YAYASAN PERGURUAN TINGGI PALEMBANG

UNIVERSITAS PALEMBANG

Visi : " Menjadi Universitas yang Unggul dalam Pendidikan Tinggi & Berwawasan Entrepreneur "

Nomor : 504433.0.2/C/IX/2024 Palembang 20 September 2024
Lampiran : 1 (Satu) Berkas
Perihal : *Permohonan ISSN*

Kepada Yth,
C.q. Kepala Bidang Dokumentasi FDII-LIPI
di-
Jakarta

Dengan Hormat,
Yang bertanda tangan di bawah ini :
Nama Pengelola /Penerbit : Universitas Palembang (UNPAL)
Alamat Pengelola : JL. Dharmapala No. 1A Bukit Besar Palembang
Email : icaesse.unpal@gmail.com
Bermaksud Mengajukan ISSN Untuk:
Nama Terbitan Berkala : Proceeding International Conference on Agriculture, Engineering, Social Science and Education
Bulan dan Tahun Pertama Terbit : Juni 2024
Frekuensi : 1 kali per tahun
Bahasa : *Bahasa Inggris*
Media Terbitan : Cetak

Sebagai Bahan Pertimbangan, Bersama ini kami Lampirkan Persyaratan Sebagai Berikut:

1. Surat Permohonan
2. Cover Terbitan Berkala Yang akan diterbitkan
3. Susunan Dewan Redaksi
4. Daftar isi terbitan

Demikian permohonan ini kami sampaikan atas perhatian dan kerjasama nya kami ucapkan terimakasih.

Palembang, Agustus 2024
Rektor

Dr. Ali Dahwir, S.H.,M.H
NIDN. 0205027401

Kampus : Jalan Dharmapala No. IA Bukit Besar Palembang (30139) Telp. 0711-440650 Fax. 0711-442318
Website : www.unpal.ac.id email : universitaspalembang@unpal.ac.id

Edisi Terbitan Volume 1 Tahun 2024

ISSN: xxxx-xxxx

PROCEEDING

INTERNATIONAL CONFERENCE ON AGRICULTURE, ENGINEERING, SOCIAL SCIENCE AND EDUCATION (ICAESSE)

Palembang, June 11, 2024

The Zuri Hotel Palembang, Indonesia

CREATING SUSTAINABLE ENVIRONMENT THROUGH DIGITAL TRANSFORMATION IN HIGHER EDUCATION

Penerbit
Universitas Palembang
Jalan Dharmapala No.1A bukit besar Palembang
Telp : 0711 440650
Email : icaesse.unpal@gmail.com
Instagram : icaesse.unpal
Web : www.unpal.ac.id

Edisi Terbitan Volume 1 Tahun 2024 **ISSN: XXXX-XXXX**

DEWAN REDAKSI
PROCEEDING
INTERNATIONAL CONFERENCE ON AGRICULTURE, ENGINEERING, SOCIAL SCIENCE AND EDUCATION (ICAESSE) 2024
TEMA: CREATING SUSTAINABLE ENVIRONMENT THROUGH DIGITAL TRANSFORMATION IN HIGHER EDUCATION

Steering Committee:
Pelindung : Zulkifli S. Mukti, S.H.,M.H
Penanggung Jawab : Dr. Ali Dahwir, S.H.,M.H
Penasehat : 1. Prof. Dr. Ir. H.M. Taufik Toha
2. Ir. H. Joni PH Rompas, M.P
3. Johansyah, S.H.,M.H
4. Ir. Fitri Yetty Zairani, M.P
5. Henson Enjen Manurung, S.E.,M.Si
6. Dr. Ardiana Hidayah, S.H.,M.H
7. Marliyus Sunarhati, S.T.,M.T
8. Ir. Gamal Abdul Nasser , M.P
9. H. Akhmad Dani, S.H.,M.H
10. Nenny Octarinie, S.E.,M.M

Organizing Committee:
Ketua : Asri Mulyadi, S.T.,M.T
Wakil Ketua : 1. Tiara Eliza, S.Hum.,M.Pd
2. Hartini Agustiawati, S.Pd.,M.Pd
Sekretaris 1 : 1. Melisa Novianty, S.Pd.,M.Pd
2. Ressy Novasyari, S.Pd.,M.Pd
Bendahara : 1. Nurwani, S.E.,M.Si
2. Farrah Rizky Amelia Mirza, S.H.,M.H

Reviewer

1. Assoc. Prof. Dr. Nor Balkish Zakaria, C. A (M) Universiti Teknologi Mara, Malaysia
2. Dr. Nur aima Binti Shafie, Universiti Teknologi Mara Malaysia
3. Assoc. Prof. Ir. Dr. Goh Wan Inn, Universiti Tun Hussein Onn Malaysia
4. Assoc. Prof. Ir. Ts. Dr. Muhammad Saufi bin Kamarudin, Universiti Tun Hussein Onn Malaysia
5. Ts. Dr. Syed Burhanuddin Hilmi Syed Mohamad, Universiti Tun Hussein Onn Malaysia
6. Prof. Aure Amador Faustito, Eastern Visayas State University, Philippine
7. Mr. Joseph Nacionales, LPT.,MAELLT, Eastern Visayas State University, Philippine

8. Dr. Sazali Zainal Abidin, Universiti Brunei Darussalam
9. Asst. Prof. Jefri Ali Saiful, Ph.D, Universitas Muhammadiyah Surabaya, Indonesia
10. Prof. Dr. Ir. H.M. Taufik Toha, Universitas Sriwijaya, Indonesia
11. Prof. Dr. Febrian, S.H.,M.S, Universitas Sriwijaya, Indonesia
12. Prof. Dr. Ir.Achmad Syarifudin, M.Sc, PU-SDA, Universitas Bina Darma, Indonesia
13. Prof. Ir. Fahrurrozi, M.Sc.,PhD, Universitas Bengkulu, Indonesia
14. Dr. Ali Dahwir, S.H.,M.H, Universitas Palembang, Indonesia
15. Dr. Ir. Haris Kriswantoro, M.Si, Universitas Palembang, Indonesia
16. Asri Mulyadi, S.T.,M.T, Universitas Palembang, Indonesia
17. Nenny Octarinie, S.E.,M.M, Universitas Palembang, Indonesia

Editorial Team

1. Asri Mulyadi, S.T.,M.T, Universitas Palembang
2. Tiara Eliza,S.Hum.,M.Pd, Universitas Palembang
3. Hartini Agustiawati, S.Pd.,M.Pd, Universitas Palembang

Managing Editor:

1. Dr. Ir. Asmawati, M.Si, Universitas Palembang
2. Rusma Rizal, S.E.,M.Si, Universitas Palembang
3. Evi Purnamawati, S.H.,M.H, Universitas Palembang
4. Daeny Septi Yansuri, S.T.,M.T, Universitas Palembang
5. Amaliah Khairunnisa, S.Tr.Log.,M.M, Universitas Palembang
6. Rosiani Annisa Fitri, S.Pd, Universitas Palembang

Bidang Kesekretariatan

1. Hartini Agustiawati, S.Pd.,M.Pd
2. Tiara Eliza, S.Hum.,M.Pd
3. Ressy Novasyari, S.Pd.,M.Pd
4. Melisa Novianty, S.Pd.,M.Pd
5. Tiray Febria Zananda, S.Pd.,M.Pd
6. Na’imatul Husni, S.Pd.,M.Pd
7. Neti Mustika Sari, S.Pd.,M.Pd

Panel and Paralel Session

1. Na’imatul Husni, S.Pd.,M.Pd
2. Hartini Agustiawati, S.Pd.,M.Pd
3. Tiara Eliza, S.Hum.,M.Pd
4. Tiray Febria Zananda, S.Pd.,M.Pd
5. Ressy Novasyari, S.Pd.,M.Pd
6. Melisa Novianty, S.Pd.,M.Pd
7. Aldity Arisrinandy, S.E.,M.M
8. Akhmad Afandi, S.E.,M.Si

9. Dodi Ismaryanto, S.T
10. Joni Maryudha , S.Kom
11. Rosiani Annisa Fitri, S.Pd
12. Oktarina, S.E
13. Andre, S.E
14. Fitriani
15. Dhaniella Rattu Intani
16. Nia Anggraini
17. M. Fahmi Fadli
18. Via oktavita
19. Rahayu

Penerbit:
Universitas Palembang
Jalan Dharmapala No. 1A Bukit Besar Palembang
Telp: 0711440650
Email:icaesse.unpal@gmail.com
Web: www.unpal.ac.id
Instagram: icaesse.unpal

Edisi Terbitan Volume 1 Tahun 2024 ISSN: XXXX-XXXX

PROCEEDING
INTERNATIONAL CONFERENCE ON AGRICULTURE, ENGINEERING, SOCIAL SCIENCE AND EDUCATION (ICAESSE) 2024
TEMA: CREATING SUSTAINABLE ENVIRONMENT THROUGH DIGITAL TRANSFORMATION IN HIGHER EDUCATION

DAFTAR ISI

MATERIAL PROPERTIES OF SELF-COMPACTING CONCRETE INCORPORATING PALM OIL FUEL ASH (POFA) AND GYPSUM POWDER AS CEMENT……. REPLACEMENT…… 1
Oleh: Goh Wan Inn, Qadir Bux alias Imran Latif, Siti Nurkhalidah binti Rosman

FOSTERING ENVIRONMENTAL SUSTAINABILITY IN ENGLISH EDUCATION…….. THROUGH ECO-ELT…… 18
Oleh : Jepri Ali Saiful

PHYSICAL MODEL APPROACH OF CRIB WALLS TO IMPROVE THE RIVER……. SLOPE STABILITY…… 25
Oleh: Achmad Syarifudin, Asri Mulyadi, Henggar Risa Destania

UNIVERSITY SOCIAL RESPONSIBILITY IN REALISING SUSTAINABLE……. DEVELOPMENT IN INDONESIA……34
Oleh: Rahmawati

POPULATION MOBILITY (MOVEMENT) MAPPING AND POLICY IN BANTEN PROVINCE……43
Oleh: Riny Handayani

STRATEGIC PLANNING OF SPATIAL PLANNING AND ZONING REGULATIONS OF SERANG DISTRICT AND CIPOCOK JAYA DISTRIC SERANG CITY, BANTEN PROVINCE……..51
Oleh: Ipah Ema Jumiati, Ardian Havidani, Suwaib Amiruddin, Ayuning Budiati

PROTECTION OF PERSONAL DATA IN THE DIGITAL SPACE……. 69
Oleh: Ardiana Hidayah, Meylanisiasm Rahmawati

WORKER RIGHTS AND PROTECTION ACCORDING TO LAW NO.13 OF 2003…….. 73 ABOUT EMPLOYMENT…….....
Oleh: Asuan

LEGAL PROTECTION OF FREEDOM OF OPINION THROUGH SOCIAL MEDIA… 89

VIEWED FROM A LEGAL PERSPECTIVE……
Oleh: Evi Purnamawati

INDEPENDENCE IN EXPRESSING OPINIONS ON SOCIAL MEDIA REVIEWED….. 94
FROM A LEGAL PERSPECTIVE…….
Oleh: Khairani Hasibuan

THE URGENCY OF THE ASSET CONFIDENTIAL LAW AS A MEANS OF…….. 101
RETURNING STATE LOSSES RESULTING FROM CRIMINAL ACTS OF……..
CORRUPTION……
Oleh: Muhammad Riduwwan

THE INFLUENCE OF BRAND IMAGE AND PRODUCT QUALITY ON……... 106
CUSTOMER SATISFACTION OF SPORT SNEAKERS NIKE BRAND……
(CASE STUDY IN PALEMBANG BASKETBALL COMMUNITY)……
Oleh: Hj. Zubaidah, Alditya Aris Rinandi, Tesha Amanda Putri

THE INFLUENCE OF PROMOTION AND LOCAL WISDOM ON INTERESTED…….. 118
IN VISITING BACK PALEMBANG CITY MODERATED BY TOURIST…….
IMPRESSIONS……
Oleh: Amaliah Khairunnisa, Rusma Rizal

THE INFLUENCE OF INSTAGRAM ON PURCHASE DECISIONS AND…… 124
REPEAT PURCHASE INTENTIONS OF FOOD AND BEVERAGE……..
CONSUMERS……..
Oleh: Arham Hafidh Akbar, Juhari, Mohamad Makrus

IMPROVING ENTREPRENEURSHIP SKILLS IN THE SOCIALIZATION……. 135
ENTREPRENEURIAL PROGRAM YEAR 2024 STATE POLYTECHNIC OF……....
SRIWIJAYA…….
Oleh: M. Arief Rahman, Indah Pratiwi, Paisal, Indri Ariyanti, Zahra Ananda Lanos,

LITERATURE REVIEW: THE INFLUENCE OF GREEN BANKING ON BANK…… 145
PERFORMANCE…….
Oleh: Mister Candera, Taufik Marwa, Isnurhadi, Yuliani

LITERATURE REVIEW ; THE INFLUENCE OF JOB INSECURITY, TURNOVER….. 152
INTENTION ON JOB SATISFACTION……
Oleh: Erick Elthoriq, Isnurhadi, Zunaidah,

THE INFLUENCE OF EMOTIONAL INTELLIGENCE ON EMPLOYEE……. 161
PERFORMANCE AT PT. TELKOM INDONESIA (PERSERO) TBK PALEMBANG…...
Oleh: Giska Dwi Adeliya, Sukaria Darmawan, Akhmad Affandi

PROMOTION STRATEGY ANALYSIS TO INCREASE BRAND AWARENESS AT…… 168
PT SEMEN BATURAJA PERSERO TBK……..
Oleh: Heni Krismawati Gulo, Endang Rahayu, Yuli Anita

LITERATURE REVIEW ; THE INFLUENCE FINANCIAL BEHAVIOR AND…….. 176

KNOWLEDGE MANAGEMENT ON INVESTMENT DECISION…….
Oleh:Randy Hidayat, Mohamad Adam, Isni Andriana, Luk Luk Fuadah

COMPANY IMAGE ANALYSIS OF CONSUMER DECISIONS IN CHOOSING J&T …… 184
EKSPRESS AS A GOODS DELIVERY EXPEDITION IN PALEMBANG CITY……
Oleh: Krisna Adhi Sanjaya, Nenny Octarinie, Pantani Dahlan

DIGITAL TRANSFORMATION MODEL OF ISLAMIC PHILANTHROPIC…….. 190
INSTITUTION IN INDONESIA……..
Oleh: Rosalina Pebrica Mayasari, Msy. Mikial, Firmansyah Arifin, Hendri Wijaya, Rahmi Bayati

THE INFLUENCE OF ENTREPRENEURSHIP TRAINING ON THE…… 200
ENTREPRENEURIAL INTEREST OF STUDENTS IN THE MANAGEMENT STUDY…..
PROGRAM, FACULTY OF ECONOMICS, PALEMBANG UNIVERSITY……
Oleh: Suci Higiantri Asti. Sugeng Mianto Fane, Khaerul Budhy Nagara

LITERATURE REVIEW ; THE INFLUENCE GREEN TRAINING, GREEN…… 206
COMPENSATION, GREEN INVOLVEMENT ON GREEN PERFORMANCE…….
Oleh: Delvina Yulanda, Isnurhadi, Muhammad Ichsan Hajri, Isni Andriana

CRITICAL REVIEW : FACTORS AFFECTING ARTIFICIAL INTELLIGENCE……
BASED MARKETING TO CONSUMER BEHAVIOUR ON BUSINESS…….
PLATFORMS……213
Oleh: Yolanda Veybitha, Sari Sakarina, Yusro Hakimah, Muhammad Yunus Alfian
Nicki Astria

PURCHASE DECISION: CASE STUDY ON GEN Z OF BUKALAPAK IN PALEMBANG..
…….226
Oleh: Yuni Adinda Putri, Djatmiko Noviantoro, Frecilia Nanda Melvani, Chika Adhelina
Marulam Damanik

LITERATUR REVIEW ; THE INFLUENCE LECTURER COMPETENCE AND……
ORGANIZATIONAL TRUST ON LECTURER PERFORMANCE…….235
Oleh: Yussi Rapareni[1], Mohamad Adam[2], Isnurhadi[3], Muhammad Ichsan Hadjri[4]

GREEN HUMAN CAPITAL AS THE COMPETITVE ADVANTAGE OF……. 243
PRIVATE UNIVERSITIES IN SOUTH SUMATRA……..
Oleh: Irayani, Ima Andriyani, Mariam Zanariah, Prety Sinta, Tarisya Idris

LITERATURE REVIEW; THE INFLUENCE DIRECTIVE LEADERSHIP AND…… 254
HARDINESS PERSONALITY ON WORK DISCIPLINE…….
Oleh : Fransiscus Ari Susetio, Mohamad Adam, Isnurhadi, Muhammad Ichsan Hadjri

THE POTENTIAL OF PGPR PLANT GROWTH PROMOTING RHIZOBACTERIA ….. 260
TO REDUCE INORGANIC FERTILIZER NEEDS IN PEANUTS CULTIVATIONS……..
Oleh: Marulak Simarmata, Masdar, Reny Herawati

AGRONOMIC PERFORMANCE AND RESPONSE OF GORONTALO UPLAND…….. 269
RICE VARIETIES TO SEVERAL PESTS AND DISEASE……....

Oleh: Nanang Buri, Surianto Sipi, Ernawati Djaja, Rohimah Handayani Sri Lestari

SHALLOT (Allium Ascalonicum L.) GROWTH AND YIELD RESPONSE TO …… 276
CONCENTRATION AND APPLICATION TIME OF LIQUID ORGANIC FERTILIZER
Oleh: Vally Tamora Manurung, Widodo, Hasanudin

INCIDENCE OF SPODOPTERA FRUGIPERDA J.E SMITH AND…….. 284
ENTOMOPATHOGENIC FUNGI IN CORN PLANTS IN THREE DISTRICTS OF …….
BENGKULU PROVINCE (REJANG LEBONG, KEPAHIANG, AND BENGKULU……..
UTARA)……..
Oleh:Sempurna Ginting, Hartal, Dicky Agus Afriyanto

ANALYSIS OF THE IMPACT OF SUGAR CANE ASH WASTE AS A REPLACEMENT 293
FOR FINE AGGREGATE IN MORTAR MIXTURE…….
Oleh: Ikahariya Pratiwi Matra, Asri Mulyadi, Rita Anggrainy, M.Rasyid Ridho

ANALYSIS OF THE UTILIZATION OF SUGAR CANE ASH WASTE AS A CEMENT… 307
SUBSTITUTION IN MORTAR MIXTURE WITH NaCl AS A SUBSTITUTE FOR…….
WATER……
Oleh: Wahyu Handoyono Hidayat[1], Asri Mulyadi[2], Asrullah[3], Rezial Nanda Saputra

MARSHALL CHARACTERISTICS WITH THE USE OF CEMENT FILLER AND…….. 323
STONE ASH IN THE MIXTURE ASPHALT CONCRETE WEARING COURSE……..
(AC-WC) (Case Study: Ogan Ilir Regency Boundary Road-Lubuk Batang STA……
26+485 to STA 27+405)……..
Oleh: Asrullah, Rita Anggrainy, Ice Trisnawati, Pengki Suanto

DESIGN AND FABRICATION OF UREA-BASED NITRIDING DEVICE FOR PURE…
TITANIUM GRADE 1……..335
Oleh: Aria Wira Yuda, Amir Arifin, Irsyadi Yani, Barlin Oemar, Rakhman

DESIGN AND DEVELOPMENT OF A HYBRID SYSTEM FOR PICO HYDRO……..
POWER PLANT AND SOLAR POWER PLANT……345
Oleh: Yosi Apriani, Soni Andika Pratama, Marliyus Sunarhati, Zulkifli Saleh, Ian Mochamad Sofian

PARTNERSHIP MODELS INVOLVING INDEPENDENT SMALLHOLDERS IN…….
INDONESIAN PALM OIL SUPPLY CHAIN:A BRIEF REVIEW……..358-368
Oleh: Syamsul Anwar, Demi Ramadian, Irna Ekawati, Indah Kurnia Ramadhani

ANALYSIS OF THE EFFECT OF COMPRESSIVE STRENGTH OFMORTAR……. 369
USINGCANE WASTE ASH AND LIME…….
Oleh: Asri Mulyadi, Saloma, Siti Aisyah Nurjannah

THE EFFFECTIVENESS OF OMETV APPLICATION ON SPEAKING SKILL……. 381
FOR EIGHT GRADE STUDENTS OF MTS FAJAR SIDDIQ PALEMBANG……..
Oleh : M.Fahmi Fadli, Hartini Agustiawati, Melisa Novianty

THE ANALYSES OF LECTURERS' NEED TOWARD DEVELOPMENT…….. 389
OF BLENDED LEARNING MODEL USING PROJECT BASED LEARNING……
APPROACH FOR ENGLISH FOR HOTEL AND TOURISM LESSON……
Oleh: Ferry Kurniawan, Ninuk Lustyantie, Herlina Usman

THE EFFECTIVENESS OF PICTURES STORY BOOKS ON READING…… 394
COMPREHESION…….
Oleh : Choirunnisa, Tiara Eliza, Tiray Febria Zananda

THE ROLE OF COLLABORATIVE LEARNING TO IMPROVE SPEAKING SKILL….. 399
Oleh: Dedek Apriansyah Putra, Hartini Agustiawati, Melisa Novianty

THE INFLUENCE OF LEADERSHIP STYLE AND WORK DISCIPLINE ON..... 406
EMPLOYEE PERFORMANCE AT PT BUKIT ASAM, TbkKERPATATI pier UNIT
Oleh : Ayu Anggraini, Pantani Dahlan, Delimawati

THE INFLUENCE OF THE PHYSICAL AND NON-PHYSICAL WORK..... 418
ENVIRONMENTON THE PERFORMANCE OF PDAM TIRTA OGAN.....
EMPLOYEES, OGAN ILIR REGENCY.....
Oleh : Yenny Fariska, Zubaidah, Nenny Octarinie

ANALYSIS OF FINANCES IN THE COMPANY PT, INDOFOOD 430
SUKSES MAKMUR TBK.....
Oleh : Muhammad Irsyad Rajabani, Hamdan, Rusma Rizal

THE INFLUENCE OF E-COMMERCE (CASE STUDY ON THE SHOPEE 443
APPLICATION) ON INTEREST IN BUYING ADULT MEN'S CLOTHING AMONG..
MANAGEMENT PROGRAM STUDENTS, FACULTY OF ECONOMICS.....
PALEMBANG UNIVERSITY.....
Oleh : M. Lisdan Pondarta, Nenny Octarinie, Rusma Rizal

THE INFLUENCE OF PRODUCT QUALITY AND DISTRIBUTION CHANNELS ON INTEREST IN BUYING VEGETABLE PRODUCTS AT PT. ETERNAL RED PINE PALEMBANG
oleh : Ardah Apsyah, Zubaidah, Sukaria Darmawan…….459

THE INFLUENCE OF PROMOTION ON CONSUMER BUYING INTEREST IN GARUDA BEANS AT PT. SINAR NIAGA SEJAHTERA PALEMBANG
Oleh : Lisa Andini, Zubaidah, Rusma Rizal ……470

PENGARUH GAYA KEPEMIMPINAN DAN IKLIM ORGANISASI TERHADAP KINERJA PEGAWAI DI KANTOR KECAMATAN ILIR TIMUR 1 PALEMBANG
Oleh : M Usman Maliki, Fahmi AlHadi…….485

MATERIAL PROPERTIES OF SELF-COMPACTING CONCRETE INCORPORATING PALM OIL FUEL ASH (POFA) AND GYPSUM POWDER AS CEMENT REPLACEMENT

Goh Wan Inn*
Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia, Batu Pahat, 86400, MALAYSIA
wigoh@uthm.edu.my

Qadir Bux alias Imran Latif
Department of civil and environmental engineering, College of engineering and architecture
University of Nizwa, Nizwa Oman
qadir.omran@unizwa.edu.om

Siti Nurkhalidah binti Rosman
Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia, Batu Pahat, 86400, MALAYSIA
nur.khalidahrosman@gmail.com

Abstract

This study explores the feasibility of utilizing palm oil fuel ash (POFA) and gypsum powder (GP) as partial replacements for cement in self-compacting concrete (SCC). Various proportions of POFA (20%) and GP (5%, 10%, 15%) were examined to assess their impact on the material and fresh properties of SCC. Physical properties of raw materials were determined, revealing differences in specific gravity and water absorption. Microstructural analysis using Scanning Electron Microscope (SEM) with Energy Dispersive X-Ray Analysis (EDX) indicated higher silica content in POFA (5.96%) and increased calcium content in GP (18.78%). Fresh properties tests, including slump flow, T500, J-Ring, and segregation, demonstrated that the 20P 0GP mix achieved optimal workability and self-compatibility without external compaction. The study highlights the potential of using agricultural waste and natural resources as sustainable alternatives in SCC production.

Keywords: *Self-compacting concrete (SCC), Palm oil fuel ash (POFA), Gypsum powder (GP), Scanning Electron Microscope (SEM), Energy Dispersive X-Ray Analysis (EDX)*

1. INTRODUCTION

Self-consolidating concrete (SCC) is a highly flow able type that spreads effortlessly without mechanical vibration, offering advantages such as enhanced constructability, reduced labour, and simplified pumping. Malaysia, a major palm oil producer, generates significant solid waste, with palm oil fuel ash (POFA) constituting about 5% through steam boiler combustion (Tangchirapat et al., 2007). The country faces challenges in solid waste disposal, generating approximately 30,000 tons daily (Clean Malaysia, 2015). POFA, with higher silica oxide but lower calcium oxide than gypsum powder (GP), is explored alongside GP as potential cement alternatives. This utilization of agricultural waste in construction materials not only reduces production costs but also addresses environmental concerns by minimizing landfill activity and pollution. The combination of POFA and GP exhibits a promising chemical composition for cement substitution (Khalid et al., 2016; Maneesh & Aravind, 2022). The integration of waste materials into usable products holds great potential for multiple industries, including agriculture, food manufacturing, and construction. This concise summary is based on findings detailed in the technical report.

Self-compacting concrete (SCC) addresses compaction issues by providing benefits such as enhanced powder content, coarse aggregate volume limits, and self-compatibility (Gupta et al., 2021; Bradu

et al., 2016). Exploration of waste materials as supplemental cementitious materials, particularly agricultural waste such as palm oil fuel ash (POFA), contributes to environmental sustainability by lowering the industry's impact on raw resources (Hamada et al., 2021).

POFA is another significant waste that must be recycled in Malaysia. Malaysia is believed to be one of the major annual producers of palm oil waste (Kushairi, 2019). POFA is the ash created by burning the palm oil shell and husk as fuel in a palm oil mill boiler to generate steam to power the palm oil extraction process. This material is often disposed of in a landfill with little commercial benefit. To counteract this, various studies attempted to reuse POFA in a sustainable manner, and it was discovered that POFA possesses pozzolanic qualities, which allow it to be utilized as an alternative to cement in the building sector. Specifically, as a one-of-a-kind cement alternative in building materials.

Gypsum is a soft sulphate mineral made of calcium sulphated hydrate, having the chemical formula CaSo4.2H2o. Gypsum is made up of calcium, sulphur, oxygen, and water. Gypsum is a plentiful mineral that comes in a variety of forms. Gypsum is utilised to replace cement in concrete mixes since it has been proven to be a pozzolanic substance. Carbon-dioxide emissions into the atmosphere can be minimised by limiting the use of regular Portland cement. Due to growing environmental concerns and the need to conserve energy and resources, efforts have been made to use waste material from industrial and agricultural goods in the building industry as a pozzolanic mineral additive to replace standard Portland cement. Considering all the circumstances, gypsum, a pozzolanic material, is used to substitute cement, lowering the percentage of cement in the concrete mix globally (Reddy Thumma, 2017). Gypsum is becoming more popular as a building material because it is one of the most environmentally friendly binders (Doleželová et al., 2018).

This study investigates the physical properties of self-compacting concrete incorporating POFA and GP as partial cement replacements. The tests, including Specific Gravity, and Water Absorption, were conducted on specimens containing 20% POFA and varying percentages (0% to 15%) of gypsum. Additionally, SEM with EDX tests were performed to assess the microstructural properties of the hardened concrete. The workability of fresh concrete was evaluated using slump flow, T500, J-Ring, and segregation tests due to the potential impact of waste material additions. The study focuses on the usage of recycled POFA and GP in the manufacturing of SCC. Many developments and modifications have been used to reduce natural resource consumption. The purpose of this study is to investigate the potential of POFA and GP as cement replacements in SCC. The assessment of various qualities of concrete to determine whether it is suitable or not to replace cement in SCC.

2. LITERATURE REVIEW

In this investigation, GP and POFA will be used at levels of 5% and 20%, respectively, to replace a portion of the cement used in the production of self-compacting concrete (SCC). It is necessary to evaluate the methods, hypotheses, and findings of previous research in order to achieve this objective. This topic will cover SCC's use and other qualities in addition to its advantages and disadvantages. Additionally, the characteristics of POFA and GP as well as earlier research on their use as partial cement substitutes in concrete will be studied.

2.1. Microstructure Study

Microstructure study involves the microscopic analysis of a material's constituents, including type, size, amount, shape, and distribution phases. Pore structure, a crucial microstructure characteristic in porous solids, significantly impacts the physical and mechanical properties of the material. SEM is a valuable tool for characterizing cement and concrete microstructures, aiding in the assessment of cementing materials' impact, addressing durability concerns, and predicting material service life. Tiedt and Pretorius (2018) note that SEM provides topography images for analysing particle size, shape, surface, roughness, and fracture surfaces. It utilizes X-Ray Microanalysis, Secondary Electron Imaging, and Backscattered Electron Imaging modes. Rajak et al. (2015) explored the influence of POFA on cement microstructure, revealing

that POFA particles inhibited ettringite growth in the hardened cement paste, as observed in Figure 1 of their study.

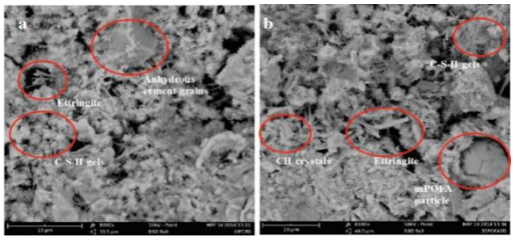


Fig. 1 Morphology of (a) Control sample-hcp (b) 20% POFA-hcp of cement pastes at 7 days of curing age (Rajak et al., 2015)

2.2. Fresh Properties

In general, POFA is the high pozzolanic activity that allows it to reduce the use of cement in concrete. Furthermore, the high fineness of POFA reduces concrete expansion due to the alkali-silica reaction, improving concrete performance (Syaizul et al., 2019). POFA has a low pozzolanic reaction because of its porous nature and big particle size. According to EFNARC, new concrete features such as filling capacity, passage ability, and segregation resistance were evaluated. Slump flow and T500 mm tests were used to evaluate horizontal flow in the absence of limitations. The J-ring flow test was used to determine passage capacity, which ensures movement across congested locations without vibrating. According to EFNARC (2005), passage ability, crucial for movement through tight spaces without segregation, was evaluated through J-ring and L-box tests. Segregation resistance, ensuring cohesiveness during casting, was verified using the GTM screen stability test method.

Table 1 Summary of fresh properties of POFA to SCC carried out by various researchers

Author/ Year	POFA (%)	Fresh Properties				
		Slump Flow (mm)	T500mm time (s)	J-Ring (mm)	Segregation Index (%)	Type of SCC
Safiuddin, M., Jumaat, M. Z. (2011).	0	630	2.0-5.0	590	10.4	High Strength
	10	640		610	10	
	15	665		630	11.2	
	20	670		635	11.7	
	30	675		650	12	
Alsubari, B., Shafigh, P., Jumaat, M. Z., & Alengaram, U. J. (2014)	0	700	3.5-4.8	690	6.7	High Strength
	10	690		670	8.7	
	15	680		650	10.8	
	20	660		630	13.9	
Alsubari, B., Shafigh, P., & Jumaat, M. Z. (2015)	0	700	2.9-3.5	690	6.7	High Strength
	10	710		690	6.9	
	20	715		695	7.3	
	30	720		700	7.8	
	50	730		710	8.2	
Ranjbar, N., Behnia, A., Alsubari, B., Birgani, P. M., & Jumaat, M. Z. (2016)	0	700	3.0-4.57	690	6.67	High Strength
	10	690		670	8.7	
	15	680		650	10.8	
	20	660		630	13.9	

Salam, M. A., Safiuddin, M., & Jumaat, M. Z. (2018)	0	630	-	590	10.4	High Strength
	10	640		610	10	
	20	665		630	11.2	
	30	675		650	12	

2.3. Replacement of Cement as POFA and GP

Agricultural waste, including materials like POFA, fly ash, and micro silica, poses a significant environmental challenge, leading to contamination in various ecosystems. These wastes, when improperly disposed of, end up in landfills, coastal waters, and rivers. Gypsum, a natural resource, plays a crucial role in cement hardening and has gained traction as an environmentally friendly construction material. Reducing the use of conventional Portland cement is identified as a method to minimize carbon-dioxide emissions (Reddy Thumma, 2017).

Previous researchers had not extensively researched the combination of POFA and GP as a cement replacement, and very little information had been found. By referring research of Kamaruddin, (2020) which is eggshell and POFA as a cement replacement, eggshell is a poultry waste with a composition as rich in calcium as limestone. The researcher succeeded in producing and proving that eggshell powder and POFA as a cement replacement in SCC. The material from previous study will be changed to the GP. As a result, the combination of POFA and GP as cement replacement in SCC is thought to be studied in this study.

3. MATERIAL AND METHOD

Methodology was one of the research stages that went through the steps of methodologies, material preparation, and experimental work. This chapter outlined or defined the approach that was used in fulfilling the objectives in this study. An experiment was carried out to investigate the material properties of self-compacting concrete (SCC) with POFA and GP as partial cement replacements.

3.1 Materials

Ordinary Portland Cement (OPC): In this experimental study, OPC was used. When cement was mixed with additional chemical admixtures, different chemical and strength characteristics resulted. In this study, concrete grade 35 was designed, and the cement was approved by SIRIM as complying with MS 197-1:2007.

Fine aggregate: The sand was prepared from UTHM laboratory "Makmal Bahan Termaju." The sand dried in the oven at a temperature of 100°C for 1 day or 24 hours to remove the moisture in the sand particles. Fine aggregates were small-sized materials in which the particles passed through a 4.75mm sieve mesh, were retained on a 0.075mm filter after oven drying and were used in this study.

Coarse aggregate: Coarse aggregate had a wide range of construction applications. When blended with other elements in concrete, good concrete mixes comprised aggregates that were clean, strong, and hard. Quarry rock was crushed to generate aggregate that had been passed through a 12mm screen.

Water: POFA was put in the oven for drying at a temperature of 105°C ± 5°C for 1 day or 24 hours and sieved through a sieve size of 300 μm to remove larger particles and other substances. POFA was also sieved through a sieve size of 75 μm to collect good ashes with the same cement size. After the sieving process, POFA was put in a container to maintain the moisture content.

POFA: POFA was collected from Band Dung Palm Oil Industries Sdn. Bhd. at Sri Medan, Batu Pahat, Johor Darul Takzim and put in the oven for drying at a temperature of 105°C ± 5°C for 1 day or 24 hours and sieved through a sieve size of 300 μm to remove larger particles and other substances. POFA was

also sieved through a sieve size of 75 μm to collect good ashes with the same cement size. After the sieving process, POFA was put in a container to maintain the moisture content.

Gypsum powder: It contributes to the hardening of cement and the rapid setting of cement. Gypsum is dehydrating calcium sulphate (CaSO4.2H2O). White gypsum powder was used as a cement replacement.

Superplasticizer: The superplasticizers that were employed in this research as an admixture in each mix proportion. The admixture is systematically specified in the ingredient selection to generate high early strength in the concrete mixture, lower the water-cement ratio, accelerate the initial set, increase strength, reduce shrinkage, and improve workability.

3.2 Method

Mix design proportion: The proportion of the concrete mixture was according to the listed weights in Table The composition of the mix that was used for the duration of this study is shown in terms of cement, sand, aggregate, and water content. In order to study the workability of fresh concrete on the day the concrete was cast, this study included 5 samples. The mix proportion involves using 20% of POFA and varying amounts of GP from 0% to 15% as substitutes for cement in self-compacting concrete (SCC). The mix concrete was labelled for 20% of POFA with 20P and 0% to 15% of GP with 0GP, 5GP,10GP and 15GP.

Table 2 Mix proportion of sample

Mix Name	Cement (kg/m^3)	POFA (kg/m^3)	GP (kg/m^3)	FA (kg/m^3)	CA (kg/m^3)	Water (kg/m^3)	SP (kg/m^3)
Control	451	0	0	902	767	180	9.02
SSC 20P 0GP	361	90.19	0	902	767	180	9.02
SSC 20P 5GP	338	90.19	22.54	902	767	180	9.02
SSC 20P 10GP	316	90.19	45.1	902	767	180	9.02
SSC 20P 15GP	293	90.19	67.65	902	767	180	9.02

Concrete Testing: EFNARC (2005) European requirements for SCC specified every testing. This table 3 shows the specifications and standards used for testing the SCC in accordance with British and European standards (BS EN) and American Society for Testing and Materials (ASTM) standards. The testing is being conducted followed by standard and the material undergoes testing.

Table 3 Mix proportion of sample

Description	Testing	Standard BS EN	Material
Physical Properties	Specific Gravity	ASTM C128-15	POFA, GP, Cement
	Water Absorption	BS 1881-122:201	Concrete
Microstructure Study	Scanning Electron Microscopy (SEM)	ASTM E1508-12	POFA, GP, Cement
	Energy Dispersive X-Ray Analysis (EDX)	ASTM E1509-20	Concrete
Fresh Properties	Slump flow	ASTM C1611M-21	Concrete
	T500	BS EN 12350-12:2010	
	J-Ring	BS EN 12350-11:2010	
	Segregation	BS EN 12350-8:2017	

Sample Preparation: The sample preparation and material handling were based on mixed design proportions. Water absorption testing utilized cube molds with dimensions of 100 mm x 100 mm. The water absorption test involved three samples for each proportion at an age of 28 days, totaling 15 cube samples. Therefore, material testing, including specific gravity tests with 50 g for each material, and SEM with EDX tests with 20 g for each material, along with concrete samples aged 28 days for each batch, was prepared with a 2-3 mm sample. Other tests, such as slump flow, T500, J-Ring, and segregation tests, were conducted during the casting process.

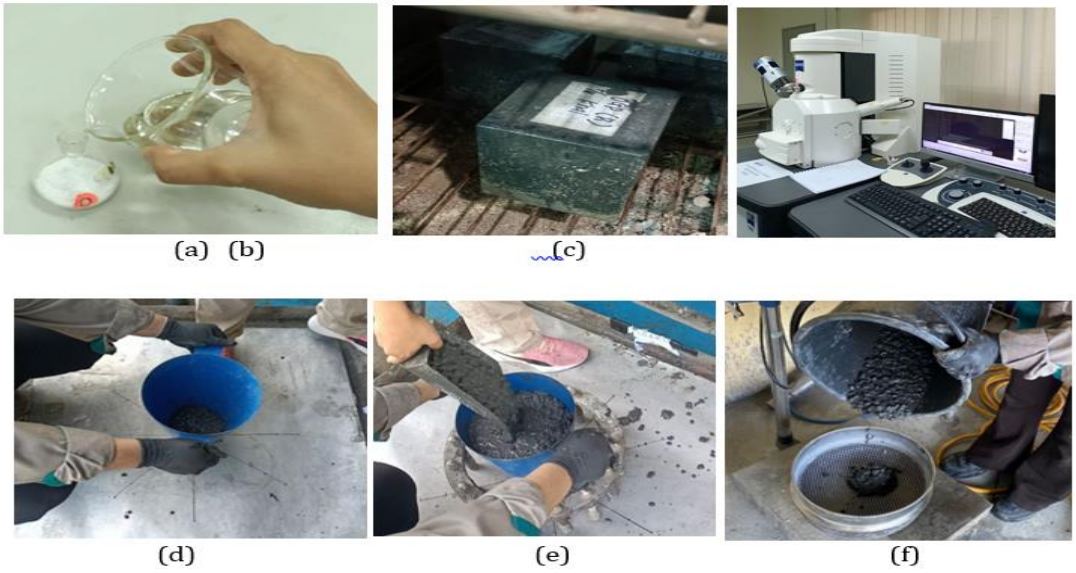


Fig. 2 Methodology of research (a) Specific gravity test; (b) Drying concrete for water absorption test; (c) Zeiss Evo LS10 instrument for SEM and EDX testing; (d) Slump flow test and T500 test; (e) Poured concrete for J-ring Test; (f) Segregation test

. Table 4 Sample preparation physical properties and microstructure study

Description	Testing	Material	Amount
Physical Properties	Specific Gravity	POFA, GP, Cement	50g
	Water Absorption	Concrete	15 samples cube
Microstructure Study	Scanning Electron Microscopy (SEM)	POFA, GP, Cement	20g
	Energy Dispersive X-Ray Analysis (EDX)	Concrete	2-3mm concrete sample

Table 5 Sample preparation fresh properties

Type of Test	Mix Name	Amount of Material		
		% of POFA	% of GP	% of Cement
Slump flow test & T500 test	Control	0%	0%	100%
J-Ring test	SSC 20P 0GP	20%	0%	80%
Segregation test	SSC 20P 5GP	20%	5%	75%
	SSC 20P 10GP	20%	10%	70%

	SSC 20P 15GP	20%	15%	65%

4. RESULTS AND DISCUSSION

4.1 Physical Properties

Specific Gravity: The purpose of this test is to determine the specific gravity of the materials. Cement, POFA, and GP are the samples. The formula and calculation for SG are shown below. The results of the SG test for cement, POFA, and GP are shown in Table 6 below.

Table 6 Sample preparation physical properties and microstructure study

Material	**Weight of empty flask (W1)**	**Weight of flask + material (W2)**	**Weight of flask + material + kerosene (W3)**	**Weight of flask + kerosene (W4)**	**Specific gravity (SG)**
Cement	33.86	44.03	80.95	73.37	2.43
POFA	33.89	43.92	78.95	72.25	2.12
Gypsum	31.47	41.5	77.81	70.92	2.19

According to table 6, the SG values for cement, POFA, and GP are 2.43, 2.12, and 2.19, respectively. POFA and GP both have lower SG values than cement. Because POFA is organic waste and GP is a natural resource. The presence of pores and voids from POFA and GP results in a lower SG value. All of the materials sunk in kerosene because their SG values were higher than SG of kerosene value.

Water Absorption: Water absorption is a deceptive technique for determining the durability of concrete. Hazardous substances are commonly found in water. These substances interact with cement components, changing the performance of concrete. The water absorption test calculation is shown below.

Fig. 3 shows the result of the water absorption test. Concrete mix with 0% of GP replacement of cement having a lower percentage absorption with 3.24% compared to other specimen. Meanwhile, specimen with 15% of GP gave higher percentage absorption with 9.43%. Specimen with 20P 15GP have the lowest workability due to high percentage of POFA and Gypsum powder which absorb the water. Both materials of POFA and GP have porous structure of surface area.

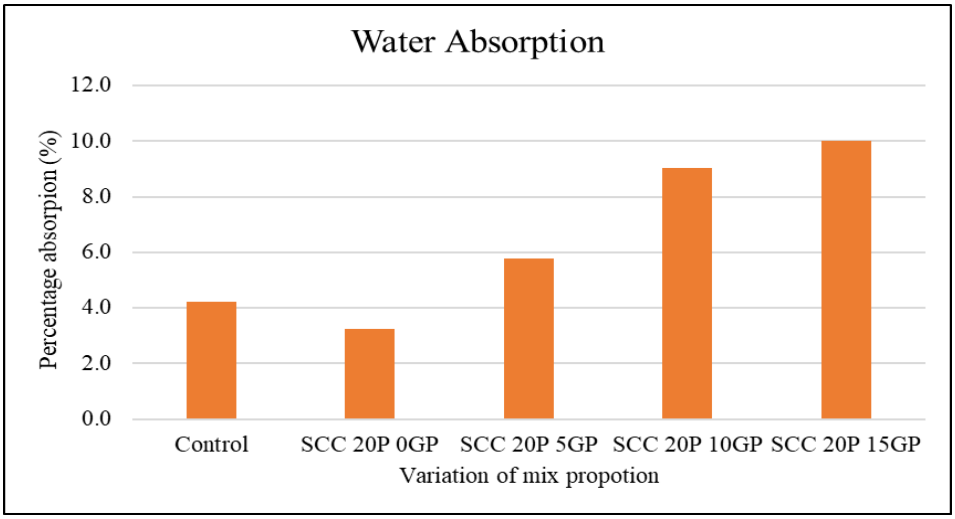
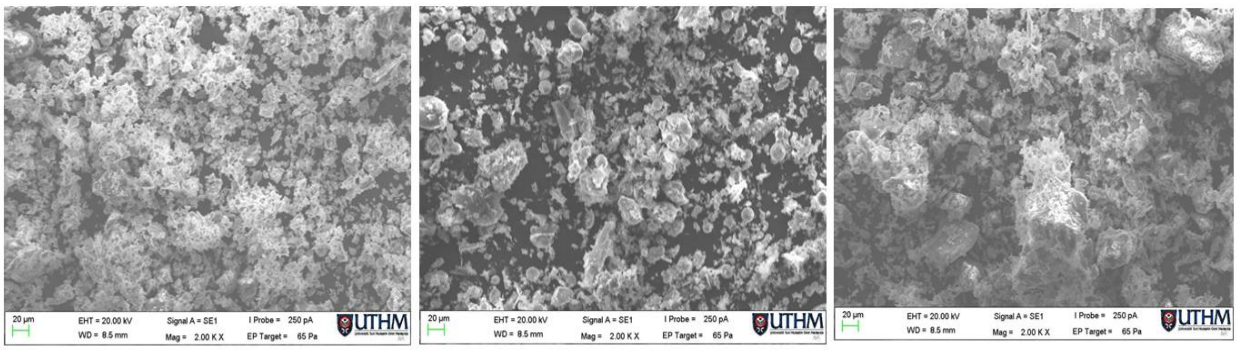


Fig. 3 Result of water absorption

4.2 Microstructure Study

Scanning Electron Microscope (SEM) with Energy Dispersive X-Ray Analysis (EDX): SEM analysis was conducted on all the concrete samples with and without the POFA and GP including all material samples which is cement, POFA and GP. The application of SEM improves the capacity to analyse the concrete microstructure and can assist in the determination of the chemical elements concrete. In Figures 4 and 5, the SEM plays an important role in clarifying the microstructure of concrete. SEM analyses their topography as well as their composition. In this investigation, concrete specimens were collected at a curing age of 28 days after the compressive strength testing.



(a) (b) (c)

Fig. 4 SEM image (a) Cement; (b) POFA; (c) GP

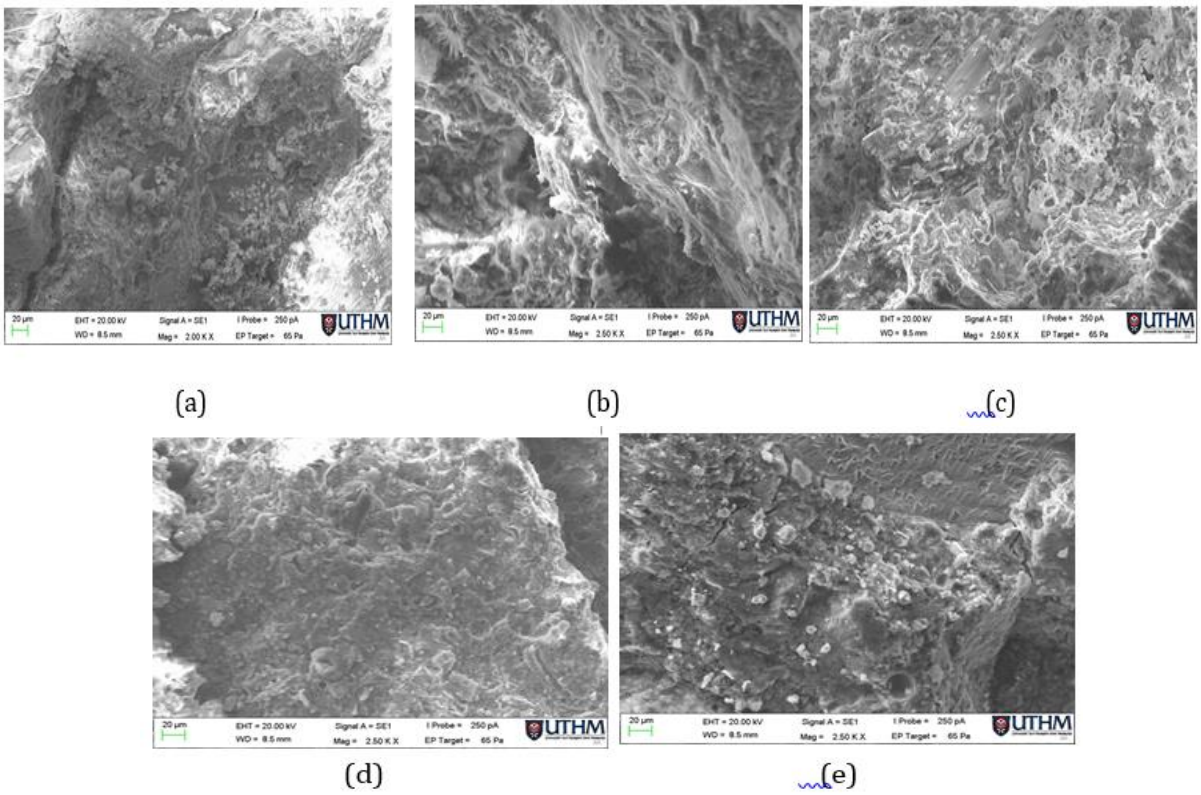


Fig. 5 SEM image (a) Control sample; (b) 20P 0GP; (c) 20P 5GP; (d) 20P 10GP; (e) 20P 15GP

According to Table 7, shows the percentage of elements in the material of cement, POFA and Gypsum. POFA have a high percentage element of Silica (Si) with 5.96% compared to GP have 0.35% only. Meanwhile, the percentage element Calcium (Ca) in GP is high with 18.78% compared to POFA. From the previous study, GP is high with Ca and POFA high with Si. As a result, the element has been proved by EDX test.

Table 7 Percentage element from EDX test

Element	**Material**		
	Cement (%)	**POFA (%)**	**Gypsum (%)**
Oxygen (O)	37.28	25.56	47.3
Calcium (Ca)	34.59	1.47	18.78
Calium (C)	13.46	56.97	20.68
Silicon (Si)	6.46	5.96	0.35
Ferum (Fe)	2.3	0.33	-
Aluminium (Al)	2.03	-	2.09
Magnesium (Mg)	1.21	0.96	-

The effect of POFA and GP on the SCC as cement replacement was investigated using microstructural properties. The microstructure images influence the percentage of POFA and GP of cement replacement. Based on the findings of this study, the microstructure of the samples of the respective concrete mixtures was examined using SEM. Figure 5 show the changes in microstructure forms from mix to mix.

4.3 Fresh Properties

Slump Flow and T500 Test: The workability and filling ability of concrete mixture were determined using slump flow and slump time for the T500 test. Table 8 shows the results of the slump flow test and T500. Figure 6 shows the result of the slump flow until it reaches T500. The result for slump flow was obtained in this test by calculating the average of the diameter and the time of spread to reach 500mm of diameter. The slump flow calculation is shown below.

Table 8 Result for Slump Flow Test and T500

Specimen	Slump Flow Test			
	Diameter of Spread			Time of Spread to T_{500} time (s)
	d1	d2	davg 550mm ≥ SF ≤ 850mm	
Control	650	680	665	3.5
SCC 20P 0GP	620	625	623	4.1
SCC 20P 5GP	610	620	615	4.8
SCC 20P 10GP	580	570	575	5.3
SCC 20P 15GP	550	560	555	5.8

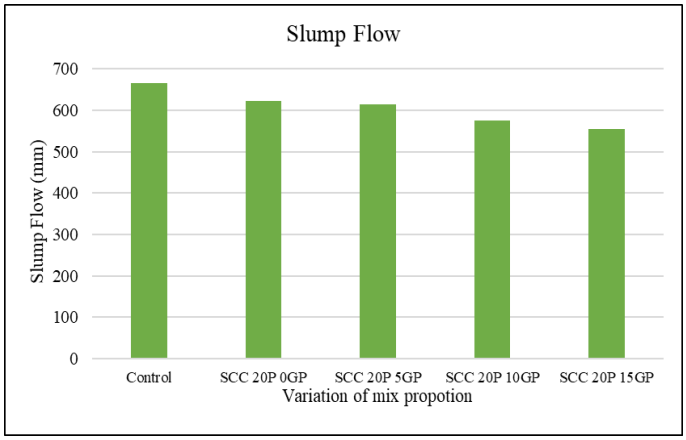


Fig. 6 Result for slump flow test

According to Figure 6, slump flow for all specimens is different. The control specimen had the highest slump flow of 665mm because it was not mixed with POFA or GP. Besides that, all of the specimens with results ranging from 20P 0GP to 20P 15GP were lower than the control. This is due to the material POFA and GP absorbing liquidity in the concrete. As a result, the replacement of cement at 20P 15GP has the lowest value in slump flow, which is 555mm. This could be because both materials absorb more water. Slump flow was 623mm, 615mm, and 575mm for specimens with POFA and GP as cement replacement, which were 20P 0GP, 20P 5GP, and 20P 10GP. The presence of POFA and GP in concrete was observed to affect the water content of the concrete mixture. According to EFNARC (2005), the limitation slump flow for SCC is between 550mm and 850mm. To summarize the results, all specimens are within the acceptable range of limitation.

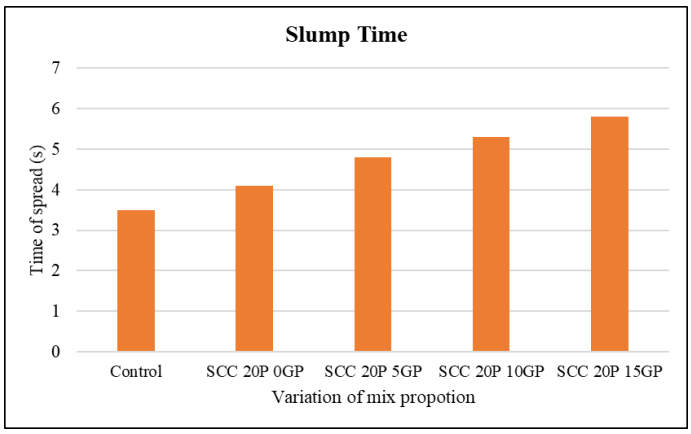


Fig. 7 Result for slump time until reach T500

According to Figure 7, The concrete mix with 0% replacement has a shorter time of 3.5 seconds for T500. Through the presence of POFA and GP in the concrete mix, this indicates that more time is required. The longest time required for 20P 15GP as cement replacement is 5.8 seconds. This could be because the combination of 20% POFA and 15% GP absorbs more liquid in the concrete mix. According to the graph, the concrete mix with 15% GP as a cement replacement takes the longest time to reach 500mm when compared to specimens with 0%, 5%, and 10% GP. It shows a higher percentage of GP replacement in the sample produced a longer time than a lower percentage of GP replacement in the sample. According to EFNARC (2005), the required time for the T500 test is between two until six seconds. As a result, the results show that all specimens with cement replacement are within the acceptable range.

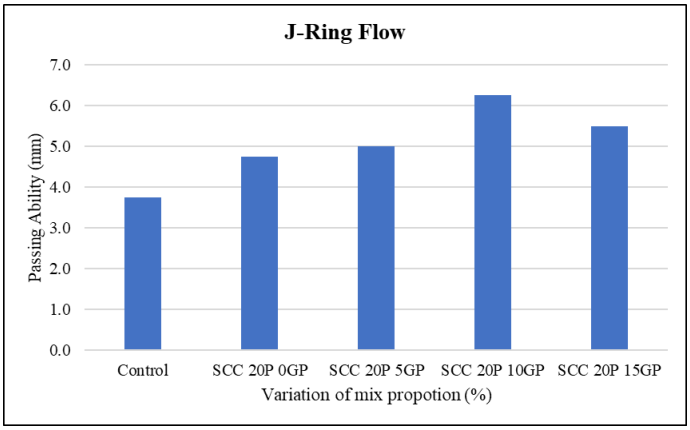
J-Ring Test: J-Ring test methods are used to determine the ability of SCC to pass under its own weight when combined with a slump mold. The results of the J-ring test are shown in Table 9 below. Figure 8 represents a bar chart of J-ring flow. The calculations are shown below.

According to the result, a specimen with 0% GP showed high passing ability. It shows that the material has a high absorbance towards liquid in the concrete mix. Meanwhile, the specimen 20P 10GP with 10% GP as cement replacement has the lowest workability because it has the highest passing ability, 6.25mm, when compared to other specimens. It is due to the fact that POFA and GP absorb water in the concrete mix. Both materials may have a porous structure area. According to EFNARC (2005), the passing ability of the J-Ring test must be less than 10mm. To summarize, all the specimen of J-Ring flow results met the requirement.

Table 9 Result for J-Ring test

Specimen	**J-ring Flow**						
	Height of Spread (mm)						**Passing ability**
	hx1	**hx2**	**hy1**	**hy2**	**havg**	**ho**	**hx1 - ho ≤ 10mm**
Control	110	120	118	115	116.75	113	3.75
SCC 20P 0GP	110	120	115	110	113.75	109	4.75
SCC 20P 5GP	110	115	105	110	110.00	105	5.00
SCC 20P 10GP	120	110	115	120	116.25	110	6.25
SCC 20P 15GP	118	115	110	115	114.50	109	5.50

Fig. 8 Result for J-Ring flow



Segregation Test: The segregation test is used for determining the sieve segregation resistance of SCC. The test aims at investigating the resistance of SCC to segregation by measuring the portion of the fresh SCC sample passing through a 5mm sieve. Table 10 and Figure 9 show the result of segregation test on SCC samples.

Table 10 Result of Segregation test

Specimen	**Segregation Sieve**						
	Mass of the pan, Wp (g)	**Mass of the sieve + pan, Wsp (g)**	**Mass of pan + sieve + total poured concrete, Wspc (g)**	**Mass of pan+ passed concrete, Wppc (g)**	**Mass of passed concrete through the sieve , Wpc (g)**	**Initial mass of concrete placed onto the sieve, Wc (g)**	**Segregated portion, SR (%) ≤ 20%**
Control	680	1830	3650	760	80	1820	4.40
SSC 20P 0GP	490	1580	3070	540	50	1490	3.36
SSC 20P 5GP	710	1860	3650	770	60	1790	3.35
SSC 20P 10GP	680	1810	3560	770	90	1750	5.14
SSC 20P 15GP	490	1640	3560	540	50	1920	2.60

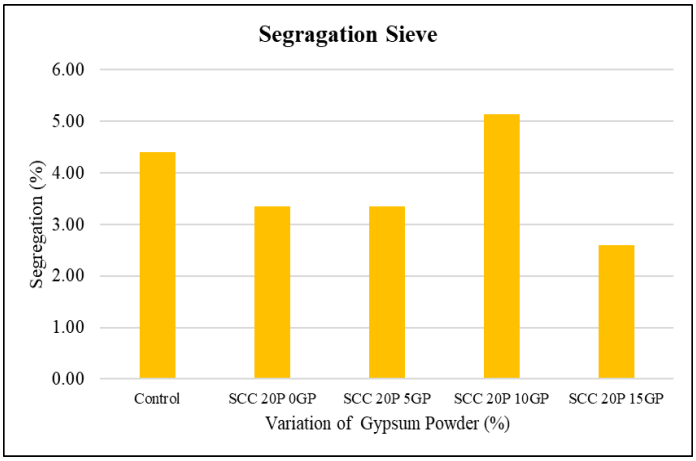
Table 10 shows the result for segregation sieve test. Figure 9 shows the result of segregation sieve for various percentage of GP and 20% POFA as cement replacement. The main objectives of the test are to investigate SCC's resistance to segregation using a 5mm sieve and to see if any fresh SCC sample passed through the sieve. According to the results, the 20P 15GP specimen has the lowest percentage of segregation. As shown in the results for specimen 20P 10GP, concrete with a high workability produces a higher percentage of segregation. Due to of the absorbance characteristics of both materials, the percentage of segregation varies depending on the percentage of material used as cement replacement. EFNARC

(2005) requires that the percentage of sieve separation results be less than 20%. As a result, all of the concrete mixtures met the requirement.

Fig. 9 Result of segregation sieve test

5. CONCLUSION

The experimental study on POFA and GP as a cement replacement for concrete can be concluded



based on the laboratory results. The first objectives are to study the physical properties of POFA and Gypsum Powder as cement replacement. This was achieved by determining the physical properties using specific gravity and water absorption. POFA and GP both gave SG values of 2.12 and 2.19. Meanwhile, the cement SG test result is 2.43. Due to the presence of pores in the materials SG of cement exceeds that of POFA and GP. Due to the SG value of kerosene is lower than the SG value of the material, all the materials tested in this test were immersed in it. The water absorption of concrete was conducted to determine the durability of the concrete. The specimen with 0% GP replacement of cement had the lowest absorption with 3.24%, while the specimen with 15% GP replacement had the highest absorption with 9.43%. The reduced workability of the 20P 15GP specimen was attributed to the high percentages of POFA and gypsum powder, which are known for their water-absorbing properties due to their porous surface structures.

The second objective is to determine the microstructural analysis of self-compacting concrete incorporating POFA and Gypsum Powder as cement replacement. Through SEM/EDX analysis of particles, it was found that OPC particles were discovered to be non-spherical and irregular in shape, whereas GP particles were cubical and angular in shape. POFA particles are spherical in shape and have a porous and honeycomb structure.

The final objectives are to undergo the fresh properties of self-compacting concrete incorporating POFA and Gypsum Powder as cement replacement. Slump flow, T500, J-Ring, and segregation tests were performed on fresh properties. According to the results of all experimental testing to determine fresh properties, it has been verified by slump flow test, T500 test, J-Ring test, and segregation test that successfully achieved workability and self-compactibility under its own weight without compaction or using any mechanical vibrator.

ACKNOWLEDGEMENTS

The author expresses thankful to the Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia for its support for the endless support and complete facilities for being able to conduct the case study.

REFERENCES

Abdullah, E., Mirasa, A., & Asrah, H. (2015). *Review on the effect of palm Oil fuel ash (POFA) on concrete*. Journal of Industrial Engineering Research, 1(7), 1-4.

Abdullah, N., & Sulaim, F. (2013). *The Oil Palm Wastes in Malaysia*. InTech. doi: 10.5772/55302

Ahmad, N. F. (2020). *Phisycal and Chemical Properties of Fresh Self-Compacting Concrete Incorporating POFA and ESP as Cement Replacement* http://hdl.handle.net/123456789/191

Alsubari, B., Shafigh, P., & Jumaat, M. Z. (2015). *Development of self-consolidating high strength concrete incorporating treated palm oil fuel ash*. Materials, 8(5), 2154-2173.

Alsubari, B., Shafigh, P., & Jumaat, M. Z. (2016). *Utilization of high-volume treated palm oil fuel ash to produce sustainable self-compacting concrete*. Journal of cleaner production, 137, 982-996.

Alsubari, B., Shafigh, P., Ibrahim, Z., Alnahhal, M. F., & Jumaat, M. Z. (2018). *Properties of eco-friendly self-compacting concrete containing modified treated palm oil fuel ash.* Construction and Building Materials, 158, 742–754. https://doi.org/10.1016/j.conbuildmat. 2017.09.174

Alsubari, B., Shafigh, P., Jumaat, M. Z., & Alengaram, U. J. (2014). *Palm oil fuel ash as a partial cement replacement for producing durable self-consolidating high-strength concrete*. Arabian Journal for Science and Engineering, 39, 8507-8516.

Amran, M., Lee, Y. H., Fediuk, R., Murali, G., Mosaberpanah, M. A., Ozbakkaloglu, T., & Karelia, M. (2021). *Palm oil fuel ash-based eco-friendly concrete composite: A critical review of the long-term properties.* Materials, 14(22), 7074.

Aziz, M. A. A. (2020). *Mechanical Properties of Self-Compacting Concrete Incorporating POFA and ESP as Cement Replacement* http://hdl.handle.net/123456789/71

Bradu, A., Cazacu, N., Florea, N., & Mihai, P. (2016). *Compressive strength of self compacting concrete*. *Buletinul Institutului Politehnic din lasi. Sectia Constructii, Arhitectura*, *62*(2), 59.

Chandara, C., Sakai, E., Azizli, K. A. M., Ahmad, Z. A., & Hashim, S. F. S. (2010). *The effect of unburned carbon in palm oil fuel ash on fluidity of cement pastes containing superplasticizer*. Construction and Building Materials, 24(9), 1590–1593. https://doi.org/10.1016/j.conbuildmat.2010.02.036

Chen, K., Wu, D., Xia, L., Cai, Q., & Zhang, Z. (2021). *Geopolymer concrete durability subjected to aggressive environments – A review of influence factors and comparison with ordinary Portland cement*. Construction and Building Materials, 279, 122496. doi:10.1016/j.conbuildmat.2021.122496

Dey, S., Kumar, V. V. P., Goud, K. R., & Basha, S. K. J. (2021). *State of art review on self-compacting concrete using mineral admixtures.* Journal of Building Pathology and Rehabilitation, 6(1). https://doi.org/10.1007/s41024-021-00110-9

Doleželová, M., Scheinherrová, L., Krejsová, J., & Vimmrová, A. (2018). *Effect of high temperatures on gypsum-based composites*. Construction and Building Materials, 168, 82–90. https://doi.org/10.1016/j.conbuildmat.2018.02.101

Durgun, M. Y. (2021). *Experimental research on gypsum-based mixtures containing recycled roofing tile powder at ambient and high temperatures*. Construction and Building Materials, 285, 122956. https://doi.org/10.1016/j.conbuildmat.2021.122956

Gupta, N., Siddique, R., & Belarbi, R. (2021). *Sustainable and Greener Self-Compacting Concrete incorporating Industrial By-Products: A Review*. Journal of Cleaner Production, 284, 124803. https://doi.org/10.1016/j.jclepro.2020.12480

Gypsum Decorative Materials. (2011). *Building Decorative Materials, 5474.* https://doi.org/10.1533/9780857092588.54

Hamada, H. M., Jokhio, G. A., Yahaya, F. M., Humada, A. M., & Gul, Y. (2018). *The present state of the use of palm oil fuel ash (POFA) in concrete.* Construction and Building Materials, *175, 26–40.* https://doi.org/10.1016/j.conbuildmat.2018.03.227

Hamada, H. M., Jokhio, G. A., Yahaya, F. M., Humada, A. M., & Gul, Y. (2018). *The present state of the use of palm oil fuel ash (POFA) in concrete.* Construction and Building Materials, 175, 26–40. https://doi.org/10.1016/j.conbuildmat.2018.03.227

Hamada, H. M., Thomas, B. S., Yahaya, F. M., Muthusamy, K., Yang, J., Abdalla, J. A., & Hawileh, R. A. (2021). *Sustainable use of palm oil fuel ash as a supplementary cementitious material: A comprehensive review*. Journal of Building Engineering, 40, 102286. https://doi.org/10.1016/j.jobe.2021.102286

Han, B., Zhang, L., Ou, J., Han, B., Zhang, L., & Ou, J. (2017). *Self-compacting concrete*. Smart and Multifunctional Concrete Toward Sustainable Infrastructures, 11-36.

Hassan, I. O., Ismail, M., Forouzani, P., Majid, Z. A., & Mirza, J. (2014). *Flow characteristics of ternary blended self-consolidating cement mortars incorporating palm oil fuel ash and pulverised burnt clay*. Construction and Building Materials, 64, 253–260. https://doi.org/10.1016/j.conbuildmat.2014.04.057

Ibrahim, M. I. (2020). *Experimental Study of Self-Compacting Concrete Incorporating POFA and ESP as Cement Replacement* http://hdl.handle.net/123456789/158

Islam, M. A., Escobedo, J. P., Hazell, P. J., Appleby-Thomas, G. J., & Quadir, M. Z. (2015). *Characterization of Closed-Cell Aluminium Foams Subjected to Compressive Loading.* Characterization of Minerals, Metals, and Materials 2015, 167–174. https://doi.org/10.1007/978-3-319-48191-3_21

Johari, M. M., Zeyad, A. M., Bunnori, N. M., & Ariffin, K. S. (2012). *Engineering and transport properties of high-strength green concrete containing high volume of ultrafine palm oil fuel ash*. Construction and Building Materials, 30, 281-288.

Kamaruddin, M. S. (2020). *Performance of Self-Compacting Concrete Incorporating Palm Oil Fuel Ash and Egg Shell Powder as Partial Cement Replacement* (pp. 9–72) [MSc Thesis].

Khalid, N. H. A., Hussin, M. W., Mirza, J., Ariffin, N. F., Ismail, M. A., Lee, H. S., ... & Jaya, R. P. (2016). *Palm oil fuel ash as potential green micro-filler in polymer concrete.* Construction and Building Materials, 102, 950-960.

Khankhaje, E., Hussin, M. W., Mirza, J., Rafieizonooz, M., Salim, M. R., Siong, H. C., & Warid, M. N. M. (2016). *On blended cement and geopolymer concretes containing palm oil fuel ash.* Materials & Design, 89, 385–398. https://doi.org/10.1016/j.matdes.2015.09.140

Kiattikomol, K., Jaturapitakkul, C., Songpiriyakij, S., & Chutubtim, S. (2001). *A study of ground coarse fly ashes with different finenesses from various sources as pozzolanic materials.* Cement and Concrete Composites, 23(4-5), 335–343. https://doi.org/10.1016/s0958-9465(01)00016-6

Li, Z. (2011). *Advanced concrete technology*. Wiley, pp. 34, 36-38.

Manenesh, K.N., and Aravind S.B (2022). *An Experimental Study on Use of Gypsum Powder and Agro Waste as Panel For Noise Insulation*.

Mazenan, P.N., Khalid, F., Shahidan, S., & Shamsuddin, S. (2017). *Review of palm oil fuel ash and ceramic waste in the production of concrete*. ***IOP Conference Series: Materials Science and Engineering*, 271**. https://doi.org/10.1088/1757-899X/271/1/012051

Mohammadhosseini, H., Tahir, M. M., Mohd Sam, A. R., Abdul Shukor Lim, N. H., & Samadi, M. (2018). *Enhanced performance for aggressive environments of green concrete composites reinforced with waste carpet fibers and palm oil fuel ash.* Journal of Cleaner Production, 185, 252–265. https://doi.org/10.1016/j.jclepro.2018.03.051

Mohd Tadza,M.,Mazelan,N.,Yusri,N. & Abdullah,A.(2019). *Some Geotechnical Properties of Pure and Waste Gypsum for Geoelectrical Grounding Applications.* Civil and Environmental Engineering Reports,29(3) 97-106. doi:10.2478/ceer-2019-0027

Mujedu, K. A., Ab-Kadir, M. A., & Ismail, M. (2020). *A review on self-compacting concrete incorporating palm oil fuel ash as a cement replacement.* Construction and Building Materials, 258, 119541.

Mujedu, K. A., Ab-Kadir, M. A., & Ismail, M. (2020). *A review on self-compacting concrete incorporating palm oil fuel ash as a cement replacement.* Construction and Building Materials, 258, 119541.

Nagaratnam, B. H., Mannan, M. A., Rahman, M. E., Mirasa, A. K., Richardson, A., & Nabinejad, O. (2019). *Strength and microstructural characteristics of palm oil fuel ash and fly ash as binary and ternary blends in Self-Compacting concrete*. Construction and Building Materials, 202, 103-120.

Nagaratnam, B. H., Rahman, M. E., Mirasa, A. K., Mannan, M. A., & Lame, S. O. (2016). *Workability and heat of hydration of self-compacting concrete incorporating agro-industrial waste.* Journal of Cleaner Production, 112, 882–894. https://doi.org/10.1016/j.jclepro.2015.05.112

Nurazuwa, M., Munadrah, Irmawaty, R., & Muhiddin, A.B. (2022). *Compressive strength and microstructure of Self Compacting Concrete with nylon fiber substitution.* IOP Conference Series: Earth and Environmental Science, 1117.

Okamura, H., Ozawa, K., & Ouchi, M. (2000). *Self-compacting concrete*. Structural concrete, 1(1), 3-17.

Ouchi-Kochi M., Hibino-Nagaoka M., Development, *Applications and Investigations of Self-Compacting Concrete*. Japan, 2000.

Paris, J. M., Roessler, J. G., Ferraro, C. C., DeFord, H. D., & Townsend, T. G. (2016). *A review of waste products utilized as supplements to Portland cement in concrete*. Journal of Cleaner Production, 121, 1-18. https://doi.org/10.1016/j.jclepro.2016.02.013

Raghavendra, T., & Udayashankar, B. C. (2015). *Engineering properties of controlled low strength materials using flyash and waste gypsum wall boards*. Construction and Building Materials, 101, 548–557. https://doi.org/10.1016/j.conbuildmat.2015.10

Ranjbar, N., Behnia, A., Alsubari, B., Birgani, P. M., & Jumaat, M. Z. (2016). *Durability and mechanical properties of self-compacting concrete incorporating palm oil fuel ash*. Journal of Cleaner Production, 112, 723-730.

Rao, U., & Kumar, N. (2021). *Palm oil fuel ash as partial substitute to cement in concrete: performance at elevated temperatures*. IOP Conference Series: Materials Science and Engineering. https://doi.org/10.1088/1757-899X/1136/1/012058

ReddyThumma, A. (2017). *Experimental Study on Gypsum as Binding Material and Its Properties*.

Revilla-Cuesta, V., Skaf, M., Faleschini, F., Manso, J. M., & Ortega-López, V. (2020). *Self-compacting concrete manufactured with recycled concrete aggregate: An overview.* Journal of Cleaner Production, 262, 121362.

S. EFNARC, *The European Guidelines for Self - Compacting Concrete, Specification, Production and Use*, (2005).

Safiuddin, M., & Jumaat, M. Z. (2011). *Fresh properties of self-consolidating concrete incorporating palm oil fuel ash as a supplementary cementing material.* Chiang Mai Journal of Science, 38(3), 389-404.

Safiuddin, M., Abdus Salam, M., & Jumaat, M. Z. (2011). *Utilization of palm oil fuel ash in concrete: a review*. Journal of Civil Engineering and Management, 17(2), 234–247. https://doi.org/10.3846/13923730.2011.574450

Salam, M. A., Safiuddin, M., & Jumaat, M. Z. (2018). *Durability indicators for sustainable self-consolidating high-strength concrete incorporating palm oil fuel ash*. Sustainability, 10(7), 2345.

Syaizul, E., Abdullah, R., & Mirasa, A. K. (2019). *Review on the Effect of Palm Oil Fuel Ash (POFA) on Concrete Review on the Effect of Palm Oil Fuel Ash (POFA) on Concrete*. October

Tangchirapat, W., Saeting, T., Jaturapitakkul, C., Kiattikomol, K., & Siripanichgorn, A. (2007). *Use of waste ash from palm oil industry in concrete*. Waste Management, 27(1), 81–88. https://doi.org/10.1016/j.wasman.2005.12.014

Tebabal, C. G. (2020). *Effect of Gypsum Amount in Cement on Fresh and Hard-ened Properties of Self-Compacting Concrete*. GSJ, 8(5).

Thomas, B. S., Kumar, S., & Arel, H. S. (2017). *Sustainable concrete containing palm oil fuel ash as a supplementary cementitious material–A review.* Renewable and Sustainable Energy Reviews, 80, 550-561.

Vyshali, N., & Jeganraj, M. (2019). *An Experimental Study of Gypsum as Partial Replacement of Cement in Concrete*. International Journal of Recent Trends in Engineering and Research, 77-86.

Yusuf, M. O.,Johari, M. M. A., Ahmad, Z. A., & Maslehuddin, M. (2014). *Influence of curing methods and concentration of NaOH on strength of the synthesized alkaline activated ground slag-ultrafine palm*

oil fuel ash mortar/concrete. Construction and Building Materials, 66, 541–548. https://doi.org/10.1016/j.conbuildmat.2014.05.037

FOSTERING ENVIRONMENTAL SUSTAINABILITY IN ENGLISH EDUCATION THROUGH ECO-ELT

Jepri Ali Saiful

Department of English Education
Faculty of Teacher Training and Education
Muhammadiyah University of Surabaya, Indonesia
jeprialisaiful@um-surabaya.ac.id

Abstract

Nature deteriorations like climate change, biodiversity loss, and energy crises, pose threats to the equilibrium of our planetary ecosystem, demanding coordinated efforts across sectors and disciplines. English Language Teaching (ELT) shares the responsibility and potential to address these environmental challenges. However, environmental initiatives in ELT are limited and lack a unified term, concept, and framework to guide practitioners and researchers systematically. This article provides overview of Eco-ELT as a pathway for environmental research and practice in ELT. It delves into the term, concept, key points, and instances of pedagogical practices teaching environmental issues in ELT. Let's collectively address environmental destructions through Eco-ELT. It is never too late for our beloved field of ELT to contribute to the preservation of our planetary ecosystem. To be a part of global Eco-ELT movement, please join our community in Facebook where you could learn and build your networks with English teachers and ELT scholars worldwide. Please click this Facebook link (https://web.facebook.com/groups/291543553251665/).

Keywords: Eco-ELT, environmental sustainability, TESOL, TEFL, TESL

INTRODUCTION TO ECO-ELT

The concept of Eco-English Language Teaching (Eco-ELT) has emerged as a transformative approach that integrates environmental education into English language teaching, addressing both language development and environmental awareness. As environmental crises, particularly climate change, become more urgent, educators across disciplines are increasingly called to instill a sense of ecological responsibility in students. Eco-ELT, as developed by Dr. Jepri Ali Saiful, represents a pedagogical response to this call, merging the goals of language education with environmental sustainability. This introduction outlines the key features of the Eco-ELT concept, its theoretical framework, and its relevance in the global context of language education.

The foundation of Eco-ELT rests on the belief that English language teaching (ELT) can go beyond linguistic competencies to foster ecological literacy and pro-environmental behaviors among learners (Saiful, 2020). As Saiful (2024a) discusses, Eco-ELT is grounded in the notion that learners' connection with nature can be cultivated through language lessons. By incorporating environmental themes into ELT, students are encouraged to engage with pressing ecological issues, which enhances not only their language skills but also their understanding of and empathy towards the environment. This aligns with broader trends in education that emphasize sustainability and holistic development.

Eco-ELT extends beyond traditional classroom teaching and materials. Saiful (2023) argues that Eco-ELT operates on multiple levels—micro, meso, and macro—enabling it to have a wide-reaching impact. At the micro level, Eco-ELT reshapes classroom practices by integrating environmental topics into lesson plans, assessments, and materials. Teachers are encouraged to incorporate local environmental contexts and issues, fostering learners' awareness of their immediate surroundings. At the meso level, institutions play a pivotal role by providing platforms for environmental initiatives and embedding sustainability into curricula. At the macro level, Eco-ELT contributes to global efforts in addressing environmental challenges

through language education, influencing policy and academic discourse on sustainable development. This multi-level framework underscores the adaptability and scalability of Eco-ELT, making it relevant across diverse educational contexts (Saiful, 2024b).

The practical application of Eco-ELT is not confined to theoretical constructs but extends to material development, which plays a crucial role in reinforcing ecological values among learners. Saiful (2014) advocates for the development of Eco-ELT materials that promote environmental awareness while upholding local wisdom. These materials, tailored to young learners, integrate environmental themes with language activities, making learning more contextual and meaningful. By using examples from local environments, students not only improve their language skills but also learn to appreciate and protect their surroundings. This approach fosters an early connection to environmental responsibility, which is vital in addressing global sustainability goals.

Furthermore, Eco-ELT draws inspiration from ecocriticism, a field that explores the relationship between literature and the environment. Saiful and Setyorini (2022) illustrate how Eco-ELT can be aligned with ecocriticism to deepen learners' understanding of environmental issues through language instruction. By analyzing environmental themes in literary texts, learners develop critical thinking skills and a greater appreciation for the interconnectedness of language, culture, and ecology. This synergy between ecocriticism and Eco-ELT enriches the curriculum and offers a powerful means of promoting sustainability in language education.

In conclusion, Eco-ELT represents an innovative and necessary approach to English language teaching in the context of global environmental challenges. Through its integration of environmental education at the micro, meso, and macro levels, and its emphasis on material development and ecocritical perspectives, Eco-ELT holds the potential to cultivate a generation of language learners who are not only proficient in English but also environmentally conscious global citizens. This pedagogical shift is particularly timely, given the growing recognition of the need for education to play a more active role in addressing the climate crisis.

KEY POINTS OF ECO-ELT

- Eco-ELT originated in 2014 as a platform for promoting environmental movements within English Language Teaching (ELT), fostering their growth and development (see Saiful, 2014, 2020, & 2023).
- Eco-ELT provides a foundation for integrating environmental education into ELT, simply defined as the study and teaching of environmental issues within the field. When ELT scholars or teachers research or teach environmental topics in English education, they are actively engaging in Eco-ELT.
- ELT instructors hold the dual responsibility of improving students' English skills while fostering sustainable worldviews and behaviors.
- Through Eco-ELT instruction, learners develop language and cognitive skills, social and emotional awareness, and pro-environmental values and behaviors.
- Eco-ELT differs from ecolinguistics and ecocriticism. Ecolinguistics focuses on the role of language in environmental advocacy, while ecocriticism examines how literature contributes to positive human-nature relationships. In contrast, Eco-ELT centers on the role of English education in addressing environmental crises, spanning policy, curriculum, instruction, assessment, teachers, and students. Despite these differences, they can be integrated to tackle environmental issues.
- Eco-ELT holds a similar position within ELT as branches like EMI (English as a Medium of Instruction), CALL (Computer-Assisted Language Learning), and MALL (Mobile-Assisted Language Learning), forming a distinct area of study and practice.
- Eco-ELT practice follows post-method pedagogy, granting teachers the autonomy to choose methods, strategies, or techniques that best suit their teaching context.
- Eco-ELT research embraces interdisciplinary approaches, allowing ELT researchers to incorporate methods from various fields to study environmental education practices in ELT.

Instances of Eco-ELT Teaching Strategies

The following are several instances of Eco-ELT teaching stratgies.

1. Using music and ecology study called “Ecomusicology” to learn about nature in English lessons (see Saiful, 2024a)

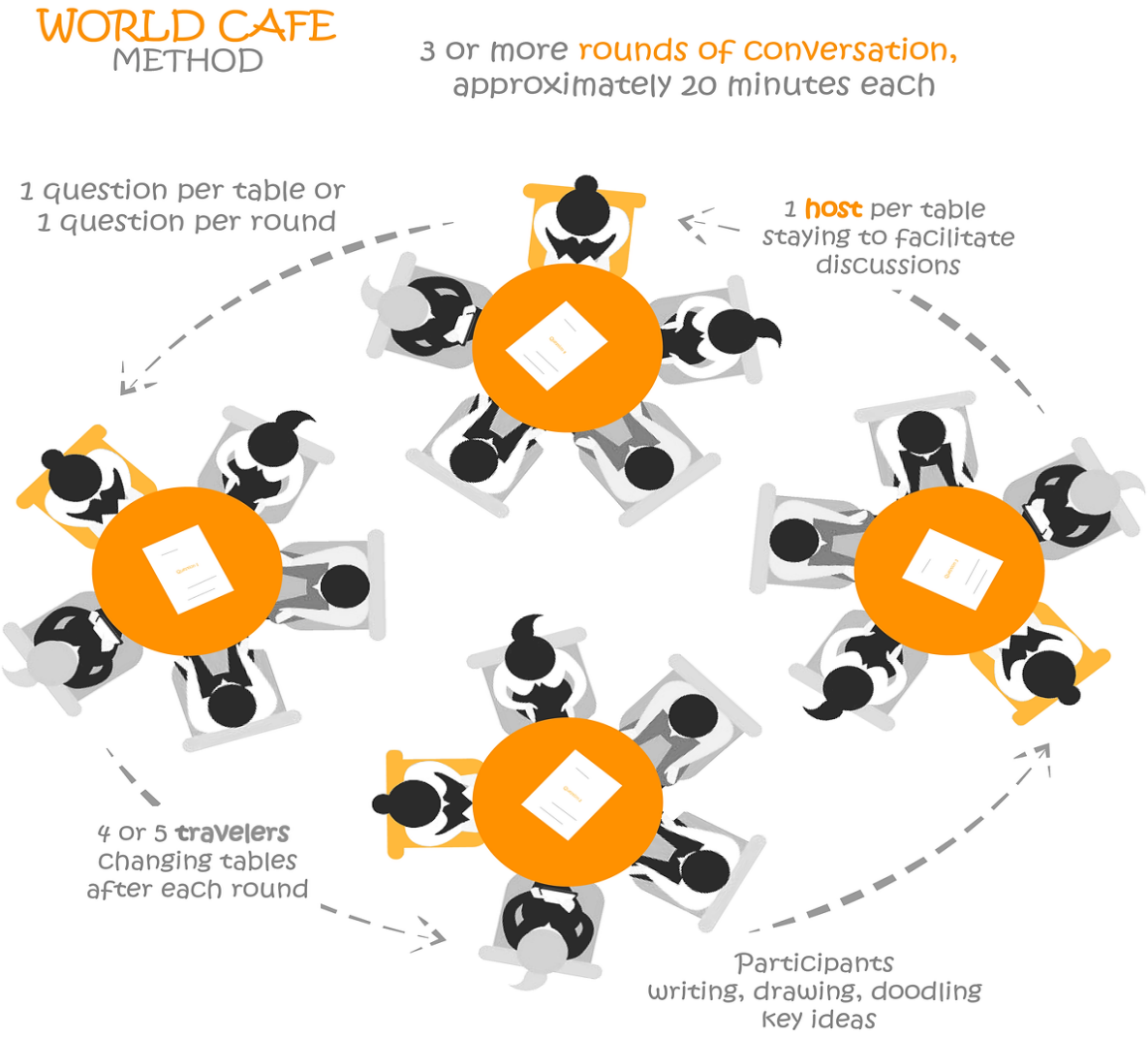
Saiful
Tell : Teaching of English Language and Literature Journal
Vol. 12, No.1, April 2024 Doi: https://doi.org/10.30651/tell.v12i1.21678

Appendix
Ecomusicology Discussion Questions

Musicians	
Artist(s)	(1) Who is/are the singer(s) of the song? (2) What are their personal interests in singing the song?
History	(1) When was the song was released? (2) What was happening at that time in the world/planet?
Music Artefacts	
Content	(1) In your views, what is the song all about? Why the song matter? (2) What can be criticized about the song, its content and display?
Person	(1) Who is addressed in the song? / Whom is the song for? (2) Are there specific names/people mentioned? If yes, who? And why?
Place	(1) Is it a global song or does it refer to specific places? (2) Which places are dealt with?
Other beings	(1) Are there any animals involved in the song? How does the song show the animals? Why so? Are the animals specifically land-based animals? Or are there other animals from ocean or air presented? (2) Is there any representation of plants? How does the song present the plant? Why so? Are the plants from land-based or from the ocean too? (3) How are the presentation of nature in general in the song?
Music in Actions (Music Analysis)	
Instruments	(1) Which music instruments are used or can be heard? (In different part of the song)
Singer	(1) Who sings the song? (e.g., female/male/group/duo/solo? (2) Why does this composition of singer matter for the song?
Feelings	(1) How does the song feel to you? (2) How does the song feel to the listeners/publics? (See the YouTube online comments)
Music in Actions (Environment)	
Reception	How can the song be listened to? And which opportunities does the artist provide to encourage sustainable music reception?

2. We can also teach environmental topics using task-based language learning instructions (Hauschild et al., 2012; Nkwetisama, 2011), ecocomposition (Elsherif, 2013) or environmental essay writing (Setyowati et al., 2022), and digital storytelling (Putri, 2018).

3. Ecocritical discussion on environmental problems using World Café Method (https://www.annmurraybrown.com/single-post/facilitation-tool-under-the-spotlight-world-café-method)



4. Poster Presentation on environmental problems

Using poster presentations to teach environmental problems in English lessons is an engaging and interactive approach. Teachers can assign students environmental topics, such as climate change, pollution, or deforestation, and have them create posters that visually represent the issue, its causes, and potential solutions. Through this process, students practice research skills, critical thinking, and English language proficiency as they gather information, synthesize key points, and write clear, concise explanations. The presentation phase encourages students to verbally articulate their findings in English, enhancing speaking and listening skills while promoting class discussions. This method not only improves language abilities but also fosters environmental awareness, encouraging students to think critically about real-world issues. Furthermore, integrating visuals and creative design into the lesson makes the learning experience more memorable and impactful.

5. Drama on climate change or other environmental topics

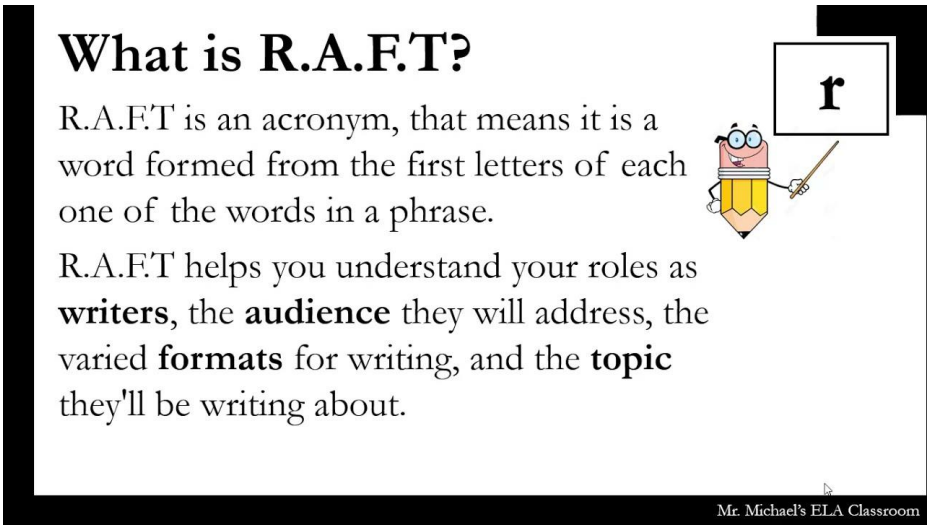
Drama could be an effective way to engage students in both language learning and environmental awareness. Teachers can guide students in creating short plays or skits that portray the effects of climate

change, deforestation, or pollution. Through role-play, students can explore various perspectives, such as those of affected communities, scientists, or policymakers. This method encourages collaboration, enhances speaking, listening, and writing skills, and builds confidence in using English in meaningful contexts. As students perform their dramas, they actively communicate complex environmental concepts while practicing vocabulary and grammar related to environmental issues. Drama also promotes empathy and critical thinking, allowing students to internalize the gravity of global environmental challenges while brainstorming possible solutions. By integrating drama into English lessons, educators create an immersive, creative, and memorable learning experience that fosters both language development and environmental responsibility.

6. Infographics on environmental problems

Infographics are a powerful tool for teaching environmental problems in English lessons because they combine visual elements with concise text, making complex information easier to understand and retain. To use infographics effectively, teachers can assign students the task of creating their own infographics about specific environmental issues, such as climate change, deforestation, or pollution. This activity involves researching the topic, selecting key information, and presenting it in a visually appealing way, all while practicing English language skills such as reading, writing, and summarizing. As students design their infographics, they engage with vocabulary and phrases related to environmental issues, reinforcing language acquisition through context. Presenting their completed infographics in class encourages speaking and discussion, fostering collaborative learning and deeper understanding of environmental challenges. This method not only improves language skills but also empowers students to communicate critical global issues effectively.

7. RAFT (Role, Audience, Format, and Topic)
https://www.pinterest.com/pin/260857003387205192/



The RAFT (Role, Audience, Format, and Topic) framework is an engaging strategy to teach environmental issues in English lessons, allowing students to explore these topics creatively while developing language skills. In this model, students assume a specific **Role** (e.g., environmental activist, concerned citizen, or wildlife species), address a particular **Audience** (e.g., government officials, the general public, or school peers), choose a **Format** (e.g., letter, speech, blog post), and focus on an environmental **Topic** (e.g., climate change, deforestation, or pollution). For example, students might take on the role of a marine animal writing a letter to the public about the effects of ocean pollution. This approach encourages them to research the topic, learn relevant vocabulary, and structure their writing in a

meaningful way. The RAFT model enhances critical thinking by pushing students to consider different perspectives and communicate their ideas in various formats, fostering creativity and deeper engagement with both the language and the environmental issues at hand.

CONCLUSION

Eco-ELT serves as a foundation for integrating environmental education into English language teaching, defined as the study and teaching of environmental issues within ELT. When ELT scholars or teachers focus on environmental topics, they are engaging in Eco-ELT practices. Following a post-method pedagogy, Eco-ELT allows teachers the flexibility to choose methods, strategies, and techniques that best fit their teaching context. These strategies include: (1) ecomusicology, (2) task-based language learning, (3) ecocomposition, (4) environmental essay writing, (5) digital storytelling, (6) ecocritical discussions, (7) poster presentations, (8) drama, (9) infographics, and (10) the RAFT (Role, Audience, Format, and Topic) framework.

REFERENCES

Elsherif, E. A. (2013). Raising awareness: introducing ecocomposition into EFL writing classroom. *Arab World English Journal*, *4*(1), 77–89. https://awej.org/raising-awareness-introducing-ecocomposition-into-efl- writing-classroom/

Hauschild, S., Poltavtchenko, E., & Stoller, F. L. (2012). Going green: merging environmental education and language instruction. *English Teaching Forum*, *50*(2), 2–13. https://www.turcomat.org/index.php/turkbilmat/article/view/5472

Nkwetisama, C. M. (2011). EFL/ESL and environmental education: towards an eco-applied linguistic awareness in Cameroon. *World Journal of Education*, *1*(1), 110-118. https://doi.org/10.5430/wje.v1n1p110

Putri, G. A. P. E. I. (2018). Critical environmental education in tertiary English language teaching (ELT): a collaborative digital storytelling project. *Indonesian Journal of Applied Linguistics*, *8*(2), 336–344. https://doi.org/10.17509/ijal.v8i2.13280

Saiful, J. A. (2024a). Chirping Symphony of Nature in the Digital Art World: How Ecomusicology Cultivates EFL Students' Nature Connectedness and Interests. *TELL: Teaching of English Language and Literature, 2024, 2*(1), 1-17. https://rb.gy/22w93c

Saiful, J. A. (2024b). Sowing seeds of change: Eco-ELT integration for environmental sustainability across micro, meso, and macro levels in TESOL department. *The Newsletter of the Higher Education Interest Section, TESOL International Association*. Link: http://surl.li/sxtjt

Saiful, J. A. (2023). Eco-ELT for environmental research and praxis in ELT. *Journal of English as a Foreign Language*, *13*(2). https://e-journal.iain-palangkaraya.ac.id/index.php/jefl/article/view/6335

Saiful, J. A., & Setyorini, A. (2022). Ecocriticism course: Development of English pre-service teachers' Pedagogical Content Knowledge of Sustainability. *Journal of Teacher Education for Sustainability*, 24(2). https://doi.org/10.2478/jtes-2022-0013

Saiful, J. A. (2020). New innovation in English language teaching: Revealing concepts and applications of ECO-ELT. *Tell: Teaching of English Language and Literature Journal*, *8*(1), 62-72. http://dx.doi.org/10.30651/tell.v8i1.4604

Saiful, J. A. (2014). Eco-ELT materials development: The proposed idea towards instilling the concept of loving the environment and upholding the virtues of local wisdom to young learners. *Proceedings of the 3rd UAD TEFL International Conference 2014: Materials Development in Asia and Beyond: Directions, Issues, and Challenges* (pp. 580-592). English Education Department of Universitas Ahmad Dahlan. Link: http://surl.li/sxtii

Setyowati, L., Prayogo, K. J. D., Gane, B. A., & Putri, S. S. (2022b). Using environmental issues for essay writing class: the students' views and challenges. *KnE Social Sciences*, 7(7), 23–36. https://doi.org/10.18502/kss.v7i7.10646

PHYSICAL MODEL APPROACH OF CRIB WALLS TO IMPROVE THE RIVER SLOPE STABILITY

Achmad Syarifudin
Indonesian Association of Hydraulic Engineers (HATHI) of South Sumatra;
Universitas Bina Darma
achmad.syarifudin@binadarma.ac.id

Asri Mulyadi
Palembang University
asrimulyadi@unpal.ac.id

Henggar Risa Destania
UIGM University
henggarrisa@UIGM.ac.id

Abstract

This study aims to determine the pattern of crib walls collapse at river bends and the effect of the slope angle of the crib walls not escaping the water as a crib walls collapse control as well as sediment control in channels with various bend angles. The model was made in a channel 25 × 20 cm, a river length of 600 cm. Sediment distribution from fine sand that is not homogeneous and the flow is clear (clear water). The angle and distance of the crib walls installation are varied. The crib walls used in this experiment were 5 cribs with a tilt angle of 30° and 60°. Each treatment was observed with parameters related to erosion and sedimentation in the river bank bends, including velocity (v), time (t), depth of erosion (de), sedimentation (ds). The dimensional analysis method is used to see the relationship between dimensionless parameters with the Langhaar method. The results showed that the maximum relative sedimentation (ds5/t) max for the crib walls angle of 30° occurred in the fifth crib walls of 0.025 at a relative speed (v/t) of 0.06. While the maximum relative erosion depth (ds3/t) max for the tilt angle of 30° crib walls occurs in the first grout, which is 0.012 at a relative speed (v/t) of 0.0042. At the angle of 60° crib walls, there is a maximum relative erosion depth (de_3/t) of 0.082 at a relative speed (v/t) of 0.006 on the third crib walls. The increasing of the relative velocity (v/t) the greater the value of the relative erosion depth (ds/t).

Keywords: **Crib walls; scale models; erosion and sedimentation; slope stability**

1. INTRODUCTION

In the era of globalization, the development of urban areas is increasingly developing, the more problems that not only bring good effects but also have bad effects on natural and environmental conditions. The river is one of the aquatic ecosystems that is influenced by many factors, both in natural activities and human activities in the watershed. In the management of a watershed, it is necessary to pay attention to the water body of the watershed. Incorrect watershed management will have an impact on the sustainability of river water bodies, namely very highwater discharge fluctuations and reduced river capacity (Paimin et al, 2012).

For physical modelling, it is usually done by reducing the various variables, namely by giving a scale (n) on each of these variables. Meanwhile, the scale of the various variables or parameters can be determined based on the relationship between the parameters expressed in dimensionless numbers, such as Reynold numbers, Froude numbers and so on. In addition to determining the relationship between scales, this

dimensionless number can also be used to describe research results, thus the results of these studies can be generalized (Holdani Kurdi, 2019).
To determine the dimensionless number can be done by dimensional analysis (Holdani Kurdi, 2019). Dimensional analysis to determine the dimensionless number there are several ways, including by:

a. Basic echelon matrix
b. Buckingham (phi.theorem)
c. Rayleigh
d. Stepwise, dan
e. Langhaar

If the hydraulic phenomenon/event can be explained by n parameters Pi with i = 1,2, 3, ... , n and if the parameter is composed of m principal elements, then the product of dimensionless numbers that can be derived number (n-m). For hydraulic engineering purposes, there are usually 3 main elements, namely: mass (M), length (L), and time (T).
$j = P1^{k1} . P2^{k2} . P3^{k3} . . . . . P$, where
jnkn = product of dimensionless numbers with j = 1, 2, 3
If Pi has dimension M, then the dimensions can be written as follows:
$= (M^{\alpha 1} L^{\beta 1} T^{\tau 1})k1 * (M^{\alpha 2} L^{\beta 2} T^{\tau 2})k2 * ..... (M^{\alpha n} L^{\beta n} T^{\tau n})^{kn}$
$= [M (^{\alpha 1k1+ \alpha 2k2} +..... +^{\alpha nkn})]*[L^{\beta 1k1} + ^{\beta 2k2}+..... +^{\beta nkn}]*[T^{\tau 1k1}+ 2^{k2} +..... +\tau n^{kn}]$ is a dimensionless number if:
$\alpha 1\ k1+ \alpha 2\ k2 +.....+ \alpha n\ kn = 0$
$\beta 1\ k1 + \beta 2\ k2+..... + \beta n\ kn = 0$
$\tau 1\ k1 + \tau 2\ k2 +.....+ \tau n\ kn = 0$
the coefficients αi, βi and τi can be known from the related Pi parameters.
In connection with this problem, in this study a laboratory experiment was carried out to determine the pattern of cliff collapse at river bends and the effect of laying non-permeable cribs as a control for cliff collapse as well as controlling sediment in a channel with a bend angle of 120°. Simulation of the installation of cribs was also carried out on variations in flow discharge at river bends. The model is made in a channel of 40 × 40 cm and the length of the river is 1,280 cm and the length of the bend is 150 cm. Sediment of fine sand that is not homogeneous and flows in clear conditions (clear water). The angle and distance of the crib installation varies (Syarifudin, A et al, 2018).

3. RESEARCH METHODS

2.1. *Research sites*

This research was conducted in the Hydrology and Hydraulics laboratory of Bina Darma University Palembang as shown in Figure 1 (Syarifudin, A et al, 2019).



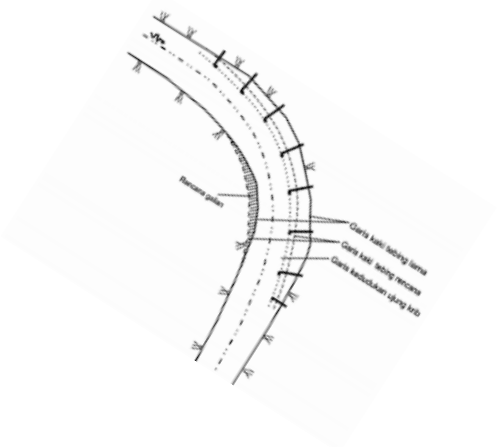


Figure 1: Crib walls design model (Syarifudin, A, 2020)

2.2. *Research Stages*

The research stages are divided into two, namely:
● Physical research, which is carried out in laboratory experiments to observe and record existing phenomena.
● Hypothetical and analytical research, which was conducted to find the relationship and the variables that influence it.

2.3. *Research Materials and Tools*

The materials used in this study include:
- ● Sand with a diameter of 0.075 mm to 2.36 mm, is considered a sedimentary material which was previously analyzed by sieve to obtain a uniform grain diameter (ds) from river material.
- ● Water, as a medium for moving sedimentary material flows in the channel,

The tool used in this research is a hydraulics laboratory facility at Bina Darma University (Syarifudin, A, 2019).
The specifications of the tool are as follows:
River model with its turns:
- ● Wall material: made of ordinary mixed cement
- ● Effective length: 600 cm
- ● Width: 25 cm
- ● Depth: 20 cm

Measuring scour depth
- ● Meter, to measure the location of scour.
- ● Photo camera to take pictures during experiments
- ● Video recorder to record the execution of the experiment

2.4. Materials and Tools

The materials and tools used in this study are as shown in table 1 below.

Table 2 List of the Research Tools and Materials

No.	Tools name	Amount	Uses
1.	River scale model	1 set	A tool for writing data recording results
2.	Pump	1 unit	Assists the movement of flow in the model
3.	Crib walls model	3, 5 and 7 unit	Simulation tool
4.	River bed materials	Sieve analysis result	Simulation material
5.	Water	Suitable for storage	Flow simulation

2.5. *Research Stages*

In accordance with the research objectives, the following stages are required:
- The first stage is to collect references from journals, books, and other secondary data sources.
- The second stage, conducting a field orientation survey to obtain the current (existing) field conditions, taking photos of the field (site) so that it can be used as initial research data.
- The third stage is to design a river with a model scale from prototype to model with a maximum storage capacity of 1000 liters, consisting of 2 circulation tanks located upstream and downstream of the river model with dimensions of 500 cm long, 20 cm wide with a wall slope ratio of 1: 0.005.

- The fourth stage, conducting initial simulation trials to see the readiness of the river model and calibrating so that the model is in accordance with the conditions from prototype to model.
- The fifth stage is to test the model by placing the sediment base material from the sieve analysis by taking the average diameter (d_{50}) with the assumption that the base material corresponds to that in the river prototype. Followed by the installation of the position of the crib model at the bend of the river with a certain distance of 5 crib walls models
- The sixth stage, conducted a trial with a running time of 60 minutes, with every 15 minutes good observations were made with 3 groin models, then 5 crib walls models and 7 groin models. Observations and recordings of erosion and sedimentation patterns were carried out in each scenario of the installation of the crib walls model.
- The seventh stage, discusses the results of observations that occur in the crib walls model and makes research conclusions and provides suggestions for further research by other studies.

3. RESULTS AND DISCUSSION

3.1. *Dimensional Analysis*

Dimensional analysis in this study uses Langhaar's theorem, this theorem is considered more in line with current conditions and in accordance with research because the parameters are relatively few. The steps of dimensional analysis are as follows:

1. In the problem formulation it is stated that the parameters that affect the erosion around the groin include the angle of the crib walls slope (α), water depth (h), flow velocity (v), erosion depth (de), time (t) and acceleration gravity (g), and the density of water (ρ_w).
2. The parameters are grouped into:
   a. Dependent parameter: v
   b. Parameters changed during the experiment: ds, h, and t
   c. Other parameters: α, g, ρ_w
3. The prices of α1, β1 and γ1 are determined as shown in table 2 below:

Table 2 Determination of Dimensional Analysis

Group	**1**	**2**			**3**			**Note**
Parameter	**v**	**ds**	**h**	**t**	**α**	**ρ**	**g**	
M	0	0	0	0	0	1	0	α1
L	1	1	1	0	0	-3	1	β1
T	-1	0	0	1	0	0	-2	γ1
	k1	k2	k3	k4	k5	k6	k7	ki

Determination of dimensionless numbers as in table 3.

Table 3 Dimensionless Numbers

ki	**k1**	**k2**	**k3**	**k4**	**k5**	**k6**	**k7**
Parameter	**v**	**d_s**	**h**	**t**	**α**	**ρ**	**g**
π1	1	0	0	-1	0	0	0
π2	0	1	0	-1	0	0	0
π3	0	0	1	-1	0	0	0
π4	0	0	0	1	0	0	-2

This results in the following dimensionless equation:

$$\pi 1 = v/t \quad (1)$$

$$\pi 2 = de/t \quad (2)$$

$\pi 3 = h/t$ (3)

$\pi 4 = t/2g$ (4)

$(h/t) \times (t/2g) = 2gh = v$

$f(v/t ; de/t; v) = 0 \ (v \approx 0)$

$(v/t) = f(de/t)$ focus on erosion around the cribs

3.2. *5 (five) crib walls models with an slope angle of 60°*

In conditions where there are 5 (five) crib walls at the bend of the river with a slope angle of 60 ° as shown in Figure 1.



Figure 2: The Placement of the crib walls with slope angle of 60^o

Table 4 The Results of Analysis of the Scouring Depth at the Crib walls Slope Angle of 60^o

		Non dimensional parameter					
V	**(t)**	**V/t**	**de_1/t**	**de_2/t**	**de_3/t**	**de_4/t**	**de_5/t**
0.03	5	0.006	0.020	0.060	0.080	0.018	0.018
0.03	5	0.006	0.020	0.060	0.080	0.018	0.018
0.03	5	0.006	0.020	0.060	0.080	0.018	0.040
0.03	5	0.006	0.020	0.060	0.080	0.018	0.040
0.03	5	0.006	0.020	0.060	0.100	0.018	0.060
0.03	10	0.003	0.001	0.001	0.009	0.010	0.040
0.03	10	0.003	0.001	0.001	0.009	0.010	0.050
0.03	10	0.003	0.001	0.003	0.030	0.009	0.050
0.03	10	0.003	0.002	0.003	0.030	0	0.050
0.03	10	0.003	0.003	0.003	0.030	0.020	0.050
0.03	15	0.002	0.001	0	0	0.000	0.007
0.03	15	0.002	0.001	0	0.006	0.005	0.013
0.03	15	0.002	0.001	0.006	0.006	0.005	0.013
0.03	15	0.002	0.001	0	0.006	0.005	0.013
0.03	15	0.002	0.001	0	0.006	0.007	0.005

3.3. *Simulation Results*

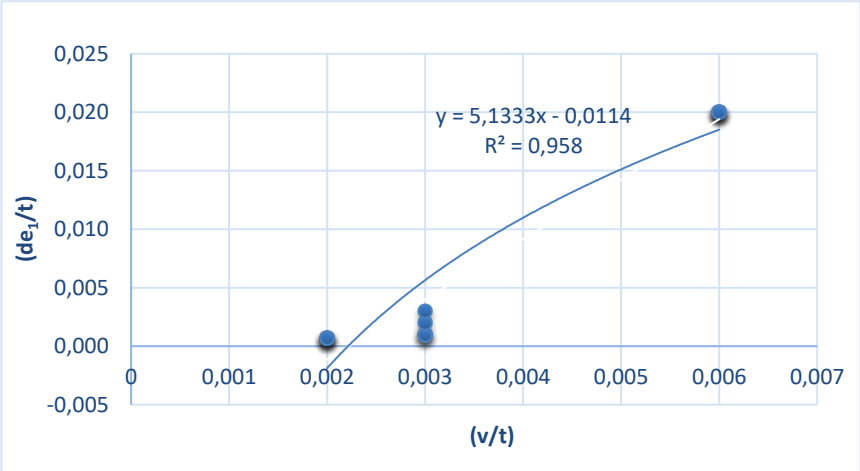


Figure 2: The relationship between (v/t) and (de_1/t) of the crib walls with slope angle of 60°

In Figure 2, If the time taken is 60 minutes, then the velocity v that occurs is 0.12 cm/sec, then with a velocity v of 0.12 cm/sec taken as a benchmark calculation, the amount of sedimentation that occurs is 0.648 cm or with a scale of 1:100 , then the amount of sedimentation is 64.8 cm in the model or 0.648 m in the prototype (site).
Then erosion begins to occur at a certain distance and increases to the maximum erosion depth at a relative velocity (de1/t) of 0.006, which is 0.02. Likewise, the erosion depth is 72 cm in the model or 0.72 m in the prototype (site).
The value of R^2 = 0.958 or R = 0.978 and this means that 97.8 percents there is a suitable value between the depth of erosion with the velocity parameter v and time t on the cribs placement with an angle of 60°.

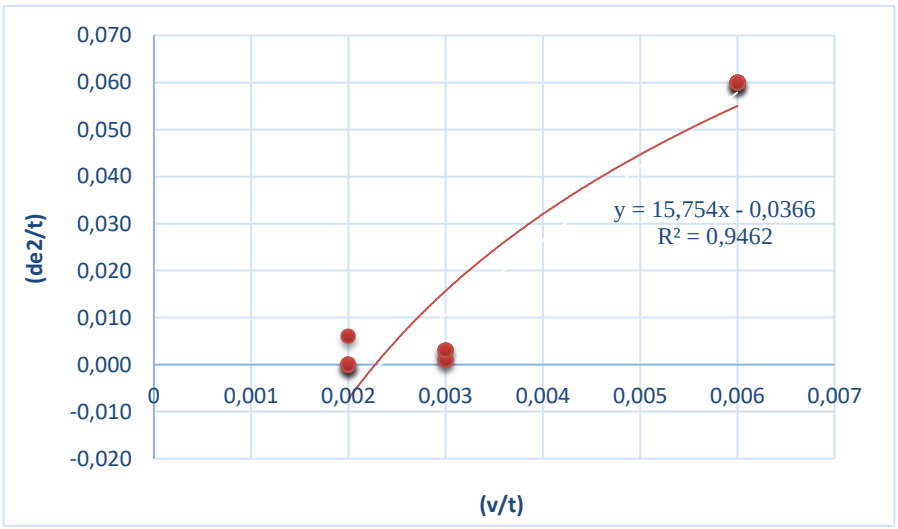


Figure 3: The relationship between (v/t) and (de_2/t) of the crib walls with slope angle of 60°

Almost the same as what happened in the second crib walls, as seen in Figure 3. It can be seen that the maximum relative erosion depth (de_2/t) is 0.06 at a relative velocity (v/t) of 0.006. and then the value of R^2

= 0.946 or R = 0.972, this means that 98.59 percents there is a suitable value between the depth of erosion with the velocity parameter v and time t on the cribs placement with an angle of 60º.

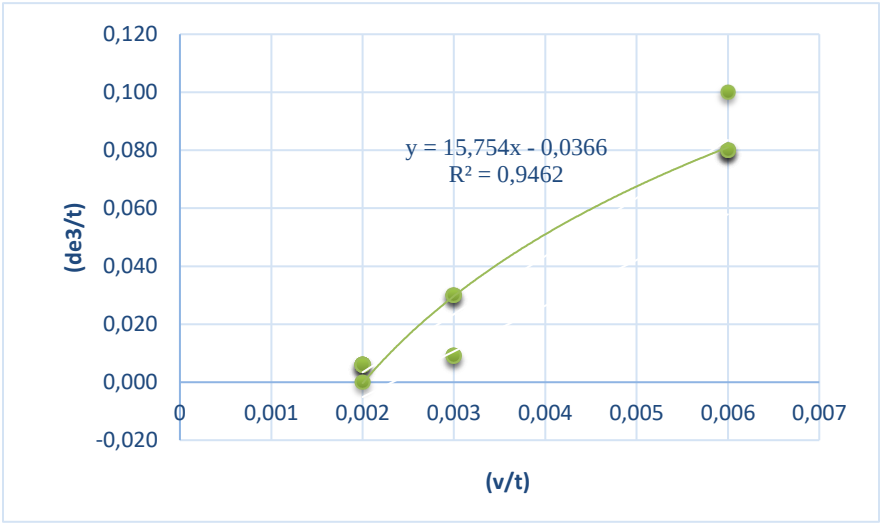


Figure 4: The relationship between (v/t) and (de_3/t) of the crib walls with slope angle of 60º

Figure 4. The third crib walls shows that the relative velocity (v/t) increases significantly in a straight line or linear trend, namely the greater the maximum relative depth value (de_3/t)max of 0.08.
The value of R^2 = 0.946 or R = 0.972, this means that 98.59 percents there is a suitable value between the depth of erosion with the velocity parameter v and time t on the groynes placement with an angle of 60º. The same like The relationship between (v/t) and (de_2/t) of the 60º cribs slope angle. (figure 5).

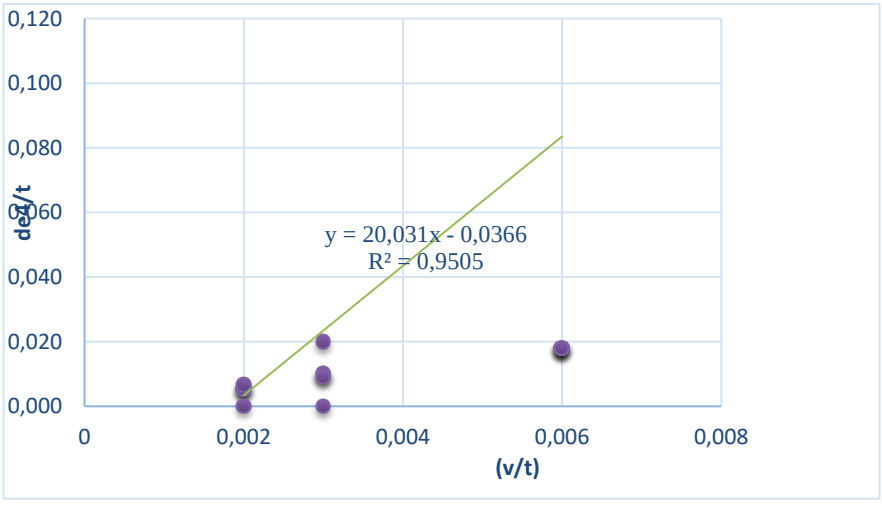


Figure 5: The relationship between (v/t) and (de_4/t) of the crib walls with slope angle of 60º

In contrast to the graph in figure 5. where the greater the relative velocity (v/t), the more it shows a decreasing trend in the relative depth of erosion (de_4/t).
This is because the longer the flow time (t), the velocity v will decrease and be stable and there is no increase in erosion at river bends.

The value of R^2 = 0.950 or R = 0.974, this means that 97.4 percents there is a suitable value between the depth of erosion with the velocity parameter v and time t on the cribs placement with an angle of 60°.

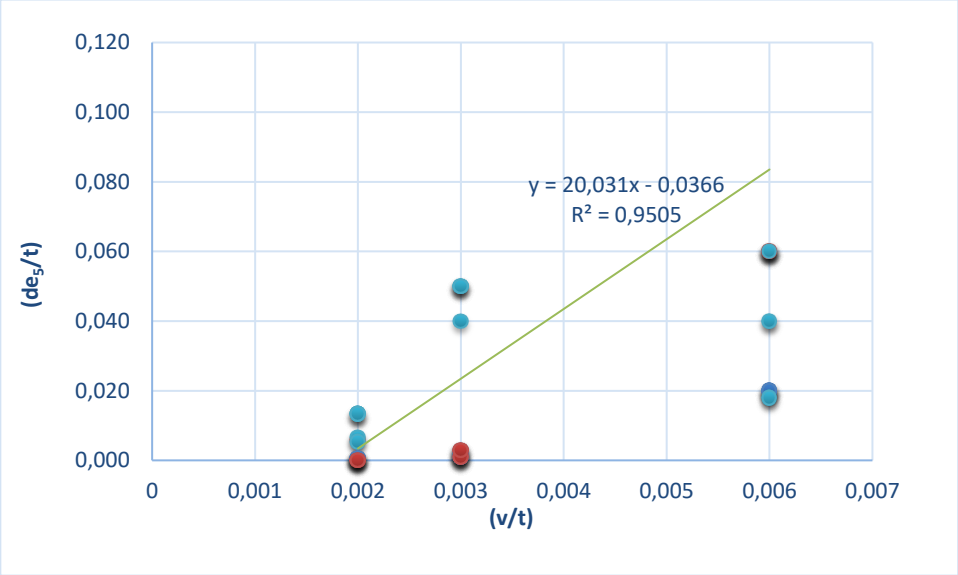


Figure 6: The relationship between (v/t) and (de_5/t) of the crib walls with slope angle of 60°

Figure 6 shows that there has been a maximum relative depth at the fourth crib walls (ds_4/t), namely at a relative velocity (v/t) of 0.004 with a maximum relative depth of erosion (de_5/t) of 0.06. After that, there was a decrease in the relative depth of erosion (de/t) proportional to the relative velocity (v/t) that occure. It is the same with the value of R^2 = 0.950 or R = 0.974, this means that 97.4 percents there is a suitable value between the depth of erosion with the velocity parameter v and time t on the crib walls placement with an angle of 60°.

4. CONCLUSION

At the slope angle of 60°, the maximum relative erosion depth (de/t) is 0.082 at a relative velocity (v/t) of 0.006 at the third crib walls. So, if the velocity is 1 m/sec with 1 hours, the **erosion** occurs 0,029 cm in the model or **2.90 m** (in site) with scale of 1:100 and with R = 0,974 or means that 97.4 percents there is a suitable value between the depth of erosion with the velocity parameter v and time t on the crib walls placement with an angle of 60°.

4. REFERENCES

Achmad Syarifudin and Dewi Sartika., (2019). A Scouring Patterns Around Pillars of Sekanak River Bridge, Journal of Physics: IOP Conference Series, volume 1167, 2019, IOP Publishing

Achmad Syarifudin., (2018). Hidrologi Terapan, Andi Offset, Yogyakarta

Achmad Syarifudin., (2018). Drainase Perkotaan Berwawasan Lingkungan, Andi Offset, Yogyakarta

Ahmed SMU, Hogue MM and Hossain S., (1992). Floods in Bangladesh: A Hydrological Analysis, Final Report R01/92, Institute of Flood Control and Drainage Research (IFCDR), Bangladesh University of Engineering and Technology (BUET), Dhaka, pp.1-5

Achmad Syarifudin., (2017). The influence of Musi River Sedimentation to The Aquatic Environment DOI: 10.1051/matecconf/201710104026, MATEC Web Conf, 101, 04026, [published online 09 March 2017]

Cahyono Ikhsan., (2017). The effect of variations in flow rate on the bottom of an open channel

with uniform flow, Civil Engineering Media.
Chow V.T., D.R. Maidment and L.W. Mays., (1988), Applied Hydrology. Mc. Graw Hill co. Department of Public Works., Guidance for Landslide Management Planning, SKBI - 2.3.06., 1987, PU Publication Agency Foundation
Directorate General of Human Settlements, Ministry of Public Works., (2010). Procedures for Making Retention Ponds and Polders With Main Channels. Directorate General of Human Settlements, Ministry of Public Works. Jakarta.
Department of Public Works., Guidance for Landslide Management Planning, SKBI - 2.3.06., (1987). PU Publication Agency Foundation Islam MZ
Holdani Kurdi et al., (2019). Model Hidrolika, Lambung Mangkurat University Press
Istiarto., (2012). Teknik Sungai, Transpor Sedimen, Gadjahmada University, Yogyakarta
Istiarto., (2012). Teknik Sungai, Gadjahmada University, Yogyakarta
Mc. Cuen R.H., (1982), A Guide to hydrologic analyses using SCS methods. Prentice Hall Publication
Madhu Sudan Acharya., (2018). Analytical Approach to Design Vegetative Crib Walls, Geotech Geol Eng (2018) 36:483–496
Okubo K, Muramoto Y, and Morikawa H., (1994). Experimental Study on Sedimentation over the Floodplain due to River Embankment Failure. Bulletin of the Disaster Prevention Research Institute, Kyoto University, 44 (2), pp. 69-92
P. Manasa1 et al., (2021). Crib retaining wall, International Journal for Modern Trends in Science and Technology · July 2021
Paimin et al., (2012). Watershed Management Planning System, Research and Development Center for Conservation and Rehabilitation (P3KR), Bogor, Indonesia
Robert. J. Kodoatie, Sugiyanto., (2002). Flood causes and methods of control in an environmental perspective, Yogyakarta
Syarifudin A, HR Destania., (2020). IDF Curve Patterns for Flood Control of Air Lakitan river of Musi Rawas Regency, IOP Conference Series: Earth and Environmental ScienceVolume 448, 2020, The 1st International Conference on Environment, Sustainability Issues and Community Development 23 - 24 October 2019, Central Java Province, Indonesia
Van Rijn, L.C., (2007). Unified View of Sediment Transport by Currents and Waves II: Suspended Transport. Journal of Hydraulic Engineering, Vol. 133, Issue 6, pp. 668-689.
Wan shun Zhang et al., (2014). Modeling Sediment Transport and River Bed Evolution in River System, Journal of Clean Energy Technologies, Vol. 2, No. 2, April 2014
Yang, C.T., (1996). Sediment Transport: Theory and Practice. McGraw-Hill, Singapore, 1996.

Biodata

Achmad Syarifudin is a Professor in Urban Drainage, Environmental and River Engineering at Bina Darma University with more than 25 years of professional experience as a consulting engineer, laboratory manager, researcher and lecturer. He is a recognized expert in Sustainable Urban DrainageSystem, Water Resources, River Engineering. His research has been funded by Ministry of education and culture, research and technology of the Republic of Indonesia. He has a long history of applied research and published in journal papers and publications in the last 3 years. Email: achmad.syarifudin@binadarma.ac.id

UNIVERSITY SOCIAL RESPONSIBILITY IN REALISING SUSTAINABLE DEVELOPMENT IN INDONESIA

Rahmawati
Public Administration, Faculty of Social and Political Science, University of Sultan Ageng Tirtayasa Banten.
rahmawati@untirta.ac.id

Abstract

University Social Responsibility (USR) is seen to be attached to community service activities as an implementation of the Tri dharma of HEIs. USR adopts the approach of Corporate Social Responsibility (CSR) towards the environment and sustainable development. This paper aims to provide a theoretical overview of university social responsibility which is still little done in Indonesia. The method used is a literature review using data based Scopus and Vos viewer applications. The results state that social responsibility is the "impact" of an organization's existence, while community service is an activity or action. These actions must certainly be considered for their impact on the environment and sustainable development. Therefore, the social responsibility of universities is the impact of the Tri dharma activities of universities on the surrounding environment as an effort to achieve the goal of sustainable development.

Keywords: corporate social responsibility; community service; university social responsibility

INTRODUCTION

University social responsibility is still not commonly heard by university managers and the community. Social responsibility is more identically carried out by companies or business institutions. As for higher education institutions, social responsibility is attached to the third pillar of Tridharma, namely community service. However, there are significant differences between the social responsibility of HEIs and community service activities, even though the objects are similar, namely the community living around the entity/organization.

The concept of social responsibility is mainly promoted by large multinational and transnational companies that are currently on the agenda in the business world. Non-profit organizations have an obligation to implement corporate social responsibility. This is related to the Sustainable Development Goals (SDGs) agenda. Sustainable development is an effort so that the natural resources that exist today can also be enjoyed by future generations. This can be realized if the Company makes various efforts to preserve the environment. The act of preserving the environment is in the form of corporate social responsibility.

The efforts of non-profit organizations to preserve the environment are in the form of corporate social responsibility. Companies are competing to implement CSR programs through social, economic, educational and environmental activities. CSR has become the company's branding in order to rank as a company with a high level of social and environmental awareness.

Social responsibility has been identified with business institutions/organizations, while for public organizations that provide services it has not become a mandatory thing to do, including in this case higher education institutions. However, this shift occurred when globalization led to the privatization of educational institutions and competition in the higher education industry. Some

universities adapted the business sector approach in order to compete and survive in the changing higher education industry.

The issue of higher education responsibility is attached to the issue of community service. However, there is a fundamental difference between the concept of social responsibility and community service. Community service is a form of institutional action, while social responsibility is a form of impact of the existence of the institution on the social environment. This paper tries to theoretically explore the concepts of corporate social responsibility, university social responsibility and university social responsibility for sustainable development.

RESEARCH METHOD

To assess the extent of research on university social responsibility in Indonesia, researchers conducted a systematic literature review. In the field of social science, a systematic literature review is directed at the requirement to identify all literature relevant to the theoretical background and research methods (Arksey & O'Malley, 2005).

Literature search using data based scopus with two search keywords namely USR and sustainable development with a duration of 5 years (2019-2024) type of journal article publication in English. The results obtained 477 articles with USR keywords and 32 articles with USR and SDGs keywords. In the next stage, researchers used the Vos Viewer application to see the linkage of research articles. The Following is an overview of Vos Viewer for USR

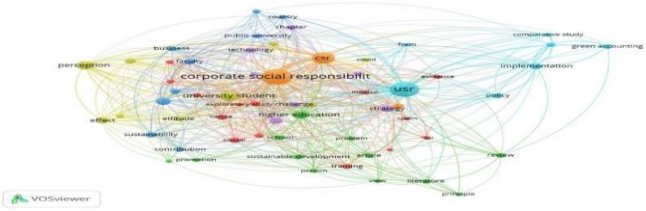
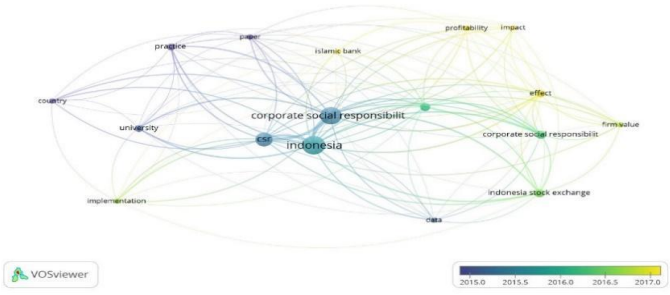


Image 1: Vos Viewer Screen Shot



DISCUSSION

Before understanding the concept of university social responsibility, it is necessary to know the definition of responsibility. Social responsibility is a new responsibility that complements moral and legal responsibilities; it is a collective responsibility, not a personal one. Moral and legal responsibilities govern our actions, while social responsibility governs the impact of our existence. The impact is not only on the immediate circle, but also on the farthest circle of the impact of our existence. It can be concluded that social responsibility is responsibility for impact and that impact

is not the same as action, we can explore the theoretical and practical richness of the social responsibility of organizations, especially universities (Vallaeys, 2011)

Corporate Social Responsibility (CSR)

Another common definition of CSR is from the World Business Council for Sustainable Development, which states that "Corporate social responsibility is an ongoing commitment by businesses to behave ethically and contribute to economic development while improving the quality of life of their workforce and their families as well as local communities and society at large (Mohamed, 2015).

Corporate Social Responsibility (CSR) is defined as the economic, legal, ethical and policy discretionary expectations that society has of an organizations at a particular point in time. Referring to the research results of Carroll (1991), there are 4 components of social responsibility and expand the scope of understanding. From the business element, it must fulfil economic, legal, ethical and philanthropic responsibilities to fulfil all obligations to society. Economic responsibility refers to the obligation for businesses to be productive and profitable. Legal responsibility refers to the framework of legal requirements that businesses must fulfil when performing economic duties. Ethical responsibility is appropriate behaviour defined by established norms that businesses must follow, and philanthropic responsibility reflects a shared desire to see businesses actively involved in the betterment of Society (Carroll, 1991).

Referring to Carrol's opinion, there are three principles of CSR implementation by the Company, namely:

1. The company must pay full attention to the development of the economic functions of the community;
2. Businesses need to be aware of the changing values of the society in which they exist;
3. It is necessary to make businesses aware of concerns about the environment and fair labour wages, poverty alleviation, and the development of rural areas. (Hendrik Budi Untung, 2008: 38-39)

Furthermore, CSR or "Corporate Social Responsibility" can be defined as a strategy by which a company or corporation conducts business in a way that is ethical, friendly, environmentally friendly and beneficial to the development of society. (Sayedahmed & Abuznaid, 2019). Meanwhile, Dahan & Senol (2012), CSR is the company's ethical and transparent relationship with all its stakeholders who have a relationship as well as with the establishment of corporate goals that are aligned with sustainable community development, preservation of environmental and cultural resources for the common benefit of future generations, respect for diversity and encourage the reduction of social problems (Dahan & Senol, 2012).

According to Dahlsrud in (Gómez Vásquez et al., 2004), the company conducts CSR as an effort to manage the company's daily operations by considering the impact of the economy, society and the environment by considering stakeholder groups. Meanwhile, according to Cohen (2010), companies do CSR because they see the benefits or are capital bound by the impact on society and the environment. Meanwhile, Vallaeys states that there are several attributes attached to CSR, namely good governance, management of social and environmental impacts, dialogue and communication with key stakeholders and partnerships with other parties/organizations to achieve sustainable development (Vallaeys, 2011).

The practice of social responsibility cannot be applied directly to higher education. This is because there is an element of teaching / education where the impact of education is to help solve pedagogical and epistemological problems. Therefore, the application of social responsibility

between companies and universities has a different approach both in theory and practice (Vallaeys, 2011)

University Social Responsibility (USR)

University social responsibility was launched in 2008 with the acronym USR, which was modified from the concept of CSR. USR is an ethical approach to develop a sense of patriotism and social responsibility of the academic community (students, academic staff and faculty members) to promote social, environmental, technical and economic engagement for sustainable local and global communities (Hanpongpandh, 2015).

In addition, USR is the most important factor in encouraging reform of the HEI education system. Most HEIs stated that they have implemented USR in the form of the vision and mission of the HEI or in the form of being a member in an association of HEIs that support sustainable development and environmentally friendly HEI management.

The overall implementation of USR reflects that individuals and communities shape each other and their relationships are, at the same time, mutually supportive and stressful. Adopting the concept of CSR as "corporate branding/positive corporate image", so does the concept of USR. USR becomes a branding of HEIs that relates to promoting social capital such as environmental issues, local community wisdom and community group knowledge. Secondly, USR is an effort to empower local communities, grassroots organizations and civil society. And third, USR is to build global business, social and cultural networks of HEIs (Hanpongpandh, 2015).

The role of universities is not only to form good professionals, have character and be able to adapt to environmental changes. But more than that, HEIs are expected to be able to produce citizens who are aware of shortcomings, challenges, injustices and environmental changes. HE aims to develop ethical values, the ability to associate, trust between members, civic awareness and co-operation (Bastos et al., 2019).

Nowadays, social responsibility has become a prominent issue for universities. Recently, attention has been paid to the role that universities can play in promoting the development of civic values and responsibility (Astin, 1998). The role of HEIs is not only transfer of knowledge, research and development, but also empowering the community around the HEI, so that the HEI is not seen as an ivory tower.

According to Dahan, USR is one of the efforts to compete in the world of education. Because this is related to the strategy to get a good reputation. Just like CSR, USR is a form of university commitment to operate sustainably based on economic, social and environmental principles, in order to balance the diverse interests of stakeholders (Dahan & Senol, 2012). USR can be concluded as an HEI's social responsibility commitment that is implemented in the form of concern for the environment and the welfare of the surrounding community. USR is also a strategy of PT in making decisions to increase profits and minimize the environmental impact caused to support sustainable development.

There are several reasons for the expansion of PT's social responsibility, namely:

1. Universities as a form of labour in public and private companies
2. HEIs play a role in the field of education, teaching and primary research in society
3. HEIs help society find a balance between personal and social needs and wants through the activities of the Tridharma of HEIs.
4. HEIs must build strong strategic relationships with stakeholders as the higher education market changes to be competitive.
5. HEIs contribute to lifelong learning
6. Companies need HEIs as a means of marketing their products.

7. Through the teaching and research process, HEIs raise the collective awareness of the academic community to create and implement innovations related to social responsibility.
8. HEIs are expected to be able to answer environmental challenges by integrating the concept of sustainable development in the form of curriculum in the classroom. (Agoston et al., 2013)

According to Matten and Moon (2017), many professors and practitioners believe that social responsibility should be fully integrated into the curriculum to help students make social and environmental decisions as business people. The obstacles to the implementation of USR are financial and lack of understanding and awareness among the academic community. Other constraints are ineffective organizational governance, traditional disciplinary boundaries and lack of a shared sustainable vision (Matten & Moon, 2017).

HE institutions are key influencers in driving social responsibility and sustainable development among future professionals. The social practice of USR represents a remodeled commitment to a different public, aligning USR with the day-to-day management of institutional processes.

According to Vallaeys USR is the ability to disseminate and apply a set of principles and values through four processes, responsible campus, social knowledge management, professional and civic education and social participation. USR includes what HEIs are responsible for, who they are responsible to and how they are responsible (Vallaeys, 2008).

4 college impacts:

1. Organizational impact: the internal impact on the academic community and the specific impact on the environment of how campus operations are conducted; waste, deforestation, transport, contamination.
2. Educational Impact; involves teaching and learning, curriculum development. HEIs must be able to restructure teaching and training to educate responsible citizens.
3. Cognitive impact: concerned with epistemological and ethical orientations, theoretical approaches, research and knowledge diffusion. How HEIs generate and manage knowledge.
4. Social impact: participating in the development of local communities and social capital. Universities have a clear impact on the economic, social and political development of society.

Meanwhile, according to (Agoston et al., 2013) Romanian universities use 6 dimensions to measure academic SR, namely alumni orientation, inter-university cooperation, university cooperation with high schools / other institutions, community-oriented universities, cooperation with business / business, community-oriented international cooperation, socio-cultural and environmental projects. Furthermore (Avilés-Palacios et al., 2017) stated that the implementation of ISO 26000 as a way to expand its commitment to university social responsibility.

Strengthening the opinions of several previous experts, according to Gulavani, the practice of social responsibility in higher education is carried out in several forms, such as:

1. Design of courses related to social responsibility subjects: Higher education institutions should design courses around social responsibility subjects that are open to students and staff to promote human rights and social inclusion values and ethics among them.
2. Environmental CSR: Includes activities to reduce consumption and waste and create further understanding of the importance of preserving and protecting the environment. For example, higher education can initiate various activities such as awareness programs on

green or clean cities, forest conservation, bird conservation, pollution reduction and environmental sustainability.

3. Waste Paper Recycling: Students can be trained to utilize waste paper and prepare paper bags of various sizes that can be distributed to local health foundations to make their own money.
4. CSR at Workplace: This includes activities typically undertaken to maintain high standards of employee recruitment, development and retention through employee volunteerism, health, safety and wellness, sports and fitness programs', employee training and employee communication channels. Other activities stimulate innovation for businesses and green technologies.
5. Community CSR: This is based on the institution's investment in the community such as donations of money, time, services, technology, expertise and other resources to make a positive contribution to the local community. Higher education institutions should contribute social and educational support activities for women, children and youth, living under severe social discrimination and poverty in nearby locations.
6. CSR by setting up Research Centre: Universities should conduct scientific research, training and vocational programs, publications and documentation of social, economic and cultural developments of civil society by setting up research centres.
7. CSR towards Stakeholders: The activities should include collaboration among stakeholders such as students, parents, alumni, organizations and government departments (Gulavani et al., 2016).

University Social Responsibility in Indonesia

Sustainable development is an international agenda mandated to be implemented by all countries in the world. There are 17 programs in the SDGs with the aim that the lives of the world community can achieve prosperity by 2030. According to the United Nation Division for Sustainable Development, sustainable development is a development that meets the needs of the current generation, but does not jeopardise the opportunity for future generations to meet their needs.

The concept and application of sustainable development in higher education is given in lectures and scientific discussions as well as research themes conducted by lecturers. This is because universities are the final level of educational institutions that are expected to produce future generations as future leaders, executives, workers, as citizens and agents of change, which have an important role to play in building a more sustainable and responsible world.

In the Stockholm Declaration on the environment, education has a very important role in the education process on sustainable development. This is because the main mission of HEIs is to produce and transfer knowledge through the Tridharma of Higher Education activities. According to Ritter (2006), higher education introduces the concepts of ethics, sustainability and environmental social responsibility into lectures or classroom teaching which is expected to increase relevant understanding and changes in ethical behaviour and moral values of students (Pizzutilo & Venezia, 2021).

In Indonesia, the mission of higher education is carried out in the realm of the Tridharma of Higher Education, namely education, research and community service. According to Law Number 20 of 2012 concerning Higher Education, Community Service is an activity of the academic community that utilizes Science and Technology to advance the welfare of society and educate the nation's life. Article 47 paragraph 1 states that Community Service is an activity of the

Academic Community in practicing and cultivating Science and Technology to advance the general welfare and intellectual life of the nation. (2) Community Service as referred to in paragraph (1) is carried out in various forms of activities in accordance with the academic culture, expertise, and/or scientific autonomy of the Academic Community and the socio-cultural conditions of the community. (3) The results of Community Service are used as a process of developing Science and Technology, enriching learning resources, and/or for learning and maturation of the Academic Community.

So far, the form commonly carried out by universities in the implementation of social responsibility to the community is through student / real work lectures and community service activities by lecturers. community service activities through counseling, coaching and empowering community groups around the campus. However, when compared to the performance of teaching and research carried out by lecturers and universities, community service activities are merely used as complementary material for the promotion of lecturer functional positions and "fulfil the obligations of universities" that universities are not ivory towers for the surrounding community. The element of community service is a marginal lecturer activity and has a small credit score. Even in the PAK lecturer formula, lecturer service activities are worth up to 10 per cent, but the realisation is often still minimal. (Prasojo 2019 https://www.ksi-indonesia.org/id/wawasan/detail/704-hilirisasi-penelitian-dan-pengabdian-masyarakat-di-perguruan-tinggi 29/05/2019)

Although the concept of social responsibility of universities is seen as almost the same as community service activities, some researchers state that there are visible differences. Rusdianto et al in their research mentioned the form of responsibility of Univ Muria Kudus by maximising the performance of MSMEs in general so that they can be competitive. PT as a community facilitator, especially home industry through Tridharma PT activities (Rusdianto & Kuncoro, 2018). Furthermore (Prapanca et al., 2020) stated that 3 universities in East Java used the Triple Bottom Line CSR approach in implementing USR to achieve sustainable development.

Rumambi (Rumambi et al., 2015) in a study on the Social Responsibility of Higher Education Institutions in North Sulawesi using a human dignity perspective stated that the CSR of higher education institutions needs to integrate social and environmental aspects in the implementation of the Trihdarma of Higher Education. Meanwhile, research results (Setiawan & Davianti, 2018) show that leading universities in Indonesia have directed and promoted social responsibility practices to create ethical and socially responsible scholars. The actions are related to organizational governance, human rights, labour practices, environment, fair operating practices, consumers, community engagement, and development issues. The study also revealed the importance of incorporating social responsibility concepts and practices for students in creating more opportunities to engage with society.

CONCLUSION

Although the way universities view social responsibility is still attached to community service activities, with the paradigm shift in higher education management that leads to the privatization of higher education, higher education institutions' social responsibility (USR) has become one of the barometers of competitiveness to attract students. Social responsibility is an impact of the institution's existence, while community service is an activity that "has an impact" on the community.

REFERENCES

Agoston, S., DIMA, A., VASILACHE, S., & GHINEA, V. (2013). a Model of Academic Social Responsibility. *Transylvanian Review of Administrative Sciences*, *38*, 23–43.

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology: Theory and Practice*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Astin, A. (1998). Higher Education and Civic Responsibility. *NSEE Quarterly*, 18.

Avilés-Palacios, C., Moyano-Santiago, M. A., & ... (2017). University social responsibility and the ISO 26000: 2010 standard. Case study of the Universidad Politécnica de Madrid (Spain). In *… and accounting and …*. researchgate.net. https://www.researchgate.net/profile/Carmen-Aviles-Palacios/publication/318441237_University_Social_Responsibility_and_the_ISO_260002010_standard_Case_study_of_the_Universidad_Politecnica_de_Madrid_Spain/links/596d19eb458515d9265fc45e/University-Social-Re

Bastos, F. C. C., De Souza, M. J. B., & Hoffmann, E. M. (2019). University Social Responsibility: An Analysis from the Carroll's Model. *Revista de Negócios*, *24*(3), 27. https://doi.org/10.7867/1980-4431.2019v24n3p27-48

Carroll, A. B. (1991). The Pyramid of Corporate Social Responsibility : Toward the Moral Management of Organizational Stakeholders. *Business Horizons /July-August 1991*, *July-Aug*(2), 211–229. https://doi.org/10.1177/0312896211432941

Dahan, G. S., & Senol, I. (2012). Corporate social responsibility in higher education institutions : Istanbul Bilgi University case. *American International Journal of Contemporary Research*, *2*(3), 95–103. http://www.aijcrnet.com/journals/Vol_2_No_3_March_2012/10.pdf

Gómez Vásquez, L. M., Morales Alequin, B., & Vadi, J. C. (2004). *University Social Responsibility: A social transformation of learning, teaching, research, and innovation "*. 23. https://scholar.google.com.pe/scholar?hl=es&q=University+Social+Responsibility%3A+A+social+transformation+of+learning%2C+teaching%2C+research%2C+and+innovation+"&btnG=&lr=

Gulavani, S., Nayak, N., & Nayak, M. (2016). CSR in Higher Education. *IOSR Journal of Business and Management*, *18*(10), 37–39. https://doi.org/10.9790/487X-1810073739

Hanpongpandh, P. (2015). From CSR to USR repositioning public relations role in university social responsibility practices in Thailand. *Journal of Communication Arts*, 1–23. https://so02.tci-thaijo.org/index.php/jcomm/article/view/160338

Matten, D., & Moon, J. (2017). "Implicit" and "Explicit" CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *Corporate Social Responsibility*, *33*(2), 257–277.

Mohamed, A. T.-E. (2015). A Framework for University Social Responsibility and Sustainability : The Case of South Valley University ,. *International Journal of Social, Behavioral, Educational, Economic and Management Engineering*, *9*(7), 2101–2110.

Pizzutilo, F., & Venezia, E. (2021). On the maturity of social responsibility and sustainability integration in higher education institutions: Descriptive criteria and conceptual framework. *International Journal of Management Education*, *19*(3), 100515. https://doi.org/10.1016/j.ijme.2021.100515

Rumambi, H. D., Kaparang, R., Lintong, J. S., & Tangon, J. N. (2015). Tanggung Jawab Sosial Institusi Pendidikan Tinggi. In *Polimoo Press* (Vol. 3, Issue April).

Setiawan, C., & Davianti, A. (2018). UNIVERSITY SOCIAL RESPONSIBILITY (USR): A STUDY OF TOP INDONESIAN UNIVERSITIES. *PROCEEDINGS UNIVERSITAS …*. http://openjournal.unpam.ac.id/index.php/Proceedings/article/view/1831

Vallaeys, F. (2008). RESPONSABIlIDAD SOCIAl UNIVERSITARIA":UNA NUEVA FIlOSOFíA DE gESTIÓN éTICA E INTElIgENTE PARA lAS UNIVERSIDADES. *Educ*, *13*, 191–220.

Vallaeys, F. (2011). *University Social Responsibility : A Mature and Responsible Definition*.

Biodata
Rahmawati is a lecturer of Public Administration, Faculty of Social and Political Science, University of Sultan Ageng Tirtayasa Banten. She received her Master Degree from University of Jenderal Soedirman. Right now as a doctoral student in public administration at Diponegoro University, Semarang.
Email: rahmawati@untirta.ac.id

POPULATION MOBILITY (MOVEMENT) MAPPING AND POLICY IN BANTEN PROVINCE

Riny Handayani
Universitas Sultan Ageng Tirtayasa
riny.handayani@untirta.ac.id

Abstract

The aspect of population mobility in Banten Province is one of the demographic parameters that can describe the success of development, which is why writing related to mapping population mobility is important considering the very dynamic changes in demographic parameters in Banten Province. Population mobility used in this research is included in the category of permanent population mobility or can also be interpreted as migration (population movement). The research method used is quantitative with spatial descriptive analysis techniques. The elaboration stages include data collection, data processing, determining variables and overlaying digital maps. The unit of analysis in this research is the district/city where there are 4 districts and 4 cities. Mapping population mobility in Banten Province is to create a description of the data that has been obtained and display it in simple statistical form so that the public can more easily get an idea of the situation of population mobility in Banten Province. The mobility indicators studied are Incoming Migration, Outgoing Migration, Net Migration, Risen Migration, and the Percentage of Migrant Population. There are significant differences regarding the incidence of population mobility in Banten Province between North and South Banten. Greater Tangerang (Tangerang City, South Tangerang City and Tangerang Regency) is an area with a dominant composition of migrant residents. Regional status is also recorded to influence the incidence of population mobility, where the status of city areas is areas with high incidences of Incoming Migration compared to areas with district status. The policy that must be prepared regarding population mobility is facilitating the preparation of regional facilities and infrastructure related to the flow of movement and population movement, the pattern of which is increasing every year.

Keywords: Mapping, Policy, Population Mobility, Banten Province

INTRODUCTION

High population growth should be balanced by an even distribution of population. The population in Banten Province is recorded as not being evenly distributed, so we find that there are areas that are densely populated and there are areas where the opposite is true. The area with the highest population density is in Tangerang City, namely per km2 there are 14,486 people, while the area with the lowest density is Lebak Regency, namely only 380 people per km2 (Banten in Figures, 2023).

Thinking about population development and the various aspects that influence each other gives a phenomenon that population problems must be broken down into simpler aspects. Aspects of population quantity, population quality aspects and population mobility in Banten Province are demographic parameters that can describe the success of development in Banten Province. Therefore, studies related to population development mapping are important to carry out considering the very dynamic changes in demographic parameters as a result of the Banten

Province region which is geographically an investment gateway in Indonesia, the entrance to the island of Java from Sumatra, a buffer area for the capital city of Jakarta and easy and smooth transportation accessibility. . Apart from the very dynamic population conditions in Banten Province, another interesting thing is that there are quite significant differences in the eight city districts in Banten Province in terms of quantity, quality and mobility based on geographical conditions, as well as socio-cultural aspects. Furthermore, the results of population development mapping will be used as a source of data, documents or references in development planning in Banten Province.

The mobility (population movement) used in this research is included in the category of permanent population mobility or can also be interpreted as migration (population movement). Migration or permanent movement is a component of population growth besides fertility and mortality. However, compared with fertility and mortality data, migration data is still very scarce. Migration is a very rare demographic event, not everyone experiences it. Apart from that, if it is differentiated from fertility and mortality which only occur once in a lifetime, migration can occur many times in a person's life so that migration data from surveys is generally not good because it is related to small sample size. Meanwhile, migration data sourced from administrative records is still far from perfect.

The following is data related to migration by district/city in Banten Province using data from the 2015 Inter-Census Survey (SUPAS).

Table 1. Incoming Migration, Outgoing Migration, Net Migration and Risen Migration in Banten Province 2022

Kabupaten/Kota	Migrasi Masuk (Jiwa)	Migrasi Keluar (Jiwa)	Migrasi Nett (Jiwa)	Migrasi Risen (Jiwa)
Pandeglang	49.158	199.749	150.591	33.536
Lebak	64.415	121.299	56.844	-13.312
Tangerang	753.370	158.831	594.539	40.124
Serang	138.735	177.463	38.728	13.381
Tangerang	881.096	134.489	746.607	84.212
Cilegon	87.609	24.731	62.878	2.168
Serang	129.454	45.363	84.091	11.696
Tangerang Selatan	699.227	29.340	669.887	39.116

Source: Banten Migration Statistics, 2015 Inter-Census Population Survey Results, BPS Indonesia

In this research, the Inbound Migration used refers to Lifetime Inbound Migration. A person is said to be a migrant during life if the province or district/kodya where he was born is different from the province or district/kodya where he currently lives (at the time of the census). Migration figures describe the number of people whose place of birth is different from where they live now. The higher the migration rate during life, the greater the number of people whose current place of residence is different from their place of birth, and vice versa. Tangerang City is the area most visited by migrants in Banten Province, namely 881,096 people according to the latest data, while the area visited by the least migrants is Pandeglang Regency, namely 49,158 people.

Table 2. Percentage of Migrant Population in Banten Province 2022

Kabupaten/Kota	Migran	Non Migran	Persentase Migran
Pandeglang	59.534	1.134.645	4,99
Lebak	79.861	1.189.180	6,29
Tangerang	772.648	2.589.092	22,98
Serang	176.058	1.297.413	11,95
Tangerang	900.762	1.142.451	44,09
Cilegon	91.439	158.773	36,54
Serang	153.326	488.879	23,87
Tangerang Selatan	708.098	830.872	46,01

Source: Banten Migration Statistics, 2015 Inter-Census Population Survey Results, BPS Indonesia

RESEARCH METHOD

The research method used in this research is a quantitative research method with spatial descriptive analysis techniques. The elaboration stages include data collection, data processing, determining variables and overlaying digital maps. The boundaries of the research area or unit of analysis in this research are districts. There are 4 (four) districts and 4 cities in Banten Province.

Classifying Incoming Migration into the number of classes obtained from the Sturgess Formula with district/city analysis units in Banten Province. This classification uses statistical formulas, namely:

$$\text{Class Interval} = \frac{\text{Maximum Value} - \text{Minimum Value}}{\text{Number of Classes}}$$

Then a Classification Mapping Pattern was created for Incoming Migration, Outgoing Migration, Net Migration and Percentage of Migrants. The migration data presented in this research comes from the results of the 2015 Inter-Census Population Survey (SUPAS 2015). The approach used to define population in SUPAS 2015 is the "de jure" concept, namely recording someone who usually resides/has a permanent residence.

The aim of mapping Incoming Migration in Banten Province in 2017 per district/city is to create a description of the data that has been obtained and display it in simple statistical form so that the public can more easily get an idea of the situation of Incoming Migration in Banten Province. First, you need to know the number of classes that must be created and determine how long the interval for each class is. This helps in distributing the values in the data. The formula for determining the number of classes is as follows (Susanti, 2010).

$K=1+3{,}3 \log N$.....(1)

The number of classes obtained based on formula (1) with total data (N) for 8 districts/cities is as follows:

$K = 1+3{,}3 \log N$

$= 1+3{,}3 \log 8$

$= 1+3{,}3\ (0{,}903)$

$= 1+ 2{,}98 = 3{,}98 \approx 4$ class

The number of classes from this distribution data is 3.98 and is rounded to 4 classes. After the number of classes is obtained, it is necessary to calculate the interval for each class. Class intervals are calculated using the following formula (Susanti, 2010):

……..(2)

Class intervals in this study were calculated by taking Incoming Migration data per district/city in Banten Province in 2015. The smallest data value for population composition based on Incoming Migration was in Pandeglang Regency, namely 49,158 and the largest data value for Incoming Migration was in Tangerang City, namely 881,096. The class interval for the Incoming Migration class based on formula 2 is as follows:

$$= \frac{881.096 - 49.158}{4}$$

$$= 207.985$$

RESULT AND DISCUSSION

Frequency distribution table for Incoming Migration obtained based on calculation results with the number of classes (K) being 4 classes and the Incoming Migration class interval being 207,985 in each class shown in the table below:

Table 3. Distribution of Incoming Migration Classes

Kelas	Migrasi Masuk	Kabupaten Kota
I	49.158 – 257.143	Kabupaten Pandeglang, Kabupaten Lebak, Kabupaten Serang, Kota Cilegon, Kota Serang
II	257.144 - 465.129	-
III	465.130 - 673.115	-
IV	≥ 673.116	Kabupaten Tangerang, Kota Tangerang, Kota Tangerang Selatan

Source: Data Processing, 2023

From the classification table above, you can clearly see the gap between the flow of Incoming Migration in the Greater Tangerang area and other regions. All areas in Greater Tangerang (Tangerang Regency, Tangerang City and South Tangerang City) are included in the Class IV category or the highest class of Incoming Migration flows, while other areas apart from Greater Tangerang are included in Class I or the lowest class of Incoming Migration flows in Banten Province.

Pandeglang Regency is the area that experiences the most outbound migration in Banten Province, namely 199,749 people according to the latest data, while the area that has the least number of outmigration incidents is Cilegon City, namely 24,731 people. The frequency

distribution table for Out Migration obtained based on calculation results with the number of classes (K) being 4 classes and the Out Migration class interval being 43,754.50 in each class is shown in the table below:

Table 4. Out-Migration Class Distribution

Kelas	Migrasi Keluar	Kabupaten Kota
I	24.731 - 68.486	Kota Cilegon, Kota Serang, Kota Tangerang Selatan
II	68.487 - 112.242	-
III	112.243 - 155.998	Kabupaten Lebak, Kota Tangerang
IV	≥ 155.999	Kabupaten Pandeglang, Kabupaten Lebak, Kabupaten Tangerang

Source: Data Processing, 2023

From the classification table above, it can be seen that areas with city status have relatively low out-migration conditions compared to areas with district status, meaning that residents in areas with district status have a different pattern of leaving their area than residents in urban areas.

The difference between Incoming Migration and Outgoing Migration is known as Net Migration. Pandeglang Regency is an area dominated by Outgoing Migration compared to Incoming Migration so there is a difference of -150,591 people, while the area that received the most additional migrants due to the dominance of Incoming Migration is Tangerang City, namely 746,607 people.

Similar to the conditions of Incoming Migration, the conditions of Net Migration in Banten Province experience disparities in the northern part with other parts of the region. Net Migration, which is the difference between Incoming Migration compared to Outgoing Migration, is dominated by the Highest Class in the Greater Tangerang area (Tangerang Regency, Tangerang City and South Tangerang City). This means that the northern region of Banten Province is dominated by incoming migration compared to outgoing migration. The opposite happens in other parts, especially in the southern part of Banten, which even has a negative value for Net Migration, meaning that there are more Outward Migration incidents than Incoming Migration, occurring in Lebak Regency, Pandeglang Regency and Serang Regency. Frequency distribution table for Net Migration obtained based on calculation results with the number of classes (K) being 4 classes and the Net Migration class interval of 224,299 in each class is shown in the table below:

Table 5. Net Migration Class Distribution

Kelas	Migrasi Nett	Kabupaten Kota
I	-150.591 – 73.708	Kabupaten Pandeglang, Kabupaten Lebak, Kabupaten Serang, Kota Cilegon
II	73.709 – 298.008	Kota Serang
III	298.009 – 522.308	-
IV	≥522.309	Kabupaten Tangerang, Kota Tangerang, Kota Tangerang Selatan

Source: Data Processing, 2023

The city of Tangerang was identified as the region with the most recent migrants, namely 84,212 people, while the region in the southern part of Banten Province, Pandeglang and Lebak Regency, had the opposite condition, Pandeglang Regency had a shortage of around 33,536 people in the past five years, Lebak Regency had a reduction of 13,312 people. The same thing also happened in Serang Regency, which within five years experienced shortages or its population

moved to other areas with 13,381 residents. The frequency distribution table for Risen Migration obtained based on calculation results with the number of classes (K) being 4 classes and the Risen Migration class interval being 12,669 in each class is shown in the table below:

Table 6. Risen Migration Class Distribution

Kelas	Migrasi Risen	Kabupaten Kota
I	-33.536 – (-20.867)	Kabupaten Pandeglang
II	-20.868 – (-8.199)	Kabupaten Lebak, Kabupaten Serang
III	-8.200 – 4.469	Kota Cilegon
IV	≥ 4.470	Kabupaten Tangerang, Kota Tangerang, Kota Tangerang Selatan, Kota Serang

Source: Data Processing, 2023

Similar to the conditions of Incoming Migration and Net Migration, Risen Migration is still dominated by areas in the North, namely Greater Tangerang (Tangerang Regency, Tangerang City and South Tangerang City) which are included in the Class IV classification or the highest Risen Migration class in Banten Province. However, there is an interesting phenomenon here, namely the rapid rise of Serang City to become the region that has the highest Inbound Migration conditions besides Greater Tangerang. This illustrates that in the last five years Serang City has experienced a surge in Incoming Migration compared to other regions besides the Greater Tangerang area. This is certainly a challenge and opportunity, especially for the Serang City Government.

Table 7. Class Distribution Percentage of Migrant Population

Kelas	Persentase Penduduk Migran	Kabupaten Kota
I	4,99 – 15,25	Kabupaten Pandeglang, Kabupaten Lebak, Kabupaten Serang
II	15,26 – 25,52	Kota Serang, Kabupaten Tangerang
III	25,53 – 35,79	-
IV	≥ 35,80	Kota Tangerang Selatan, Kota Tangerang, Kota Cilegon

Source: Data Processing, 2023

From the table above, it is identified that the area in Greater Tangerang (Tangerang Regency, Tangerang City and South Tangerang City) is the area with the largest number of migrants as part of its population, even for Tangerang City and South Tangerang City, almost half of the population are migrants or immigrants. This is in contrast to the situation in southern Banten, which is the region with the lowest migrant population composition. As for Cilegon City, it is the only region not in the North that is in the Class IV calcification category or the highest class with a percentage of migrants compared to its non-migrant population, and Serang City also has a pattern that is starting to follow the region in Greater Tangerang.

CONCLUSION

Mapping population development in Banten Province is used as a basis for regional development planning in all fields and helps the government to make the right decisions to carry out development in accordance with the characteristics of the existing population. Data and information resulting from population development analysis will be useful for planning the provision of basic needs, health facilities, education, housing and employment opportunities.

The analysis of mapping population development in Banten Province aims to present the results of the analysis with an overview of basic information from the spatial aspect. Population development in this research is seen from the Population Mobility aspect, limited to Incoming Migration, Outgoing Migration, Net Migration, Risen Migration and the Percentage of Migrants to the Total Population.

The gap between the flow of Incoming Migration in the Greater Tangerang area and other regions. All regions in Greater Tangerang (Tangerang Regency, Tangerang City and South Tangerang City) have the highest Incoming Migration flows, while other regions besides Greater Tangerang have the lowest Incoming Migration flows in Banten Province.

Residents in areas with district status have a different pattern of leaving their area than residents in urban areas.

The rise of Serang City to become the region that has the highest Inbound Migration conditions besides Greater Tangerang, this illustrates that in the last five years Serang City has experienced a surge in Incoming Migration compared to other regions besides the Greater Tangerang area. This is certainly a challenge and opportunity, especially for the Serang City Government.

Some suggestions or recommendations that can be made for population developments occurring in Banten Province are as follows:

- Coordinating with OPD/Institutions/Universities/NGOs regarding population parameters, current population situation and population developments in Banten Province.
- Carrying out Advocacy related to Coordination and partnerships with regional agencies and agencies as well as partners related to population issues (Grand Design for Population Development, Population Profile, Data House as well as Coordination and partnerships with regional agencies and agencies and related partners).
- Coordinating regarding the urgency of population data as outlined in the Population Development Mapping document for each City Regency.

REFERENCES

Lee, Everett S., 1966. A Theory of Migration. Demography 3: 47-57

Mantra Bagoes Ida, 20017, Demografi Umum, Yogyakarta, Pustaka Pelajar Offset.

Mundiharto, 2020, Dinamika Kebijakan Kependudukan : Perkembangan, Ekses Negatif, Perbaikan dan Harapan, Warta Demografi No.1 Lembaga Demografi FEUI, Jakarta.

Rusli, Said. 2013. Pengantar Ilmu Kependudukan LP3ES . Jakarta::FKIP-Universitas Terbuka

Susanti, M. N. 2010. Statistika Deskriptif Induktif. Yogyakarta: Graha Ilmu.

Todaro, Michael P., 1969. A Model Of Labour Migration And Urban

Undang – Undang Nomor 52 Tahun 2009. Tentang Pembangunan Keluarga

Badan Pusat Statistik Provinsi Banten, Banten Dalam Angka 2023

Badan Kependudukan dan Keluarga Berencana , 2016, Arah Kebijakan dan Strategi

BKKBN Tahun 2015.

Badan Kependudukan dan Keluarga Berencana Perwakilan Provinsi Banten. 2023. Parameter Kependudukan dan Pemetaan Capaian Kinerja Program KKBPK (Berdasarkan Updating Pendataan Keluarga Tahun 2017 dan Survei Sosial Ekonomi Nasional/SUSENAS Tahun 2015
BPS Indonesia. Statistik Migrasi Banten, Hasil Survei Penduduk Antar Sensus 2015
Sistem Informasi Pembangunan Daerah (SIPD) Provinsi

Biodata

Riny Handayani is a Lecturer at the Department of Public Administration, FISIP, Sultan Ageng Tirtayasa University (UNTIRTA) who completed her doctoral education in Social Welfare at the University of Indonesia, completing her bachelor's and master's degrees at the same place. The field of Social Welfare and Population is the dominant teaching and research activity which has been carried out for approximately 20 years. Email: riny.handayani@untirta.ac.id

STRATEGIC PLANNING OF SPATIAL PLANNING AND ZONING REGULATIONS OF SERANG DISTRICT AND CIPOCOK JAYA DISTRICT, SERANG CITY, BANTEN PROVINCE

Ipah Ema Jumiati, Ardian Havidani, Suwaib Amiruddin, Ayuning Budiati

ipah.ema@untirta.ac.id, 7775210016@untirta.ac.id, suwaib_a@yahoo.com, ayoekomara@gmail.com

Abstract

The article discusses the rapid development of Kota Serang, which is characterized by the rapid use of land and space. The increasing number of residents, coupled with the need for housing and supporting facilities, has led to an increase in land use activities. However, this has also caused problems, such as: Increased pressure on land use, leading to changes in the way land is used. Decreased land availability for agricultural and water sectors, leading to an imbalance in the needs of local residents. Conversion of green open spaces, conservation areas, and agricultural areas to residential areas, causing spatial imbalance and environmental problems such as air pollution, flooding, landslides, and fires. Inconsistency in the implementation of the Regional Spatial Planning, which does not align with the planned plan. To address these problems, the government of Kota Serang needs to clearly define the city's development orientation and integrate it into spatial planning and regional policies. This includes: Clearly defining goals and responsibilities for each program, Clarifying the tasks of each institution in implementing spatial planning policies, Establishing a mechanism for monitoring and control, Providing sanctions for non-compliance. The study uses a qualitative approach to achieve a more in-depth understanding of the issues.

Key words: Strategic Planning, Spatial, Zonation

Introduction

The text states that Kota Serang has already prepared a Detailed Regional Spatial Plan for Kecamatan Serang and Kecamatan Cipocok Jaya, along with zoning regulations based on the Regional Regulation of Kota Serang Number 9 Year 2014 concerning the Detailed Regional Spatial Plan and Zoning Regulations for Kecamatan Serang and Cipocok Jaya from 2013 to 2033.

However, the four other districts, namely Kecamatan Curug, Kecamatan Taktakan, Kecamatan Kasemen, and Kecamatan Walantaka, do not have a regional detailed spatial plan.

The Regional detailed Planning for Kecamatan Serang and Cipocok Jaya plans to structure the service activities of Kota Serang as a City Service Center, which includes the central area of Kota Serang, specifically Kecamatan Serang and Cipocok Jaya, with the center located in Kelurahan Serang. The primary functions of the city center are government, education, trade, services, and secondary functions such as housing, dry land agriculture, and tourism.

The hierarchy of the city center aims to create a sense of order in the space. Each city center is expected to be a location where various facilities are concentrated, playing a role as a factor that binds each sub-city center. Sub-city centers are expected to meet the needs of residents in carrying out social and economic activities.

The placement of locations and their service areas will lead to efficiency and effectiveness in the pattern of service provision, which ultimately leads to efficient land use.

The Detailed Spatial Plan for Serang Subdistrict and Cipocok Jaya Subdistrict consists of a Spatial Pattern Plan and a Public Facility Network Plan. The Spatial Pattern Plan for Serang Subdistrict and Cipocok Jaya Subdistrict, which covers an area of approximately 6,151 hectares, consists of:

a. A protected zone plan covering an area of approximately 266 hectares, or 4.33% of the total area.
b. A productive zone plan covering an area of approximately 5,885 hectares, or 95.67% of the total area.

The Public Facility Network Plan for Serang Subdistrict and Cipocok Jaya Subdistrict consists of:

a. A transportation network development plan
b. An energy/power network development plan

c. A telecommunications network development plan
d. A drinking water network development plan
e. A drainage network development plan
f. A wastewater network development plan
g. A plan for developing other public facilities

Picture 1
Spatial Planning Map
Serang Municipality and Cipocok Jaya Regency
Year 2013-2033

(Source: General Affairs and City Planning Offices of Serang City, 2023)

Detailed Spatial Plan for Serang Sub-district and Cipocok Jaya Sub-district
* The plan consists of a spatial pattern plan and infrastructure network plan.
* The spatial pattern plan covers an area of approximately 6,151 hectares.
* The plan includes:
+ 266 hectares (4.33%) of protected zone
+ 5,885 hectares (95.67%) of cultivation zone
* Infrastructure network plan includes:
+ Transportation networks
+ Energy and electricity networks
+ Telecommunications networks
+ Water supply networks
+ Drainage networks
+ Sewage networks
+ Other infrastructure networks

The plan is dominated by residential areas (high-density, medium-density, and low-density) and commercial/service areas along roads.The plan aims to provide a comprehensive framework for development, balancing residential, commercial, and infrastructure needs.

It can be observed that:

* There are discrepancies between the actual conditions on the ground and the Spatial Pattern Plan. Specifically, there are:
+ Buildings standing on the boundary of High-Tension Air Power Lines (SUTET)
+ Residential areas standing on the boundary of rivers
+ Buildings standing on the boundary of railway tracks
+ Decreased areas of water absorption, which is not in line with the Spatial Pattern Plan
* These discrepancies are caused by:
+ Inadequate implementation of spatial control and management due to limited personnel
+ The lack of alignment between the Detailed Spatial Plan (Rencana Detail Tata Ruang) and the Revised Regional Spatial Plan (Rencana Tata Ruang Wilayah) of Kota Serang, which has been revised since 2011
+ The lack of integration between the Rencana Detail Tata Ruang and the new regulations, such as the Copyright Law (Undang-undang Cipta Kerja), which requires a more integrated and online-based approach to spatial planning
+ Unregulated land use by residents who have built buildings in protected zones, such as riverbanks and greenbelt areas
* The existence of these discrepancies indicates a lack of harmonization between the Spatial Pattern Plan and the actual conditions on the ground, which is likely to have an impact on the quality of life and environmental sustainability of the area.

Overall, the study highlights the importance of ensuring that spatial planning is aligned with actual conditions on the ground and that regulations are in place to ensure sustainable development.

Research Method

The research method used in this study is qualitative research. Qualitative research is a method for exploring and understanding the meanings that individuals or groups of people consider to arise from social or human problems. This qualitative research process involves important efforts such as asking questions, collecting specific data from participants, analyzing data inductively from specific themes to general themes, and interpreting the meaning of the data.

The final report of the research has a flexible structure or framework. Anyone involved in this form of research must apply an inductive research approach, focusing on individual meanings, and translating the complexity of a problem (Creswell, 2021: 4-5).

In this study, the researcher uses qualitative research methodology to explore and understand the meanings that individuals or groups of people consider to arise from social or human problems. The researcher will ask questions, collect data from participants, analyze the data inductively, and interpret the meaning of the data. The report of the research will have a flexible structure or framework.

Analysis

The importance of strategic planning in organizations, particularly in non-profit organizations. You're citing various authors and sources to support your argument.

The benefits of strategic planning, such as:

1. Anticipating potential changes and challenges in the future

2. Helping organizations maintain alignment with their environment

3. Providing tools for future thinking, goal-setting, and decision-making

4. Facilitating effective communication and performance measurement

Non-profit organizations face complex challenges, which require the application of strategic theories to manage their organizations effectively.

Furthermore, Korten (cited in Salusu, 2016) states that government and non-profit organizations must make strategic decisions to achieve their goals. Additionally, Bryson (2014) states that strategic planning can help organizations handle unexpected changes, such as those experienced by many countries in recent years.

Lastly, Mercer (cited in Salusu, 2016) who proposes six key elements of an effective strategic plan:

"Scanning the environment that includes SWOT analysis. Accurate identification of internal and external environments will influence strategic decision-making regarding the direction to be taken and actions to be taken in order to innovate within the managed institution. Scanning the external and internal environment can monitor changes within the institution, allowing for the identification of strengths, weaknesses, opportunities, and threats within the institution through the SWOT analysis approach."

In this text, the author is highlighting the importance of scanning the internal and external environment of an institution to identify its strengths, weaknesses, opportunities, and threats. This is done through a SWOT analysis, which is a widely used strategic planning tool that helps organizations identify their internal and external factors that can impact their success. The author is emphasizing the importance of accurate identification of these factors to inform strategic decision-making and innovation within the institution.

2. The statement is:

> "Organizational mission statement is a preliminary statement about the organization's mission. The purpose of an organization is communicated through vision and mission statements. The repeated articulation of positive vision and mission statements is the key to unifying the organization and motivating members to remain enthusiastic and motivated in their work. Mission is a statement that is formed to clarify the responsibilities and measurable targets that an organization can achieve. On the other hand, vision plays a role in describing the organization's goals or aspirations. The vision statement is required by an organization because it provides a positive forward-looking perspective. The vision describes the organization's long-term plans in an inspiring and achievable manner."

The key components of a strategic planning process. Here is a breakdown:

1. **Strategies**: Establish a set of strategies that outline what needs to be done to achieve the organization's mission.

2. **Objectives**: Identify specific goals and objectives for each strategy.

3. **Tactics and Operational Plans**: Develop short-term tactics and operational plans to achieve the objectives.

4. **Monitoring and Control**: Establish a system to monitor and control the implementation of the strategies, including evaluation and feedback mechanisms.

In other words, the process involves:

1. Defining the organization's vision and mission.

2. Developing strategies to achieve the mission.

3. Identifying specific objectives for each strategy.

4. Creating short-term plans to achieve those objectives.

5. Monitoring and controlling the implementation of those plans to ensure they are on track and making adjustments as needed.

By following this process, organizations can ensure they are working towards their goals and making progress towards achieving their mission.

SWOT analysis is a strategic planning tool that helps organizations identify their internal strengths and weaknesses (S and W) and external opportunities and threats (O and T). By analyzing these four quadrants, organizations can gain a better understanding of their position in various aspects, set priorities for their strategies and programs, and create a roadmap for implementation.

The benefits of SWOT analysis include:
1. Identifying internal strengths and weaknesses to inform strategic decisions.
2. Identifying external opportunities and threats to inform strategic decisions.
3. Developing a comprehensive understanding of the organization's situation in relation to its stakeholders.
4. Enabling the development of a vision for the future.

By combining an understanding of external factors with an assessment of internal strengths and weaknesses, organizations can develop a more informed vision for the future. This is in line with the concept of strategic planning, which involves identifying the organization's goals, objectives, and strategies to achieve them.

As SWOT analysis can be particularly useful in planning for urban development and spatial planning, as it allows organizations to consider the complex interplay between internal and external factors that affect their operations and decision-making processes.

Overall, SWOT analysis is a powerful tool for organizations looking to make informed decisions about their future direction and strategy.

Strategic Planning of Spatial Serang City

SWOT analysis

A SWOT analysis conducted in a research to determine realistic business goals that align with the company's current situation. The analysis aims to identify:

* Strengths

* Weaknesses

* Opportunities

* Threats

The outcome of the analysis will help decision-makers develop strategies based on the collected information.

1. Strengths

It seems like you're talking about the strength of an organization, which is identified as a goal to know what strengths an organization has in order to continue and maintain its business process. By knowing the strengths of an organization, it can be preserved and even increased as a competitive advantage.

From this research, we found that the strength of RTRW (Regional Transportation and Regional Development) planning in Kota Serang is:

The key elements of a regulatory framework that addresses common labor issues and land management. The four points highlight the importance of:

1. A regulatory framework that governs labor and land management.

2. A commitment from stakeholders to optimize the use of land and resources.

3. A commitment from officials and construction services to improve regional infrastructure.

4. A commitment to resolve land-related issues at the structural level.

Overall, the text emphasizes the need for a comprehensive regulatory framework that addresses various aspects of labor and land management, as well as commitments from stakeholders to improve the utilization of space and infrastructure.

2. Weaknesses

Based on the context, it seems that you are trying to identify the weaknesses or limitations of the Regional Traffic and Roadway (RTRW) planning in Kota Serang. Here are some potential weaknesses that may be identified:

1. **Lack of stakeholder engagement**: RTRW planning may not have involved all stakeholders, including local communities, businesses, and government agencies, which can lead to inadequate representation of their needs and concerns.

2. **Inadequate data collection**: The planning process may not have collected sufficient data on traffic patterns, road conditions, and other relevant factors, which can result in inaccurate predictions and poor decision-making.

3. **Limited consideration of environmental impact**: The RTRW planning may not have taken into account the potential environmental impacts of new roads and transportation infrastructure, such as air pollution, noise pollution, and habitat destruction.

4. **Inadequate consideration of social and economic impacts**: The planning process may not have considered the social and economic impacts of new roads and transportation infrastructure on local communities, such as displacement of residents, loss of livelihoods, and changes in land use.

5. **Insufficient budget allocation**: The planning process may not have allocated sufficient budget for the implementation of the RTRW plan, which can result in inadequate funding for critical projects and infrastructure.

6. **Lack of monitoring and evaluation**: The RTRW planning process may not have included a comprehensive monitoring and evaluation system to track progress, identify issues, and make adjustments to the plan.

7. **Inadequate consideration of alternative modes of transportation**: The planning process may not have considered alternative modes of transportation, such as public transportation, walking, and cycling, which can lead to a focus on car-centric infrastructure.

8. **Limited involvement of local experts**: The planning process may not have involved local experts and professionals who have knowledge of the local context, which can lead to a lack of understanding of local needs and constraints.

9. **Inadequate consideration of long-term sustainability**: The planning process may not have considered the long-term sustainability of the RTRW plan, including issues such as maintenance, repair, and adaptation to changing conditions.

10. **Lack of transparency and accountability**: The planning process may not have been transparent or accountable, which can lead to a lack of trust among stakeholders and a failure to achieve the intended goals.

By identifying these weaknesses, Kota Serang can take steps to address them and improve the RTRW planning process to better meet the needs of its citizens and stakeholders.

It seems like you're listing some challenges or obstacles related to urban planning and infrastructure development.

* "The regulation (Perda) or (Perwali) that governs building techniques and the environment is not yet available."

* "The infrastructure and facilities for space management and land management are not yet sufficient."

* "The performance of human resources in the field of Public Works and Urban Planning is not yet optimal."

* "The technology information system is not yet adequate."

These challenges may be hindering the effective implementation of urban planning and infrastructure development projects.

2. Opportunities

The opportunities faced by Kota Serang in planning its Regional Spatial Plan and identifying potential strategies to capitalize on these opportunities.

The two opportunities are:

1. **Strong desire from stakeholders for spatial suitability**: This means that there is a strong willingness among stakeholders to ensure that the use of space in Kota Serang is suitable and efficient. This could be an opportunity to develop more sustainable and organized urban planning, with a focus on preserving green spaces, promoting public transportation, and reducing congestion.

2. **Strong desire from the community to improve public infrastructure**: This suggests that the community is eager to see improvements in public infrastructure, such as roads, public transportation, healthcare facilities, and education institutions. This could be an opportunity to invest in upgrading existing infrastructure, building new ones, and providing better services to the community.

To capitalize on these opportunities, Kota Serang could consider the following strategies:

* Conduct a comprehensive spatial analysis to identify areas that require more efficient use of space and develop strategies to optimize land use.

* Engage with stakeholders and the community to gather feedback and input on the development of public infrastructure.

* Develop a long-term plan for upgrading public infrastructure, prioritizing areas that require the most attention.

* Explore innovative financing mechanisms and partnerships to support the development of public infrastructure.

* Consider implementing sustainable urban planning practices, such as green spaces, pedestrian-friendly areas, and public transportation systems.

By identifying these opportunities and developing strategies to capitalize on them, Kota Serang can create a more sustainable, efficient, and livable city for its residents.

3. Threats

The challenges that an organization may face in achieving its goals and sustaining its business continuity. Specifically, you've identified three threats that can be identified and mitigated:

1. **Low public awareness of the importance of spatial planning**: Many people may not understand the significance of having a well-planned spatial layout, which can lead to inefficient use of resources and potential conflicts.

2. **Public perception of complex land administration**: Some people may view the process of land administration as too complicated and time-consuming, which can lead to frustration and lack of compliance.

3. **Ineffective construction service development**: The construction industry may not be developing effectively, leading to potential issues with building quality, safety, and timely completion.

To mitigate these threats, organizations may need to take proactive steps such as:

* Conducting public awareness campaigns to educate people about the importance of spatial planning and the benefits of a well-planned layout.

* Simplifying land administration procedures to make them more accessible and efficient.

* Developing effective construction services by providing training to contractors, improving quality control, and ensuring timely completion of projects.

By identifying and addressing these threats, organizations can minimize the risks and ensure their sustainability in the long run.

4. IFAS dan EFAS analysis

Table 1
Internal Factor Analysis

No	Description	Weight	Score	Total
	Strengths			
1	The availability of regulation on general affairs and land	0,3	5	1,5
2	The availability of leaders commitment on land used	0,2	2	0,4
3	Leaders commitment and consultant of construction to improve local infrastructure	0,2	4	0,8
4	The availability of structural commitment on solving land constraints	0,3	3	0,9
	TOTAL	100%		3,6
	Weaknesses			

1	there is lack of regulation and policy on technical on buildings and land	0,3	2	0,6
2	Lack of infrastructure on land and spatial management	0,2	3	0,6
3	lack of human resource performance on general affairs and spatial management	0.3	2	0,6
4	Lack of Information technology	0,2	3	0,6
		1		2,4
	FINAL SCORE			**1,2**

The internal factors with the highest weight score are strength, with a total score of 1.5. This means that the strength of the internal factors related to the availability of regulations governing general development and land issues plays a very important role.

From the weakness side, the overall score of all factors is the same, which is 0.6. This means that all four weakness factors have equal importance. This shows that all four weakness factors have an equal contribution to the performance or outcome expected."

Table 2
Eksternal Factor Analysis

No	Description	Weight	Score	Total
	Opportunities			
1	Strong willingness from leaders on space usage suitability	0,5	3	1,5
2	Strong willingness from people to improve infrastructure	0,5	2	1`
	TOTAL	1		2,5
	Threats			
1	Low of people awareness towards land and spatial planning	0.3	3	0,9
2	People perception on land administration resolution difficulties	0,3	3	0,9

3	Lack of effectiveness construction work	0,4	4	1,6
		1		3.4
	FINAL SCORE			**0,9**

External factors using a table, specifically looking at the largest opportunity factor and the highest threat. According to the analysis, the largest opportunity factor is the strong desire of stakeholders for compatibility with the use of space, which has a total score of 1.5.

On the other hand, the highest threat is the potential ineffectiveness of construction service training, which also has a total score of 1.6. It's interesting to see how these external factors can impact the project or organization.

6. Quadrant Matrix

A quadrant matrix to determine the position of a strategic step by applying one of the four options: Progresif, Stabilitas, Diversifikasi, or Survival.

The matrix is based on the calculation of IFAS (Internal Factor Analysis Summary) and EFAS (External Factor Analysis Summary). The IFAS and EFAS scores are used to determine the position of the strategy in the quadrant.

Here's an example of how the matrix might look:

Quadrant Matrix**

High IFAS (Strengths) | Low IFAS (Weaknesses)

High EFAS (Opportunities) | Progresif (High growth potential) | Diversifikasi (Diversification to mitigate weaknesses) |

Low EFAS (Threats) | Stabilitas (Consolidation and stability) | Survival (Focus on survival and mitigation of threats) |

In this matrix:

* High IFAS (Strengths) indicates a strong internal position, while Low IFAS (Weaknesses) indicates a weak internal position.

* High EFAS (Opportunities) indicates a favorable external environment, while Low EFAS (Threats) indicates an unfavorable external environment.

* The four options for strategic steps are:

    + Progresif: Apply strengths to capitalize on opportunities.

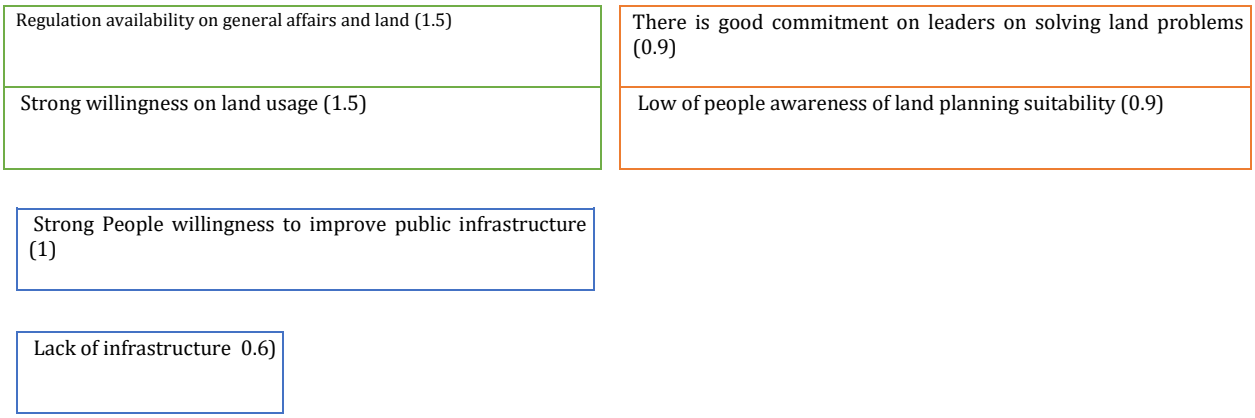
+ Stabilitas: Consolidate and stabilize the organization to mitigate threats.

+ Diversifikasi: Diversify and adapt to mitigate weaknesses and opportunities.

+ Survival: Focus on survival and mitigation of threats.

Please note that this is just an example, and the actual matrix may vary depending on your specific organization and context.

Picture 2 Quadrant Matrix



7. SWOT Analysis

Applying the SWOT analysis results to formulate a strategy using the quadrants. For those who may not be familiar, the SWOT analysis is a strategic planning technique that identifies:l

Strengths (S): internal advantages that an organization can leverage

Weaknesses (W): internal disadvantages that an organization needs to improve

Opportunities (O): external factors that can benefit an organization

Threats (T): external factors that can harm an organization

The quadrants are often used to categorize the SWOT analysis results as follows:

Quadrant 1: Strengths-Opportunities (SO): These are the best possible scenarios where an organization's strengths can be leveraged to take advantage of external opportunities.

Quadrant 2: Strengths-Threats (ST): These are situations where an organization's strengths can help mitigate or overcome external threats.

Quadrant 3: Weaknesses-Opportunities (WO): These are situations where an organization's weaknesses can be improved or addressed to take advantage of external opportunities.

Quadrant 4: Weaknesses-Threats (WT): These are the worst possible scenarios where an organization's weaknesses can be exploited by external threats.

By analyzing the SWOT matrix and identifying the strengths, weaknesses, opportunities, and threats, organizations can develop strategies to:

1. Build on strengths and opportunities (SO quadrant)

2. Mitigate weaknesses and threats (ST quadrant)

3. Improve weaknesses and capitalize on opportunities (WO quadrant)

4. Address weaknesses and avoid threats (WT quadrant)

By applying these strategies, organizations can increase their chances of success and competitiveness in their respective markets.

Table 4

SWOT Matrix Analysis

	Strengths	**Weaknesses**

	Regulation framework availability on general affairs and land	Lack of regulation and policy that arrange land and environment
SWOT Matrix	The improvement of leaders on land usage	Lack of infrastructure of spatial and land
	Good commitment of local leaders on construction services	Lack of Optimum human resource performance
	Good commitment on solving land problem	Jnavailability of information system
Opportunities	**S-O Strategy**	**W-O Strategy**
1. Willingness of leaders on land usage optimally	S,1,2,4-O,1 Strong land management comprehensively and sustainable	W,2,3,4-O,1 The implementation on land usage qualifiedly with comprehensive land system
improving public infrastructure willingness	S,3-O,2 improving public infrastructure at local level	W,1,3,4-O,2 the implementation of government building and public facility with accurate information system,
Threats	**S-T Strategy**	**W-T Strategy**

Low of People awareness towards land planning	S,2-T,1 The optimum management on spatial land based on land planning	W`,1,2,3,4-T,1 The use of Information Technology on spatial land
2. Miss perception of people on land administration obstacles	S,1,4-T,2 collaborations on land problem solutions	W,2,3,4-T,2 Effective land public service based on lan regulation
Ineffective construction management	S,3-T,3 More managing construction aspect	W,1,3,4-T,3 Improving discipline and creativity of human resources on local infrastructure

8. Strategy of SWOT Implementation

A list of strategies and their corresponding recommendations for each quadrant, specifically:

1. S-O :

(1) strengthening comprehensive and sustainable land planning and management, and (2) strengthening the realization of meeting regional infrastructure needs. The text provides a detailed breakdown of each point, highlighting the importance of a holistic approach to land planning and management, as well as meeting the infrastructure needs of a specific region or community.

2. S-T :

Optimizing Coordination with Stakeholders

* Ensure effective use of space by coordinating with stakeholders (government agencies, local communities, and private companies)

* Encourage open communication and sharing of information to prevent misunderstandings and conflicts

* Identify and address potential issues early to prevent delays or complications

Implementing Synergies among Stakeholders

* Collaborate with stakeholders to address land-related issues (land use conflicts, infrastructure development, environmental concerns)

* Encourage joint problem-solving and decision-making to find mutually beneficial solutions

* Foster trust and cooperation among stakeholders

Optimizing Construction Service Management

* Ensure construction services are managed by qualified professionals with expertise in their fields

* Provide training and development opportunities to keep professionals up-to-date

* Implement quality control measures to ensure projects meet standards and specifications

Overall, optimizing coordination, implementing synergies, and optimizing construction service management can lead to effective and efficient implementation of the spatial plan and timely resolution of land-related issues.

3. W-O :

* Space Planning

* Spatial Planning and Management

* Implementing an integrated land management system for accurate and reliable information

* Planning and designing buildings, infrastructure, and public facilities that meet community needs

* Ensuring sustainable and efficient use of resources

4. W-T :

* Spatial Planning with Information Technology to control the use of space

* Implementing effective and fast land service systems to enforce land regulations

* Increasing competition, discipline, and creativity among HR in meeting regional infrastructure needs

Conclusion

Based on the research results, it can be concluded that Kota Serang is consistent with the Serang City Spatial Planning Area Plan, which basically serves as a spatial framework in the city's

strategic planning and development programs. The strategic spatial planning model in Kota Serang was formed based on the Regulation of the Province of Banten No. 6 of 2011 on the Serang City Spatial Planning Area Plan 2010-2030, which refers to the Long-Term Development Vision of Kota Serang, namely "Being Ahead as a Center for Education, Services, and Trade, Towards SMART Kota Serang 2025". The purpose of this vision is for Kota Serang to be ahead as a center for education, services, and trade, which means being a city that has a competitive advantage compared to other cities or regencies, particularly in the fields of education, services, and trade.

The competitive advantage in education is focused on higher education and pesantren (Islamic boarding schools). The competitive advantage in services is focused on tourism, maritime (ports), government, and banking. The competitive advantage in trade is focused on regional trade (inter-regional).

Strategic planning helps organizations produce effective plans. Strategy is also related to human resources. Human resources, although the contents of the policy have been clearly communicated and consistent, if the implementors lack resources to implement it, then implementation will not be effective. These resources can take the form of human resources, such as implementor competence and financial resources.

Communication is essential for successful policy implementation. It requires implementors to know what needs to be done. Where the goal and target of the policy must be transmitted to the target group, so as to reduce implementation distortion.

The units involved in implementing the regulation on spatial planning area plan in Kota Serang have carried out their respective tasks and functions; BAPPEDA with macro planning, Dinas Tata Ruang responsible for providing recommendations and physical space permits (building construction), and related institutions (such as KOPERINDAG issuing permits).

Finally, the strategic planning of spatial planning area plan and zoning regulations in Kecamatan Serang and Kecamatan Cipocok Jaya Kota Serang Province of Banten still needs to be improved based on multi-helix collaboration and spatial land use technology (TI) information.

Suggestions

1. **Concrete planning**: The city government needs to clearly define the city's orientation for development and integrate it into spatial planning and zoning policies.
2. **Clear goals and responsibilities**: This includes specifying the objectives and responsibilities of each institution in implementing spatial planning and zoning policies, as well as establishing mechanisms for monitoring and evaluation.
3. **Masyarakat involvement**: The government should encourage public participation in the policy-making process, particularly through collaboration with community organizations and media outlets.
4. **Policy evaluation**: The government should conduct regular evaluations of the effectiveness of spatial planning and zoning policies, considering both their processes and impacts.
5. **Effective regulations**: The city should establish clear regulations for land use and zoning, utilizing technology such as Aplikasi Land on Android phones to make them more accessible and efficient.

6. **Collaboration and knowledge sharing**: The city should foster collaboration between various stakeholders, including academics, media, and community groups, to promote better understanding and implementation of spatial planning and zoning policies.
7. Festival for spatial planning and zoning regulation: The city should organize a festival or event to promote awareness and understanding of spatial planning and zoning regulations, as well as to facilitate knowledge sharing and collaboration among stakeholders.
Overall, the key takeaway is that the city of Serang needs to prioritize concrete planning, public participation, and effective regulation to ensure sustainable urban development.

References

Creswell, J. W. (2021). *Research Design : Pendekatan Metode Kualitatif, Kuantitatif, dan Campuran* (4 ed.). Yogyakarta: Pustaka Pelajar.

David, Fred R. 2014. *Manajemen Strategis*. Jakarta: Salemba Empat .

Putung, D. T., & Perdana, Y. (2019). *Konsep Dasar Rencana Detail Tata Ruang dan Peraturan Zonasi*. Jakarta: Pusat Pengembangan Sumber Daya Manusia Kementerian Agraria dan Tata Ruang/ Badan Pertanahan Nasional.

Santosa, D. P. (2020). *Penataan Ruang Melalui Pendekatan Administrasi Publik*. Malang: Inteligensia Media.

Sitorus, S. R. . (2019). *Penataan Ruang*. Bogor: IPB Press.

Wahid, Y. (2016). *Pengantar Hukum Tata Ruang*. Jakarta: Prenadamedia Group.

Waskito, & Arnowo, H. (2018). *Pertanahan, Agraria, dan Tata Ruang*. Jakarta: Kencana.

Jumiati, I. E., & Winanto, A. (2023). *Spatial Planning of Serang City Area in Realizing Food Security of Urban Communities*. *Proceedings of the 2nd International Conference for Smart Agriculture, Food, and Environment (ICSAFE 2021)*. Atlantis Press International BV. https://doi.org/10.2991/978-94-6463-090-9

PROTECTION OF PERSONAL DATA IN THE DIGITAL SPACE

Ardiana Hidayah
Law Faculty, Palembang University
dianahidayah083@gmail.com
Meylanisiam Rahmawati
Law Faculty, Palembang University
ellenmamakia1@gmail.com

Abstract

Personal data is a valuable asset that needs to be protected. Personal Data Protection is a fundamental right for every individual to control their personal data. Various sensitive information is stored on digital devices and connected to the internet which can open opportunities for misuse of personal data. Regulations for protecting the right to privacy are generally regulated in Article 28G paragraph 1 of the 1945 Constitution, that every person has the right to personal protection, the right to a sense of security and protection from threats as something that is a human right. Specifically regulated in Law Number 27 of 2022 concerning Protection of Personal Data. If there is misuse of personal data in actions that could harm the owner of the data, then there are sanctions for those who violate this provision. It is hoped that people who use digital devices when carrying out various activities in cyberspace are more concerned about maintaining the security of personal data. It is also hoped that care will be taken in wisely using personal data in the digital space.

Keywords: personal data, data protection, digital space, digital devices

1. INTRODUCTION

Protection of personal data in the digital space is a very important issue in this modern era. Personal data is information that can identify a person, in a digital context, data collected through online interactions, application use and activity on social media.

Digital era individual personal data is increasingly vulnerable to potential misuse and privacy violations. Personal data security is a human right that must be guaranteed and respected. Indonesia, as a developing country with rapid technology adoption, has a responsibility to protect personal data as a privacy right.

The right to privacy is one of the rights inherent in every person. The right to privacy is the dignity of every person that must be protected. Personal data is data relating to a person's characteristics, name, age, gender, education, occupation, address and position in the family. The reason the right to privacy must be protected is, first, in building relationships with other people, a person must cover part of his personal life so that he can maintain his position at a certain level. Second, a person in his life needs time to be alone so privacy is really needed by someone. Third, privacy is a right that stands alone and does not depend on other rights, but this right will be lost if the person publishes personal things to the public . Fourth, privacy also includes a person's right to have domestic relations, including how a person builds a marriage, builds a family and other people must not know about these personal relationships, so Warren calls it the right against the word. Fifth, another reason why privacy deserves legal protection is because the losses suffered are difficult to assess. The loss is felt to be much greater than the physical loss, because it has disrupted his personal life, so that if there is loss suffered then the victim must receive compensation.[1]

2. DISCUSSION

[1] Jonathan Elkana Soritua Aruan. (2024). "Perlindungan Data Pribadi Ditinjau Dari Teori Perlindungan Hukum dan Teori Perlindungan Atas Privasi. . Personal Data Protection Reviewed from Legal Protection Theory and Right to Privacy Protection Theory," *Jurnal Globalisasi Hukum* Vol.1 No.1 April, p. 1-22 https://e-journal.trisakti.ac.id/index.php/globalisasihukum/issue/view/1187, DOI: https://doi.org/xxxxxx

Indonesia is a rule of law state based on Article 1 Paragraph (3) of the 1945 Constitution, the assertion that the rule of law does not refer to mere power but to the rule of law. In order to realize the nation's ideals, the Indonesian state must adhere to the principles of the rule of law. This is for the sake of guaranteeing national development and establishing regulations based on norms and laws.

The principle of the right to privacy regarding personal data aims to protect human rights and individual dignity, as well as to ensure that personal data is used ethically and honestly. Every individual can choose to privacy their data or share it, this freedom is protected by the laws in force in Indonesia. [2]

The interpretation of the existence of the rule of law is that the constitution is the basis of the state. It is known that the Indonesian state adheres to the understanding of constitutionalism by implementing one of the elements of constitutionalism, namely the fulfillment of human rights. Referring to the state constitution, it has regulated various constitutional rights of citizens, one of which is regarding the protection of personal data. [3]

Based on Article 28G Paragraph (3) of the 1945 Constitution, it states that "Every person has the right to protection of himself, his family, honor, dignity and property under his control, and has the right to a sense of security and protection from the threat of fear of doing or not doing something. which is a human right." This shows that the state must be responsible for protecting personal data as a constitutional right of citizens.

The value of personal data as a personal right consists of a number of important meanings, namely: a) personal rights are the right to enjoy personal life and freedom regardless of all distractions; b) personal rights are the right to socialize with other individuals without silent observation; c) personal rights are the right to monitor access to information related to personal life and individual information. [4]

Protection of privacy and data privacy cannot be separated from the existence of law as a tool to protect individual constitutional rights. The legal scope of personal data protection is very broad, starting from types, principles, rights and obligations of subjects, obligations of data controllers and data processors, data transmission across borders of other countries, sovereignty, data protection officers, data protection authorities, as well as how to resolve disputes and sanctions for violators of the law.

In particular, personal data protection is regulated in Law Number 27 of 2022 concerning Personal Data Protection, several important aspects are often emphasized. Here are some of the main aspects regulated by law: [5]

2. 1. Collection and use of personal data:

Personal data protection laws regulate how personal data may be collected, processed and used by certain entities or organizations. This includes seeking permission or consent from individuals before the collection and use of their personal data.

2. 2. Individual rights:

This law gives individuals the right to access, correct, delete, or limit the use of their personal data collected by certain entities or organizations. Individuals also have the right to know the purposes for which data is used, to object to the processing of their personal data for certain purposes and to file a complaint in the event of a violation of the protection of their personal data.

2.3. Data security:

Personal data protection laws require entities or organizations that collect and process personal data to protect that data from unauthorized access, leakage or unauthorized use. Technical and organizational security measures must be taken to prevent data breaches and leaks of personal information.

2.4. Cross-border data transmission:

[2] Kadek Rima Anggen Suari and I Made Sarjana, (2023). "Menjaga Privasi di Era Digital: Perlindungan Data Pribadi di Indonesia," Jurnal Analisis Hukum (JAH): Vol. 6 No. 1 April, p.132-146

[3] Imam Gunawan. (2024). "Upaya Preventif dan Represif dalam Penanggulangan Kebocoran Data Pada Penyelenggaraan Pinjaman Online," *Officrum Notarium*, p. 25-49, https://doi.org/10.20885/JON.vol4.iss1.art3

[4] M. Jefri Maruli Tacino. (2020). "Perlindungan Hukum Terhadap Hak Pribadi Seseorang Di Media Sosial Menurut Undang Undang Nomor 19 Tahun 2016 Tentang Informasi Dan Transaksi Elektronik," Dinamika: Jurnal Ilmiah Ilmu Hukum, no. 26, p. 174–84.

[5] "Aspek Hukum Dalam Undang-Undang Perlindungan Data Pribadi. (2023). https://siplawfirm.id/aspek-hukum-dalam-undang-undang-perlindungan-data-pribadi/

If personal data is transferred to another country, personal data protection laws often establish special requirements to ensure that the recipient country has an appropriate level of data protection. Some laws may require special agreements or additional mechanisms such as privacy provisions or individual consent to protect transmitted data.

2.5. Sanctions and responsibilities:

Personal data protection laws generally provide sanctions and penalties for entities or organizations that violate the provisions of the law. This could involve significant financial penalties or other legal consequences. In addition, laws often establish the responsibility of an entity or organization to ensure compliance with personal data protection.

Safeguarding personal data in the digital space can be done as follows: [6] (a) Use difficult social media passwords and change them regularly; (b) Use different passwords for each social media account so that when one account is hacked, the other accounts are not easily hacked too; (c) Do not display personal information on social media to avoid misuse of data by irresponsible parties; (d) Pay attention to the URL addresses of email attachments and the sites you visit so you don't enter fake sites that want to steal personal data; (e) Pay attention to the access permissions requested by the application when you want to install a new application by avoiding access to data that is not needed in the application; (f) Set the privacy settings on the social media accounts that we use to determine who can access our profiles and posts; (g) Be careful not to share personal information when using public connections as they are prone to hacking.

With increased awareness and implementation of good personal data protection practices, the risk of data breaches can be minimized, providing individuals with a sense of security when interacting in the digital space.

3. CONCLUSION

Protection of privacy rights and individual personal data in the digital space has become part of the state's constitutional obligations which have been regulated in Article 28G paragraph (1) of the 1945 Constitution of the Republic of Indonesia, specifically the protection of personal data is regulated in Law Number 27 of 2022 concerning Personal Data Protection. This protection cannot be separated from the existence of law as a tool to protect the constitutional rights of every human being. Furthermore, the presence of personal data is a manifestation of the existence of strategic assets with high economic value, making it vulnerable to cases of misuse of personal data which has the potential to violate the integrity of privacy in the digital space.

4. ACKNOWLEDGEMENTS

This protection cannot be separated from the existence of law as a tool to protect the constitutional rights of every human being. Furthermore, the presence of personal data is a manifestation of the existence of strategic assets with high economic value, making it vulnerable to cases of misuse of personal data which has the potential to violate the integrity of privacy in the digital space. This article was written independently for the purposes of an international seminar organized by Palembang University.

[6] Pentingnya Menjaga Keamanan Data Pribadi Di Era Digital. (2023). https://sumut.kemenkumham.go.id/berita-kanwil/berita-utama/pentingnya-menjaga-keamanan-data-pribadi-di-era-digital-yuk-simak-bagaimana-caranya

REFERENCES

Aspek Hukum Dalam Undang-Undang Perlindungan Data Pribadi. (2023). https://siplawfirm.id/aspek-hukum-dalam-undang-undang-perlindungan-data-pribadi/

Imam Gunawan. (2024), "Upaya Preventif dan Represif dalam Penanggulangan Kebocoran Data Pada Penyelenggaraan Pinjaman Online," *Officium Notarium*, p. 25-49, https://doi.org/10.20885/JON.vol4.iss1.art3

Jonathan Elkana Soritua Aruan. (2024). "Perlindungan Data Pribadi Ditinjau Dari Teori Perlindungan Hukum dan Teori Perlindungan Atas Privasi, Personal Data Protection Reviewed from Legal Protection Theory and Right to Privacy Protection Theory," *Jurnal Globalisasi Hukum* vol.1 no.1 April, p. 1-22

Kadek Rima Anggen Suari and I Made Sarjana. (2023). "Menjaga Privasi di Era Digital: Perlindungan Data Pribadi di Indonesia," *Jurnal Analisis Hukum* (JAH), Vol. 6 No. 1 April, p.132-146

M. Jefri Maruli Tacino. (2020). "Perlindungan Hukum Terhadap Hak Pribadi Seseorang Di Media Sosial Menurut Undang Undang Nomor 19 Tahun 2016 Tentang Informasi Dan Transaksi Elektronik," *Dinamika: Jurnal Ilmiah Ilmu Hukum*, no. 26, p. 174–84.

Pentingnya Menjaga Keamanan Data Pribadi Di Era Digital. (2023). https://sumut.kemenkumham.go.id/berita-kanwil/berita-utama/pentingnya-menjaga-keamanan-data-pribadi-di-era-digital-yuk-simak-bagaimana-caranya

Biodata

The first author is a lecturer at the Faculty of Law, University of Palembang, while the second author is a student at the Faculty of Law, University of Palembang

WORKER RIGHTS AND PROTECTION ACCORDING TO LAW NO. 13 OF 2003 ABOUT EMPLOYMENT

Asuan, SH., M. Hum

Palembang University

asuan.okay@gmail.com

Abstract

This research is a type of normative legal research or library legal research which is research into legal systematics. Primary legal materials include statutory regulations, namely: the Civil Code, Law no. 13 of 2003 concerning Employment and laws and regulations related to the problem. Secondary legal materials, namely discussing primary legal materials including scientific works, research results and articles related to research topics. Tertiary legal materials are legal materials that support primary and secondary legal materials consisting of dictionaries, encyclopedias, and others. The legal material is prepared systematically and a conclusion is drawn regarding the problem. The discussion concludes: A work agreement is an agreement between a worker/laborer and an entrepreneur/employer which contains the work conditions, rights and obligations of the parties as regulated in chapter IX concerning Employment Relations (article 51 and article 52 of Law No. 13 of 2003 About Employment). Work protection rights for workers, namely occupational safety and health (article 86), wages (article 88) and welfare rights, namely social security for workers in the form of BPJS health, BPJS employment (article 99 of the Employment Law) and welfare of workers/their families (articles 100 and 101 UUK)

Keywords : workers' protection rights, workers, laborers, entrepreneur, employer

1. INTRODUCTION

Employment development as an integral part of national development based on Pancasila and the 1945 Constitution of the Republic of Indonesia, is carried out in the context of developing Indonesian people as a whole and developing Indonesian society as a whole to increase the

honor, dignity and self-esteem of the workforce and create a prosperous, just society. , prosperous and equitable, both materially and spiritually.

Employment development must be regulated in such a way that basic rights and protection are met for workers and workers/laborers and at the same time can create conditions that are conducive to the development of the business world.

In connection with this provision, the government has an obligation to ensure the welfare of the community, one of which is by providing employment opportunities and developing the workforce. This direction of development is also manifested in legal policies in the field of employment, namely developing employment in a comprehensive and integrated manner which is directed at increasing the competence and independence of the workforce, increasing wages, guaranteeing welfare, protecting work and freedom of association. The labor factor as a human resource in national development, especially in the economic sector, isone of the important components as an actor in national development.[7]

The aim of government intervention in employment is to realize fair employment by providing rights for workers as complete human beings, therefore they must be protected regarding safety, health, decent wages, apart from that the government must also pay attention to the interests of employers. The government's influence in the employment sector is manifested by Law Number 13 of 2003 concerning Employment.

Employment is a problem related to the relationship between workers and employers which is subordinate in nature so that it often gives rise to the perception that workers are the weak party therefore the role of the government is needed to protect workers so that they can realize their rights and obligations. The implementation of work within the employment relationship between employers and workers requires legal protection to provide protection and legal certainty for both parties regarding problems that arise during the implementation of work. One form of legal protection and certainty for both parties is through the existence of a work agreement regulated in Law Number 13 of 2003. This work agreement is The beginning of the creation of this employment relationship must be made based on the

[7]Abdul Khakim, *Dasar-DasarHukum Ketenagakerjaan Indonesia*, Cetakan Pertama, Edisi III. Bandung : Citra Aditya Bakti, 2003, hal. 27

principles of an employment agreement. This work agreement is used as a means of realizing the rights and obligations of employers and workers which must be obeyed and implemented properly in order to provide benefits for both parties, to create a sense of justice and create prosperity for all parties.[8] The work agreement is intended for protection at work, especially in the aspect of work norms.

Labor protection is divided into 3 (three) types :

1. Economic protection, namely protection of workers in the form of sufficient income, including if workers are unable to work against their will.
2. Social Protection, namely labor protection in the form of occupational health insurance, and freedom of association and protection of the right to organize.
3. Technical Protection, namely worker protection in the form of work safety and security.[9]

From the description above, a problem can be drawn, namely how to form a work agreement and the rights and protection of workers according to Law no. 13 of 2003 concerning Employment. In normative legal research or doctrinal legal research (perscriptive, not descriptive). Research sources in the form of primary legal materials are binding legal materials such as statutory regulations (Law Number 13 of 2003 concerning Employment, Civil Code) and statutory regulations. Non-binding secondary legal materials such as the results/thoughts of legal experts as well as tertiary legal materials (law dictionaries, encyclopedias, and so on).

2. DISCUSSION

2.1. **Employment Agreement According to Law no. 13 of 2003 concerning Employment**

A work agreement is a derivative of agreements in general, where each agreement has special characteristics that differentiate it from other agreements. However, all types of agreements have general provisions which are universally shared by all types of agreements,

[8]Heru Suyanto, Andriyanto Adhi, *Perlindungan Hukum Hak – hak Pekerjaberdasarkan Asas Keadilan,* Jurnal Universitas Pembangunan Nasional – Vol 1 , Jakarta, 2016, hal. 1

[9]*Op. Cit,* Abdul Khakim, hal. 61.

namely regarding legal principles, validity of the agreement, subject and object of the agreement. The provisions and conditions in the agreement made by the parties contain the rights and obligations of the parties. each party must fulfill. In this case, the principle of "freedom of contract" is stated, namely to what extent the parties can enter into an agreement, what relationships occur between them in that agreement and to what extent the law regulates the relationship between the parties.[10]

Work agreements are specifically regulated in CHAPTER VII of the KUHCivil law regarding agreements to carry out work. According to Article 1601 letter a of the Civil Code, what is meant by a work agreement is, "An agreement in which one party, the worker, binds himself to work for another party, the employer, for a certain time, by receiving wages." Furthermore, in Article 1 number 14 of the Manpower Law, a work agreement is an agreement between a worker or laborer and an entrepreneur or employer which contains work conditions, rights and obligations of the parties.

A work agreement must fulfill the following elements :

a. There is work

Work is an achievement that must be carried out by the recipient of the work himself, and cannot be transferred to another party (individual in nature). Which work, namely that which is carried out by the worker himself, must be based on and guided by the employment agreement.

b. There is an element of command

That in carrying out the work carried out as a manifestation of the existence of the agreement, the worker must submit to the orders of another person, namely the employer and must submit to and be under the orders of another person, namely the superior. The

[10]Sentosa Sembiring, *Himpunan Peraturan Perundang-undangan Republik Indonesia Tentang Ketenagakerjaan*, CV Nuansa Aulia, Bandung, 2005, hal. 17

existence of these provisions shows that the worker in carrying out his work is under the authority of his superior.

c. There are wages

Wages are compensation for work carried out by the recipient of the work, which can be in the form of money or non-money (in kind). This wage can be seen from a nominal perspective (the amount received by the worker), or from a real perspective (the use of the wage) in order to meet the worker's living needs. The wage system is usually based on time or results of work, which in principle refers to the law, provisions of applicable laws and regulations, or customs existing in society.

d. There is a time period

That in carrying out the employment relationship, it must be carried out in accordance with the time specified in the employment agreement or statutory regulations.[11]

Confirmation that the existence of an employment relationship arises from a work agreement between the employer and the employee is in Article 1 point 15 of Law Number 13 of 2003 concerning employment which states that the employment relationship is a relationship between the entrepreneur and the worker/laborer based on a work agreement which has elements of employment, wages, and orders.[12]

The implementation of the employment agreement, in addition to having to be in accordance with the contents of the employment agreement, is in accordance with the time specified in the employment agreement or company regulations. Likewise, the

[11]Handri Raharjo, *Hukum Perjanjian di Indonesia*, Pustaka Yustitia, Yogyakarta, 2009, hal. 41.

[12]Lalu Husni, *Pengantar Hukum Ketenagakerjaan, Edisi Revisi*, Jakarta, 2019, hal. 61.

implementation of work must not conflict with statutory provisions, local customs and public order.

Regarding the form of employment agreement, it is regulated in CHAPTER IX Concerning Employment Relations Law no. 13 of 2003 concerning Manpower in Article 51 paragraph (1) states that work agreements are made in writing or verbally, and Paragraph 2 states that work agreements that are required to be in writing are carried out in accordance with applicable laws and regulations. The conditions for the validity of a work agreement are regulated by Article 52 Paragraph (1) which determines that the work agreement is made on the basis of :

a. Both side agreement;
b. Ability or skills to carry out legal actions;
c. There is work that has been agreed upon; and
d. The work agreed upon does not conflict with public order, morality and applicable laws and regulations.[13]

If the conditions in points a and b are not fulfilled in making a work agreement, then the work agreement that has been made can be cancelled, whereas if points c and d are not fulfilled, then the work agreement made will be null and void.

Article 54 Paragraph (1) of the Manpower Law determines that employment agreements made in writing must at least contain :

1. Name, company address and type of business;
2. Name, gender, age and address of the worker or laborer;
3. Position or type of work;
4. Place of work;
5. Amount of wages and method of payment;
6. Working conditions which contain the rights and obligations of the entrepreneurand workers/laborers;
7. Start and term of validity of the employment agreement;
8. Place and date of employment agreement;
9. Signatures of the parties in the employment agreement.

The Employment Law qualifies work agreements into two, namely :

[13]Op. Cit, Sentosa Sembiring, hal. 37

1. A certain time work agreement (PKWT) is a work agreement between a worker or laborer and an entrepreneur to enter into a work relationship for a certain time or for a certain job (Article 56 paragraph (2) UUK). Apart from that, a certain time work agreement (PKWT) is only can be made for certain work which, according to the type and nature or activity of the work, will be completed within a certain time, namely:
   a. Work that is completed once or is temporary in nature;
   b. Work that is estimated to be completed within a short period of time and a maximum of 3 (three) years;
   c. Seasonal work; or
   d. Work related to new products, new activities or additional products that are still under trial or exploration.

2. PKWTT is a work agreement between a worker or laborer and an entrepreneur to establish a permanent work relationship (Article 1 Number 2 of the Decree of the Minister of Manpower and Transmigration Number KEP.100/MEN/VI/2004 concerning Provisions for Implementing a Certain Time Work Agreement). As stated in Article 63 of the UUK, it states :
   1. If the work agreement for an indefinite period of time is made verbally, the entrepreneur is obliged to make a letter of appointment for the worker/laborer concerned.
   2. The letter of appointment as intended in paragraph (1), at least contains the following information :
      a. Name and address of worker/laborer;
      b. Date started work;
      c. Type of work; And
      d. The amount of wages.

An Indefinite Time Work Agreement (PKWTT) can be made in writing or orally and is not required to obtain approval from the employment agency.[14]

[14]Suwarto, *Hubungan Industrial dalam Praktek*, Penerbit Asosiasi Hubungan Industrial Indonesia (AHII), Jakarta, 2003, hal. 48.

2. 2. Workers' rights and protection in employment relations

Legal protection is to provide protection for human rights (HAM) that are harmed by other people and this protection is given to the community so that they can enjoy all the rights granted by law. Law can be used to create protection that is not only adaptive and flexible, but also predictive and anticipatory. Law is needed for those who are weak and not yet strong socially, economically and politically to obtain social justice.[15]

Worker protection can be carried out either by providing guidance or by increasing recognition of workers' basic rights, physical and technical as well as social and economic protection through norms that apply in the work environment. The following are forms of legal protection based on work environment norms :

a. Work safety norms relate to equipment, materials and work processes, conditions of the place, environment, and ways of doing work.
b. Occupational health norms and company hygiene include; maintaining and improving the health status of workers, carried out by administering medicines, caring for sick workers.
c. Work norms which include; protection for workers related to working time, wage systems, rest, leave, women's work, children, morality, worship according to their respective beliefs recognized by the government, social obligations to society and so on in order to maintain enthusiasm and work morale which guarantees high work efficiency. and maintaining treatment in accordance with human dignity and morals.[16]

According to Heru Suyanto, worker protection is as follows :

a. Economic protection, namely protection of workers in the form of sufficient income, including if workers are unable to work against their will.
b. Social protection, namely labor protection in the form of occupational health insurance, and freedom of association and protection of the right to organize.
c. Technical protection is worker protection in the form of work safety and security.[17]

---

[15]SatijiptoRaharjo,*IlmuHukum*,PT.CitraAdityaBakti, Bandung, 2000,hal. 53.
[16]. ZaenalAsyikin,dkk, *Dasar – Dasar Hukum Perburuhan*,RajaGrafindo Persada, Jakarta, 2008,hal. 95

[17]Op. Cit, Heru Suyanto, hal. 1

Worker protection is the basic rights of workers and guarantees equality, opportunity and non-discriminatory treatment to achieve the welfare of workers and their families, taking into account the progress of the business world and interests businessman. Law Number 13 of 2003 concerning Employment is the basis for protective legislation for workers.[18]

One of the objectives of employment development is to provide protection to workers or laborers in realizing welfare, namely as regulated in Article 4 letter c of the Employment Law and mentioned in CHAPTER X Protection, Wages and Welfare.

Protection of occupational safety and health is one of the rights of workers. Article 86 paragraph (1), paragraph (2), paragraph (3) of the Manpower Law states that protection as intended in paragraph (1) and paragraph (2) is carried out in accordance with regulations. current regulation :

a. Remuneration

Wages are one source of income for workers in fulfilling a decent life, the right to wages arises from an employment agreement, and is one of the rights in an employment relationship. These constitutional rights are protected in Article 27 paragraph (2) of the 1945 Constitution. These constitutional rights are further regulated in Law no. 13 of 2013 concerning Employment and its implementing regulations, namely Presidential Regulation no. 78 of 2015 concerning Wages. The definition of wages according to Article 1 paragraph (30) of Law no. 13 of 2003 concerning Employment, Wages are the rights of workers/laborers which are received and expressed in the form of money as compensation from entrepreneurs or employers to workers/laborers which are determined and paid according to a work agreement, agreement or statutory regulations, including allowances for workers /workers and their families for work and/or services that have been or will beperformed.

Article 88 of the Manpower Law states that :

Paragraph 1: Every worker has the right to earn an income that fulfills a decent living for humanity;

Paragraph 2: To realize income that fulfills a decent living for humanity as intended in paragraph (1), the government establishes a wage policy that protects workers/laborers;

[18]*Op. Cit*, Asikin Zainal, hal. 97

Paragraph 3: Wage policies that protect workers/laborers as intended in paragraph (2) include :

a. Minimum wage;
b. Overtime pay;
c. Wages for not coming to work due to absence;
d. Wages not coming to work due to carrying out other activities outside of work;
e. Wages for exercising the right to rest time;
f. Form and method of payment of wages;
g. Fines and wage deductions;
h. Things that can be taken into account with wages;
i. Proportional wage structure and scale;
j. Wages for severance pay; And
k. Wages for income tax calculation.

Paragraph 4: states that the Government determines the minimum wage as referred to in paragraph (3) letter a based on the needs for a decent living and taking into account productivity and economic growth.

Implementation of wages for workers as stated in article 89 of the Manpower Law is as follows :

1. The minimum wage as intended in Article 88 paragraph (3) letter a may consist of:

   a. Minimum wage based on province or district/city;
   b. Minimum wages based on sectors in provincial or district/city areas;

2. The minimum wage as intended in paragraph (1) is directed towards achieving the needs of a decent living.

3. The minimum wage as intended in paragraph (1) is determined by the Governor taking into account recommendations from the Provincial Wage Council and/or Regent/Mayor.

4. The components and implementation of the stages of achieving decent living needs as referred to in paragraph (2) are regulated by Ministerial Decree.

Regarding the implementation of the wage scale structure, it is regulated in the Minister of Manpower Regulation No. 1 of 2017 concerning Wage Scale Structure, the wage structure and scale is the arrangement of wage levels from the lowest to the highest or from the highest to the lowest which contains the range of nominal wage values from smallest to largest for each position group. Regarding class, position, length of service, education and competence

Article 92 of Law 13/2003 concerning employment, states that the preparation of wage structures and scales is intended as a guideline for determining wages so that there is certainty in

wages for each worker/laborer and to reduce the gap between the lowest and highest wages in the company concerned.[19]

b. Social Security for Workers

Social Security for Workers in Law no. 24 of 2011 concerning Social Security Administering Bodies (BPJS), there are 2, namely: BPJS Health and BPJS Employment, the explanation is as follows:

1**). BPJS Health**

BPJS Health or commonly called health insurance, according to Law no. 40 of 2004 concerning the National Social Security System (SJSN), health insurance aims to ensure that participants receive health care benefits and protection in meeting basic health needs. The definition of social security is explained in Presidential Regulation no. 19 of 2016 concerning the Second Amendment to Presidential RegulationsNumber 13 of 2013 concerning Health Insurance. Article 1 paragraph (4) PP No. 19/2016 concerning Health Insurance, what is meant by Health Insurance Participants is, Every person, including foreigners who work for a minimum of 6 (six) months in Indonesia, is obliged to become a Social Security program participant.

Health insurance for employees is explained in PP No. 19 of 2016 concerning Health Insurance, Article 1 paragraph (7) contains the definition of a wage-receiving worker as anyone who works for an employer and receives a salary or wages, in article 4 paragraph (1) letter a , states that health insurance is intended for workers who receive wages and their families, then in Article 5 it states that, workers who receive wages and their family members as intended in Article 4 paragraph (1) letter a include workers who receive wages, legal wives/husbands, children biological, stepchildren from a legal marriage, and legally adopted children, a maximum of 5 (five) people.

Article 16 C paragraph (2), that, health insurance contributions for wage-earning worker participants, will be paid starting July 1 2015 at 5% (five percent) of the monthly salary or wages provided that 4% (four percent) is paid by the employer. and 1% (one percent) paid by the participant. The benefits of BPJS Health are explained in

[19]TriJataAyuPramesti, *StrukturSkalaUpah*, RinekaCipta, Jakarta, 2005, hal.51

Article 20 PP 19/2016 concerning social security, that, Every Participant has the right to obtain health insurance benefits in the form of individual health services, including promotive, preventive, curative and rehabilitative services including drug services and consumable medical materials in accordance with with necessary medical needs. Both medical and non-medical benefits (*Article 20-26 PP 19/2016 concerning Health Insurance).*

2).BPJS of Employment

BPJS Employment in Law no. 40 of 2004 concerning SJSN, divided into 4 (four) forms, namely; job security, pension security, old age security and death security. The explanation will be explained as follows:

1. **Guarantee of work safety**

According to Government Regulation no. 44 of 2015 concerning the Implementation of Work Accident Insurance and Death Benefit Programs, Work Accident Insurance is a benefit in the form of cash and/or health services provided when participants experience a work accident or illness caused by the work environment. Meanwhile, work accident insurance aims to ensure that participants receive health service benefits and cash compensation if a worker experiences a work accident or suffers from an occupational disease.

2. Pension guarantee

Pension guarantees are regulated in Government Regulation no. 45 of 2015 concerning the Pension Security Program, what is meant by pension security is social security which aims tomaintain a decent standard of living for participants and/or their heirs by providing income after the participant reaches retirement age, experiences permanent total disability, or dies. UU no. 40 of 2004 concerning SJSN explains that, Pension guarantees are provided to maintain a decent standard of living when participants lose or reduce their income due to entering retirement age or experiencing permanent total disability.

Retirement age limit in PP No. 45 in 2015 is 56 (fifty six) years. and starting January 1 2019, the retirement age will be 57 (fifty seven) years. The retirement age increases

by 1 (one) year for every 3 (three) years until reaching the retirement age of 65 (sixty five) years.

3**. Old age security (JHT)**

Old age security (JHT) is regulated in PP no. 46 of 2015 concerning Old Age Security, what is meant by old age security is a cash benefit that is paid at once when the participant reaches retirement age, dies, or experiences permanent total disability.

4. Death guarantee

Death guarantee is contained in PP no. 44 of 2015 concerning the Implementation of Work Accident Insurance and Death Insurance Programs. Death Benefit, hereinafter abbreviated as JKM, is a cash benefit given to the heirs when the participant dies not as a result of a work accident. JKM benefits are paid to the participant's heirs, if the participant dies during the active period, consisting of: Children's education scholarships are given to each participant who dies not as a result of a work accident and has had a contribution period of at least 5 (five) years.

3. Worker welfare

. Welfare is a manifestation of the fulfillment of normative or basic rights and obligations for workers/laborers. Welfare regulations are contained in articles 99, article 100 and article 101 of Law no. 13 of 2003 concerning Employment in Chapter X, the third part is regarding welfare.[20]

Regarding the provision of welfare facilities as regulated in Article 100 of the Employment Law, namely:

1. To improve welfare for workers/laborers and their families, employers are obliged to provide welfare facilities;

[20]ZaeniAsyhadie,*HukumKerjaHukumKetenagakerjaanBidangHubunganKerja*,RajaGrafindo,Jakarta,2008, hlm. 19-20.

2. Provision of welfare facilities as intended in paragraph (1), is carried out by taking into account the needs of workers/laborers and the size of the company's capabilities;

3. Provisions regarding the types and criteria of welfare facilities in accordance with the needs of workers/laborers and the size of the company's capabilities as intended in paragraph (1) and paragraph (2), are regulated by Government Regulations."

Discussing the provisions on types and criteria for welfare facilities, it is explained further in the explanation section of articles 100 and 101 of the Manpower Law that types of welfare facilities include:

1. Family planning services;
2. Daycare;
3. Housing for workers/laborers;
4. Worship facilities;
5. Sports facilities;
6. Canteen facilities;
7. Health facilities;
8. Recreational facilities; And
9. Cooperative.

Article 101 paragraph 1 of the Manpower Law explains that in order to improve the welfare of workers/laborers, apart from the formation of cooperatives, other businesses are also formed.

The welfare facilities referred to in the Employment Law focus on providing additional services in the workplace or in the employment relationship. Implementation of welfare is further regulated in company regulations and/or collective work agreements.

3.CONCLUSION

1. A work agreement is an agreement between a worker/laborer and an entrepreneur or employer which contains the work conditions, rights and obligations of the parties as

regulated in chapter IX concerning Employment Relations (article 51 and article 52 of Law No. 13 of 2003 concerning Employment).

2. Job protection rights for workers, namely occupational safety and health (article 86), wages (article 88) and welfare rights, namely social security for workers in the form of BPJS health, BPJS employment (article 99 of the Employment Law) and the welfare of workers and their families (article 100 and 101 of the Employment Law)

A. Suggestions

1. It is recommended that workers/laborers comply with the rules in the work agreement which is made based on the agreement of the parties (worker and entrepreneur/employer)
2. It is recommended that employers/employers provide worker protection and rights in accordance with work agreements and applicable laws. The government provides supervision over the functioning of employment relations

4. ACKNOWLEDMENT

I really created this scientific work and can be responsible for the authenticity of the scientific work, the scientific work has been given an international seminar and thanks to the committee of the International Conference on Agriculture, Engineering, Social Science and Education (ICAESSE) Palembang University. On June 11, 2024

REFERENCES

Abdul Khakim, Basics of Indonesian Employment Law, First Printing, Edition III. Bandung: Citra Aditya Bakti, 2003

Asikin Zainal, et al, Basics of Labor Law, Cetke-4, RajaGrafindo Persada, Jakarta, 2002.

Handri Raharjo, Contract Law in Indonesia, Pustaka Yustitia, Yogyakarta, 2009.

Lalu Husni, Introduction to Employment Law, Revised Edition, Jakarta, 2019.

TriJataAyuPramesti, Wage Scale Structure, RinekaCipta, Jakarta, 2005

SatijiptoRaharjo, Legal Sciences, PT. CitraAdityaBakti, Bandung, 2000

Sentosa Sembiring, Collection of Legislative Regulations of the Republic of Indonesia Concerning Employment, CV Nuansa Aulia, Bandung, 2005.

Suwarto, Industrial Relations in Practice, Publisher of the Indonesian Industrial Relations Association (AHII), Jakarta, 2003.

Zaenal Asyikin, et al, Basics of Labor Law, RajaGrafindo Persada, Jakarta, 2008.

Journal :

Heru Suyanto, Andriyanto Adhi, Legal Protection of Workers' Rights based on the Principle of Justice, National Development University Journal – Vol 1, Jakarta, 201

Legislation :

1. The 1945 Constitution of the Republic of Indonesia

2. Law Number 13 of 2003 concerning Employment

3. Law no. 40 of 2004 concerning the National Social Security System (SJSN)

4. Law no. 24 of 2011 concerning the Social Security Administering Agency (BPJS)

5. Civil Code (KUHP)

6. Presidential Regulation Number 13 of 2013 concerning Health Insurance

7. Presidential Regulation No. 19 of 2016 concerning Second Amendment to Presidential Regulation No. 13 of 2013 concerning Health Insurance

8. Decree of the Minister of Manpower and Transmigration Number KEP.100/MEN/VI/2004 concerning Provisions for Implementing Specific Time Work Agreements

9. Minister of Manpower Regulation No. 1 of 2017 concerning Wage Scale Structure

BIODATA :

Asuan is a lecturer Faculty of Law University of Palembang, His major interest in law. Email. Asuan.okay@gmail.com

LEGAL PROTECTION OF FREEDOM OF OPINION THROUGH SOCIAL MEDIA VIEWED FROM A LEGAL PERSPECTIVE

Evi Purnamawati

Lecturer at the Faculty of Law, Palembang University

evipurnamawatiplg@gmail.com

Abstract

This research is based on the basic rights of human rights, namely the right to freedom of opinion. Preventive legal protection, namely the existence of the 1945 NRI Constitution, Law No. 9 of 1998, Law No. 39 of 1999. The arrival of the Reformation era approaching the millennium seems to be a "good day" for the further development of democratization in Indonesia. The development of information technology, especially internet technology, is experiencing very rapid growth. Along with this progress, new alternative media based on Information Technology have also emerged. The media supports the realization of the democratization process, especially in terms of conveying opinions and aspirations. The problem that will be studied is how legal protection is for the regulation of expressing opinions in public according to Law No. 9 of 1998. The research results according to the Law only contain obligations that must be fulfilled by social media users and tend to be restrictive because their rights are not clearly stated. owned on social media. Then we need people who have appropriate expertise in their fields to develop policies for running a country's government. The right to freedom of expression in public has been guaranteed and protected by international covenants and is a right guaranteed and protected by the 1945 Constitution of the Republic of Indonesia.

Keywords: Legal Protection, Freedom of Opinion, Social Media, Information

1. INTRODUCTION

The presence of such sophisticated information technology has provided a new nuance by touching almost all aspects of life. Technology has made it easier for people to carry out daily activities to fulfill their needs, as well as making it easier to interact between people wherever they are. This certainly has a relatively large positive impact on improving human welfare. However, technological developments do not only have a positive impact, because this technology has also been used to commit crimes. Technological developments have made it easier for crimes to be committed, making them more common, where the modus operandi is also becoming more sophisticated, making it increasingly difficult to control.

Freedom of opinion is often discussed recently, post-reformation, as if it has brought a breath of fresh air for people to express their thoughts and ideas, and even criticize the government. Freedom of opinion has its own place in the process of democracy and reform that is currently underway in Indonesia.

One of the characteristics of a democratic country is that by guaranteeing the protection of freedom of opinion, it is appropriate for the government, in this case, to be the holder of executive rights and the House of Representatives as the bearer of the people's mandate. encourage and strive for respect for freedom of opinion. A country considered to be truly democratic must be prepared to provide substantial protection for media ideas [Krishna Harahap, Human Rights and Enforcement Efforts in Indonesia. (Bandung: Graffiti, 2003),].

Crime can arise due to several factors, namely internal factors which are divided into two, namely: Specific internal factors which include a person's psychology General internal factors which are categorized into several types, namely age, gender, position in society, education and entertainment. Apart from internal factors, there are also external factors that influence those that are related to the emergence of crime, namely: Economic factors, supported by free competition which stimulates consumer interest which has an impact in cyberspace.

2. DISCUSION

One of the characteristics of a democratic country is that it guarantees the protection of freedom of opinion, so it is appropriate for the government, in this case the holder of executive rights and the House of Representatives as the bearer of the people's mandate, to encourage and strive for respect for this freedom of opinion. A country considered to be truly democratic must be prepared to provide substantial protection for the ideas expressed by the media.[Krisna Harahap, Human Rights and Efforts to Enforce It in Indonesia. (Bandung: Graffiti, 2003),]

Every individual in general and Indonesian citizens in particular, have rights protected by statutory regulations on information, namely as regulated in the 1945 Constitution in article 28, namely: "Freedom of association and assembly, expressing opinions verbally or in writing and etc. are stipulated by law"4, and in Article 13 and Article 14 of Republic of Indonesia Law Number 39 of 1999 concerning Human Rights, in Article 13 which states that "Everyone has the right to develop and obtain benefits from science and technology, arts and culture in accordance with human dignity for the welfare of the individual, the nation and humanity" and Article 14 paragraph 1 states "Everyone has the right to communicate and obtain information necessary to develop their personality and

Basically, freedom to express opinions is part of human rights. Because rights are an inseparable part of being human. Rights contain elements of protection, interests and desires. Rights always correlate with obligations and responsibilities as a form of balance in life.[Latipah Nasution, The Right to Freedom of Opinion and Expression in Public Spaces in the Digital Era, Is: Bulletin of Law and Justice, 4, No. 3

(2020): p. 40] Regulations regarding freedom of expression have been regulated in several human rights instruments.

The 1945 Constitution, the 1945 Constitution, guarantees the right to freedom of expression, namely in article 28E paragraph 2 and emphasized in paragraph 3: "everyone has the right to freedom of association, assembly and expression of opinion." And continued in article 28F. Regarding this freedom, there are limitations as in Article 28J.

Indonesian Government Legal Policy regarding the protection of the Right to Freedom of Opinion on Social Media for civil servants; Basically, every citizen, without exception, civil servants constitutionally has the right to freedom of opinion and can legally express what is on their mind. Implementation of freedom of opinion can take the form of writing, books, discussions, or in press activities, and the dissemination of ideas electronically, including social media. Based on its definition, social media is a communication tool used by users in social processes. In essence, with social media various two-way activities can be carried out in various forms of exchange, collaboration and getting to know each other in written, visual and audiovisual form.

Conclusion The protection of freedom of opinion via internet media in Law Number 11 of 2008 is seen from a human rights perspective. From several cases that occurred via electronic media, it can be said that expressing opinions on social media or electronic media does not receive strict protection from the law.

Law Number 11 of 2008 and Law Number 19 of 2016 concerning Information and Electronic Transactions. Therefore, people do not have freedom of opinion through social and electronic media because it is not protected by law. Apart from that, there are also no clear criteria regarding defamation conveyed via social media and electronic transactions.

Forms of freedom of opinion via internet media in Law Number 11 of 2008, that the law does not mention forms of freedom of opinion. However, from the provisions of the articles contained in the law, it can be understood that the use of social media and the internet as a medium for information and electronic transactions is not permitted to violate the law and statute, but there is no detailed form of freedom of opinion that can be exercised by a person or group of people. .

In efforts to protect and enforce Human Rights, Indonesia as a legal state has the duty to respect, protect, uphold and promote them.[Dede Rosyada, Democracy, Human Rights and Civil Society. Jakarta: Revised edition of ICCE UIN Syarif Hidayatullah, (2003), p. 199.] The Indonesian government through Law Number 11 of 2008 concerning Information and Electronic Transactions has provided prevention and protection for the use of social media from acts against the law such as insults and defamation good, blasphemy, provoking, inciting, fake news, as well as unpleasant actions that have the impact of violence, social conflict, and discrimination, and so on. enforced by sanctions if the exercise of freedom of opinion

is not in accordance with the law. Freedom of expression of opinion on social media which is classified as a criminal offense is regulated in articles 27, article 28 and article 29. If someone violates the specified restrictions on freedom of opinion on social media, they will be subject to criminal sanctions as stated in article 45, Article 45A, and Article 45B.

3. **CONCLUSION**

On the other hand, acts of hate speech on social media still occur frequently and there are several obstacles in law enforcement regarding hate speech on social media, especially the lack of standard rules that can be used as a reference, making it theoretically difficult to determine whether speech can be categorized as hate speech. This has an impact on suboptimal law enforcement regarding hate speech. Furthermore, in its implementation there are several other obstacles such as: Lack of public understanding and awareness regarding the limitations of using social media, limited knowledge of law enforcement in measuring hate speech on social media, and lack of education to the public regarding social media ethics.

4. ACKNOWLEDGEMENTS

This implementation there are several other obstacles such as: Lack of public understanding and awareness regarding the limitations of using social media, limited knowledge of law enforcement in measuring hate speech on social media, and lack of education to the public regarding social media ethics. This article was written independently for the purposes of an international seminar organized by Palembang University.

REFERENCES

Dede Rosyada, Democracy, Human Rights and Civil Society. Jakarta: Revised edition of ICCE UIN Syarif Hidayatullah, (2003), p. 199.

Ernes.Y. 2020. https://new.detik.com/berita/d-5308010/polda-metro-tangani-443-kas-cyber-lama2020-1448-akun-di-take-down Accessed at 15:50 WIB. December 29, 2020

Krisna Harahap, Human Rights and Enforcement Efforts in Indonesia. (Bandung: Graffiti, 2003)

Latipah Nasution, The Right to Freedom of Opinion and Expression in Public Spaces in the Digital Era, Is: Law and Justice Bulletin, 4, No. 3 (2020): p. 40

Articles 13 and 14 of Republic of Indonesia Law Number 39 of the Year concerning Human Rights Republic of Indonesia Constitution of 1945

Law Number 11 of 2008 concerning Information and Transactions
Electronic

Law Number 39 of 1999 concerning Human Rights

BIODATA

The first author is a lecturer at the Faculty of Law, University of Palembang. For further information, contact email evipurnamawatiplg@gmail.com

INDEPENDENCE IN EXPRESSING OPINIONS ON SOCIAL MEDIA RERVIEWED FROM A LEGAL PERSPECTIVE

Khairani Hasibuan
Palembang University
khairani.hsb1989@gmail.com

Abstract

The state has guaranteed freedom to express opinions in public, this can be seen from several special regulations that regulate it both in the 1945 Constitution and the laws below. As a nation that has gained independence, the Indonesia nation prioritizes the principles of freedom of opinion independently as the embodiment of a democratic state, however, freedom of opinion both in public and on social media must be regulated carefully and wisely so that the freedom that has been given is not violate applicable legal regulations. This is an effort to prevent problem if problems occur and as an effort to control that even thought the Indonesian state adheres to a democratic system, in opinion, what will be conveyed and expressed in public or on social media must not violate ethics, legal norms and violate Human Rights (HAM). In order to realize freedom of expression, freedom of opinion must be in accordance with the legals rules that have been regulated. The legal basic governing this matter is continued in UUD; 45 Article 28 paragraph (3) and Law No. 9 of 1998 concerning Freedom to Express Opinion In Public and Other Legal Sources

Keywords: Legal, Freedom Of Opinion, Democratic State, Ethics Of Opinions

1. INTRODUCTION

August 17 1945 became a historic day for the Indonesian people, on that date the proclamation of Indonesian independence meant that the Indonesian people had achieved complete independence, namely freedom from all forms of violence, oppression, colonialism and freedom in terms of expressing opinions in public, where So far, the colonialists have been authoritarian towards the Indonesian people by taking away human rights, especially the right to express opinions and express opinions. Law Number 9 of 1998 concerning freedom of opinion in public was the first breakthrough in regulating freedom of opinion, freedom of opinion in public was carried out directly in expressing its income through direct interaction. The existence of these regulations can

be a reference in regulating freedom of opinion on social media, namely sharing opinions but via the internet and not interacting directly, this is the difference.

1.1 Formulation of the problem

What is the role of the government as a facilitator in fulfilling the right to freedom in expressing opinions in public and on social media so that it is in accordance with the principles of a democratic state and an ethical nation?

1.2 Metode Penelitian

This research uses a normative juridical method, this method is a basic type of method that analyzes statutory regulations, norms and literature by presenting research qualitatively with a juridical approach.

2. LITERATURE REVIEW

Freedom of association and assembly to express thoughts both orally and in writing has been guaranteed and regulated in the 45 Constitution in articles 28 and 28E paragraph (3) which reads; Everyone has the right to freedom of association, assembly and expression of opinion.[21]

2.1. The right to freedom to express opinions

Freedom to express opinions is a human right, this is guaranteed in the Universal Declaration of Human Rights and recognized by the constitution.

2.2 legal consequences

[21] Undang-Undang Dasar 1945 pasal 28 ayat (3)

given freedom of opinion, legal consequences are also given if actions, words, writings are proven and can be proven to violate other people's rights, then they will be processed according to applicable law. The ITE Law is a legal forum for every perpetrator who is proven to have violated the law, therefore, as it should be, every person must be wise in their words and actions, especially in public and on social media.

2.3 the government's role as a facilitator in fulfilling the right to freedom of expression

The definition of independence according to the KBBI is freedom, independence, not being pressured from outside, not being colonized and so on. One of the meanings of independence is the freedom given to each individual to control his own life, make decisions according to his thoughts, determine his life choices and live according to his wishes without any interference from other parties. As a legal state that adheres to a democratic system, the fulfillment of human rights must be fulfilled by the state as the party that facilitates the fulfillment of these rights so that the fulfillment of human rights can be achieved and can operate as regulated in law. As a legal state that adheres to a democratic state system, the government is run based on the interests of the people. We can see this in the UUD'45 and Pancasila as the basis of the state which states that sovereignty is in the hands of the people, by the people and for the people, so all actions are carried out in the interests of the people. together, namely in the interests of the Indonesian people.

Technological advances make it easier for us to obtain various kinds of useful information because there we can access whatever we need, but not everything that is displayed on the internet or on social media can be retrieved without us first examining whether the information is true or not. Therefore, the use of the internet must be used wisely, especially for parents who must control their children when they access the internet. The rise of various internet applications currently has two inseparable sides, namely the positive and negative sides. If we look at it from the positive side, it will make it easier for us to get information, knowledge, learning and so on quickly, but on the negative side, the information provided is not necessarily true, the main thing is proven by various cases that occur on the internet, whether in the form of spreading hoax news, slander, coups and other things that can harm yourself, other people and even

the country. Therefore, the use of gadgets today must be used as wisely as possible and there is a need for strict supervision from the government so that technological advances are not misused, especially for the younger generation who are not yet mature enough, not legally competent and whose emotional conditions are not yet stable so that they can be monitored, especially for parents and adult families. So, as adults, we have to be wise in selecting the information or content we will upload, because not only adults can see it, minors can see it, teenagers can also see it easily. Therefore, there needs to be awareness from all parties to participate in monitoring so that the development of this technology can provide benefits to us. In interpreting the meaning of independence in terms of freedom to express opinions both in public and on social media, it must be based on mutual respect, respect for the rights of other people and everyone who expresses an opinion must be able to take responsibility for their words.

The reason behind freedom of opinion is because Indonesia adheres to a democratic system, namely the best legal and political system in state administration, but what is currently a problem and is being debated is how to implement democracy in practice so that it can be implemented correctly. Therefore, democracy must be developed on the basis of mutual trust between one another because if there is no trust, it cannot be hoped that much democracy will emerge. If the government does not have trust in the people, the government will monopolize existing power, everything will be decided by itself while the people are left behind. Apart from that, we must pay attention that democracy also requires moderate attitudes and behavior and compliance with the rule of law. The tendency to extremism in attitudes will clearly not support the emergence of democracy.[22] So the government facilitates the fulfillment of the right to express opinions through law by providing freedom as a constitutional right to express opinions in public and on social media, as a form of implementing the democratic system in Indonesia and as a form of trust between the government and its citizens. Apart from these reasons, one of the reasons behind the implementation of a democratic system was during the New Order era led by President Soeharto at that time. This incident

[22] Ni'matul Huda, *Hukum Tata Negara Indonesia Edisi Revisi*, PT. Raja Grafindo Persada 2011, hlm 262, Jakarta

occurred on May 21, 1998. At that time, it was a turning point in change in Indonesia, which was initially known as the New Order era, becoming an era of reform. This incident is an event that continues to be remembered to this day, starting from massive demonstrations to changes to the UUD'45 at that time, the people demanded a number of demands, namely;

1. Amendment to the '45 Constitution

2. Elimination of the dual function of ABRI

3. Upholding the supremacy of the law, respecting human rights (HAM), and eradicating corruption, collusion and nepotism (KKN)

4. Decentralization and fair relations between the center and the regions (regional autonomy)

5. Realizing press freedom

6. Realizing democratic life.[23]

Therefore, it is necessary for each of us to be aware of ourselves so that we can respect each other and respect other people. This is also aimed at the good of ourselves, others and to maintain the integrity of the Republic of Indonesia. Imu is indeed important, but the position of adab is above knowledge, so what has become the characteristic of the Indonesian nation is a nation that is civilized and upholds the norms of politeness, we should continue to maintain religion considering that we are a nation with eastern characteristics that upholds it highly. good ethical values. Moreover, the government has issued policies to realize a democratic system by providing independence and freedom to express opinions, so we also need to respect it.

[23] Tundjung Herning Sitabuana, *Hukum Tata Negara Indonesia, Konstitusi Press (Konpress)*, hlm.21, Jakarta

3. CONCLUSION

The role of the state as a facilitator in upholding the right to express opinions both in public and on social media is very much needed, this is due to the rapid development of technology where all information can be easily accessed by almost all ages. Therefore, it is necessary to have a controller so that it can run in harmony and balance. Internet users are in almost all circles and are not limited by age. The worrying thing is that if the users are underage then the task for all is to control their children when using gadgets. For people who are adults, when uploading and speaking on social media, it is appropriate to pay attention to the content of the writing, do not convey news that contains slander, hoaxes, hate speech and other negative things because the worry is that underage children, especially those who cannot digest the information properly. This will clearly have a negative impact, therefore the government, through the ITE law, makes regulations so that anyone who violates the law gets the consequences. The freedom referred to here is related to freedom of opinion but within the limits of applicable legal norms. Therefore, even though freedom of opinion is guaranteed in law, what we say, whether orally or in writing, must not violate the rights of other people, such as degrading the dignity of other people because that is a human right that must be protected and respected. As a nation that upholds the norms of decency, religion and ethics, we seem to apply this when using social media.

4. ACKNOWLEDGEMENTS

This recognition is made based on legal issues. This is the impact of modernization on technological developments where everyone is given the freedom to freely express their opinions both orally and in writing, especially on social media. The government as a facilitator has regulated various rules and given every citizen the right to express his opinions as a form of a democratic country that upholds human rights, however there are legal consequences if the opinions expressed violate the law, so there is the ITE Law

which regulates this. This article was written independently for the purposes of an international seminar organized by Palembang University.

REFERENNCES

Undang-Undang Dasar 1945 pasal 28 ayat (3)

Ni'matul Huda, *Hukum Tata Negara Indonesia Edisi Revisi*, PT. Raja Grafindo Persada 2011, hlm 262, Jakarta

Tundjung Herning Sitabuana, *Hukum Tata Negara Indonesia, Konstitusi Press (Konpress)*, hlm.21, Jakarta

BIODATA

Khairani Hasibuan was born in Palembang 02 January 1989. He has been a lecturer since August 2023 at the Faculty of Law, Palembang University in the Department of Constitutional Law, teaching several courses, namely Constitutional Law, Citizenship and Immigration Law, Judicial Power and so on. Graduated with a law degree at the Indonesian Islamic University (UII) in Yogyakarta in 2012 and continued his master's in law at Sriwijaya University (Unsri) in 2019. For further information, contact email khairani.hsb1989@gmail.com

THE URGENCY OF THE ASSET CONFIDENTIAL LAW AS A MEANS OF RETURNING STATE LOSSES RESULTING FROM CRIMINAL ACTS OF CORRUPTION

Muhammad Ridduwan
Palembang University
ridwannoermuhammad@gmail.com

Abstract

Indonesia as a developing country certainly requires a lot of fund for its national development in all fields. In this regards there is an interesting phenomenon that has become a culture in almost all level of society, that phenomenon is corruption. Corruption is a frightening thing for the national development of every country in the world, because corruption can hinder national development. One of the impact of corrupt behavior is from the economic aspect namely state losses. To overcome this indonesia needs a regulation that regulates the return of assets because in several countries the existence of assets confiscation law has been recognized, but unfortunately indonesia has not recognized the existence of this law. Even though a lot of assets resulting from criminal acts of corruption are stored abroad.

Keyword : confiscation of assets, state losses, criminal, corruption,

1.INTRODUCTION

The criminal act of corruption, which is included in the category of extra ordinary crime, continues to experience an increasing trend every year. In general, the perpetrators of this crime always try to disguise the origin of the assets obtained as a result of criminal acts in various ways so that the assets cannot be traced and can be used for other purposes. what is halal or haram.

Corruption as a criminal act that is an extraordinary crime has a huge impact on the condition of the country. One of the most real and deeply felt impacts is the massive impact of corruption in the economic sector, where this corruption has caused enormous state losses.[24]

The impact of the spread of corrupt behavior in the wider community in the economic sector is sluggish economic growth, decreased community productivity, low quality of goods and services for the public, decreased state income, and increased state debt.[25]

One effort to overcome the impacts as mentioned above is to return assets resulting from criminal acts of corruption to the state. However, efforts to return assets resulting from criminal acts of corruption in Indonesia are not running optimally due to the absence of specific regulations governing this matter. In fact, the assets resulting from corruption from the perpetrators of these criminal acts are widely spread across various countries

1.1. formulation of the problem

[24] Zico Junius Fernando, Pujiyono, Nur Rochaeti, confiscation of assets of criminal perpetrators from the perspective of human rights and criminal law principles, legal legislation, volume 19, no 1, March 2022, p 84.

[25] Nanang T Puspito et al, 2011, anti-corruption education textbook, Ministry of Education and Culture of the Republic of Indonesia, Jakarta.

Moving on from the background as explained above, the problem that will be raised in this article is what is the urgency of the asset confiscation law as a means of returning state losses resulting from criminal acts of corruption?

1.2. Metode Penelitian

The research method used in this paper is the normative legal research method, namely research carried out by examining statutory regulations that are intertwined with the legal issues being discussed.[26]

2. Literature review

2.1. confiscation of assets

Asset confiscation is a legal action by the state to take over control of assets with a court decision in a case based on strong evidence that the assets are strongly suspected to be the result of a criminal act or used to carry out a criminal act.[27]

2.2. state losses

State losses are a shortage of money, securities and goods in real and definite amounts as a result of unlawful acts, whether intentional acts (opzet) or those that occur due to negligence that must be legally accounted for.[28]

2.3. Corruption Crime

Etymologically, the word corruption comes from Latin, namely corruption or corruptus, where the terminology itself comes from the word corumpere, an older Latin word. Next, many terminologies were born in foreign languages for the term corruption, such as corruption, corrupt, and corruptie. Literally, the word corruption has various meanings, namely rottenness, ugliness, depravity, dishonesty, corruptibility, immorality, and deviation from purity.[29]

Next, a new terminology emerged that was previously unknown, where this terminology is a terminology that is specifically known in corruption laws and regulations in Indonesia, namely "criminal acts of corruption. The term non-corruption crime consists of two terms, namely criminal acts and corruption.

A criminal act is a wrongful act that contains the nature of wederrechtelijkeheid which is committed by a person who is capable of responsibility and is threatened with sanctions. Meanwhile, corruption is a bad act such as embezzling money, accepting bribes and so on.[30]

In the criminal act of corruption law, a criminal act of corruption is defined as an unlawful act that harms state finances, regional finances, or the finances of agencies that receive assistance from the state.[31]

2.DISCUSSION

[26] "Understanding normative legal research methods", accessed from http:// Hukumonline.com/, accessed on 17 May 2024 at 19.10

[27] Refki Saputra, challenges in implementing asset confiscation without criminal charges (non-conviction based asset forfeiture) in the asset confiscation bill in Indonesia, integrity journal, volume 3, no 1, March 2017, p. 119.

[28] Runi Yasir, Faisal A Rani, Moh Din, authority to determine state financial losses in cases of criminal acts of corruption, Syiah Kuala Law Journal, volume 3, no 2, August 2019, p 282

[29] Andy Hamzah, 2014, eradicating corruption through national and international criminal law, Jakarta, Rajagrafindo Persada, p. 4.

[30]Andy Hamzah, ibid, p. 5

[31] Adami Chazawi, 2016, Corruption Criminal Law in Indonesia, Jakarta, Rajagrafindo Persada, p 4

3. In Indonesia, the legal issue of human rights is an issue that is always hotly studied. Where if we examine it from the perspective of human rights law, these basic human rights are innate rights that humans have had since they were born on earth as a gift from the Almighty God. As stated in the law, "basic human rights are a set of very basic rights that are inherent in humans as creatures created by God and are gifts that must be respected, upheld and protected.....[32]

As a right which is a gift from Almighty God and is inherent in every human being, this right must be respected, upheld and protected by the state, legal norms and the government. The deeper consequence of this is that this right cannot be revoked, set aside, or violated by anyone.[33] Humans as creatures of an all-powerful god carry three absolute rights from birth, namely the right to life, the right to freedom and the right to ownership.

However, basic human rights provisions relating to property rights under certain conditions and based on statutory mandates can be deviated normatively in criminal law. There are several special criminal acts that require the confiscation of property rights owned by someone, one of which is the act of corruption crime.

In general, criminal law norms are contained in a legal codification, namely the criminal law book which consists of three books, namely Book I which contains general provisions (algemene bepalingen) which apply to all criminal acts, both general and specific. Book II regulates crimes (misdrijven), and book III regulates violations[34]

The background for regulating criminal acts of corruption in special regulations is because this criminal act is an extra ordinary crime which has a multidimensional impact and results in state losses

Apart from that, looking at the development of corruption cases which are increasingly rampant in Indonesia and linked to the inadequacy of existing criminal law norms, it is necessary for the government to make a new breakthrough in the form of a special law which is normatively intended as an effort to overcome corruption crimes in Indonesia. Corruption is seen as a crime that has robbed people of their social and economic rights, which are part of basic human rights. Therefore, there are rational justifications for classifying corruption as an extra ordinary crime, so that overcoming it needs to be done in an extraordinary way and with special rules.[35]

In connection with dealing with corruption crimes, the government has also formed a special institution, namely the anti-racywah commission. Normatively, what is meant by an anti-racywah commission is "a state institution which in carrying out its duties and powers is independent and free from the influence of any power.[36]

The formation of a special anti-corruption agency carried out by the government is a step forward in tackling the spread of criminal acts of corruption. Apart from that, one thing that can be appreciated about the formation of this institution is that this institution is a new institution that was previously unknown in the state institutional system which was given the main task of eradicating corruption offenses.

The background to the birth of this Institution was due to the increase in uncontrolled acts of corruption which caused major disasters for the life of the nation and state in general. Law enforcement against criminal acts of corruption carried out conventionally by law enforcement officials has been proven to experience many obstacles. Therefore, a special law enforcement method is needed through the formation

[32] Article 1 point 1 of Law No. 39 of 1999 concerning basic human rights

[33] Widiada Gunakaya, 2017, human rights law, Yogyakarta, Andi Publishers, p. 55.

[34] Wirjono Prodjodikoro, 2014, principles of criminal law in Indonesia, Bandung, Refika Aditama, p. 4.

[35] Elwi Danil, 2012, corruption: concepts, criminal acts and its eradication, Jakarta, rajagrafindo persada, p. 76.

[36]. Articles 2 and 3 of Law No. 30 of 2002 concerning the Corruption Eradication Commission

of a special body whose powers are distributed according to normative provisions, are independent, and free from influence from any party in order to eradicate criminal acts of corruption which is carried out optimally, professionally and sustainably.[37]

However, it is very unfortunate that the implementation of the task of eradicating corruption carried out by this commission has not run optimally. This is caused by the absence of normative provisions that regulate the issue of confiscation of assets resulting from acts of corruption. In fact, the essence of implementing the eradication of corruption is the return of state assets in order to overcome state losses caused by this criminal act.

Talking about asset confiscation as an effort to recover state losses as a result of acts of corruption, there are several ways, namely:

a. Confiscation of assets through penalty channels
i. Asset tracking

Asset tracing is a series of actions to search for, request, obtain and analyze information about the origin, existence and ownership of assets.[38]

ii. Blocking

Blocking is an action to secure assets that are strongly suspected to have been obtained from the proceeds of corruption in the form of money deposits in banks either during the investigation, prosecution, or even at the examination stage in court on the orders of a judge.

iii. Foreclosure

Confiscation is a legal action to control assets resulting from acts of corruption by first asking permission from the district court.[39]

b. Confiscation of assets based on a court decision
c. Confiscation of assets based on a lawsuit

3.CONCLUSION

Based on the results of the discussion above, it can be seen that specifically regarding the confiscation of assets resulting from acts of corruption, up to now there are no positive legal norms that regulate it, but the only one that currently exists is the Draft Law on Asset Confiscation. This is a development that should be appreciated. However, it is hoped that the government will immediately ratify the Draft Law into the Asset Confiscation Law. This is important to overcome state losses as a result of acts of corruption that can be recovered.

ACKNOWLEDGEMENTS

This article was written based on a developing legal issue, namely the urgency of the asset confiscation law as a means of recovering state losses resulting from criminal acts of corruption, where currently Indonesia does not yet have a national law that regulates this matter, whereas several other

[37] Ermansjah Djaja, 2010, eradicating corruption with the Corruption Eradication Commission, Jakarta, Sinargrafia, p. 255.

[38] Republic of Indonesia attorney general regulation no PER-027/A/JA/10/2014

[39] Arizon Mega Jaya, implementation of confiscation of assets of perpetrators of criminal acts of corruption, cepalo journal, volume 1, no 1, July 2017, p 23.

countries already have it. This article was written independently for the purposes of an international seminar organized by Palembang University

REFERENCES

Adami Chazawi, 2016, Corruption criminal law in Indonesia revised edition, Rajagrafindo Persada, Jakarta.

Andi Hamzah, 2014, eradicating corruption through national and international criminal law, rajagrafindo persada, Jakarta.

Arizon Mega Jaya, 2017, implementation of confiscation of assets of perpetrators of criminal acts of corruption, cepalo journal, volume 1 number 1.

Elwi Danil, 2012, corruption: concepts, criminal acts and its eradication, rajagrafindo persada, Jakarta.

Ermansjah Djaja, 2010, eradicating corruption with the Corruption Eradication Commission, Sinargrafia, Jakarta.

Nanang T Puspito, 2011, anti-corruption education textbook, Ministry of Education and Culture of the Republic of Indonesia, Jakarta.

"Understanding normative legal research methods", accessed from http:// Hukumonline.com/, accessed on 17 May 2024 at 19.10.

Republic of Indonesia Attorney General Regulation No PER-027/A/JA/10/2014

Refki Saputra, 2017, challenges in implementing asset confiscation without criminal charges in the Draft Asset Confiscation Law in Indonesia, integrity journal, volume 3, no 1.

Runi Yasir et al, 2019, authority to determine state financial losses in cases of criminal acts of corruption, Syiah Kuala Law Journal, volume 3, no 2.

Republic of Indonesia Law No. 39 of 1999 concerning basic human rights.

Republic of Indonesia Law No. 30 of 2002 concerning the Corruption Eradication Commission.

Widiada Gunakaya, 2017, human rights law, Andi publisher, Yogyakarta.

Wirjono Prodjodikoro, 2014, principles of criminal law in Indonesia, refika aditama, bandung.

Zico Junius Fernando et al, 2022, confiscation of assets of criminal perpetrators from the perspective of human rights and criminal law principles, legal legislation, volume 19, no 1.

Biodata

Muhammad Ridduwan was born in Depok 12 February 1996. He is a lecturer at the law faculty at Palembang University in the civil law department who teaches several courses, namely sociology, civil law, securities law, bankruptcy law, guarantee law, and capita selecta civil law. Completed undergraduate education at the law faculty of Palembang University in 2018 and master of law in 2021. For further information, contact email ridwannoermuhammad@gmail.com.

THE INFLUENCE OF BRAND IMAGE AND PRODUCT QUALITY ON CUSTOMER SATISFACTION OF SPORT SNEAKERS NIKE BRAND (CASE STUDY IN PALEMBANG BASKETBALL COMMUNITY)

Hj. Zubaidah Warni SE, M.Si[1]
Alditya Aris Rinandy SE, MM[2]
Tesha Amanda Putri[3]
(zubaidahunpal@gmail.com)
Lecturer in the Management Study Program at Palembang University[1,2]
Student in the Management Study Program at Palembang University[3]

ABSTRACT :

Sport is a form of physical activity that is usually competitive in nature with the aim of improving a person's physical abilities and skills while providing entertainment for players and spectators . One type of sport that is popular with people is basketball. The majority of world athletes use the Nike sports brand, whether for their shoes or clothing. Moreover, several athletes from the world of basketball are Brand Ambassadors of the brand. The Nike brand itself is currently a sponsor of the world basketball competition, namely the NBA. This research aims to determine whether there is an influence of brand image and product quality on consumer satisfaction among Nike sports shoe users. The sample in research is basketball sports activists in the city of Palembang a total of 100 samples . The research method is presented quantitatively, based on questionnaires distributed to respondents. Next, the data was processed using the SPSS 26 program. The final aim of this research is to find out whether there is an influence of brand image and product quality on consumer satisfaction, either partially or simultaneously.

Keywords: Brand image, product quality, consumer satisfaction, sports, basketball

1. Introduction

Sport is a form of physical activity that is usually competitive in nature with the aim of improving a person's physical abilities and skills while providing entertainment for players and spectators . Whatever the type of sport, activating all parts of the body is beneficial physically, mentally and makes the body healthy. Someone who rarely does exercise will be susceptible to disease, besides that the immune system of people who often exercise will be fully formed so that it can protect against disease. Exercise can be stated as an easy and effective way to provide benefits and positive impacts on physical health and increase life expectancy.

One sport that is currently famous in the world is basketball. Basketball is a type of sport using a ball which was initiated by a sports teacher from Canada named Dr. James Naismith in 1891. Basketball is a sport group ball consisting of two teams of five people each who compete to score points by putting the ball into the basket against.

Until now, basketball is a sport that has various competitions at various international events. One of the biggest basketball competitions in the world is the NBA (National Basketball Association) in the United States. The world's best Basketball players compete in this competition. But actually the sport of basketball is not only big in America. Even in Europe, basketball is a popular sport, as well as on the Asian continent.

In Indonesia the sport of basketball itself is very popular. Several school, amateur and professional level competitions have been held under the Indonesian Basketball Association (Perbasi) . For example, in the city of Palembang, South Sumatra province, Perbasi Palembang has a basketball competition to accommodate the basketball community in Palembang City to compete. The competition is called the Palembang Basketball League. This competition has been running since 2013 and is still active today. Until 2024, the Palembang Basketball League will have many competition branches including, PBL division I, PBL division II, PBL division III, *W om en Palembang Basketball League,* and competitions for school

and children level. Apart from that, several Palembang basketball clubs and communities also often take part in basketball tournaments held outside the city.

The rolling of the competition plus the development of the basketball community in the city of Palembang has also influenced changes in the lifestyle of its activists. This change in the lifestyle of basketball activists starts with the choice of sports shoes that are used as well as the outfits and outerwear that are used . There are many brands of sports apparel that are used in basketball competitions. Nike is one of the brands used by the majority of basketball activists, whether local, national or international.

As we know, Nike is a shoe, clothing and sports equipment company in the United States which is one of the largest in the world . Nike sports shoes and apparel products are easily identified by the company's distinctive logo, the *"swoosh"* tick, and the slogan *"Just Do It"* . Nike is also known for its distinctive shoe designs and comfortable to use by many people. Based on data obtained by Companies Market Cap it is concluded that Nike is the world's largest footwear company with a capitalization value of 146.12 billion US dollars as of 19 September 2023. In full, the top 10 world shoe companies can seen in the following table.

Table 1 Top 10 Sneakers Company

No.	Data Name	Value (USS billion)
1	Nike	146,12
2	Adidas	32,38
3	Deckers Brands	13,75
4	Li Ning Company	11,87
5	PUMA	9,63
6	On Holding	9,62
7	Skechers	7,27
8	ASICS Corporation	6,97
9	VF Corporation	6,73
10	Crocs	5,4

Source: Companies Market Cap (https://databoks.katadata.co.id)

One of Nike's strategies in marketing goods, both shoes and clothing, is to use brand ambassadors. Several world sports athletes who have become Brand Ambassadors for this brand include footballer from Portugal Cristiano Ronaldo, then 22-time Grand Slam winner Rafael Nadal, and golfer from the United States Tiger Woods. Apart from that, this famous brand is also the main sponsor for big football clubs in the world such as Barcelona from Spain, Liverpool from England, Inter Milan from Italy and the Paris Saint Germain club from France.

To attract the market of basketball activists themselves, since the 2017-2018 season until now, Nike has become the NBA's main sponsor for apparel. Meanwhile, some of the best NBA players have become *brand ambassadors* for the brand. Some players who are known to be *brand ambassadors* for Nike and have signature shoes for them are Kyrie Irving who currently plays for the Dallas Mavericks club, Giannis Antetokoumpo who is twice the best NBA player from the Milwaukee Bucks club, and the best player Lebron James world. Even the NBA legend from the Los Angeles Lakers, Kobe Bryant, was also *Brand Ambassador* for Nike during his lifetime.

By having the best players in every field of sport, as well as with unique designs that suit the player's character, Nike is able to win competition in the world of sport. In Palembang itself, many basketball activists use Nike as sports shoes. Apart from the fact that these shoes are used by their idol players, the *Signature Shoes* used by the players also have their own characteristics that suit the players' playing

character. Apart from sports, these shoes can also be used on any occasion, whether just for a casual walk or for daily activities.

Based on the facts mentioned above, this research is entitled "The Influence of Brand Image and Product Quality on Consumer Satisfaction of Nike Brand Sports Shoes (Case Study of the Palembang City Basketball Community) . The aim of this research is to find out whether there is an influence of Brand Image and Product Quality on Consumer Satisfaction, either partially or jointly.

2. Theoretical Foundation

2.1 Brand Image

According to Keller (2020:76), Brand Image or *brand image* is the perception of a brand as reflected by the brand associations that exist in consumers' memories. It can be concluded that *brand image* is consumers' understanding of a brand as a whole with their beliefs and views towards a brand.

Brand image relates to how consumers perceive a brand in their minds, resulting in perceptions. This perception is formed due to consumer interactions and experiences when using the brand in question. The perceptions that emerge can be good, bad, or neutral. Kotler and Keller (2014:315) explain *brand image* is the consumer's perception and beliefs which are reflected in the associations that occur in the consumer's memory. These associations will equate and differentiate similar products with different brands. *Brand image* is a differentiating image that is produced and used as a comparison in these associations.

Understanding *brand image* According to (Nurhalim, 2020) *brand image* or brand image is a representation of all perceptions of a brand and is built from information and past experiences.
According to Keller (2020:76) that *brand image* consists of the following components:

1) *Attributes* (Attributes) This is a descriptive definition of the features in a product or service.
   a. *Product related attributes* (product attributes) Defined as the ingredients needed for the function of the product that consumers are looking for to work. Relating to the physical composition or requirements of a service offered, it can function.
   b. *Non-product related attributes* (non-product attributes) Are external aspects of a product that are related to the purchase and consumption of a product or service. Consists of: information about price, packaging and product design, people, groups or celebrities who use the product or service, how and where the product or service is used.
2) *Benefits* (Benefits) The personal value that consumers attach to the attributes of the product or service.

a. *Functional benefits* : related to meeting basic needs such as physical and security needs or problem solving.
b. Experient *ial benefits* : related to the feelings that arise from using a product or service. This benefit satisfies the need for experimentation such as sensory satisfaction.
c. Symbolic benefits: related to the need for social approval or personal expression and one's self-esteem. Consumers will appreciate the values of prestige, exclusivity and brand fashion style because these things are related to their self-concept.

According to Schiffman & Kanuk in Murti (2019) the factors that influence and shape *brand image* include the following:

1) *Quality* , related to the quality offered by producers of both goods and services. In terms of education, it includes the competence of teaching staff and the capabilities of alumni as well as the breadth in obtaining employment.
2) *Trusted* , related to the views or opinions created by the public or consumers regarding a product consumed.
3) *Profit* , related to the benefits of a product or service that consumers can use.
4) *Service* , regarding services provided to consumers by makers or producers.
5) *Consequence* , relating to the effects that consumers may face, both the size of the consequences or the pros and cons after consumers or students choose or decide on a product or college of education.

6) *Cost* , related to the small or large amount of money or costs for a product that consumers or students spend to pursue future education.
7) The image of the brand itself is related to opinions, perceptions and news about a product from a particular brand.
According to Aaker & Biel in Keller & Swaminathan (2020:239), the *brand image* indicator can be seen from:
1) Company Image (*Corporate Image*), namely a set of associations that consumers perceive towards a company that makes a good or service. Includes: popularity, credibility, company network, and the users themselves.
2) Product/consumer image (*product image*), namely a set of associations that consumers perceive regarding a good or service. Includes: product attributes, benefits for consumers, and guarantees.
3) User image (*User Image*), namely a set of associations that consumers perceive towards users who use a good or service. Includes: the user himself, as well as his social status.

2.2 Product Quality

According to Kotler and Armstrong (2019:266) "Defining Product (*product*) as anything that can be offered to the market to attract attention, acquisition, use or consumption that can satisfy a want or need" . Which can also be interpreted as anything that can be offered to the market in order to attract attention, even users that satisfy a need or desire can be interpreted as a product.

According to Kotler and Armstrong (2019:272) "Product quality (*product quality*) is one of the main positioning tools for marketers. Quality has a direct impact on the performance of a product or service; therefore, quality is closely related to customer value and satisfaction. In a narrower sense, quality can be defined as 'free from damage'. But most customer-centric companies go far beyond this narrow definition. Instead, they define quality based on value creation and customer satisfaction."
The quality of a product, whether in the form of goods or services, needs to be determined in terms of dimensions. If a company wants to maintain its competitive advantage in the market, the company must understand what dimensional aspects are used by consumers to differentiate the products the company sells from competitors' products. According to Lupiyoadi and Hamdani (2017:176), the dimensions of product quality are as follows:
1. Performance (*Performance*)
Performance here refers to the core product characteristics which include the brand, measurable attributes, and individual performance aspects. The performance of some products is usually based on subjective customer preferences which are basically general.
2. Product Diversity (*Features*)
Can be in the form of additional products from a core product that can add value to a product. Product diversity is usually measured subjectively by each individual (in this case consumers) which shows differences in the quality of a product.
3. Reliability (*Reliability*)
This dimension relates to the possibility of a product experiencing a state of non-function (*malfunction*) in a certain period. The reliability of a product which determines the level of quality is very important for consumers in choosing products.
4. Conformity (*Conformance*)
Another dimension related to the quality of a product is the conformity of the product with standards in the industry. Suitability of a product in the industry
Services are measured by the level of accuracy and completion time including calculations errors that occur, unanticipated delays and several other errors.
5. Endurance or Endurance (*Durability*)
The measure of a product's durability includes both economic and technical aspects. Technically, the durability of a product is defined as the number of uses one obtains before experiencing a decline in quality. Economically, durability is defined as the economic life of a product seen from the number of uses obtained before damage occurs and the decision to replace the product.

6. Service Capability (*Servicebility*)
Service capability can also be referred to as speed, competence, usability and ease of product repair. This dimension shows that consumers not only pay attention to a decrease in product quality but also the time before the product is stored, scheduling, service, process communication process with staff , frequency of repair services for product damage, and other services .
7. Aesthetics (*Aesthetics*)
Aesthetics is the most subjective measurement dimension. The aesthetics of a product can be seen from how the product sounds to consumers, how the product looks, tastes and smells. Thus, aesthetics is clearly an assessment and reflection felt by consumers.
8. Perceived quality (*Perceived Quality*)
Consumers do not always have complete information about product attributes. However, consumers generally have information about products indirectly, for example through the brand, name and country of manufacture.

According to Amrullah, *et.al* (2017) product quality consists of several indicators, namely:
1.Performance (performance), related to the basic operating characteristics of a product
2.*Durability* (durability), which means how long or age the product in question lasts before the product must be replaced. The greater the frequency of consumer use of the product, the greater the power product.
3.*Features* (features), are characteristics of a product that are designed to enhance product functions or increase consumer interest in the product.
4.*Reliability* (reliability), is the probability that the product will work with satisfactory or not within a certain time period. The less likely it is if damage occurs, the product is reliable.
5.*Aesthetics* (aesthetics), relates to how the product looks, for example: physical form, model, artistic design, and so on.
6.*Perceived quality* (impression of quality), often said is the result of using measurements carried out indirectly because there is a possibility that consumers do not understand or lack information on the product is concerned.

2.3 Consumer Satisfaction

Satisfaction *(satisfaction)* according to Kotler & Keller (2016) is a feeling of pleasure or disappointment that comes from a comparison between the impression of the performance or results of a product and his hopes. In Tjiptono (2019) states that consumer satisfaction is a condition where consumers feel that their hopes and desires are very well fulfilled by the service provider.. Satisfaction is the label used by consumers to summarize a set of actions or actions that are visible, related to a product or service.

Achieving the highest level of consumer satisfaction is the main goal of marketing. Maintaining consumer satisfaction from time to time will foster good relationships with consumers. According to Irawan (2017:5) the factors driving consumer satisfaction are:
1. Product Quality
Customers will feel satisfied after purchasing and using the product which has good product quality.
2. Price
Usually low prices are an important source of satisfaction. However, usually the price factor is not a guarantee that a product has good quality.
3. Service Quality
Customers feel satisfied if they receive good service or in accordance with what is expected from employees and company employees.
4. *Emotional factors*
Satisfaction is not due to product quality, but self-esteem or social value make customers satisfied with certain product brands.
5. Cost or ease of obtaining products or services
Convenience and efficiency in obtaining a product or service and easy obtaining product services provide special value for customer satisfaction.

Marketing strategies are needed to provide satisfaction to consumers. Several methods for evaluating satisfaction, including: (Irwansyah et al., 2019)

1. Performance *(performance),* the main characteristic of a product and is the main characteristic that consumers consider when buying a product.
2. Additional characteristics or features *(features),* of the basic function related to product choices and development, namely secondary or complementary characteristics.
3. Reliability *(reability),* the small possibility of a good or service being damaged or malfunctioning within a certain period of time and under certain conditions.
4. Conformance to specifications *(conformance to specifications),* the extent to which the design and operating characteristics meet previously established standards based on consumer desires.
5. Durability *(durability),* Relating to technical life and product life.
6. Easy to repair *(servicebility),* Includes speed, competition, comfort, easy to repair, and satisfactory complaint handling.
7. Aesthetics *(aesthetics),* The attractiveness of the product according to consumer perception, for example design model and color.

Tjiptono (2019) states that consumers are something that is l more important than attracting consumer interest, because are the 3 (indicators) used to Measuring consumer satisfaction consists of (Tjiptono 2019):

1. Conformity to expectations, shows the level of suitability of the products and services provided with what consumers receive .
2. Repurchase Intention, a condition where consumers whose expectations have been met will make a purchase or return to using the service provided. offered.
3. Recommend products, conditions in which satisfied consumers will be the service will recommend experiences gained after using the service.

2.4 Framework

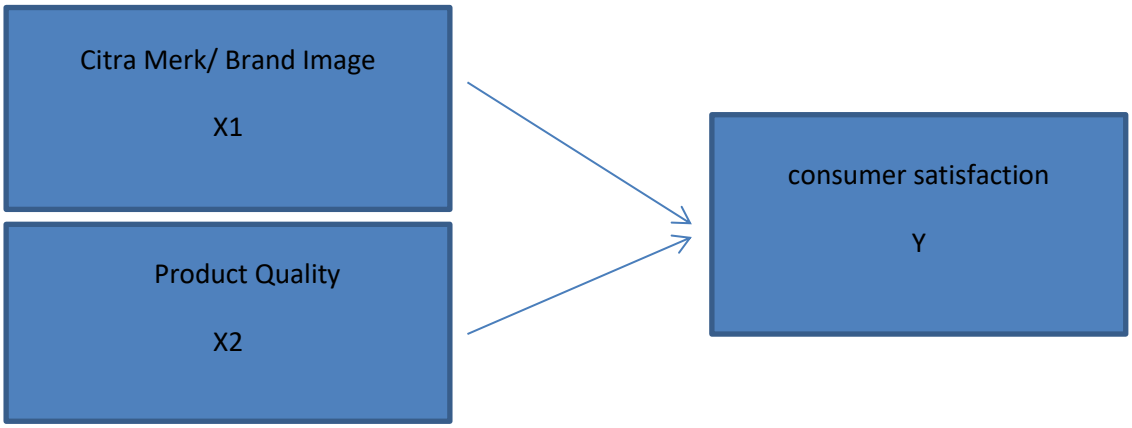


Figure 1: framework of thought

2.5 Hypothesis

Based on the framework above, the hypothesis that the author proposes is:.

H1 : A has an influence Brand Image on Consumer Satisfaction
H2 : There is an influence Product Quality on Consumer Satisfaction
H3 : There is an influence Brand Image and Product Quality on Consumer Satisfaction
H4 : There is no influence Brand Image on Consumer Satisfaction
H5 : There is no influence Product Quality on Consumer Satisfaction
H6 : There is no influence Brand Image and Product Quality on Consumer Satisfaction

3. Research Methods

The research method used by the author is a quantitative research method, based on data obtained from distributed questionnaires. This type of research is associative. According to Sugiyono (2019:65) associative research is a research problem formulation that asks about the relationship between two or more variables. The variables linked in this research are Brand Image (X1) and Product Quality (X2) to Consumer Satisfaction (Y).

The population in this study was basketball activists in the city of Palembang . Basketball activists in the city of Palembang from young and old who joined basketball clubs in the city of Palembang. Therefore the sample was determined using the random sampling method. *Simple Random Sampling* is taking sample members from a population randomly without paying attention to the strata in that population. Because the population is clearly basketball activists residing in the city of Palembang, the author randomly distributed sioner quizzes to 100 people randomly.

The questionnaire was created using a Likert scale calculation with a scale of 1-5 points, where the value 1 is for strongly disagree and the value 5 is for strongly agree. After the questionnaire data is obtained, it is then processed using SPSS 26.

4. Research Results and Discussion

Based on the results of distributing questionnaire data distributed to a sample of 100 people, where the samples were basketball players in the city of Palembang, it was found that 100% of respondents were users of Nike basketball shoes, but with different variants. As discussed in the background, Nike has Brand Ambassadors who are famous athletes. Each athlete has their own signature shoes. Based on these signature shoes, results were obtained as in the table below:

Table 2 Respondents Based on Nike Signature Shoes

Signature Shoes	Amount	Percent
Nike Zoom Lebron	24	24.00%
Nike Zoom Kobe	43	43.00%
Nike Zoom Kevin Durant	11	11.00%
Nike Kyrie	7	7.00%
Nike Hyperdunk	7	7.00%
Etc	8	8.00%
Total	100	100%

Source: primary data that has been processed

Based on the table above, Nike Zoom Kobe is worn by 43% of total respondents, followed by Nike Zoom Lebron with 24% of total respondents. For your information, Kobe Bryant and Lebron James are included in the top 75 best NBA players of all time as reported by www.espn.com . Apart from Zoom Kobe and Zoom Lebron, 11% of respondents also wear Zoom KD shoes, while the rest wear Nike Kyrie, Hyperdunk and other Nike signature shoes.

Questionnaires were distributed to 100 random people who are a group of people who like playing basketball, but most of them are members of basketball clubs that play in the Palembang Basketball League under the auspices of the Palembang City Perbasi (Indonesian Basketball Association). Based on membership status, it can be seen in the table below:

Table 3 Membership Status

Membership Status	Amount	Percent
Club Member	85	85.00%
Non-Members	15	15.00%
Total	100	100%

Source: primary data that has been processed

Based on membership status, it can be seen that the majority of respondents are members of basketball clubs in Palembang City, namely 85%, while the rest are ordinary players who have not joined any clubs.

Basketball in the city of Palembang is not only played by men, but also women, as in the table below:

Table 4 Gender

Gender	Amount	Percent
Man	77	77.00%
Woman	23	23.00%
Total	100	100%

Source: primary data that has been processed

A total of 77 respondents were men and 23% of respondents were women. This is enough to prove that basketball is popular among all genders and Nike is also the favorite brand for athletes, both male and female.

Calculation of research results begins by using a validity test to measure whether a questionnaire is valid or not. A questionnaire is said to be valid if the questions in the questionnaire are able to reveal something that the questionnaire will measure. This research uses a margin of error of 5% or with an R table value of 0.1946 because the total number of respondents is 100 people .

Based on the results of the validity test for each questionnaire question, it was not found that the calculated R value was d below the table R value, namely 0.1946 . 15 questions showed an average figure above 0.1946 , s so it is concluded that each questionnaire item is valid. It showed from the table below:

Table 5 Validity Test

Items	R count	R table	Results
X1	0.681	0.1946	valid
X2	0.636	0.1946	valid
X3	0.277	0.1946	valid
X4	0.698	0.1946	valid
X5	0.578	0.1946	valid
X6	0.672	0.1946	valid
X7	0.555	0.1946	valid
X8	0.706	0.1946	valid
X9	0.706	0.1946	valid
X10	0.672	0.1946	valid
Y1	0.896	0.1946	valid
Y2	0.868	0.1946	valid
Y3	0.896	0.1946	valid
Y4	0.868	0.1946	valid
Y5	0.312	0.1946	valid

Source: primary data that has been processed

After testing the validity of the statements in the questionnaire and declaring them valid , , then then carried out a reliability check using the Cronbach Alpha formula to ensure the consistency of the items. The reliability of questionnaire question items can be determined if the Cronbach's Alpha score is greater than 0.60 .The Cronbach Alpha of each variable can be shown on the table below:

Table 6 Reliability Test

Variable	Cronbach Alpha	Minimum Standard	Results
Brand Image	0.680	0.600	reliable
Product Quality	0.716	0.600	reliable

Customer Satisfaction	0.807	0.600	reliable

Source: primary data that has been processed

From the table above, it concluded that each variable are reliable. The value of Cronbach alpha of the variable are shown more than the minimum standard.

Meanwhile, it was previously explained that the number of respondents participating was 100 people . Because there is no empty data or in the sense of the word all respondents filled in the questionnaire, the validity level is 100%.

Multiple linear regression is a regression model that involves more than one independent variable . Multiple linear regression analysis was carried out to determine the direction and how much influence the independent variable has on the dependent variable (Ghozali, 2018) . In this study there are 2 X variables and 1 Y variable.

The multiple linear regression equation is mathematically expressed by:

$$Y = a + b1\ X1 + b2\ X2 + \ldots + bn\ Xn$$

Explanation:

Y	= dependent variable (value of the variable to be predicted)
a	= constant
b1,b2,…, bn	= regression coefficient values
X1,X2,…, Xn	= independent variables

In this research , SPSS was used to carry out the calculations needed for regression analysis. As seen in the table below, the accompanying analysis produces the following findings.

Table 7 Regression Analyst

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	,340	1,848		,184	,854
	Brand Image	,643	,127	,533	5,074	,000
	Kualitas produk	,328	,132	,261	2,486	,015

Source: spss 26

Dependent Variable: Cust Satisfaction. The regression equation from the results of statistical calculations is as follows: Y = a + b1X1 + b2X2 Consumer Satisfaction = 0.340 + 0.643X1 + 0.38X2 The constant value (a) is 0.340, meaning that if the Brand Image and product quality are assumed to be zero then Consumer Satisfaction is worth 0.340. The regression coefficient value for the Brand Image variable is 0.643. This means that every increase in Brand Image by 1 unit will increase consumer satisfaction by 0.643 assuming other variables remain constant. The regression coefficient value for the product quality variable is 0.328. This means that every increase in product quality by 1 unit will increase consumer satisfaction by 0.328 assuming other variables remain. Standard error of probability. Standard error of influence on Y but not included in the equation. The t test is used to test the significance of the relationship between variables X and Y, whether variables X1 and In the Brand Image variable, it is known that t count is 5.074 > t table 1.660 and sig 0.000 < 0.05. This means that the Brand Image variable has a significant influence on consumer satisfaction. Meanwhile, for the product quality variable, it is known that t count is 2,486 > t table 1.660 and sig is 0.015 < 0.05. This means that the product quality variable has a significant effect on consumer satisfaction.

The F test basically shows whether all independent or independent variables have a joint influence on the dependent or dependent variable. To prove this, an F test is carried out, the results of the simultaneous regression test or F test can be seen in the table below:

Table 8 f Test

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	217,985	2	108,992	63,682	,000[b]
	Residual	166,015	97	1,711		
	Total	384,000	99			

Source: spss 26

In the table above the results of hypothesis testing show that the calculated F value 63.282 > F table 3,936 with sig 0.000 < 0.05 means that the independent variables together have a significant effect on the independent variable.

The purpose of coefficient of determination analysis is to determine the extent to which the independent variable explains the dependent variable. The results of calculating the coefficient of determination can be seen from the table below:

Table 9 Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,753[a]	,568	,559	1,308

Source: spss 26

Based on SPSS analysis, the following can be explained:

a. r shows a simple correlation (person correlation), namely the correlation between independent variable and dependent variable. The figure obtained is 0.753, meaning the correlation between the variable is 0.753. With these results it can be concluded that the correlation value between variables is very strong and positive.

b. r square (r^2) or the square of R, which shows the value of the coefficient of determination. This number will be converted into a percentage, which means the percentage contribution of the influence of the independent variable to the dependent variable. The r^2 value is $(0.753)^2$, which is 0.568, meaning that the percentage contribution of brand image and product quality towards costumer satisfaction is 56.8%, while the remaining 43.2% is influenced by other variables not included in this research.

5. Conclusion

From the results of the multiple linear regression equation above, it can be seen that *Brand Image* has a positive and significant effect on consumer satisfaction Nike brand sports shoes with a regression coefficient value of 0.643. Meanwhile the variable *Product Quality* also has a positive and significant effect on consumer satisfaction Nike brand sports shoes with a regression coefficient of 0.328.

Hypothesis test results on variable Brand Image d it is known that t count count 25,074 > t table 1, 660 and sig 0.000 < 0.0 5 which means that the variable *Brand Image* has a significant effect on customer satisfaction for Nike brand sports shoes . In the variable *Product quality* d it is known that t count 22.486 > t table is 1.660 and sig 0.0 15 < 0.005, a means the variable *Product Quality* has a significant effect on consumer satisfaction Nika brand sports shoes . The results of the F test show that the F value calculate 63.682 > F table 3,936 with sig 0.000 < 0.05 which means that the independent variables together significant effect on the independent variable. Simultaneously or together the variables *Brand Image* and Product Quality have a significant effect on Consumer Satisfaction of Nike brand sports shoes.

In the coefficient of determination test results, the figure R^2 was 0.568. In other words, in this research, the Brand Image and Product Quality variables were able to explain the consumer satisfaction variable by 56.8%, while 43.2% was explained by variables outside the research. Variables that can explain the level of consumer satisfaction include product price, promotional methods and service quality.

The Nike brand is the largest sports brand that uses the services of the world's great athletes as Brand Ambassadors to introduce their products. Each ambassador has their own product characteristics so that each product has different quality, shape and image. Currently, there are still many big athletes in the world who are Brand Ambassadors for Nike. However, currently Nike has not found a suitable basketball athlete to become its newest Brand Ambassador. The names of NBA players who have stolen the world's attention are starting to emerge, the author hopes that some of these players who are idols of world basketball fans will become the newest Brand Ambassadors who will raise Nike's image in the eyes of the world.

Acknowledgment

I really created this scientific work and can be responsible for the authenticity of the scientific work. The scientific work has been given in an international seminar and thanks to the committee of the International Conference on Agriculture, Engineering, Social Science and Education (ICAESSE) Palembang University. On June 11, 2024

Bibliography:

Amrullah et al, 2017 “Pengaruh Kualitas Produk Dan Kualitas Layanan Terhadap Keputusan Pembelian Sepeda Motor Honda, jurnal Ekonomi dan Manajemen, Volume 13, (2), 2016 ISSN print: 1907-3011, ISSN online: 2528-1127

Ghozali, Imam. 2018. Aplikasi Analisis Multivariate dengan Program IBM SPSS 25. Badan Penerbit Universitas Diponegoro: Semarang

Irawan, Adi. 2017.“Analisis Pengaruh Daya Tarik Wisata, Persepsi Harga, Dan Kualitas Pelayanan Terhadap Minat Berkunjung Ulang Dengan Kepuasan Konsumen Sebagai Variabel Intervening” Jurnal penelitian manejemen vol 1 No 2,2017

Keller. 2020. Strategic Brand Management: Building, Measuring, and Managing Brand Equity. Global Edition: Pearson.
Keller, K. L., & Swaminathan, V. (2020). Strategic Brand Management Building, Measuring, and Managing Brand Equity (Fifth Edition). Pearson Education.
Kotler, Philip., dan Gary Armstrong., (2019), Principles of Marketing, 14th Ed, Prentice Hall, Jakarta
Kotler, Philip And Kevin Lane Keller., 2016., Marketing Management, 15e Global Edition. Pearson Education Limited, New York.
Kotler, Philip Dan Kevin Lane Keller., 2014., Manajemen Pemasaran, Edisi Ke 13, Jilid 1&2, Alih Bahasa: Bob Sabran, Erlangga, Jakarta
Lupiyoadi dan Hamdani. 2017. Manajemen Pemasaran Jasa. Jakarta : Salemba Empat.
Murti, T.K. 2019. Pengaruh Brand Image, Promosi dan Biaya Pendidikan Terhadap Keputusan Mahasiswa Melanjutkan Studi Pada Program Studi Pendidikan Ekonomi. Jurnal Ilmiah Pendidikan Ekonomi Fakultas Keguruan dan Ilmu Pendidikan Vol. 7, No. 2, 102-107
Nurhalim, A. D. 2020. Pengaruh Brand Image Gojek terhadap Loyalitas Konsumen (Studi Kasus Efek Covid 19 Konsumen Karawaci Tegal Baru Tangerang). Jurnal Bina Manajemen Vol.9 No.1, 17- 29.
Septaria, V., & Rizal, R. (2022). PENGARUH BRAND IMAGE DAN BRAND EXPERIENCE TERHADAP BEHAVORIAL INTENTION MELALUI CUSTUMER EXPERIENCE SEBAGAI MODERASI (Studi Kasus Destinasi Wisata Seribu Rumah Gadang di Muara Labuh Kecamatan Sungai Pagu Kabupaten Solok Selatan Propinsi Sumatera Barat). Jurnal Manajemen, 10(2), 223-236.
Sugiyono. (2019). Memahami Penelitian Kualitatif". Bandung : ALFABETA.
Tjiptono, Fandy. 2019. "Pemasaran Jasa Edisi Terbaru." Yogyakarta: Penerbit Andi
Warni, Z., Rinandy, A.A., Dahlan, P., Gunarti, T.S. (2024) THE EFFECT OF DIITAL MARKETING ON INCREASING INTEREST IN PURCHASING MOTOR VEHICLE POLICIES IN GENERATION Z IN PALEMBANG CITY. Jurnal Manajemen, 12(1), 84-91

https://databoks.katadata.co.id
www.espn.com

Biodata:

Zubaidah Warni, SE, M.Si is a lecturer in University of Palembang, Faculty of Economy and act as Secretary of Management Study Program. Her Major Interest are Business Management, Enterpreneurship Management and Marketing Management. Email: zubaidahunpal@gmail.com

Alditya Aris Rinandy SE, MM is a lecturer in University of Palembang, Faculty of Economy, Management Study Program. He has experience for working as marketing on many Insurance Company. His major interest are Digital Marketing, Ecommerce, Insurance and Sport Management. Email: aldityarinandy90@gmail.com

Tesha Amanda Putri is second year student of University of Palembang. She takes Management Study Program on Faculty of Economy and has interest on Marketing Management. Email: teshaamandaputri@gmail.com

THE INFLUENCE OF PROMOTION AND LOCAL WISDOM ON INTERESTED IN VISITING BACK PALEMBANG CITY MODERATED BY TOURIST IMPRESSIONS

(Case Study of Ngidang Tradition Culture in Palembang City)

Amaliah Khairunissa[1*], Rusma Rizal[2]
Palembang University[1*,2]
amaliahk@unpal.ac.id[1]*,rizaldie2000@gmail.com[2]

ABSTRACT

This study aims to determine the effect of promotion, local wisdom on interested in visiting back the Palembang city moderated by the impression of tourists. This study uses a quantitative approach to explain the position of the variables studied and the relationship between one variable and another. This research is intended to test the hypothesis that has been formulated previously. The results of this study will explain the causal relationship between variables through hypothesis testing. In this study, the analysis method used was path analysis using the SmartPLS 3.0 program. The results of this study found that 1) there is a positive influence of promotion on interested in visiting back 2) there is a positive influence between local wisdom on interested in visiting back 3) there is a positive influence on tourist impressions on interested in visiting back 4) there is a positive influence of promotion on interested in visiting back moderated by tourist impressions 5) there is a negative influence between local wisdom on interested in visiting back moderated by tourist impressions.

Keywords*: Interested in visiting back, Local wisdom, Tourist impressions, Promotion*

INTRODUCTION

Gastronomy is another way to enjoy tourist attractions while also preserving culture through cultural preservation efforts in the field of food and drink or what is usually called culinary tourism. (Setiawati et al., 2021) Gastronomy includes practical gastronomy, theoretical gastronomy, technical gastronomy, food gastronomy and molecular gastronomy. Meanwhile, gastronomy combined with tourism has become a tourism resource for the creation of new products. Another benefit of developing gastronomic tourism is providing authentic culinary education and understanding to have a high appreciation of a region's culinary delights.

According to Ayu Nurwitasari in(Hasnah & Nugroho, 2021)gastronomy or culinary arts is the art or science of good food (good eating). A shorter explanation mentions gastronomy as everything related to the enjoyment of eating and drinking. Based on the definition above, it can be concluded that the study (science) of gastronomy regarding the culture and history contained therein constitutes the cultural identity of a region.

Based on the Decree of the Head of Berkah number 84 of 2019, Palembang was named a creative city with a superior culinary sub-sketetor. According to South Sumatra Culinary data in 2014, Palembang City has 130 types of culinary delights. Palembang's typical culinary delights have cultural and historical value. (Kartika & Harahap, 2019) This is closely related to gastronomy. Cultural tourism destinations such as the ngidang tradition in Palembang City as an alternative choice for tourists in choosing a cultural destination will have an impact such as tourists not returning or not visiting again. This is a challenge for the city government to encourage tourists to come back.

The ngidang tradition is a typical Palembang culture of serving food. The togetherness that appears from serving food gives its own meaning when we take part in the ngidang procession. For some tourists who follow this tradition, it is unique enough to be part of the fun and enjoyment in the process of enjoying the Ngidang way of eating in Palembang city.

This local wisdom, which has been taught from generation to generation, should be preserved. Local Wisdom is a humanities theme proposed to restore civilization from the crisis of modernity. Local wisdom is prioritized as knowledge that is considered correct when faced with modernization standards. This knowledge is obtained with an approach through observing symptoms to search for laws (Wahyuningsih & Santoso, 2023).

For this reason, the city government must be able to pay attention to and analyze various factors that influence tourists' revisit intentions (behavioral intention), such as providing the best service so that visitors can and have the intention to revisit tourist attractions together with colleagues, friends and extended family. All of this is a challenge for tourist area managers to be able to provide various incentives to tourists to become repeat visitors. Repeat visitors are a stable market that also provides free advertising in the form of word of mouth recommendations to family members and colleagues. (Reid and Reid, 1993; Lau and McKercher, 2004; Oppermann, 2000) in (Pujiastuti et al., 2020).

Tourist impressions are one of the factors that influence tourists' desire to visit again. A good tourist impression will make tourists feel satisfied and want to return to that destination another time. There are several factors that can influence the impression of tourism, including: tourist attraction, tourist attraction is the main factor that determines the impression of tourism. Diverse and interesting tourist attractions will make tourists feel satisfied with their travel experience. Tourist facilities, adequate and quality tourist facilities will make tourists feel comfortable and at home while on holiday. Tourist facilities that need to be considered include transportation, accommodation, food and drink, and recreational facilities.

Tourism promotion efforts are one of the factors that can influence tourists' desire to visit. Effective tourism promotion can increase tourist awareness about a tourist destination, as well as provide interesting and convincing information about that destination.

METHOD

The method used in this research is a quantitative descriptive method and regression analysis which is a method of describing or illustrating, depicting the phenomenon or phenomenon being researched systematically, factually and accurately and also defining the influence that occurs from the independent variable on the dependent variable. Data will be processed using the SmartPLS 3 program. In this research, the primary data collection method used is based on an online-based questionnaire using accidental sampling.

The research population is local tourists, national and foreign tourists who have seen, felt and enjoyed the culture, customs and tourism in the Palembang city. Based on tourism data from the city of Palembang, there are 2,011,058 tourists coming to the city of Palembang during 2023. The sampling technique used by researchers is simple random sampling, namely a sampling technique that is carried out randomly without paying attention to the strata in the population (Sugiyono, 2019). (Hair et al., 2014) Determining the number of samples that can be representative population, namely the variable indicator multiplied by 5 to 10. So the number The sample in this research is 28 indicators x 5 = 140. So the sample This research should have 140 respondents.

RESULTS AND DISCUSSION

Respondent characteristics

From the questionnaires that were distributed, there were 45 male respondents and 95 female respondents. There were 40 respondents aged >20 years, 41 respondent aged 20-30 years and 59 respondent aged >30 years. There are 65 respondent with income of tourists was <3 million, 41 respondent with income from 3 – 5 million and 54 respondent with income >8 million. There were 116 tourists from South Sumatra, 20 tourists from outside South Sumatra and 4 tourist from abroad.

Outer model testing

Research data quality testing is divided into 2 parts, namely data validity and reliability. Data quality testing is a stage that a research model must go through before arriving at an influence test or correlation test. In general, data validity describes the suitability of each indicator to the variable. The analysis results from this test will show several influences of factor loading, Average Variance Extracted (AVE), Discriminant Validity and Composite Reability. According to (Hair et al., 2017)*Loading Factor*The indicator must have a value > 0.6, if there is a variable whose factor loading is less than 0.6 then it is removed from the existing model. The following are the results of testing the outer model of this research:

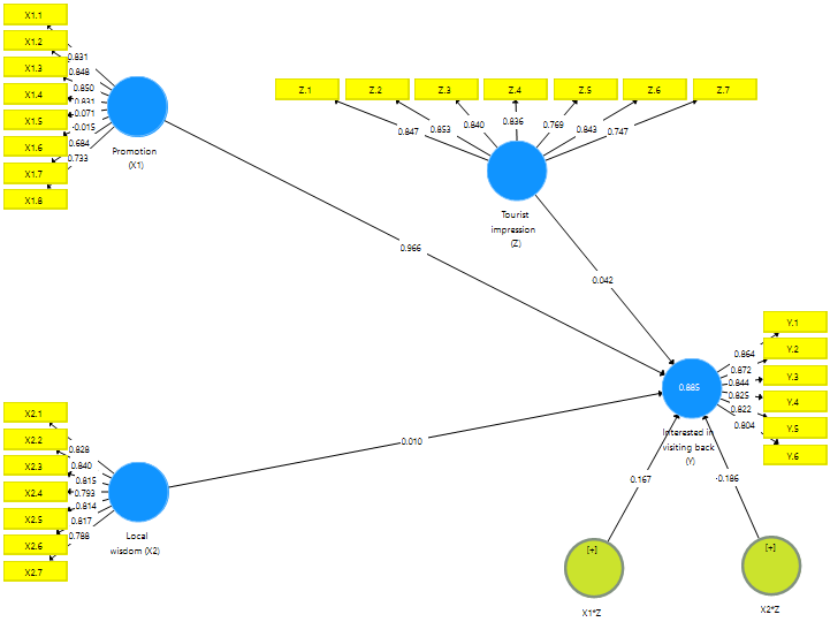


Figure 1: Loading Factor calculation results

From the picture above, it can be seen that there are 2 indicators in the promotion variable (X1) which must be removed from the model because the loading factor is <0.6, namely indicators X1.5 and X1.6. After eliminating these 2 indicators, they will also be deleted in the process of this research so that the new model is as follows:

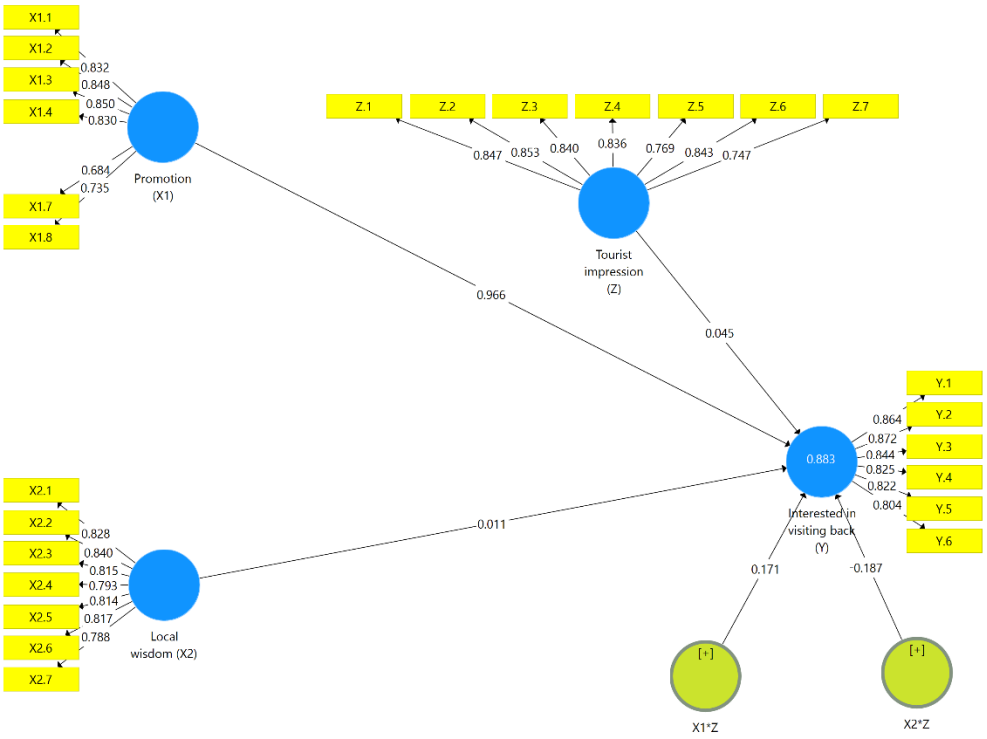


Figure 2: Outer loading results

Next, to test the validity, the Average Variance Extracted (AVE) value must be >0.5. Based on the table below, all AVE values in the latent variables are >0.5(Ghozali, 2017, 2018):

Table 1 Average Variance Extracted (AVE)

Variable	***Average Variance Extracted*(AVE)**
Promotion (X1)	0.913
Local wisdom (X2)	0.932
Interested in visiting back (Y)	0.934
Tourist impressions (Z)	0.935

Next, the validity of each latent variable was tested. This test is also referred to as a way to test the unidimensionality of the model that has been developed. This test can be seen from the Cronbach Alpha and Composite Reliability values which are >0.7 (Muhson, Ali: 2022)

Table 2 Cronbach Alpha and Composite Reliability

Variable	***Cronbach Alpha***	***Composite*Realibility**
Promotion (X1)	0.887	0.913
Local wisdom (X2)	0.915	0.915
Interested in visiting back (Y)	0.916	0.918
Tourist impressions (Z)	0.919	0.924

From the table above, all construct variables have Cronbach Alpha and Composite Reliability values >0.7 so that no unidimensionality problems were found in each latent variable studied.

Statistical coefficients

In PLS SEM 3.0, hypothesis testing calculations are carried out using and paying attention to the calculated t value (T) obtained from the results of the data with the t table value (t) from the SPSS table. The t-table value with a significance of 5% and the degree of freedom (DF) – number of data (n) -2, namely 140 -2 =138 is 1.977 (t table)

Table 3 Statistical Test Values

	t-statistics	P values	Original sample
Promotion (X1) → Interested in visiting back (Y)	3,102	0.042	0.966
Local wisdom (X2) → Interested in visiting back (Y)	2,084	0.039	0.011
Tourist impressions (Z) → Interested in visiting back (Y)	3,031	0.003	0.045
*Promotion (X1) * Tourist impression (Z) → Interested in visiting back (Y)*	2,185	0.029	0.171
*Local wisdom (X2)) * Tourist impression (Z) → Interested in visiting back (Y)*	2,366	0.018	-0.187

Based on the table data above, the t-statistic value of local wisdom (X2) on interested in visiting back (Y) is 3.102> t table 1.977 and the p value is 0.042 < 0.050, thus showing that local wisdom (X2) has a significant positive effect on interested in visiting back (Y). The local wisdom value for interested in visiting back (Y) has a t statistical number of 2.084 > t table 1.977 and a p value of 0.039 > 0.050 so it has a significant positive effect. Tourist impression (Z) on interested in visiting back (Y) has a t statistic of 3.031 > t table 1.977 and p value 0.003 < 0.050 so that tourist impression (Z) has a significant effect on interested in visiting back (Y).

Meanwhile promotion (X1) for interested in visiting back (Y)with moderationtourist impression (Z) has a t-statistic value of 2.184 > t table 1.977 and a p value of 0.029 < 0.050 sopromotion (X1) to interested in visiting back (Y)with moderationtourist impression (Z) has a significant positive influence. Then local wisdom (X2) towards interested in visiting back (Y) with moderation of tourist impression (Z) has a t-statistic of 2.366 < t table 1.977 and p value 0.018 > 0.050 so that local wisdom (X2) towards interested in visiting back (Y) with moderation tourist impression (Z) has a significant positive influence.

The results obtained in this research explain that there is a positive and significant influence on the promotional value and local wisdom on the intention to visit again. This is in line with research previously conducted by(Agusti et al., 2020) promotion, destination image and trust have a significant direct influence on tourist interest in visiting. Destination promotion and image have a significant influence on visiting interest through tourist trust.

Tourists' impressions have a significant influence on their intention to visit again. This is in line with research previously conducted by (Rochmadika et al., 2023).The research results of the Pecenongan area have the potential for gastronomic attraction in accordance with the operational indicators of the research variables.The results obtained in this research explain that there is a positive and significant influence on promotional value and intention to revisit through tourist impressions. This is in line with research previously conducted by(Septiyani et al., 2021). The positive impact is the increasing development of human thought patterns which produce the latest innovations which result in improvements in life sectors.

The results obtained in this study explain that there is no positive and significant influence on the value of local wisdom on the intention to visit again through tourist impressions. This is in line with research previously conducted by(Setiawati et al., 2021). The steps for developing agricultural areas as gastronomic tourism attractions are selecting agricultural areas, determining local products as basic ingredients, types of processed agricultural food, food processing culture, serving food and enjoying food. The output of the

research is a plan to develop gastronomic tourism in the agricultural area of Randobawailir Village, Kuningan Regency.

CONCLUSION

From this research, it was found that promotions have a positive and significant influence on tourists' intention to revisit. It was also found that local wisdom has a positive and significant influence on visiting intentions. Tourist impressions as a moderating variable also have a positive and significant influence on tourists' intention to revisit. Promotion also has a positive and significant influence on tourists' intention to revisit, moderated by tourists' impressions. However, this is inversely proportional to local wisdom having a negative and significant influence on tourists' intention to revisit, moderated by tourists' impressions.

ACKNOWLEDGEMENTS

The author would like to thank all parties who have helped in the process of writing this article. Thank you also to lecturers in the management study program and Palembang University

REFERENCES

Agusti, M., Utari, W., & Mardi W, N. (2020). Analysis Of The Influence Of Promotions And Destination Image On Interest In Visiting With Trust As An Intermediate Variable (Study of Tourists in the Wonocolo Textile Oil and Gas Energy Tourism Village in Bojonegoro). Management Partners Journal, 4(5), 804–818. https://doi.org/10.52160/ejmm.v4i5.397

Ghozali, I. (2017). Structural Equation Models - Concepts and Applications with AMOS 24 Programs (7th ed.). Diponegoro University.

Ghozali, I. (2018). Multivariate Analysis Application with SPSS Program. Diponegoro University Publishing Agency.

Hair, JF, Black, WC, Babin, BJ, & Anderson, RE (2017). Multivariate Data Analysis (7th ed.). Pearson.

Hasnah, VA, & Nugroho, SP (2021). Yogyakarta Food Gastronomy as a Culinary Tourism Attraction. Undergraduate Conference on Language, Literature, and Culture (UNCLLE), 1(1), 141–154.

Kartika, T., & Harahap, Z. (2019). The Culinary Development of Gastronomic Tourist Attraction in Palembang, South Sumatra. Tourism Scientific Journal, 4(3), 211–233.

Pujiastuti, EE, Hadi, L., & Zahro, SA (2020). Analysis of Factors that Influence Behavior Intention (Study of Tourists at the Puthuk Setumbu Borobudur Tourist Attraction) Introduction. Journal of Business Administration, 9(1), 55–70.

Rochmadika, H., Trisia, PA, & Parantika, A. (2023). Analysis Of The Potential Of Gastronomic Attraction In The Pecenongan Culinary Tourism Area, Central Jakarta. Journal of Educational Innovation, 3(8), 7317–7324.

Septiyani, S., Bety, B., & Hadi, N. (2021). Ngidang Tradition (Study of Changes and Shifts in the Ngidang Tradition in the Community of Subdistrict 30 Ilir Palembang). Tanjak: Islamic History and Civilization, 1(2), 1–9. https://doi.org/10.19109/tanjak.v1i2.9369

Setiawati, E., Ningsih, W., & Khalim, A. (2021). Development of Agricultural Areas as a Gastronomic Tourism Attraction in the New Normal Era in Randobawailir Village, Kuningan Regency. Journal of Research Innovation, 2(6), 1821–1832.

Sugiyono. (2019). Business Research Methods. Alphabet.

Biodata

Amaliah Khairunissa is a lecturer of Management Department, Palembang University. She received his Master Degree under Trisakti University. Her major interest are operation management, logistic and supply chain management. Her email is amaliahk@unpal.ac.id.

THE INFLUENCE OF INSTAGRAM ON PURCHASE DECISIONS AND REPEAT PURCHASE INTENTIONS OF FOOD AND BEVERAGE CONSUMERS

Arham Hafidh Akbar
Pertiba University
arham.hafidh@gmail.com

Juhari
Pertiba University
juhari@pertiba.ac.id

Mohamad Makrus
Pertiba University
[3]mohamadmakrus01@gmail.com

Abstract

Consumer behavior has shifted towards using digital platforms, such as Instagram, for obtaining information about food and beverage products. This trend shows that more consumers rely on these platforms for references, reviews, and recommendations before making purchasing decisions. This research examines how Content Creation, Content Sharing, and Connecting on Instagram influence Purchasing Decisions and their subsequent impact on Consumer Repurchase Intentions for food and beverage products in Pangkalpinang City. The study's population consisted of residents of Pangkalpinang City who use Instagram, and the sample size of 400 was determined using the Slovin formula. The hypotheses were tested using the SEM statistical method with the SmartPLS application version 4.0.9.6, 2023. The research findings indicate that (1) Content Creation positively and significantly affects purchasing decisions, (2) Content Sharing affects purchasing decisions, (3) Connecting positively and significantly impacts purchasing decisions, (4) Content Creation, Content Sharing, Connecting, and purchasing decisions influence repurchase interest positively, (5) Content Creation positively and significantly affects repurchase interest, (6) Content Sharing positively and significantly affects repurchase interest, (7) Connecting does not have a positive and significant effect on repurchase interest, and (8) Purchasing decisions positively and significantly affect repurchase interest.

Keywords: *Content Creation, Content Sharing, Connecting, Purchase Decision and Repurchase Intention*

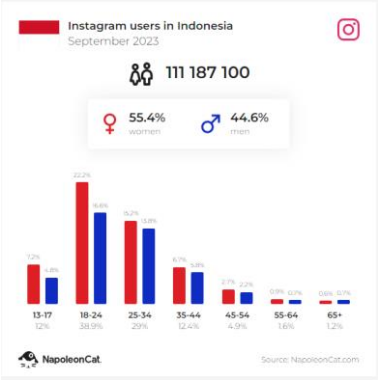
1. INTRODUCTION

The development of internet technology in the world internationally makes progress in various fields of human life such as health, finance, and marketing. The development is very fast because of the help of technology so that everyone can easily get the desired information from various international and national sources. The rapid development of technology that creates sophisticated devices makes the spread of information spread quickly. Information about a product that is marketed easily can directly reach target consumers both internationally and nationally.

The strong influence of the internet on the world that can be used by humans to do *digital marketing* is considered to influence a *trendsetter*. The use of the internet or social media is increasing in line with its

use in the world of marketing. Even according to Utami and Triyono (2012) online marketing is increasingly familiar among the public along with the increase in internet users.

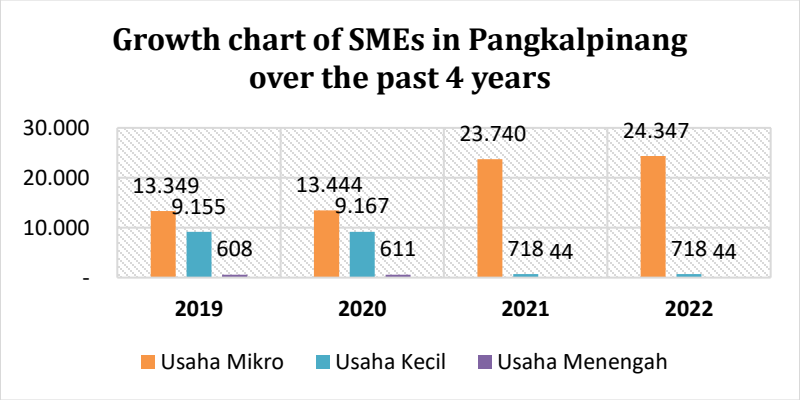
Instagram is one of the means of disseminating product and service information. This makes Instagram enter into the needs of life other than to meet the lifestyle. It is also known that Instagram active users in Indonesia are 111,187,100 users consisting of various genders and ages as of September 2023.



(Source: NapoleonCat)

Picture 1: Instagram User Data in Indonesia

In today's digital age, lifestyles are influenced by trends and viral content. Promotional advertising content that goes viral on social media, especially Instagram, attracts people to buy it. These contents are in the form of videos or photos accompanied by uniquely created and contemporary captions, which aim to influence consumers to buy their products. Viral content has reached many viewers on social media, so it can increase the number of their online purchases. If one of the consumers reviews the product and uploads it to his social media, chances are his followers will also be influenced and curious to try it until they are sure to make a purchase too.



Source: Department of Cooperatives, Trade and MSMEs of Pangkalpinang City

Picture 1: MSME Growth Graph Pangkalpinang City

With the help of social media in marketing, the growth of MSMEs in Pangkalpinang City grows every year. Rapid growth occurred in 2021 and 2022, where the pandemic occurred which required activities to be carried out remotely or digitally. This makes people have to use devices for communication, work, and buying and selling activities. The rapid exchange of information allows all people to get information from anywhere, including MSMEs whose products are promoted by content creators.

Observing the phenomenon, researchers are interested in further studying the impact of Content Creation, Content Sharing, and Instagram Connectivity on purchasing decisions, which influences the interest in repurchasing food and beverage products in Pangkalpinang City.

2. LITERATURE REVIEW

In English, the term *Content Creation* consists of 2 words, namely "*content*" which means content, and "*creation*" which means creation. From these two definitions, *Content Creation* can be explained as the process of creating content in various forms, such as video, writing, sound, photos, or a combination of two or more of these elements to fill space on social media platforms (Sundawa, 2018). Currently, all digital marketing efforts are centered around content creation. This involves researching, developing strategic concepts, producing high-value materials, and promoting these works to a target audience. According to Maeskina (2022), there are several types of digital content, including web pages, blogs, infographics, movies, and social media posts.

Content Sharing allows writers to expand their online audience and network their business. Widely shared content can provide a great opportunity to gain exposure, attract online viewers to stay engaged, and significantly improve sales results (Hartono, 2020). *Content sharing* through social networks can help businesses grow their networks and reach a wider audience online. Depending on the type of information shared, sharing can result in sales either directly or indirectly (Genelius, 2011).

According to Genelius (2011), *Connecting* refers to the relationship between the sender and receiver of communication that has common interests. The relationship between the recipient of the message and the sender of the message can result in increased business. Human interaction can now be realized simply and successfully as a result of modern technological advances, such as through the use of cell phones, social media, and other communication technologies.

According to Kotler (2012), the AIDA model has four stages that are used to influence purchasing decisions. The AIDA (*Attention, Interest, Desire, and Action*) model is used by marketers to design messages delivered in the right language to influence customers in making purchasing decisions. However, not all marketers can communicate their message effectively to customers, which can cause customers to pause as they consider their needs and wants.

According to Gersom Hendarsono and Sugiono Sugiharto (2013), repurchase interest reflects a buyer's intention to revisit and purchase again in the future. While repurchase behavior is frequently linked to loyalty (Mirabi et al., 2015), the two concepts are distinct. Repurchase behavior involves repeatedly buying the same brand, whereas brand loyalty signifies a psychological commitment to a particular brand. Peter and Olson (2014) define repurchase interest as the act of making a purchase more than once or multiple times. Customer satisfaction can drive someone to make repeat purchases, develop loyalty to the product, or become loyal to the store where the purchase was made, leading to positive recommendations to others.

3. RESEARCH METHODS

Population and Sample`

The population of this study is Instagram application users in Pangkalpinang City. The population is spread across several sub-districts and the number is not known exactly. It is known that the population of Pangkalpinang City is 226,297 people. Thus, the population in Pangkalpinang City was obtained as many as 226,297 people. Based on existing population data, the Slovin formula is used to calculate the number of samples with 5% precision and 95% confidence, as follows:

$$n = \frac{\mathrm{N}}{1 + \mathrm{Ne}^2}$$

Information:

n = Number of samples searched

N = Population size, where the population is Instagram users in Pangkalpinang City

e2 = Precision value/immutability percentage error rate 5% (0.05)

Thus, the sample size to be taken for a population of about 226,297 with a 95% confidence level and a *5% margin of error* of about 399,294, would round up to 400 to ensure an adequate sample.

Sampling Techniques

Purposive random sampling *technique* is used as a sampling method, where researchers select sample members based on certain criteria that are considered relevant to the research objective (Dharma, 2017). Sampling must be by the quality and characteristics of a population, to be trusted, and conclusions can be drawn, this is because the sample can be representative of the population.

Location and Time of Research

This research was conducted by distributing digital questionnaires using Google Forms to residents of Pangkalpinang. The questionnaire will be distributed from October 2023 to December 2023. The time needed by the authors to complete this study is for three months from October 2023 to December 2023.

Data Analysis Techniques

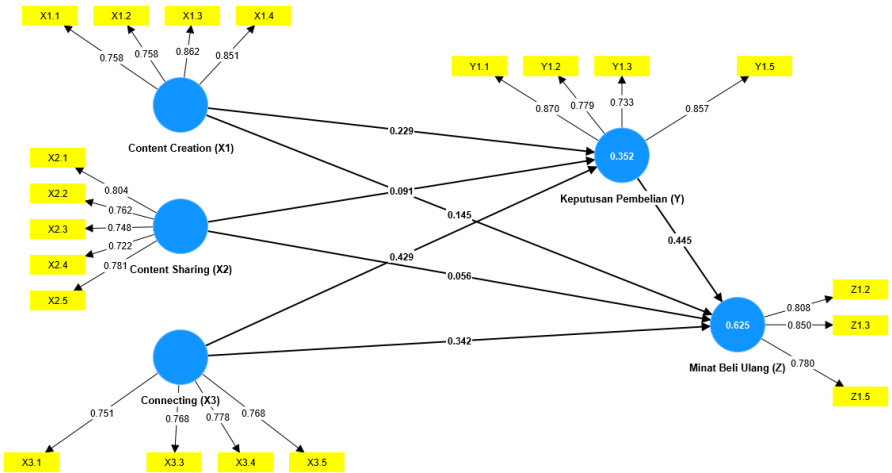
This study employed data analysis using the Partial Least Square (PLS) method with SmartPLS software Version 4.0.9.6. PLS is a technique for solving Structural Equation Modeling (SEM) and is considered superior to other SEM methods. SEM offers greater flexibility in connecting theory and data, enabling path analysis with latent variables. It is frequently used in social and psychological research to explore complex conceptual models and understand how related variables influence one another. PLS is a strong analytical method as it does not depend on many assumptions. It allows for data that are not normally distributed and can include indicators with categorical, ordinal, interval, and ratio scales within the same model. Additionally, it does not require a large sample size (Ghozali, 2014).

Explain the research plan to be applied including an explanation of the collection of supporting information/data, presentation of steps to discuss/analyze (defining variables, computational techniques/processing data), and explanation of assumptions. The methodology can describe data analysis techniques or procedures.

4. RESULTS AND DISCUSSION

Outer Model Analysis

A research concept and model must first undergo the purification stage in the measurement model before it can be tested in a predictive framework for relational and causal relationships. The outer model is used to assess the construct validity and reliability of the instruments.



Source: SmartPLS Data Output Version 4.0.9.6, 2023

Picture 3: Structural Model Diagram

a. Convergent Validity

The results show that the loading factor surpasses the recommended threshold of 0.7. Validity tests are essential to ensure that the questionnaire items are properly understood by respondents and produce reliable results. According to Wijoyono (2011), as cited in Nasta'in (2024), validity can be evaluated through convergent validity (outer model), where a loading factor value between 0.50 and 0.60 is considered acceptable, and by Average Variance Extracted (AVE), which should be above 0.50. In this study, the researchers used loading factor values above 0.50 and an AVE value above 0.50. Here are the results of SmartPLS with loading factor.

Table 1. Convergent Validity

Indikator Variabel	***Outher loading***	***Consistency Reliability***	***Convergent Validity***
X1.1 <- *Content Creation* (X1)	0.758	0.829	0.654
X1.2 <- *Content Creation* (X1)	0.758		
X1.3 <- *Content Creation* (X1)	0.862		
X1.4 <- *Content Creation* (X1)	0.851		
X2.1 <- *Content Creation* (X1)	0.804	0.858	0.584
X2.2 <- *Content Sharing* (X2)	0.762		
X2.3 <- *Content Sharing* (X2)	0.748		
X2.4 <- *Content Sharing* (X2)	0.722		
X2.5 <- *Content Sharing* (X2)	0.781		
X3.1 <- *Connecting* (X3)	0.751	0.774	0.587
X3.3 <- *Connecting* (X3)	0.768		
X3.4 <- *Connecting* (X3)	0.778		
X3.5 <- *Connecting* (X3)	0.768		
Y1.1 <- purchase decision (Y)	0.870	0.827	0.659
Y1.2 <- purchase decision (Y)	0.779		
Outher loading	Consistency Reliability		
0.758	0.829		
0.758	0.808	0.747	X1.3 <-
0.862	0.850		
0.851	0.780		

Source: SmartPLS Data Output Version 4.0.9.6, 2023

Based on the table above, it can be seen that the loading factor value on 20 indicators is more than 0.6 and the AVE is more than 0.5. This indicates that each of these indicators is valid and can be used as a variable instrument *of Content Creation*, *Content Sharing*, *Connecting*, purchase decision, and repurchase interest.

b. Discriminant Validity

Discriminant validity is evaluated by comparing the square root of the average variance extracted (√AVE) for each construct with the correlation between that construct and other constructs within the model. The model demonstrates adequate discriminant validity when the square root of AVE for each construct exceeds the correlation between that construct and other constructs. Additionally, Ghozali & Latan (2015) propose another method for assessing construct validity by examining the AVE value. The model is considered satisfactory if the AVE value for each construct is above 0.50. Measurements of discriminant validity will be made using *Fornell Larcker* and crossloadings. The results of the *Fornell Larcker* test in this study are as follows:

Table 2. Discriminant Validity

	0.858 **(X3)**	***0.584*****(X1)**	***X2.2*** **<- Content Sharing**	**0.762**	**Repurchase Decision (Z)**
Connecting **(X3)**	**X2.3 <-**				
0.722**(X1)**	0.493	**0.809**			
Content Sharing **(X2)**	X3.1 <-	0.751	**0.774**		
0.768	0.550	0.448	X3.4 <-	**0.778**	
Repurchase Interest (Z)	X3.5 <-	0.768	0.160	0.706	**Y1.1 <- Purchase Decision (Y)**

Source: SmartPLS Data Output Version 4.0.9.6, 2023

Based on the outcomes of the data analysis, the square root of the AVE for all research variables is greater than the correlation between the variables. So the *Fornell-Larcker Criterion* criteria is acceptable.

Inner Model Analysis

The R2 value represents the extent to which the exogenous variable determines its endogenous counterpart. A higher R2 value signifies a stronger level of determination. Chin presents the R2 Value criterion for assessing model quality, also known as the Goodness of Fit Model criterion, along with the coefficient of determination (KD), which indicates the magnitude of influence of exogenous latent variables on endogenous latent variables. Chin's (2013) criteria for R2 are used to measure these aspects:

- 0.67 → Strong
- 0.33 → Moderate
- 0.19 → Weak

The value of the coefficient of determination can be shown in the following table:

Table 3. Inner Model

	0.827	**0.659**
Y1.2 <- Purchase Decision (Y)	0.779	0.347
Repurchase Interest (Z)	Y1.3 <- Purchase Decision (Y)	0.733

Source: SmartPLS Data Output Version 4.0.9.6, 2023

Based on the data processing results in Table 3, the R-Square value indicating the combined influence of X1, X2, and X3 on Y is 0.352, with an Adjusted R-Square value of 0.347. This means that the exogenous constructs (X1, X2, and X3) together explain 34.7% of the variance in Y. Since the Adjusted R-Square is over 33%, the effect of these constructs on Y is considered moderate. Additionally, the R-Square value for the combined influence of X1, X2, X3, and Y on Z is 0.625, with an Adjusted R-Square value of 0.622. This indicates that these constructs collectively explain 62.2% of the variance in Z. With the Adjusted R-Square falling between 33% and 67%, the effect of the constructs on Z is also considered moderate.

Hypothesis Test

The calculation results of SmartPLS Version 4.0.9.6 show that a direct relationship between variables is said to exist if the p-value < 0.05, and it is said that there is no direct relationship if the p-value value > 0.05. The results of testing the hypothesis of direct influence on this study are seen in the following table:

Table 4. Hypothesis Test

	Original sample (O)	**Y1.5 <- Purchase Decision (Y)**	**0.857**	**T statistics (|O/STDEV|)**	**P values**
***Z1.2* <- *Repurchase Interest (Z)*(X1) -> Purchase Decision (Y)**	0.808	0.747	0.661	Z1.3 <- Repurchase Interest (Z)	0.850
***Content Creation* (X1) -> Repurchase Interest (Z)**	0.145	Z1.5 <- Repurchase Interest (Z)	0.780	3.461	0.001
Purchase Decision (Y) -> Repurchase Interest (Z)	0.445	0.443	0.047	9.479	0
***Connecting* (X3)**	Content Creation	Content Sharing	Purchase Decision (Y)	Repurchase Interest (Z)	Connecting
***0.766*(X2) -> Repurchase Interest (Z)**	0.056	0.058	0.035	1.573	Content Creation
***0.493* (X3) -> Purchase Decision (Y)**	0.809	0.429	0.055	7.797	Content Sharing
***0.084* (X3) -> Repurchase Interest (Z)**	0.077	0.764	0.049	6.926	Purchase Decision (Y)

Source: SmartPLS Data Output Version 4.0.9.6, 2023

Based on the table above, it can be concluded as follows:

1) *Content Creation* has a positive and significant effect on Purchase Decisions by showing a t-statistic value of 3.973 > t table (1.960) and a p-value of 0.000 < 0.05.
2) *Content Creation* does not affect Repurchase Interest by showing a t-statistic value of 3.461 < t table (1.960) and a p-value of 0.001 > 0.05.
3) Purchase Decision has a positive and significant effect on Repurchase Interest by showing a t-statistic value of 9.479 > t table (1.960) and a p-value of 0.000 < 0.05.
4) *Content Sharing* has a favorable and notable impact on the decision by showing a t-statistic value of 2.220 > t table (1.960) and a p-value of 0.026 < 0.05.
5) *Content Sharing* does not affect Repurchase Interest by showing a t-statistic value of 1.573 < t table (1.960) and a p-value of 0.116 > 0.05.

6) *Connecting* has a favorable and substantial impact on purchasing decisions by showing a t-statistic value of 7.797 > t table (1.960) and a p-value of 0.000 < 0.05.
7) *Connecting* has a positive and significant effect on Repurchase Interest by showing a t-statistic value of 6.926 > t table (1.960) and a p-value of 0.000 < 0.05.

Table 5. Direct and Indirect Influence

	0.448	**0.145**	**0.812**	**T statistics (|O/STDEV|)**	**Repurchase Interest (Z)**
***0.663*(X1) -> Purchase Decision (Y) -> Repurchase Interest (Z)**	0.518	0.160	0.706	0.813	0
***Content Sharing* (X2) -> Purchase Decision (Y) -> Repurchase Interest (Z)**	0.041	0.043	0.018	2.199	0.028
***Connecting* (X3) -> Purchase Decision (Y) -> Repurchase Interest (Z)**	0.191	0.191	R-square	R-square adjusted	Purchase Decision (Y)

Source: SmartPLS Data Output Version 4.0.9.6, 2023

Therefore, it can be inferred from the aforementioned statement that:

1. The Purchase Decision variable partially mediates the relationship between the Content Creation variable and the Repurchase Interest variable. This is evident from the positive and significant influence of the Content Creation variable on Repurchase Interest, both directly and through the mediation of the Purchase Decision variable. Therefore, it is concluded that the Purchase Decision variable serves as a partial mediator between Content Creation and Repurchase Interest.
2. The Purchase Decision variable partially mediates the relationship between the Content Sharing variable and the Repurchase Interest variable. This is shown by the positive and significant influence of the Content Sharing variable on Repurchase Interest, both directly and through the mediation of the Purchase Decision variable. Thus, it is concluded that the Purchase Decision variable serves as a partial mediator between Content Sharing and Repurchase Interest.
3. The Purchase Decision variable partially mediates the relationship between the Connecting variable and the Repurchase Interest variable. This is demonstrated by the positive and significant influence of the Connecting variable on Repurchase Interest, both directly and through the mediation of the Purchase Decision variable. Hence, it is concluded that the Purchase Decision variable serves as a partial mediator between Connecting and Repurchase Interest

Implications

Future researchers are advised to consider incorporating additional variables associated with patient satisfaction. This approach would enable research to offer a more holistic understanding of the factors influencing Content Creation, Content Sharing, and Connecting. It's worth noting that the questionnaires used in this study to measure Content Creation, Content Sharing, Connecting, purchase decisions, and repurchase interest are somewhat limited in scope. Expanding the scope of these questionnaires could enhance the depth and breadth of future investigations. Therefore, future research can add and improve existing questions or statements on this research questionnaire. This research focuses on Instagram social media, for future research is expected to expand the scope on other social media so that it can provide a more comprehensive picture.

5. CONCLUSION

From the findings and discussions presented in the research, the following conclusions can be inferred:

1. The calculations indicate that the Content Creation variable significantly and positively influences purchasing decisions for food and beverage products in Pangkalpinang City, with a p-value significance of $0.000 \leq 0.05$ and a calculated t value of $3.973 \geq 1.960$.
2. The analysis shows that the Content Sharing variable affects purchasing decisions for food and beverage products in Pangkalpinang City, with a p-value significance of $0.026 \leq 0.05$ and a calculated t value of $2.220 \geq 1.960$.
3. Additionally, the calculations reveal that the Connecting variable significantly and positively impacts purchasing decisions for food and beverage products in Pangkalpinang City, with a p-value significance of $0.000 \leq 0.05$ and a calculated t value of $7.797 \geq 1.960$.
4. The overall influence of Content Creation, Content Sharing, and Connecting on purchasing decisions for food and beverage products in Pangkalpinang City is moderate, with an Adjusted R Square value of 0.622, supporting the hypothesis.
5. The analysis also shows that the Content Creation variable significantly and positively influences repurchase interest in food and beverage products in Pangkalpinang City, with a p-value significance of $0.001 \leq 0.05$ and a calculated t value of $3.461 \geq 1.960$.
6. However, the Content Sharing variable does not significantly influence repurchase interest, as indicated by a p-value significance of $0.116 \geq 0.05$ and a calculated t value of $1.573 \leq 1.960$.
7. Conversely, the Connecting variable significantly and positively affects repurchase interest, with a p-value significance of $0.000 \leq 0.05$ and a calculated t value of $6.926 \geq 1.960$.
8. Moreover, purchasing decisions for food and beverage products in Pangkalpinang City positively and significantly influence repurchase interest, with a p-value significance of $0.000 \leq 0.05$ and a calculated t-value of $9.479 \geq 1.960$.
9. Overall, the combined influence of Content Creation, Content Sharing, Connecting, and Purchasing Decisions on repurchase interest in food and beverages in Pangkalpinang City is moderate, with an Adjusted R Square value of 0.347, supporting the hypothesis.

Overall, the hypothetical results show that *Content Creation*, *Content Sharing*, *Connecting*, and Purchase decisions have a significant influence on repurchase interest. Purchase decision as an intervening variable shows that *Content Creation*, *Content Sharing*, and *Connecting* can increase customer repeat purchase interest. This confirms that MSMEs for food and beverage products need to create marketing content on social media to increase product selling power.

6. ACKNOWLEDGEMENTS

We express our deepest gratitude to all parties who have contributed to and supported this research. Thank you to the Pertiba University Foundation, the Rector of Pertiba University for providing funding for this research and the publication of this article, the respondents who took the time to participate in this survey, and the advisory faculty team for their guidance in writing this research. This research would not have been possible without the assistance and support of all the parties mentioned above. We hope that the results of this study will provide benefits and positive contributions to the development of knowledge and practice in the field of digital marketing.

Biodata

Arham Hafidh Akbar is an alumnus of the Master of Management Program at Pertiba University and an entrepreneur. Juhari is a permanent lecturer and Head of the Master of Management Program at Pertiba University, certified in Marketing Management. Mohamad Makrus is a

permanent lecturer in the Master of Management Program and also serves as Vice Rector for General Administration and Finance at Pertiba University, with expertise in financial management and accounting.

REFERENCES

Chaffey, D., Edmundson-Bird, D. and Hemphill, T., 2019. *Digital business and e-commerce management*. Pearson UK.

Dharma, N.B.S. and Noviari, N., 2017. The effect of corporate social responsibility and capital intensity on tax avoidance. *E-Journal of Accounting Udayana University*, 18(1), pp.529-556.

Office of Cooperatives, Trade and MSMEs of Pangkalpinang City. 2023. *MSME Growth Data in Pangkalpinang City in 2023*.

Feriyanto, Andri and Triana, Endang Shyta. 2015. *Business Communications*. Kebumen: MEDIATER

Ghozali, H.I & Latan, H. 2015. s, *Concepts, Techniques and Applications, using the Smart PLS 3.0 program*. Yogyakarta: Diponegoro University.

Ghozali, Imam. 2014. *Structural EquationModeling, Alternative Methods with (PLS). 4th edition*. Semarang: Diponegoro University

Gunelius, S. 2011. 30-Minute Social Media Marketing. United States: McGraw-Hill Companies.

Hartono, R., Arifin, R. and Hufron, M., 2020. The influence of social media (Instagram) and word of mouth promotion strategies on Mbok Taya's culinary purchase decisions. *E-JRM: Electronic Journal of Management Research*, 9(03).

Hasibuan, M.S., 2016. Human resource management (revision). Jakarta: Bumi Aksara.

Hendarsono, G. and Sugiharto, S., 2013. Analysis of the Effect of Experiential Marketing on Consumer Repurchase Interests at Cafe Buntos 99 Sidoarjo. *Journal of Marketing Management*, 1(2), pp.1-8.

Kotler and Amstrong, 2017. Marketing Managemet. Edition 16 Global Edition. Pearson.

Kotler, Philip and Kevin Lane Keller, 2012. *Marketing Management, Edisi 14*. New Jersey: Prentice-Hall Published.

Laudon, K.C. and Laudon, J.P., 2017. *Management Information System "translated by Chriswan Sungkono and Machmudin Eka P"*. Management Information System. Jakarta: Salemba Empat.

Maeskina, M. M., &; Hidayat, D. 2022. Adapting Content Creator Work in the Digital Era. *Journal of Communio : Journal of the Department of Communication Science* 11(10). https://doi.org/10.35508/jikom.v11i1.5150

Mirabi, V., Akbariyeh, H. and Tahmasebifard, H., 2015. A study of factors affecting on customers purchase intention. *Journal of Multidisciplinary Engineering Science and Technology (JMEST)*, 2(1).

Nasta'in, A.F., Samad, A. and Sujatmiko, S., 2024. The influence of content marketing and social media on repurchase interest through purchase decisions on Bekind. Id. *Journal of Nitro Financial Banking Management*, 7(1), pp.38-52.

Utami, A. A., &; Triyono, R. A. (2012). Utilization of blackberry as a means of communication and online Batik sales with a dropship system in batik. *Speed-Centric Journal (Solo, Engineering Research and Education, 2011).*

IMPROVING ENTREPRENEURSHIP SKILLS IN THE SOCIALIZATION ENTREPRENEURIAL PROGRAM YEAR 2024 STATE POLYTECHNIC OF SRIWIJAYA

M Arief Rahman
Politeknik Negeri Sriwijaya
m.arief.rahman@polsri.ac.id

Indah Pratiwi
Politeknik Negeri Sriwijaya
indahp@polsri.ac.id

Paisal
Politeknik Negeri Sriwijaya
paisal@polsri.ac.id

Indri Ariyanti
Politeknik Negeri Sriwijaya
indri@polsri.ac.id

Zahra Ananda Lanos
Politeknik Negeri Sriwijaya
zahralanos@gmail.com

Abstract

Entrepreneurship education plays a crucial role in fostering innovation and empowering future leaders in today's dynamic economic landscape. This paper delves into Socialization Entrepreneurial Program conducted at the State Polytechnic of Sriwijaya in 2024, aimed at nurturing entrepreneurial skills among students. Through a comprehensive analysis of the program's implementation, sharing sessions, challenges, and participant feedback, this study provides insights into the efficacy of entrepreneurship education initiatives. The program employed a hybrid approach, blending webinar sessions with coaching activities, to disseminate knowledge about entrepreneurship and guide participants in engaging with the program effectively. Various challenges encountered during implementation were identified, and recommendations for future enhancements were proposed based on participant feedback. The findings underscore the positive impact of the Entrepreneurial Program in instilling entrepreneurial interest and facilitating skill development among students, highlighting the transformative potential of integrating entrepreneurship education within academic institutions.

Keywords: Entrepreneurial, Socialization, Entrepreneurial Program, Skill Development, Hybrid Approach, Participant feedback.

6. INTRODUCTION

In the contemporary global landscape, entrepreneurship stands as a cornerstone for economic growth, innovation, and societal advancement (Abhijith, 2021). Recognizing its pivotal role, educational institutions worldwide have increasingly embraced entrepreneurship education to foster a culture of innovation and empower the next generation of leaders and innovators (Houjeir et al., 2023).

As an effort to cultivate entrepreneurial spirit and enhance entrepreneurial activities to encourage college graduates to become job creators, the Student Entrepreneurship Program (Program Mahasiswa Wirausaha - PMW) has been developed as part of the entrepreneurship education strategy in higher education institutions (Suwena, 2016). However, it is seldom found that a graduate wishes to embark on an

entrepreneurial journey upon completing their studies. The failure of such endeavors is purportedly due to a lack of earnestness in entrepreneurial pursuits and a failure to recognize the inherent potentials within students (Yulikah et al., 2021). Identifying the entrepreneurial potentials of students can be assessed through six aspects: personality, self-discipline, creativity, drive/desire, willingness to face risks, and self-confidence.

In an endeavor to foster a culture of entrepreneurship and stimulate entrepreneurial activities among college graduates, the Student Entrepreneurship Program (PMW) has been formulated as an integral component of entrepreneurship education within higher education institutions (Setyobakti et al., 2022). Nonetheless, the inclination of graduates to venture into entrepreneurship post-graduation remains scarce. This dearth in entrepreneurial endeavors is often attributed to a lack of earnest commitment towards entrepreneurial pursuits and an inherent failure to recognize the latent potentials residing within students (Yuliana et al., 2022).

This paradigm shift is particularly evident in the initiatives undertaken by the State Polytechnic of Sriwijaya (Politeknik Negeri Sriwijaya), where the integration of entrepreneurial programs has become a focal point in shaping the academic landscape. Amidst this backdrop, the Entrepreneurial Program at the State Polytechnic of Sriwijaya in the year 2024 marks a significant milestone in nurturing the entrepreneurial spirit among its students.

Entrepreneurial Program serves as a precursor to delve into the multifaceted dimensions of the Entrepreneurial Program, elucidating its objectives, methodologies, and anticipated outcomes. By exploring the symbiotic relationship between entrepreneurship, education, and societal advancement, we aim to shed light on the transformative potential of integrating entrepreneurship within the social fabric of academic institutions (Jamali & Kreidie, 2014). This program to navigate through the intricate facets of this entrepreneurial journey, it becomes imperative to discern the underlying motivations and aspirations that drive the integration of entrepreneurship within the academic milieu. From fostering a culture of innovation to instilling an entrepreneurial mindset, the Entrepreneurial Program at the State Polytechnic of Sriwijaya embodies a holistic approach towards equipping students with the requisite skills and competencies to thrive in an ever-evolving global landscape.

This discourse endeavors to unravel the intricacies of the Entrepreneurial Program, delineating its core components, pedagogical approaches, and strategic imperatives. Through an interdisciplinary lens, we strive to elucidate how the amalgamation of theoretical knowledge with practical experiences can serve as a catalyst for fostering entrepreneurial acumen and propelling socioeconomic development. In the subsequent sections, we shall embark on a comprehensive exploration of the Entrepreneurial Program at the State Polytechnic of Sriwijaya, delving into its strategic underpinnings, collaborative endeavors, and transformative impacts. By elucidating the symbiotic relationship between entrepreneurship and education, we endeavor to catalyze a discourse that transcends conventional paradigms and embarks on a transformative journey towards a more entrepreneurial future.

7. THEORITICAL

4.1. Entrepreneur

An entrepreneur is an individual who takes on the responsibility of initiating, organizing, and managing a business venture or enterprise with the aim of making a profit (Giacomin et al., 2023). Entrepreneurs are characterized by their willingness to take risks, their ability to identify and capitalize on opportunities, and their innovative approach to solving problems. They are often driven by a strong sense of independence, creativity, and determination to succeed. Entrepreneurs play a crucial role in driving economic growth and development by introducing new products, services, and business models, creating jobs, and fostering competition in the marketplace (Pattinson & Cunningham, 2022).

8. METHODOLOGY

The Community Service Activity was conducted by the Career Development and Entrepreneurship Unit with representatives from nine departments in State Polytechnic of Sriwijaya participating. The event comprised webinar sessions and entrepreneurship coaching, with a focus on providing "Successful

Entrepreneurship at a Young Age." The choice of the PMW-themed webinar aimed to assist participants who already harbored aspirations and interests in entrepreneurship in realizing their business ideas by utilizing the funding opportunities available through PMW. Essentially, igniting entrepreneurial interest and encouraging individuals to venture into entrepreneurship can be cultivated through educational and training activities focused on entrepreneurship The execution of this initiative involved delivering insights into the Socialization PMW program to participants through online webinar sessions and providing coaching to ensure their success in engaging with PMW activities on this Year. This activity was conducted in a hybrid format, with some participants attending in-person sessions at the Career Development and Entrepreneurship Unit while others joined remotely via Zoom Meetings and in Graha Building State Polytechnic of Sriwijaya.



Figure 3 Activity Procedural Steps

The activity's procedural steps, as outlined in Figure 1, began with a comprehensive dissemination phase aimed at ensuring broad participation from stakeholders. This involved the distribution of informational materials, such as event flyers, across various channels including student associations, social media platforms, and departmental networks. Subsequently, the execution phase commenced with the conduct of hybrid webinar sessions, facilitated by knowledgeable speakers who provided valuable insights and strategies for engaging with the Entrepreneur Program 2024. Following the informative webinars, participants actively engaged in socialisation coaching sessions designed to refine their entrepreneurial ideas and proposals for submission. These coaching socialization sessions provided a platform for participants to receive personalized guidance and feedback from mentors as a source of information, fostering the development and enhancement of their entrepreneurial initiatives. The activity culminated in an evaluation phase, where feedback mechanisms such as questionnaires and observations were employed to assess the effectiveness and impact of the socialization efforts in instilling entrepreneurial interest and facilitating participation in the Entrepreneur Program 2024.



Figure 4 Event Flyers

Figure 2 presents the event flyer for the Socialization and Learning Program for Student Entrepreneurship (Program Mahasiswa Wirausaha - PMW) slated for the year 2024 at Sriwijaya State Polytechnic. The flyer highlights key details of the event, including the theme "Sukses Berwirausaha di Usia Muda" (Success in Entrepreneurship at a Young Age), scheduled for 12:30 PM WIB on March 28, 2024. The event features a distinguished speaker, Abdul Anzisy, the Owner of Bakso Grenat Mas Azis, who is a seasoned entrepreneur and Indah Pratiwi as a Lecturer and Practicioner to explain about entrepreneur program from Career Development and Entrepreneurship Unit State Polytechnic of Sriwijaya and M. Daffa Fadlurahman as Moderator from Polsri Outstanding Student. It is emphasized that the event held both offline and online, with the offline venue specified as the Graha Pendidikan building at State Polytechnic of Sriwijaya. The flyer also indicates that the event is free of charge and provides registration links for both students and lecturer. Additionally, it encourages early registration due to limited seating, particularly highlighting that the first 15 registrants from each department will have the opportunity to attend the event offline. Overall, the flyer serves as a concise and informative tool to attract participants and communicate essential details about the PMW socialization event.

6. DISCUSSION

The discussion section encapsulates the comprehensive analysis and insights derived from the implementation of the State Polytechnic Sriwijaya Entrepreneurial Program in 2024, focusing on improving entrepreneurship skills through socialization efforts. This section explores various aspects, including the implementation, sharing sessions, challenges, and recommendation for future.

4.1. Implementation

The successful implementation of the Entrepreneurial Program at State Polytechnic Sriwijaya in 2024 is crucial for achieving its objectives of improving entrepreneurship skills among participants. This section delves into the various aspects of the program's implementation, including the strategies employed, the resources utilized, and the overall execution process. By examining these elements, we can assess the effectiveness of the implementation phase in reaching its intended goals.



Figure 5 Opening Speech From Head Unit Career and Entrepreneur Development State Polytechnic of Sriwijaya

Figure 3 depicts the opening speech delivered by the Head of the Career and Entrepreneur Development Unit at State Polytechnic of Sriwijaya, Mr. Paisal. This speech likely serves to set the tone for the Entrepreneurial Program, highlighting its significance, objectives, and encouraging participants to actively engage in the program activities. The speech may also provide insights into the institution's commitment to fostering entrepreneurship among its students and the broader community, emphasizing the importance of entrepreneurial skills in today's dynamic economy. Overall, the opening speech plays a pivotal role in inspiring and motivating participants to embark on their entrepreneurial journey with enthusiasm and determination and give a start to held the event of socialization entrepreneurship program 2024.

4.2. Sharing Sessions

The sharing sessions within the Entrepreneurial Program serve as invaluable opportunities for participants to gain insights, knowledge, and inspiration from experienced entrepreneurs and industry experts. This section discusses the significance of these sessions in facilitating peer learning, fostering networking opportunities, and providing practical guidance for aspiring entrepreneurs. Furthermore, it explores the impact of these sharing sessions on participants' attitudes, motivations, and entrepreneurial aspirations.



Figure 6 Sharing Sessions From Mentor Abdul Anzisy (Owner Bakso Granat Mas Azis)

Figure 4 illustrates the sharing sessions conducted by Mentor Abdul Anzisy, the Owner of Bakso Granat Mas Azis, as part of the Entrepreneurial Program. These sessions likely entail valuable insights, experiences, and practical advice shared by Mr. Anzisy with program participants. As an accomplished entrepreneur, Mr. Anzisy's mentorship offers unique perspectives and guidance, inspiring aspiring entrepreneurs and providing them with the necessary knowledge and skills to navigate the challenges of starting and running a successful business. Through these sharing sessions, participants have the opportunity to learn from real-world experiences and gain valuable insights into the entrepreneurial journey.



Figure 7 Sharing Sessions From Mentor Indah Pratiwi (Entreprenur Development Coordinator)

Figure 5 illustrates the sharing sessions led by Mentor Indah Pratiwi, the Entrepreneur Development Coordinator, as part of the Entrepreneurial Program in 2024. These sessions likely encompass detailed discussions on the procedural steps involved in the PMW 2024 program. Participants would benefit from Ms. Pratiwi's expertise as she provides insights into the intricacies of the program, including application procedures, project development stages, and evaluation criteria for a project plan program. Through these sharing sessions, participants gain a comprehensive understanding of the steps required to effectively engage with the PMW 2024 Entrepreneur program and maximize their entrepreneurial potential.

4.3. Challenges

Despite the program's objectives and efforts, various challenges may have been encountered during its implementation. This section identifies and analyzes these challenges, which could range from logistical constraints to socio-economic barriers faced by participants. By understanding these challenges, we can devise strategies to mitigate their impact and enhance the effectiveness of future iterations of the Entrepreneurial Program.



Figure 8 College Student Asking About Challenge

Figure 6 portrays a college student asking about the challenges that may arise in the future during the implementation of the Entrepreneurial Program. This indicates the student's awareness of potential obstacles and their proactive approach in seeking clarification to better understand and address these challenges. By asking about the challenges, the student demonstrates a readiness to confront difficulties head-on and a willingness to collaborate in finding solutions. This interaction highlights the importance of open communication and proactive engagement among program participants to effectively address challenges and ensure the success of the Entrepreneurial Program.

Following the student's inquiry depicted in Figure 6, the mentor responds with a comprehensive explanation addressing the potential challenges anticipated in the Entrepreneurial Program's implementation. Utilizing a qualitative method, the mentor delves into each identified challenge, providing insights and strategies for mitigation. This exchange underscores the mentor's role in guiding participants through the complexities of entrepreneurship and fostering a collaborative environment where challenges are acknowledged and addressed collectively. By leveraging qualitative methods, such as open-ended discussions and in-depth analyses, the mentor ensures a thorough understanding of the challenges, empowering participants to navigate them effectively and contribute to the program's success through proactive engagement and problem-solving.



Figure 9 Moderator, Mentor, And Committee Documentation Sessions With Deputy Director of Student Affairs

Figure 7 captures the documentation sessions involving the moderator, mentor, and committee members, along with the Deputy Director of Student Affairs. This image likely portrays a collaborative effort to document key aspects of the Entrepreneurial Program, including discussions, decisions, and action points. The involvement of the Deputy Director of Student Affairs underscores the program's institutional support and the importance placed on student initiatives and entrepreneurship within the institution. Through documentation sessions like these, valuable insights, progress updates, and future plans are recorded, ensuring transparency, accountability, and continuity in program implementation.

4.4. Recommendations for Future

Drawing from the insights gained through the implementation, sharing sessions, and challenges encountered, this section provides recommendations for enhancing the State Polytechnic Sriwijaya Entrepreneurial Program in future years. Based on the results of the participant questionnaire from the Socialization 2024 Entrepreneur Program (see Table 1), it is evident that the program has been well-received by participants, with high average questionnaire results across various aspects. To further improve the program, recommendations may include enhancing the depth and breadth of the sharing sessions to provide more diverse perspectives and practical insights into entrepreneurship. Additionally, incorporating hands-on activities and workshops can offer participants experiential learning opportunities to reinforce their understanding and application of entrepreneurial concepts. Strengthening collaboration opportunities among participants and fostering mentorship programs with successful entrepreneurs can also contribute to the program's effectiveness in nurturing entrepreneurial skills and confidence among students. Moreover, continuous evaluation and feedback mechanisms should be established to monitor program impact and identify areas for improvement iteratively. By implementing these recommendations, the State Polytechnic Sriwijaya Entrepreneurial Program can continue to evolve and empower students to thrive in the dynamic world of entrepreneurship.

Table 3 Results of the Participant Questionnaire Socialization 2024 Entrepreneur Program

No	Question	%Average Questionnaire Results
1	I feel that the socialization of the Student Entrepreneurship Program has helped me understand the concept of entrepreneurship.	80,80%
2	The socialization activities were very effective in providing me with new insights into business opportunities.	79,20%
3	I feel more confident in developing business ideas after participating in this activity.	76,40%
4	I agree that the material presented in the socialization is easy to understand.	79,20%
5	I am very motivated to start a business after participating in this socialization activity.	79,20%
6	The socialization activities have helped me recognize the practical steps in starting a business.	79,60%
7	My knowledge of financial management increased after participating in this activity.	79,20%
8	I feel more prepared to face challenges in the entrepreneurial world after participating in this activity.	76,40%
9	This activity is very effective in providing opportunities to collaborate with fellow students.	79,20%
10	I think this activity is very beneficial for the development of my entrepreneurial skills.	76,40%

Source: Writer, 2024

Based on the results of the Participant Questionnaire from the Socialization 2024 Entrepreneur Program (refer to Table 1), it is evident that the program has been positively perceived by participants across various key aspects. The questionnaire revealed that 80.80% of participants felt that the socialization of the Student Entrepreneurship Program aided in their understanding of entrepreneurship concepts.

Additionally, 79.20% of respondents found the socialization activities to be effective in providing them with new insights into business opportunities. Moreover, 76.40% of participants expressed increased confidence in developing business ideas after participating in the activity. The questionnaire also indicated that 79.20% of respondents agreed that the material presented in the socialization was easy to understand, while the same percentage felt highly motivated to start a business after participating in the socialization activity. Furthermore, 79.60% of participants acknowledged that the socialization activities helped them recognize practical steps in starting a business, and 79.20% reported an increase in their knowledge of financial management after participating in the activity. While 76.40% of respondents felt more prepared to face challenges in the entrepreneurial world post-activity, the same percentage found the activity highly effective in providing opportunities for collaboration with fellow students. Lastly, 76.40% of participants believed that the activity significantly contributed to the development of their entrepreneurial skills. These findings underscore the effectiveness of the Socialization 2024 Entrepreneur Program in fulfilling its objectives and highlight areas of success that can be leveraged in future program iterations to further enhance participant satisfaction and skill development.



Figure 10 All Participant Documentation For Socialization Entrepreneur Program 2024

Figure 8 showcases the documentation of all participants during the Socialization Entrepreneur Program 2024 held at the Graha Pendidikan building State Polytechnic Sriwijaya of (Polsri). This documentation to confirm the attendance of each participant between Student, Lecturer, Mentor, and Committee.

7. CONCLUSION

In conclusion, the Entrepreneurial Program Socialization implemented at State Polytechnic of Sriwijaya in 2024 has demonstrated significant potential in fostering entrepreneurial skills and aspirations among participants. Through a multifaceted approach encompassing socialization efforts, sharing sessions, and proactive engagement, the program has effectively equipped students with the necessary knowledge, insights, and confidence to embark on their entrepreneurial journey. The high participant satisfaction levels, as evidenced by the results of the Participant Questionnaire, underscore the program's success in achieving its objectives and positively impacting participants' attitudes towards entrepreneurship. Moving forward, leveraging the program's strengths and addressing identified areas for improvement will be crucial in sustaining its momentum and further enhancing its impact on student entrepreneurship development. By fostering a culture of innovation, collaboration, and resilience, the Entrepreneurial Program at State Polytechnic of Sriwijaya continues to pave the way for aspiring entrepreneurs to thrive in an increasingly competitive and dynamic business landscape.

8. ACKNOWLEDGEMENTS

We would like to express our sincere gratitude to the Career Development and Entrepreneurship Unit and State Polytechnic of Sriwijaya for their unwavering support and dedication in organizing and implementing the Entrepreneurial Socialization Program. Additionally, we extend our appreciation to all colleagues and committee who have contributed their time, expertise, and resources to make this socialization program possible. Without their collective efforts, this event socialization would not have been possible.

REFERENCES

Abhijith, L. (2021). Role Of Entrepreneurship In Rural Development – An Analysis. *Journal of Emerging Technologies and Innovative Research (JETIR)*, *8*(5).

FH, Y., Firmansyah, F., Amrina, D. E., & Pratita, D. (2022). Peningkatan Minat Berwirausaha Mahasiswa Melalui Webinar Dan Coaching Program Mahasiswa Wirausaha. *JMM (Jurnal Masyarakat Mandiri)*, *6*(6). https://doi.org/10.31764/jmm.v6i6.11013

Giacomin, O., Janssen, F., Guyot, J. L., & Lohest, O. (2023). Opportunity and/or Necessity Entrepreneurship? The Impact of the Socio-Economic Characteristics of Entrepreneurs. *Sustainability (Switzerland)*, *15*(14). https://doi.org/10.3390/su151410786

Houjeir, R., Abousamra, R. M., Veljanoska, F., & Patena, W. (2023). Describing the Relationship Between Role Conflict and Student Satisfaction with Educational Services: A Case Study of Business Faculty in a Higher Education Institution in UAE. *Journal of Educational and Social Research*, *13*(5). https://doi.org/10.36941/jesr-2023-0122

Jamali, D., & Kreidie, L. (2014). Social entrepreneurship in the Arab world: Lessons from Lebanon. In *Emerging Research Directions in Social Entrepreneurship*. https://doi.org/10.1007/978-94-007-7896-2_9

Pattinson, S., & Cunningham, J. A. (2022). Entrepreneurship in times of crisis. In *International Journal of Entrepreneurship and Innovation* (Vol. 23, Issue 2). https://doi.org/10.1177/14657503221097229

Polsri. (2024). *POLSRI | Politeknik Negeri Sriwijaya | Politeknik Negeri Sriwijaya Tepat Waktu Tepat Aturan Tepat Ukuran*. https://www.polsri.ac.id/

Setyobakti, M. H., Cahyaningati, R., & Ermawati, E. (2022). Model Pembelajaran Program Wirausaha Merdeka Terhadap Minat Wirausaha Mahasiswa. *Progress Conference*, *5*(2).

Suwena, K. R. (2016). Pentingnya Penilaian Potensi Diri Wirausaha Sebagai Pondasi Untuk Mensukseskan Program Mahasiswa Wirausaha (PMW). *Jurnal Ilmu Sosial Dan Humaniora*, *4*(2). https://doi.org/10.23887/jish-undiksha.v4i2.6385

Yulikah, A., Faizin, M. A., & Sujianto, A. E. (2021). Implementation of Islamic Entrepreneurship Concept in Double Track SMA Program. *Indonesian Economic Review*, *2*(2). https://doi.org/10.53787/iconev.v2i2.14

Biodata

1. M Arief Rahman: Lecturer in the Department of Informatics Management, also acting as Career Coordinator in the Career Development and Entrepreneurship Unit.
2. Indah Pratiwi: Lecturer in the Department of Chemical Engineering, who serves as the Coordinator of Entrepreneurship.
3. Paisal: Lecturer in the Department of Business Administration, as Head of the Career Development and Entrepreneurship Unit.
4. Indri Ariyanti: Lecturer in The Department of Informatics Management, also acting as Informatics Management Head Department.
5. Zahra Ananda Lanos: Student from Politeknik Negeri Sriwijaya.

LITERATURE REVIEW: THE INFLUENCE OF GREEN BANKING ON BANK PERFORMANCE

Mister Candera[1], Taufik Marwa[2], Isnurhadi[3], Yuliani[4]
Sriwijaya University [1,2,3,4]
mister.candera@gmail.com[1]

Abstract

The adoption of green banking basically has a positive impact on long-term bank development. Bank operations that are based on sustainable environmental principles can create a positive image in the eyes of customers and the public. This research is to see whether there is an influence of green banking on bank performance. This research uses a literature review method by reviewing research articles that are relevant to this research. From the study carried out, there is an influence of green banking on bank performance.

Keywords: Bank performance, Green banking

INTRODUCTION

Economic and business activities that are increasingly growing and developing are currently causing environmental quality to continuously decline. This activity also causes climate change, thus triggering long debates, both on a national scale and on a global scale. Explained byKaryani & Obrien (2020)that the World Economic Forum places the economy and the environment as the world's main risks. The study of a sustainable economy is a serious discussion to encourage sustainable development, harmony between an advanced economy and environmental sustainability. Basiago (1998); Chouinard et al., (2011); and Blewit (2014) explained that a sustainable economy is seen as important for balancing economic growth and quality of life.

The position of financial institutions is very strategic to be able to play a role in creating and maintaining the green revolution. In addition, financial institutions cannot be separated from a country's economic system.Sadiq et al. (2023)states that financial institutions are the backbone of the economy and stand tall in any situation. Financial institutions such as banks can ensure environmental sustainability and inclusive economic growth because of the bank's connections with most industries as a source of funding(Chowdhury, 2023). Therefore, it can be said that as financial intermediation, banks can consider green policies in both internal and external activities aimed at protecting the environment.

Currently, stakeholders have begun to care about all banking activities, especially regarding environmental sustainability. This was stated by Fakhira et al (2022) that banks are responsible for environmental sustainability because stakeholders are starting to care about the environment and want real action in environmental protection.Chowdhury (2023)also stated that stakeholders have now realized the significant benefits of sustainable business practices. These stakeholders include competitors, customers, shareholders and top management(Choudhury et al., 2013).

Banking activities that can be carried out in an effort to minimize environmental pollution caused by business activities are by implementing the green banking concept.Islam & Das (2013) Defining green banking is a concept to support environmentally friendly practices and reduce the

impact of the carbon footprint of banking activities. Implementing green banking is referred to as ethically responsible behavior because it not only advances banking initiatives, but can also influence the socially responsible behavior of other business actors.

Several researchers have revealed various positive impacts that banks will obtain when implementing the green banking concept. Meena (2013) explains that implementing green banking will minimize the use of paper in banking operational activities so that it is more paper-less and increasingly utilizes technological innovation. Banks' concern for environmental sustainability will attract stakeholders, considering that currently stakeholders have paid more attention to various businesses that prioritize long-term sustainability (Fakhira et al., 2022; andChowdhury, 2023).Lymperopoulos et al., (2012b)explained that the reputation of banks will increase and new customers will be increasingly attracted to banks that consider the concept of green banking when developing their operational policies. The expert's statement can be said that the implementation of green banking by banking institutions can be a surefire way to win customers and investors from competitors.

Implementing environmental sustainability-based banking in practice is not easy. Mazuru et al (2013) stated that one of the challenges of implementing green design is high costs.Zheng et al. (2021)and Alamri (2023) also stated that implementing green-based banking requires high costs. Therefore, banks have not been able to fully implement it in its entirety. Based on this study, it can be said that the main challenge faced by banks in implementing green banking is the high costs caused by the transition to technology and innovation as basic capital.

The adoption of green banking basically has a positive impact on long-term bank development. Bank operations that are based on sustainable environmental principles can create a positive image in the eyes of customers and the public (Febiola et al. 2023). This positive image will increase customer trust and result in sustainable business growth. Apart from that, implementing green banking also involves investing in environmentally friendly projects. By making this investment, banks can take advantage of growth opportunities in developing sectors, which in turn can increase company value (Hastuti & Kusumadewi, 2023).

Impirically, the link between green banking and bank value has been proven by leading researchers.Jayathilake (2019)and Zhang et al (2022) that bank support for the environment can increase company value. Besides that,Karyani & Obrien (2020b)also found that green banking has a positive and significant impact on bank value. So it can be concluded that implementing green banking will not only generate profits, implementing green banking can also increase the value of the bank in the eyes of stakeholders. In contrast to the studies above, several researchers also found that the implementation of green banking had a negative impact on bank value. This is proven by Romli & Reza (2022); Alamsyah & Muljo (2023); and Tommaso & Thornton (2020) who found that the implementation of green banking had a negative impact on company value.

One measure of green banking adoption in banks is the implementation of Environmental, Social and Governance (ESG).Bukhari et al. (2020)in his study stated that measuring green banking through ESG implementation is a complex measurement. With regard to this study, its relationship to bank value has been studied by Azmi et al. (2021) who found that ESG has a somewhat non-linear relationship. This means that a high level of ESG activity has a negative impact on bank value. Another study by Miralles-Quiros (2019) also found that the market values the three ESG dimensions separately and banks from common law countries perceive high value relevance to ESG performance. Mure et al. (2020) also studied banks in Italy and found that increasing ESG practices were due to the need for these banks to improve their reputation.

Several studies state that the implementation of 'green' based banking, whether measured by ESG practices or the green banking index, has a positive and significant impact on bank value. However, on the other hand, it was also found that the implementation of 'green' based banking had an insignificant impact on bank value. In fact, several researchers say that the implementation of 'green' based banking actually reduces the value of the bank. The inconsistent research results are the reason why this study is interesting to study in more depth. Especially in relation to green banking.

The inconsistent research results between green banking and bank performance are thought to be caused by the existence of contingency factors that can mediate the relationship between variables. These contingency factors include environmental regulations. Empirically, Shirai (2023) and Park & Kim (2020) have proven that environmental regulation has an important role in implementing green banking. The implementation of green banking really depends on the applicable regulations. Strict environmental regulations will encourage banks to pay more attention to the ecological impact of each of their operational activities. Vice versa. However, what happens in Asian countries is that the environmental regulations in force are still very diverse. In some countries, environmental regulations are strictly regulated. Meanwhile in several other countries environmental regulations are still not the main focus.

METHOD

This research uses a literature review method from the data obtained. The research presents the results of searches for research on the internet according to the variables of this research. Literature reviews are carried out with a focus on original articles containing abstracts, introductions, methods and results. Literature review is a systematic, explicit and reproducible method for identifying, evaluating and synthesizing research works and ideas that have been produced by researchers and practitioners. The aim of a literature review is to make an analysis and synthesis of existing knowledge related to the topic to be researched to find free space for the research to be carried out.

RESULTS AND DISCUSSION

Sustainable banking was first launched in January 2003, as stated in the Collevencchio declaration. The declaration outlines the roles and responsibilities of financial institutions in advancing sustainable development goals. It also outlines the financial institution's commitment to fully integrate considerations of ecological limits, social justice, and economic justice into corporate strategy and core banking business areas such as credit, investment, underwriting, and advising. More specifically, Collevecchio's declaration reads as follows:

“Financial institutions must expand their mission from ones that prioritize profit maximization to a vision of social and environmental sustainability. A commitment to sustainability would require financial institutions to fully integrate the consideration of ecological limits, social equity and economic justice into corporate strategies and core business areas (including credit, investing, underwriting, and advising), to put sustainability objectives on an equal footing to maximization of shareholder value and client satisfaction, and to actively strive to finance transactions that promote sustainability.” (Declaration Collevecchio).

Based on Collevecchio's declaration, it can be seen how important the role of banking is in achieving sustainable goals. This was also clarified by Beck et al. (2010); Alexander (2014); And(Yip & Bocken, 2018)that to achieve sustainable development the role of the banking industry is very important, this is because of its function as a very unique intermediary that can mobilize

resources towards sustainability goals.(Alexander & Fisher, 2018)also stated that financial institutions play an important role in supporting economic growth, by providing credit and allocating investment capital. Furthermore,(Alexander & Fisher, 2018)argued that the important role of banking in supporting broader economic adaptation to environmental change, by reallocating credit to more sustainable economic sectors in particular to adapt to the consequences of environmental change, reducing the possibility of environmental sustainability risks, mitigating the impact of these risks when they occur, and supports recovery from any impacts provided.

According to Relano and Faulet (2012), sustainable banking can be defined as a bank's decision to provide products and services only to customers who consider the environmental and social impacts of the company's activities.(Yip & Bocken, 2018)also defines sustainable banking as financial products and services offered by banking institutions, which are developed to meet community needs and protect the environment while generating profits. Agreeing with the opinion above, Deka (2015) defines sustainable banking as meaning a bank that cares about the social and environmental impacts of its investments and loans.

Globally, action on environmental protection and climate change is key to achieving the UN's sustainability goals by 2030(Amidjaya & Widagdo, 2019). Also explained by Urban and Wojcik (2019) and(X. Zhang et al., 2022)stated that the world bank would no longer allow funds to be received by companies and countries that do not prioritize environmental protection. In response to the World Bank's policy, several banks have admitted that they will work hard and shift their corporate strategy to adopt environmentally friendly policies (Sanchez-Roger et al, 2018). Bouma et al. (2001) identified four stages of banking towards sustainability, namely defensive banking, preventive banking, offensive banking and sustainable banking.

Green banking was first practiced by Triodos bank from the Netherlands in 1980, at the beginning of its existence Triodos bank started with environmental preservation in the banking sector. The term "green" is likened by Shaumya & Arulrajah (2017) to land covered with grass, various plants and trees without buildings. In line with this term, in relation to banking, green banking is a term for banks whose business activities refer to reducing external carbon emissions and internal carbon footprints as a whole (Chaurasia, 2014). Lako (2015) also explains that green banking is a business concept that refers to environmentally friendly business practices. If we look at this concept, it can be said that every bank that carries out its activities with reference to environmental sustainability means that the bank is included in the term green bank.

The business concept in green banking can provide adequate profits and economies of scale. Therefore, overall this strategy is beneficial for the bank's sustainability.(Hossain et al., 2020)explained that green banking practices are very important in efforts to drive sustainability, for this reason banks contribute to environmental performance by providing green finance and initiating green bonds in various sectors. In line with this opinion(Chen et al., 2022)also believes that banks can play an important role in helping to achieve sustainable development goals.

Green banking is a guarantee of sustainability, where banking business operations do not have a negative impact on the environment. Implementing green banking can be a promotional tool for banks. This is because, through this implementation, the bank's image can improve.(Lymperopoulos et al., 2012a)has proven empirically that banking initiatives to be environmentally friendly produce a favorable green image. This can be done by demonstrating and serving its environmental commitment; reduce operational costs due to reduced use of office stationery, energy and water, increase employee productivity and efficiency through skilled and optimal use of technology, and reduce hazards by installing environmentally friendly

equipment(Mir & Bhat, 2022b). Based on this opinion, it can be said that banks are very important for the economy in relation to their significant contribution to sustainable development.

Banks that are committed to preserving the environment have a positive impact on life in the future. Green bank activities such as saving operational costs have the effect of saving a lot of forests by minimizing paper use and reducing greenhouse gas emissions(Mir & Bhat, 2022b).

The current implementation of green banks is increasingly increasing the attractiveness of stakeholders. This has a positive effect on banks to continue to compete in winning investors and creditors.(T. Choudhury et al., 2013)explained that currently to be able to compete in banking, banks must produce green products involving high levels of interest and sustainable development. Even described by Zhang et al. (2022) that green banking practices can increase the competitiveness of the bank itself. Therefore, it cannot be denied that green banking practices carried out by banks are an important strategy in competing and winning investors and creditors.

Green banking practices can help restore and preserve the environment, through the various products offered. Chourasia (2014) explained that various environmental problems, including climate change, deforestation, air quality problems, and loss of biodiversity can be reduced with environmentally friendly banking. The products offered by green banking (Chaurasia, 2014) are (a) green deposits; (b) green mortgages and loans; (c) green credit cards; (d) green reward checking account; and (f) mobile banking.

CONCLUSION

Based on the literature review that has been carried out, there is an influence of green banking on bank performance. Green banking is a guarantee of sustainability, where banking business operations do not have a negative impact on the environment. Implementing green banking can be a promotional tool for banks. The bank's reputation will improve and new customers will be increasingly attracted to banks that consider the green banking concept when formulating their operational policies. The experts' statements can be said that the implementation of green banking by banking institutions can be a surefire way to win customers and investors from competitors.

ACKNOWLEDGEMENTS

The author would like to thank all parties who have helped in the process of writing this article. Thank you also to the supervisors and Sriwijaya University.

REFERENCES

Alexander, K., & Fisher, P. G. (2018). *Electronic copy available at: https://ssrn.com/abstract=3299351*. 1–17.

Amidjaya, P. G., & Widagdo, A. K. (2019). *Sustainability reporting in Indonesian listed banks*. https://doi.org/10.1108/JAAR-09-2018-0149

Bukhari, S. A. A., Hashim, F., & Amran, A. (2020). Green Banking: a road map for adoption. *International Journal of Ethics and Systems*, *36*(3), 371–385. https://doi.org/10.1108/IJOES-11-2019-0177

Chen, J., Siddik, A. B., Zheng, G. W., Masukujjaman, M., & Bekhzod, S. (2022). The Effect of Green Banking Practices on Banks ' Environmental Performance and Green Financing : An Empirical Study. *Energies*, *15*(1292), 1–22. https://doi.org/10.3390/en15041292

Choudhury, T., Salim, Bashir, Md. M. Al, & Saha, P. (2013). Influence of Stakeholders in Developing Green Banking Products in Bangladesh. *Research Journal of Finance and Accounting*, *4*, 67–77.

Choudhury, T. T., Salim, M., Al Bashir, M. M., & Saha, P. (2013). Influence of Stakeholders in Developing Green Banking Products in Bangladesh. *Research Journal of Finance and Accounting*, *4*(7), 67–77. www.iiste.org

Chowdhury, M. M. (2023). Green Finance and Bank Performance: Evidence from Bangladesh. *International Journal of Multidisciplinary Research and Analysis*, *6*(6), 2354–2362. https://doi.org/10.47191/ijmra/v6-i6-28

Hossain, Md. A., Rahman, Md. M., Hossain, Md. S., & Karim, Md. R. (2020). The Effects of Green Banking Practices on Financial Performance of Listed Banking Companies in Bangladesh. *Canadian Journal of Business and Information Studies*, *2*(6), 120–128. https://doi.org/10.34104/cjbis.020.01200128

Islam, M. S., & Das, P. C. (2013). "Green Banking practices in Bangladesh." *IOSR Journal of Business and Management*, *8*(3), 39–44. www.iosrjournals.orgwww.iosrjournals.org

Jayathilake, S. (2019). Impact of Green Financing for the Corporate Governance in the Banking Industry. *OIDA International Journal of Sustainable Development*, *12*(11), 23–30. www.oidaijsd.comAlsoavailableathttp://www.ssrn.com/

Karyani, E., & Obrien, V. V. (2020a). Green Banking and Performance: The Role of Foreign and Public Ownership. *Jurnal Dinamika Akuntansi Dan Bisnis*, *7*(2), 221–234. https://doi.org/10.24815/jdab.v7i2.17150

Karyani, E., & Obrien, V. V. (2020b). Green Banking and Performance: The Role of Foreign and Public Ownership. *Jurnal Dinamika Akuntansi Dan Bisnis*, *7*(2), 221–234. https://doi.org/10.24815/jdab.v7i2.17150

Lymperopoulos, C., Chaniotakis, I. E., & Soureli, M. (2012a). A model of green bank marketing. In *Journal of Financial …*. Springer. https://doi.org/10.1057/fsm.2012.10

Lymperopoulos, C., Chaniotakis, I., & Soureli, M. (2012b). A model of green bank marketing. *Journal of Financial Services Marketing*, *17*, 177–186. https://doi.org/10.1057/FSM.2012.10

Mir, A. A., & Bhat, A. (2022a). Green banking and sustainability – a review. *Arab Gulf Journal of Scientific Research*, *null*, null-null. https://doi.org/10.1108/agjsr-04-2022-0017

Mir, A. A., & Bhat, A. (2022b). Green banking and sustainability – a review. *Arab Gulf Journal of Scientific Research*, *null*, null. https://doi.org/10.1108/agjsr-04-2022-0017

Sadiq, M., Le-Dinh, T., Tran, T. K., Chien, F. S., Phan, T. T. H., & Quang Huy, P. (2023). The role of green finance, eco-innovation, and creativity in the sustainable development goals of ASEAN countries. *Economic Research-Ekonomska Istrazivanja* , *36*(2). https://doi.org/10.1080/1331677X.2023.2175010

Yip, A. W. H., & Bocken, N. M. P. (2018). Sustainable business model archetypes for the banking industry. *Journal of Cleaner Production*, *174*, 150–169. https://doi.org/10.1016/j.jclepro.2017.10.190

Zhang, K., & Zhou, X. (2022). Is Promoting Green Finance in Line with the Long-Term Market Mechanism? The Perspective of Chinese Commercial Banks. *Mathematics*, *10*(9). https://doi.org/10.3390/math10091374

Zhang, X., Wang, Z., Zhong, X., Yang, S.-L., & Siddik, A. (2022). Do Green Banking Activities Improve the Banks' Environmental Performance? The Mediating Effect of Green Financing. *Sustainability*, *null*, null. https://doi.org/10.3390/su14020989

Zheng, G. W., Siddik, A. B., Masukujjaman, M., Fatema, N., & Alam, S. S. (2021). Green finance development in Bangladesh: The role of private commercial banks (PCBs). *Sustainability (Switzerland)*, *13*(2), 1–17. https://doi.org/10.3390/su13020795

Biodata

Mister candera is a doctoral student in Sriwijaya University for the management program.His email is mister.candera@gmail.com.

LITERATURE REVIEW ; THE INFLUENCE OF JOB INSECURITY, TURNOVER INTENTION ON JOB SATISFACTION

Erick Elthoriq[1], Isnurhadi[2], Zunaidah[3]
Sriwijaya University[1,2,3]
Erick.toriq@gmail.com[1]

Abstract

Thoughts of quitting describes an individual who has thoughts of leaving the job or remaining in the work environment. This usually begins with things that the employee feels are dissatisfying, so he thinks about leaving the job.This research is to look at job insecurity, turnover intention on job satisfaction. This research uses the literature review method by examining research articles that are relevant to this research. From the research carried out, there is an influence between job insecurity and turnover intention on job satisfaction.

Keywords: Job insecurity, Job satisfaction, Turnover intention,

INTRODUCTION

Companies need to create a competitive and talented workforce through human resource management. Human resource management must be carried out optimally so that the company obtains economic benefits and competitiveness. The company's task is not only to find and recruit suitable employees for the company, but also to train, develop and retain quality employees. Good people management allows companies to succeed. Therefore, companies must pay attention to human resources and manage them as best as possible. Additionally, according toAl Kurdi (2020)Employees are a critical resource for any Company, and a company's failure or success is often tied to its ability to attract, retain, and appropriately reward talented and capable employees.

The company's efforts to realize its vision and mission include minimizing employee turnover and considering factors that can make employees want to move.Tettand Meyer (1993) defineturnover intentionasperception of poor performance and intention to leave or quit (Applebaum et al., 2010).According to Mobley et al. (1979), turnover intention is defined as an employee's intention or tendency to leave or quit their job voluntarily or move to another place of work. Namin et al. (2022), states that turnover intention can be said to be an individual's willingness to leave a company or organization.

*Turnover intention*candetrimental to the organization because it has a broad impact and can cause losses and become a serious problem for organizational balance. The intention to move voluntarily is an undesirable condition for any organization, because the high costs that must be borne by the organization are a cause other than the emergence of a bad work culture in the organization. Apart from that, turnover intention will increase workload and reduce work productivity(Ratnawati et al., 2020).Alzoubi et al. (2020) and Alshurideh (2019) claim that employee retention helps retain customers and minimizes organizational operational costs in addition to costs caused by recruiting and training new employees. Employee turnover not only incurs financial costs but also results in the loss of skills, knowledge and business relationships (Yukongdi and Shrestha, 2020). Research shows thatThe high turnover intention that exists has an impact on employee trust in the organization, productivity, and job satisfaction of other employees in the company.

An employee's desire to leave (turnover intention) occurs while the employee is still working at the company and is influenced by many factors. One of the factors isjob insecurity (job insecurity).This is in line with research by Balz & Schuller (2018) which found that one of the causes of employee turnover intention is*job insecurity*. Many researchers have found that the higher the job insecurityexperienced by employees in the company, the higher their desire to leave the company. One of the studies conducted by Brougham & Haar (2020) showed that job insecurity can shape a person's turnover intention. Therefore, job insecurity is an important problem that companies need to pay attention to, because the symptoms shown by employees can have a negative impact on the company and the employees themselves. Employees with high levels of job insecurity tend to want to change jobs to get a better job.

Many researchers have found that the higher the level of job insecurity (*job insecurity*)among company employees, the higher the desire to leave the company. One study conducted by Brougham & Haar (2020) shows that job insecurity can influence employees' desire to move. Therefore, job insecurity is an important issue that companies must pay attention to, because the impact shown by employees can have a negative impact on the company and the employees themselves. Employees with*job insecurity*those who are high are more likely to change jobs to find a better job.

METHOD

This research uses a literature review method from the data obtained. The research presents the results of searches for research on the internet according to the variables of this research. Literature reviews are carried out with a focus on original articles containing abstracts, introductions, methods and results. Literature review is a systematic, explicit and reproducible method for identifying, evaluating and synthesizing research works and ideas that have been produced by researchers and practitioners. The aim of a literature review is to make an analysis and synthesis of existing knowledge related to the topic to be researched to find free space for the research to be carried out.

RESULTS AND DISCUSSION

The very rapid development of business is currently a worry for every employee, the uncertainty of the employee's future in the company means that employees are worried about the possibility of quitting their job, changing jobs, moving to another job or even leaving the company where they work. This is a psychological state of an employee that shows confusion or feelings of insecurity due to changes in environmental conditions (Smithson & Lewis, 2000).

Adkins et al (2001) indicate that Job Insecurity is psychological resulting from the lack of job security received by employees. In accordance with Ashford et al. (1989) who showed that Job Insecurity reflects the extent to which workers feel that their jobs are threatened and are powerless to do anything about it. This condition is caused by the large number of types of work that are temporary or contract in nature. The emergence of temporary or continuous employment is creating job insecurity among an increasing number of workers. Kang et al., (2012) consider job insecurity as an anxiety felt by employees when working where they are faced with unpleasant conditions.

Based on the definitions provided by the experts above, researchers state that job insecurity is a feeling of threat, fear and helplessness felt by employees related to the condition of the organization where they work and perceptions of the continuity of their work in the future.

Greenhalgh & Rosenblatt (1984) also explained the factors that influence the emergence of Job Insecurity. These factors are:

a. Environmental and organizational conditions, such as organizational communication and organizational change. Organizational changes can cause job insecurity to emerge and an example of this condition is the reorganization or even merger of the company where the person works.
b. Individual or position characteristics such as gender, age, economic and social status, educational background, previous work experience, even position in the company.
c. Personal characteristics of employees, for example a sense of solidarity between individuals from the affected company. As the sense of togetherness increases, so does the sense of well-being of each individual. By prioritizing a sense of belonging, employees are more motivated to work.

Sverke & Hellgren (2002) found that Job Insecurity affects workers, including:

1. Increased job dissatisfaction
2. Increased disability
3. Increased mental disorders
4. Employees tend to withdraw from the work environment
5. Increasingly reduced organizational commitment
6. Increase the number of employees who move (employee turnover)

Ashford et al (1989) developed a job insecurity scale based on Greenhalgh & Rosenblatt's theory and found that the components of job insecurity are:

a. Perceived threats to job aspects (Job Features)
   The level of threat an employee feels about aspects of a job such as maintaining their current pay level, receiving a promotion, or getting a raise. Based on this description, it can be said that this aspect is the possibility of negative changes occurring in parts of the work.
b. Feelings of threat to one's total employment
   Namely the possibility of the threat of events occurring that negatively affect the individual's overall work, for example someone may be fired or forced to retire too early.
c. Powerlessness is a feeling of helplessness that may play a role in a person's feelings of lack of control or inability to control events in their work environment.

Elst et al., (2013) revealed that there are 4 (four) items in measuring job insecurity, namely:

a. Threat of losing your job
   The threat of losing one's job is a person's perception of a negative event that could affect their job, such as being laid off temporarily. These threats can be identified by how important and how likely these negative events are felt to impact their overall work.
b. The importance of work, how important work is to individuals influences their level of job insecurity or job insecurity at work.
c. Powerlessness, powerlessness is a condition that shows a person's inability to maintain his or her job. The more helpless an individual feels, the higher the job insecurity they experience.
d. Threat or chance of losing your job
   The risk of an event having a negative impact on employment, such as dismissal.
   Elst et al (2013) used job insecurity measurements in this research. This is because this measurement is still new and better describes job insecurity in the research conducted. From the definition of job insecurity, it can be concluded that job insecurity reflects feelings of

threat, anxiety and helplessness experienced by employees from the situation prevailing in the organization regarding the continuity of their future employment.

According to Abelson (1987), turnover intention is the desire to leave an organization, which consists of thoughts of leaving, the desire to look for work, the desire to get a job elsewhere, and the desire to change jobs. has been built. Another definition of turnover intention is an employee's intention to stop working from their current job voluntarily or move from one institution to another according to their own choice (Mobley, 2011).

Turnover intention problem is a common problem that is often faced by companies. Turnover intention tends to be defined voluntarily according to one's choice. This was confirmed by Tett & Meyer (1993) that turnover intention refers to a conscious and deliberate willingness to leave the organization. Freely interpreted, turnover intention refers to a conscious and deliberate desire to leave an organization.

Turnover intention affects organizational effectiveness, high turnover results in increased investment costs in human resources (HR), and can cause instability and dissatisfaction with employee labor conditions so that this can have implications for company performance. According to Mobley (2011), turnover intention is the result of an individual's evaluation of the continuation of their relationship with the company where they work but has not yet been realized in real action. This opinion shows that turnover intention is the desire to move, not yet reaching the realization stage, namely moving from one workplace to another.

High employee turnover intention (desire to move) will have an unfavorable impact on the organization, both in terms of costs and in terms of loss of time and opportunity to take advantage of opportunities. High turnover intention also results in an ineffective organization because the company loses experienced employees and needs to retrain new employees. According to the definitions above, it can be concluded that turnover intention is the desire to move which describes an individual's thoughts about leaving, looking for work elsewhere, and the desire to leave the organization.

Mobley (2011) argues that*turnover intention*influenced by two main factors: internal and external to the organization. Influencing organizational factors*turnover intention*includes job satisfaction (salary, job weight, promotion, working conditions, satisfaction with evaluation/supervision, satisfaction with coworkers), organizational culture, leadership style, compensation, including commitment to the organization, and career development. External factors that influence*turnover intention*includes personal (age, length of service, gender, education, marital status) and environment (for example, other work opportunities).

According to Price (1989), influencing factors*turnover intention*consists of individual factors and environmental factors. Individual factors mentioned include job satisfaction, organizational commitment, job search behavior, desire to stay, education, willingness to work hard, and job sentiment (negative or positive). The environmental factors at issue include environmental responsibility and employment opportunities. Job aptitude (individual job suitability), age, gender, marital status, length of service, work pressure, and organizational culture also influence the intention to leave.

*Turnover intention*high levels of employees will cause high stress for employees in the workplace and prevent employees from increasing their loyalty and commitment to their work (Lin et al., 2017). Apart from that, employee turnover intention can also influence overall organizational performance (Busari et al., 2017).

As for Mobley, et. al., (1979)describes turnover intention measured through dimensions:

1. The tendency of individuals to think about leaving the organization.

2. The tendency for individuals to look for work in other organizations.
3. The individual's likelihood of leaving the organization.
4. The likelihood of an individual leaving the organization over timenear.
5. The possibility of an individual to leave the organization if anybetter opportunity

According to Abelson (1987), measuring turnover intention can use three indicators, namely:

1. *Thinking of quitting*(thoughts of leaving/leaving/moving from the organization). There are four items, including: thoughts of leaving/moving from the current employer, inadequate salary, desire to move immediately even though you don't have a position at the new workplace.
2. *Intention to search for alternatives*(desire to look for work elsewhere). There are five items, including: things related to looking for alternatives to move/leaving, thinking about other job alternatives, feeling that the current job is not suitable, wanting to move to get better facilities.
3. *Intention to quit*(desire to leave the company). There are three items, including: less proud of working in the current place, many choices of new workplaces to move to, not feeling guilty/bound if you move.

According to Mobley (2011), measuring turnover intention includes several items, including:

a. Thoughts of quitting describe an individual who has thoughts of leaving the job or remaining in the work environment. This usually begins with things that the employee feels are dissatisfying, so he thinks about leaving the job.
b. Desire to leave current job An employee who has thoughts or intentions to leave the company.
c. Desire to look for a new job An employee has the desire to look for another job, which he feels is better than the company where he works.
d. Opportunity for a career An employee who wishes to make a turnover usually has the thought that if he moves to another company he will have the opportunity for an even better career.
e. Other companies are more attractive. An employee who wants to turnover usually thinks that another company is better than the current company.

Defining employee satisfaction is a complex issue for businesses and is an important aspect for employees as well as the business. An employee's job satisfaction influences their performance in staying with the company or looking for another company. Every employee expects satisfaction from the place they work. Basically, job satisfaction is personal. This is because each individual has a different level of satisfaction depending on the values that apply to him. The more aspects of the work that suit your wishes, the higher the satisfaction you will feel.

Job satisfaction reflects an employee's positive attitude towards their work and everything they encounter in the work environment. Job dissatisfaction, on the other hand, shows that the employee is disappointed with the company and has negative work behavior such as coming late, not coming to work, delaying work, or even deciding to leave the company. However, if employees are happy with their work, then the work will benefit the company and achieve the goals set by the company.

According to Robbins & Judge (2017), job satisfaction is an individual's general attitude towards their work. It is further explained that someone with high job satisfaction shows a positive attitude towards the job, whereas someone who is dissatisfied with their job shows a negative attitude towards the job. Job satisfaction is an employee's (positive) attitude towards their work which arises based on an assessment of the work situation. This assessment can be carried out on one's work, the assessment is carried out as a sense of appreciation for achieving one of the important values in the work. Satisfied employees like their work situation more than they dislike it. Spector (1985) argues that job satisfaction is an emotional affective response to a job or certain aspects of a job. Colquitt et al., (2018) define job satisfaction as coming from assessing one's job or work experience and creating a pleasant emotional state. Feelings related to job satisfaction and dissatisfaction tend to reflect employees' assessments of current and past work experiences rather than hopes for the future.

Even though at first glance the opinions of the experts above regarding job satisfaction are different, in essence it is the same, namely that job satisfaction reflects a person's attitude or feelings towards their work. Job satisfaction is a measure of how much employees enjoy their work and is an employee's attitude related to their psychological state.

Kreitner & Kinicki (2009) state that there are five factors that can influence job satisfaction, namely:

a. Fulfillment of needs (Need Fulfillment). Job satisfaction is determined by the level of job characteristics in providing opportunities for individuals to fulfill their needs.
b. Differences (Discrepancies). Job satisfaction is the result of meeting expectations. Fulfillment of expectations reflects the difference between what is expected and what a person gets from his work. If expectations exceed what they receive, people will be dissatisfied, whereas people will be satisfied if they receive benefits that exceed their expectations.
c. Achievement of value (Value Attainment). Job satisfaction is the result of an individual's perception of work in providing fulfillment of important individual work values.
d. Justice (Equity). Job satisfaction is a function of how fairly individuals are treated in the workplace.
e. Genetic components (Genetic Components). Job satisfaction is a function of personal traits and genetic factors. The level of job satisfaction a person has in their job is related to the person's genetic makeup and personal traits. This implies that differences in individual traits have an important meaning in explaining job satisfaction in addition to work environment characteristics.

Employees who are satisfied with their work will tend to work wholeheartedly and do their job as well as possible, this will certainly have a positive impact on the company. According to Robbins & Judge (2017) job satisfaction can have an impact on productivity and the possibility of employee leaving.

1. Productivity

   People argue that productivity can be increased by increasing job satisfaction. Job satisfaction may be a result of productivity or vice versa. High productivity causes an increase in job satisfaction only if the workforce perceives that what the company has achieved is in accordance with what they received. (salary/wages) that is fair and reasonable and associated with superior work performance.

2. Employee Exit

Employee turnover from work has large economic consequences, so it is likely to be related to job dissatisfaction. Robbins & Judge (2017) explain that job dissatisfaction among workers can be expressed in various ways, for example by leaving work, complaining, disobeying, stealing company/organization property, avoiding their job responsibilities and others.

Meanwhile, measuring job satisfaction according to Luthans (2015) has five items, namely:

1. Interesting Jobs Jobs that are interesting to someone have an influence onperceived job satisfaction.
2. Closeness to Colleagues By creating good relationships between co-workers, a sense of comfort and security at work will be created in them so that job satisfaction can be realized.
3. Supervisor's actions: Supervisors who are considerate and fair towards employees can lead to job satisfaction.
4. The amount of salary is a very important factor in achieving employee job satisfaction. In general, people's main motivation for working is to earn enough salary to meet their daily needs.
5. Promotional opportunities.

CONCLUSION

Based on the literature review that has been studied, it can be concluded that there is an influence of job insecurity, turnover intention on job satisfaction.*Job Insecurity*reflects the extent to which workers feel that their jobs are threatened and are powerless to do anything about it. This condition is caused by the large number of types of work that are temporary or contract in nature. High employee turnover intention (desire to move) will have an unfavorable impact on the organization, both in terms of costs and in terms of loss of time and opportunity to take advantage of opportunities. High turnover intention also results in an ineffective organization because the company loses experienced employees and needs to retrain new employees. Job satisfaction is an employee's (positive) attitude towards their work which arises based on an assessment of the work situation. This assessment can be carried out on one's work, the assessment is carried out as a sense of appreciation for achieving one of the important values in the work. Satisfied employees like their work situation more than they dislike it.

ACKNOWLEDGEMENTS

The author would like to thank all parties who have helped in the process of writing this article. Thank you also to the supervisors and Sriwijaya University.

REFERENCES

Abelson, M.A. (1987). Examination of avoidable and unavoidable turnover. Journal of Anplied Psychology, 72 (3), 382-386

Adkins, C. L., Webel, J. D., & Farh, J. L. (2001). A Field Study of Job Insecurity During A Financial Crisis. Journal of Group and Organizational Management, 26(4), 463-483. DOI: 10.1177/1059601101264004.

Al Kurdi, B., Alshurideh, M. and Al afaishat, T. (2020) ‘Employee retention and organizational performance: Evidence from banking industry’, *Management Science Letters*, 10(16), pp. 3981–3990. doi:10.5267/j.msl.2020.7.011.

Applebaum, D., Fowler, S., Fiedler, N., Osinubi, O., & Robson, M. (2010). The impact of environmental factors on nursing stress, job satisfaction, and turnover intention. The Journal of nursing administration, 40, 323.

Ashford, S. J., Lee, C., & Bobko, P. (1989). Content, Causes, and Consequences of Job Insecurity: A Theory Based Measure and Substantive Test. Academy of ManagementJournal, 32(4), 803-829. doi:10.2307/256569.

Badan Pusat Statistik (2021). Hasil Sensus Penduduk Tahun 2020. Diakses pada 21 Janauri 2021, dari https://demakkab.bps.go.id/news/2021/01/21/67/hasil-sensus-penduduk-2020.html.

Balz, A., & Schuller, K. (2018). Always looking for something better? The impact of job insecurity on turnover intentions: Do employables and irreplaceables react differently?. Economic and Industrial Democracy, 42(1), 142-159. doi:10.1177/0143831x18757058

Chen, M. F., Lin, C. P., & Lien, G. Y. (2011). Modelling job stress as a mediating role in predicting turnover intention. The service industries journal, 31(8), 1327-1345.

Colquitt, J. A., Lepine, J. A., & Wesson, M. J. (2018). Organizational Behavior: Improving

Elst, T. V., De Witte, H., & De Cuyper, N. (2013). The Job Insecurity Scale: A psychometric evaluation across five European countries. European Journal of Work and Organizational Psychology, 23(3), 364–380. doi:10.1080/1359432x.2012.745989.

Greenhalgh, L., & Rosenblatt, Z. (1984). Job Insecurity: Toward Conceptual Clarity. Academy of Management Review, 9(3), 438-448

Kang, D. S., Jeef, G., & Kim, D. (2012). Reponses to job insecurity the impact on discretionary extra-role and impression management behaviours and the moderating role of employability. Journal Carrer Development International, 17(4), 314-332. DOI: 10.1108/13620431211255815.

Kreitner, R., & Kinicki, A. (2009). Organizational Behavior, 9th Edition. New York: McGraw-Hill Inc.

Luthans, F. (2015). Organizational Behavior, 10th Edition. Alih Bahasa: Vivin Andhika, dkk. Yogyakarta: Andi.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of theemployee turnover process. Psychological Bulletin, 86(3), 493–522. https://doi.org/10.1037/0033-2909.86.3.493.

Mobley, Horner dan Hollingsworth. 2011. Pergantian Karyawan: Sebab, Akibat dan Pengendaliannya. Alih Bahasa: Nurul Imam. PT Pustaka Binaman Pressindo: Jakarta.

Mobley, W. H. 2016. Review And Conceptual Analysis Of The Employee Turnover. Journal Of Applied Psychology. Vol. 4, No. 62, pp. 237-240.

Namin, B. H., Øgaard, T., & Røislien, J. (2022). Workplace incivility and turnover intention in organizations: A meta-analytic review. International Journal of Environmental Research and Public Health, 19(1). https://doi.org/10.3390/ijerph19010025.

Price, J.L. (1989). The impact of turnover on the organization. Word and Occupations 16(4), 461-473.

Ratnawati, A. *et al.* (2020) 'Job Embeddedness: a Strategy to Reduce Voluntary Turnover Intention', *Jurnal Dinamika Manajemen*, 11(2), pp. 271–282. doi:10.15294/jdm.v11i2.22876.

Robbins, S. P. (2002). Organizational Behavior. Jakarta: Prentice Hall International.

Robbins, S. P., & Judge T. A. (2017). Organizational Behavior, 17th Edition. England: Pearson Education Limited.

Smithson, J., & Lewis, S. (2000). Is job insecurity changing the psychological contract?. Personnel Review, 29(6), 680-702. DOI: 10.1108/00483480010296465.

Spector, P. E. (1985). Measurement of human service staff satisfaction: Development of the Job Satisfaction Survey. American Journal of Community Psychology, 13(6), 693–713. doi:10.1007/bf00929796

Stride, C., Wall, T. D., & Catley, N. (2007). Measures of Job Satisfaction, Organizational Commitment, Mental Health and Job-related Well-being. A Benchmarking Manual. Second Edition. John Willey & Sons, Ltd.

Sverke, M., & Hellgren, J. (2002). The Nature of Job Insecurity: Understanding Employment Uncertainty on the Brink of a New Millennium. Applied Psychology, 51(1), 23–42. doi:10.1111/1464-0597.0077.

Yang, J. & P. Wittenberg. 2016. Perceived Work-related Factors and Turnover Intention. Journal of Business Administration, 1-69.

Yao, X., Lee, T.W., Mitchell, T.R., Burton, J.P., & Sablynski, C.S. (2004). Job embeddedness: Current research and future directions. In book: Innovative Theory and Empirical Research on Employee Turnover (pp.153-187). Publisher: Information Age Publishing. Editors: R. Griffeth, P. Hom.

Yukongdi, V. and Shrestha, P. (2020) 'The Influence of affective commitment, job satisfaction and job stress on turnover intention: A study of Nepalese bank employees', *Review of Integrative Business and Economics Research*, 9(1), pp. 88–98. Available at: http://buscompress.com/journal-home.html.

Biodata

Erick Elthotiq is a doctoral student in Sriwijaya University for the management program.His email is erick.toriq@gmail.com.

THE INFLUENCE OF EMOTIONAL INTELLIGENCE ON EMPLOYEE PERFORMANCE AT PT. TELKOM INDONESIA (PERSERO) TBK PALEMBANG

Giska Dwi Adeliya[1], Sukaria Darmawan[2], Ahmad Affandi[3]

Giska Dwi Adeliya[1]
Student of Management Study Program, Faculty of Economics, Palembang University
giskadwi2704@gmail.com

Sukaria Darmawan[2]
Lecturer of Management Study Program, Faculty of Economics, Palembang
sukariadarmawan67@gmail.com

Akhmad Afandi[3]
Lecturer of Management Study Program, Faculty of Economics, Palembang
fandiakhmad2021@gmail.com

Abstract

This research was conducted to find out how emotional intelligence influences employee performance at Pt. Telkom Indonesia (Persero) Tbk Palembang. The research sample was 67 employees at PT Telkom Indonesia (Persero) Tbk Palembang. Hypothesis testing is carried out using Simple Linear Regression Analysis, as well as the t test (partial test), with the aim of being able to determine the influence of the independent variable, namely Emotional Intelligence, on the dependent variable, namely Employee Performance at a confidence level of 95% (a= 0.05). The results of the t test on the Emotional Intelligence variable have a positive influence on the employee performance of PT. Telkom Indonesia (Persero) Tbk Palembang. , where the calculated t-value of the Emotional Intelligence variable (X), is greater than the t-table value (0.417 > 0.678) and the significance value (sig.) is smaller than the required α (0.001<0.05) Coefficient of determination (R^2) of 0.458. This shows that 45.8% of the Employee Performance variable can be explained by the Emotional Intelligence variable while the remaining 54.20% is explained by other factors not included in this research.

Keywords: Emotional Intelligence, Performance

INTRODUCTION

Economic development and growth in the business world have created several types of concepts and understanding regarding human resource management. Many experiences have been able to motivate in strengthening the concept of human resource management with strength and character that can accelerate towards a good future. Human resources are a useful factor in the business world, because having quality resources can influence the level of development and productivity of the company (Octarinie & Fane, 2022). So an organization needs to be able to control and manage human resources effectively and efficiently in maintaining its existence, especially its employees.

With good emotional intelligence, employees can complete tasks according to the company's target regulations. Emotional intelligence has a significant influence on employee performance. It can be interpreted that if emotional intelligence increases, employee performance will be high. Emotions are a typical feeling and way of thinking, a biological and psychological condition, as well as a series of

tendencies in carrying out work (Goleman, 2018). Emotions are included in the aspect of an employee's intelligence which has an impact on employee performance. Emotional intelligence can determine the potential to perform a skill that influences an employee's performance. Emotional intelligence can also influence job satisfaction. Emotional intelligence is the ability to think about and use emotions to improve thinking abilities. This includes the ability to feel emotions correctly, to access and manage emotions to help the mind, to understand emotions and knowledge of emotions, and to reflect on emotions so as to regulate emotions and intellectual growth. Emotional intelligence can help someone to remain calm in facing any situation that can cause stress.

Advances in science and technology have pushed the telecommunications industry to develop rapidly. The growth of the telecommunications industry in 2015 is estimated to increase by 7% -10% or almost the same as the previous year. The large number of telecommunications companies requires each company to have a competitive advantage in order to be able to compete with other competitors, both in terms of human resources and the products and/or services it offers. In fact, the quality of human resources in Indonesia is still relatively low, including in the telecommunications industry. This is due to the low level of education and low soft skills possessed. The low quality of human resources is due to the low ability of these human resources in terms of knowledge, skills and attitudes so they still need to be developed (Maliki, M Usman,Alditya, 2023).

One of the telecommunications companies, namely PT. Telkom Indonesia (Persero) Tbk, which is a state-owned company engaged in information and communication technology (ICT) services and telecommunications networks in Indonesia, is also not free from human resource problems. To find out how well employees are performing, companies need to carry out performance appraisals. Performance appraisal is the process of determining how well employees perform their jobs against work standards and communicating that information to them (Malthis, 2012). Performance assessment carried out at PT. Telkom Indonesia (Persero) Tbk Palembang is held once a year. The following is Table 1 which shows the results of the performance assessment of PT employees. Telkom Indonesia (Persero) Tbk Palembang.

Table 1. Average Performance Assessment of PT Employees. Telkom Indonesia (Persero) Tbk (In Percent)

Work Behavior	2022			2023		
	Weight	Mark	Score	Weight	Mark	Score
1. Discipline	10	80	8	10	70	7,5
2. Responsibility	10	75	7,5	10	70	7,0
3. Collaboration	10	80	8	10	75	7,5
4. Leadership	10	80	8	10	75	7,5
WORK RESULTS						
1. Quality of Work	20	80	16	20	70	14
2. Work Quantity	20	80	16	20	70	14
3. Job Skill	20	80	16	20	65	13
Total	**100**		**79,5**	**100**		**70,5**

Source : PT. Telkom Indonesia (Persero) Tbk Palembang 2023

From Table 1 above, it can be seen the current condition of employee performance at PT. Telkom Indonesia (Persero) Tbk Palembang. will decrease from 2022 to 2023 from 79.5% to 70.5%. The value of performance behavior seen from the discipline aspect decreased from 8% to 7.5%, the responsibility aspect decreased from 7.5% to 7.0%, the cooperation aspect also decreased compared to the previous year, the leadership aspect decreased from 8% to 7, 5%. The value of work results seen from the aspects of work quality and work quantity decreased from 16% to 14%, work skills decreased in value from 16% to 13%.

These data show that aspects of employee work skills at PT. Telkom Indonesia (Persero) Tbk Palembang experienced a decline, based on interview results, this decline occurred because employees had various work errors caused by inaccuracy. The decline in skills is caused by an increase in workload, resulting in an imbalance between workload and human resources as well as an inability to regulate one's emotional condition.

Skills so that someone can manage themselves are skills regarding emotional intelligence. Emotional intelligence can help someone use their cognitive abilities (knowledge) according to their maximum potential (Octarinie et al., 2023). One form of coaching carried out by PT. Telkom Indonesia (Persero) Tbk Palembang to increase employee emotional intelligence, namely by holding several coaching programs regarding emotional management. The Result of research Goleman in (Sutrisno, n.d.) revealed that intellectual intelligence (IQ) contributes around 20% to the factors that determine success in life, while the other 80% is influenced by other strengths including emotional intelligence. This statement shows that in the work environment, aspects of human behavior play a very important role. Employee behavioral attitudes towards work greatly determine success in achieving organizational goals.

Emotional intelligence is the ability to control emotions, the ability to control oneself and be able to make decisions calmly." Therefore, the presence of employees at the PT. Telkom Indonesia (Persero) Tbk Palembang is not only cognitively intelligent but also has to have emotional intelligence. Based on the background of the problem above, research was conducted with the title Emotional intelligence is the ability to control emotions, the ability to control oneself and be able to make decisions calmly." Therefore, the presence of employees at the PT. Telkom Indonesia (Persero) Tbk Palembang is not only cognitively intelligent but also has to have emotional intelligence. Based on the background of the problem above, research was conducted with the title **"The Influence of Emotional Intelligence on Employee Performance at PT. Telkom Indonesia (Persero) Tbk Palembang".**

METHODS

Object of research

This research took PT. Telkom Indonesia (Persero) Tbk as the object of research is located at Jalan Colonel Haji Burlian No.45 Km 7 Sukarami, Palembang City

Population and Sample

The population in this study were employees at PT. Telkom Indonesia (Persero) Tbk Palembang numbering 200 people

A sample is a portion of the number and characteristics possessed by the population, or a small portion of the population members taken according to certain procedures so that it can represent the population. One way to determine the number of samples is to use the Slovin formula (Sugiyono, 2018) :

$$n = \frac{N}{N.d^2 + 1} \quad \textbf{(1)}$$

Keterangan :

n = Jumlah sampel,
N = Jumlah Populasi,
d^2 = Presisi yang inginkan (misal 5 % atau 10 %)

$$n = \frac{200}{200(0{,}1)^2 + 1}$$

(2)

$$n = \frac{200}{200(0,01)+1}$$

(3)

$$n = \frac{200}{3}$$

(4)

$n =$ **66,66, rounded up to 67 respondents**

Research Methods

A This research uses a Causal Research Design, namely research that is directed at investigating cause-and-effect relationships based on observing the consequences that occur and looking for causal factors through the data collected (Ghozali, 2018). In this research the basic approach is to start with the differences between the two groups and then look for factors that might be the cause or effect of these differences.

Data analysis method

A. Validity Test

The validity test is carried out by comparing the calculated r value with the r table for a significance level of 5 percent of degree of freedom (df) = n-2, in this case n is the number of samples. If r count > r table then the question or indicator is declared valid, and vice versa if r count < r table then the question or indicator is declared invalid.

B. Reliability Test

Reliability measurements are carried out using one shot or just one measurement using the SPSS tool for the Cronbach Alpha (α) statistical test. A construct or variable is said to be reliable if it provides a Cronbach Alpha value > 0.60.

C. Simple Linear Regression Analysis

This analysis is used to find out how much influence the independent variable, namely Emotional Intelligence (X), has on the dependent variable, namely employee performance (Y). The linear regression equation is as follows:

Y = a + bX + e

Where :

X = Independent Variable (Emotional Intelligence)
Y = Dependent variable (Employee Performance)
a = Constant
b = Regression line coefficient
e = error

D. Coefficient of Determination

The coefficient of determination (R^2) essentially measures how far the model's ability is to explain variations in the dependent variable. The value of the coefficient of determination is between zero and one. A small R^2 value means that the ability of the independent variables (Emotional Intelligence) to explain variations in the dependent variable (Employee Performance) is very limited. Vice versa, a value close to one means that the independent variables provide almost all the information needed to predict variations in the dependent variable.

E. t test (partial test)

The t test is used to partially test each variable. The t test results can be seen in the coefficients table in the sig (significance) column. If the probability of the t value or significance is <0.05, then it can be

said that there is a partial influence between the independent variable and the dependent variable. However, if the probability of the t value or significance is > 0.05, then it can be said that there is no significant influence between each independent variable on the dependent variable.

DISCUSSION

Regression analysis is used to determine the form of relationship between variables. The main aim of using analysis is to predict or estimate the value of one variable in relation to other variables which are known through the regression line equation. The regression equation formed is:

Y = 12.330+ 0.417 X1

From this equation it can be explained that:

a. The emotional intelligence variable has a positive coefficient direction towards employee performance
b. The emotional intelligence variable constant gives a value of 12,330, which means that if the emotional intelligence value is zero then the employee performance value is 12,330
c. The emotional intelligence coefficient gives a value of 0.417, which means that if emotional intelligence increases assuming other variables remain constant, employee performance will increase by 41.7%.

This coefficient of determination is used to measure how far the independent variables explain the dependent variable. The coefficient of determination value is determined by the adjusted R square value. From the results of the regression calculations, it can be seen that the coefficient of determination (adjusted R^2) obtained is 0.458. This means that 45.8% of the variation in employee performance variables can be explained by the emotional intelligence variable while the remaining 54.2% is explained by other variables not explained in this research.

The validity of the hypothesis in this research was tested using a partial test. Testing is carried out by looking at the significance level (p-value), if the significance level resulting from the calculation is below 0.05 then the hypothesis is accepted, conversely if the significance level calculated is greater than 0.05 then the hypothesis is rejected. The results of testing the emotional intelligence hypothesis show a calculated t value of 0.417 with a significance level of 0.001. This significance level is smaller than 0.05, which means that the hypothesis in this study is proven. This means that the hypothesis which states that emotional intelligence has a positive influence on employee performance is declared "acceptable".

Based on the results of statistical tests, it can be clearly seen that partially (individually) the independent variable, namely emotional intelligence, has an effect on the dependent variable, namely the performance of PT employees. Telkom Indonesia (Persero) Tbk Palembang. The influence given by the independent variable is positive, meaning that the higher the emotional intelligence, the resulting employee performance will increase. These results are in accordance with the proposed hypothesis. The results of this study are also in accordance with the results of previous research.

From several previous studies, there are many factors that influence performance. However, one of the many factors that influence performance is the most important, namely the workforce or human resources themselves (Octarinie et al., 2023). Therefore, to be able to improve performance, one of the things that employees need to pay attention to is emotional quality. To get the best performance, employees are not only seen from their intellectual abilities but also seen from their ability to control their emotions in carrying out their responsibilities in the organization. Human intelligence is not something that is merely a single dimension, which can only be measured from one side of the dimension, but also the ability to control and manage oneself as well as the ability to build relationships with other people (Simamora, 2017).

CONCLUSION

The results of hypothesis testing have proven that there is an influence between Emotional Intelligence and Employee Performance. Testing proves that Emotional Intelligence has a positive influence on the performance of PT employees. Telkom Indonesia (Persero) Tbk Palembang. In connection with this matter, PT. Telkom Indonesia (Persero) Tbk Palembang needs to provide counseling to provide an understanding of the benefits of emotional intelligence for oneself and in understanding other people's emotional conditions. Apart from that, PT. Telkom Indonesia (Persero) Tbk Palembang can facilitate events/agenda that can enable employees to interact more frequently so that good communication can be established which can help employees understand each other's characteristics of their colleagues. Employees are expected to be able to manage conflicts between co-workers with their emotional intelligence so that conflicts can be resolved and not prolonged, so that they do not hinder work which can reduce performance in the organization. Employees are expected to be able to establish good relationships with their colleagues and share information about their work, to make it easier to carry out their duties and responsibilities which are expected to improve employee performance. Future researchers are expected to be able to test other factors that can improve performance besides emotional intelligence.

ACKNOWLEDGEMENTS

The author would like to thank the University of Palembang for all the support provided in this research. This support allows the author to collect data and analyze the findings presented in this article. On this occasion, the author would also like to express his gratitude to Mr. Sukaria Darmawan and Mr. Ahmad Affandi for their valuable academic advice and guidance in preparing this article. Hopefully this research will provide benefits for the development of science.

REFERENCES

Ghozali, I. (2018). *Aplikasi Analisis Multivariate dengan Program SPSS*. Badan Penerbit Universitas Diponegoro.

Goleman, D. (2018). *Kecerdasan Emosional : Mengapa EI lebih penting daripada IQ*. PT.Gramedia Pustaka Utama.

Maliki, M Usman,Alditya, A. (2023). Improving the Quality of Human Resources from a Socio Economic Perspective in the Globalization Area. *Jurnal Manajemen*, *11*(3), 260–269. https://jurnal.unpal.ac.id/index.php/jm/article/view/953/734

Malthis, R. (2012). *Manajemen Sumber Daya Manusia* (Jilid 1 da). Salemba Empat.

Octarinie, N., & Fane, S. M. (2022). *Analysis The Use of Fingerprint Attendance and The Effect of Compensation On Discipline For DPRD Secretariat Staff In Prabumulih*. *2*(1), 11–19.

Octarinie, N., Fane, S. M., & Delimawati, D. (2023). Pengaruh Kedisiplinan, Komitmen Organisasi dan Budaya Organisasi Terhadap Kinerja Karyawan PT. Maju Global Indonesia Palembang. *Jurnal Media Wahana Ekonomika*, *19*(4), 657–671. https://doi.org/10.31851/jmwe.v19i4.11030

Simamora, H. (2017). *Manajemen Sumber Daya Manusia*. STIE YKPN.

Sugiyono. (2018). *Metode Penelitian Kuantitatif, Kualitatif dan R & D*. CV.Alfabeta.

Sutrisno, E. (n.d.). *Manajemen Sumber Daya Manusia*. Penerbit Kencana.

BIODATA

Giska Dwi Adeliya is a 4th semester student in the management study program, Faculty of Economics, Palembang University. The author is interested in taking a concentration in human resource management as a specialization. Email : giskadwi2704@gmail.com

PROMOTION STRATEGY ANALYSIS TO INCREASE BRAND AWARENESS AT PT SEMEN BATURAJA PERSERO TBK

Heni Krismawati Gulo[1], Endang Rahayu[2], Yuli Anita[3]

Heni Krismawati Gulo[1]
Student of Management Study Program, Faculty of Economics, Palembang University
henikrismawatigulo@gmail.com

Endang Rahayu[2]
Lecturer of Management Study Program, Faculty of Economics, Palembang
endangrahayu123455@gmail.com

Yuli Anita[3]
Lecturer of Management Study Program, Faculty of Economics, Palembang
yulianita@unpal.ac.id

Abstract

This research was conducted to find out how promotional strategies are used to increase brand awareness at PT. Semen Baturaja Persero. Tbk Palembang. In determining the sample in this study, the population size is unknown, so the sampling technique provides an equal chance for each element or member of the population to be selected as a sample. A total of 100 people. Hypothesis testing is carried out using Multiple Linear Regression Analysis, as well as the t test (partial test) and f test (simultaneous test), with the aim of knowing the effect of the independent variable, namely Promotion Strategy, on the dependent variable, namely Brand Awareness at a confidence level of 95% (a= 0.05). The results of the t test on each Promotion Strategy variable have a positive influence on increasing Brand Awareness at PT Semen Baturaja Persero Tbk Palembang. From the results of the regression analysis it can be seen that together the independent variables have a significant influence on the dependent variable. This can be proven from the F count value of 19.674 with a significance value (sig) of 0.000. The coefficient of determination (R^2) is 0.427. This shows that 42.7% of the Brand Awareness variable can be explained by the Promotion Strategy variable while the remaining 57.30% is explained by other factors not included in this research.

Keywords: Brand Awareness, Promotion Strategy

INTRODUCTION

In today's trading era, companies are required to find and build management patterns or systems that are able to professionally retain their customers. Several things are the main considerations for companies in carrying out customer retention, namely, firstly, the increasingly expensive cost of acquiring new customers in such tight competency conditions, secondly, the level of profit or profit the company obtains is directly proportional to the growth of the relationship between the company and its customers. (Octarinie & Rasjid, 2021). To create such conditions, companies must design good strategies to use in an effort to create feelings of customer satisfaction, and try to create loyal customers..

In this modern era, companies or industries can enter various fields due to rapid changes in tastes, technology and competition. To face competition, companies need to carry out marketing activities using appropriate promotions so that goals can be achieved. The main goal of the company is essentially the same,

namely to increase sales volume so that the profits generated will continue to increase, so that the company can achieve prosperity.

In an increasingly developing economic situation, of course, there is a lot of competition in various fields of life, including competition in the business world, including media-related businesses. Many companies are competing with each other to get market share, so this spurs companies to continue trying. progress in improving its business (Octarinie, 2022). Apart from that, with advances in marketing, companies are also required to be able to keep up with current developments so as not to be left behind by other companies. So that a company can grow and develop well, the company must be able to anticipate increasingly competitive economic developments, namely by implementing the right strategy to be able to compete, being able to create promotional strategies to increase company sales.

Promotional strategies are an effective basis for consideration in determining marketing strategies to increase a company's sales volume, therefore availability is very important so that consumers can be served well (Ramadhona et al., 2023). Global competition has forced many companies to determine new strategies in order to face competition. either through providing information to improve services to the public, namely through promotions which include sales promotions, advertising, personal selling and publications (Tjiptono, 2019). The current market situation is no longer a seller's market, but a buyer's market, which means sellers looking for buyers, which means consumers in this case are kings who must be served well. In general, companies implement a business strategy that is a combination of offensive strategies, namely strategies aimed at achieving or acquire new consumers, while to increase market share a defensive strategy is used which seeks to reduce the possibility of customer exit and consumers switching from the company.

The product concept is not limited to physical objects or anything that can satisfy a need can be called a product. Apart from tangible goods, products are activities or benefits offered for sale, which are essentially intangible and do not result in any ownership (Zubaidah, 2020). In this case, product features are one of the most important marketing considerations in addition to other factors that support consumers in making purchasing decisions. The following are several companies operating in the cement industry in Indonesia, shown in Table 1 below :

Table 1. Cement Manufacturing Companies in Indonesia

Manufacture	Merk
PT. Semen Gresik	Semen Gresik
PT. Indocement Tunggal Prakarsa	Semen Tiga Roda
PT. Holcim Indonesia	Semen Holcim
PT. Semen Padang	Semen Padang
PT. Semen Tonasa	Semen Tonasa
PT. Semen Andalas	Semen Andalas
PT. Semen Kupang	Semen Kupang
PT. Semen Bosawa	Semen Bosawa
PT. Semen Baturaja	Semen Baturaja

Based on Table 1 above, it shows that several large companies are Indonesian cement producers, namely PT. Semen Gresik which is the producer of Semen Gresik. PT. Indocement Tunggal Prakarsa which produces Tiga Roda Cement, and PT. Holcim Indonesia produces Holcim cement. There are also PT Semen Padang, PT Semen Tonasa, PT Semen Andalas, PT Semen Kupang, PT Semen Bosawa and PT Baturaja, each of which is a producer of Semen Padang, Semen Tonasa, Semen Andalas, Semen Kupang, Semen Bosawa and Semen Baturaja.The following in Table 2 shows the Brand Share of Cement Manufacturers in Indonesia in 2023.

Table 2. Data on Brand Share Percentage of Cement Companies in Indonesia

No	Nama Perusahaan	Persentase (%)
1	PT Indocement Tunggal Prakarsa	33
2	PT Semen Gresik	17
3	PT Holcim Indonesia Tbk	15
4	PT Semen Padang	11
5	PT Semen Tonasa	8,1
6	PT Semen Bosowa	5,2
7	PT Semen Andalas	4
8	PT Baturaja	2,2
9	PT Semen Kupang	1

Sumber : Kemenperin 2022

The large number of companies offering cement products shows a fairly high level of competition. This encourages companies to carry out various strategies to face this competition. Apart from the usefulness of the product, price and quality are considerations for consumers when making a purchase. The increase in sales of Semen Baturaja exceeds the national market growth rate. This increase shows that consumers are well aware of the Semen Baturaja brand which carries out integrated business activities and is able to provide quality products at competitive prices. The following is a table of increasing sales of Baturaja cement domestically from 2020–2023:

Table 3. Sales volume of Semen Baturaja 2020 to 2023

Year	Total
2020	70,45 juta Ton
2022	77,41 juta Ton
2022	78,14 juta ton
2023	79,70 juta ton

Source : http:// semenbaturaja.co.id

PT. Semen Baturaja (Persero) Tbk, is one of the largest cement industries in South Sumatra. This company is part of the Indonesian Cement group with several other companies including Andalas, Indocement, Cibinong, Bosowa and Kupang cement which compete with each other to win market share in Indonesia. The need for cement in the market experiences competition with companies operating in the same field. The increasing demand for cement for infrastructure and housing has caused PT. Semen Baturaja (Persero) Tbk strives to continue to increase production and distribution of cement to various distributors and building shops that sell stock to serve customers.

The choice of an item depends on the attractiveness of the item to the consumer. Firstly, to create a strong brand and have a positive image in society, a brand must first have brand awareness, this is important because the most basic thing for a brand to be chosen is that it must first be known by consumers. Brand awareness can create a certain value for consumers, when a brand is well known, the brand tends to become the consumer's choice, which then leads to the brand being liked by many consumers (Assauri, 2017).

Many companies with their respective brands are fighting to lead the market or become Market Leaders. To become a market leader, PT Semen Baturaja (Persero) Tbk must at least have brand awareness capital. This capital is increasingly sharpened by communication carried out through marketing on social media such as Instagram, Facebook and websites. Indirectly, the strength and identity of PT Semen Baturaja (Persero) Tbk is formed in the minds of consumers.

Based on this explanation, researchers are interested in conducting research on PT Semen Baturaja (Persero) tbk as a research object. Because seeing the emergence of various cement brands in Indonesia and South Sumatra in particular, companies must be able to build Brand Awareness so that consumers can know and also realize that they are present in their midst. With many tips and ways for a company to build Brand Awareness for its products, the researcher chose the promotional strategy carried out by PT Semen Baturaja (Persero) Tbk, namely information about the product and what efforts have been intensified to provide brand awareness. PT. Semen Baturaja (Persero) tbk to its consumers.

METHOD

Object of research

Considering the ease of data collection, this research took the sales locations of Baturaja Semen in several building shops in the city of Palembang.

Populasi Dan Sampel

The population in a study is very necessary because it is the main target of the research object. Population is a generalized area consisting of objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn. (Sugiyono, 2018). In connection with this, the population in this study is PT Semen Baturaja (Persero) Tbk. The sampling technique used in this research is a nonprobability sampling method. In determining the sample in this study, the population size is unknown, so the sampling technique provides an equal chance for each element or member of the population to be selected as a sample.

A sample is a small part of a population. In this research, it is hoped that the samples taken can describe the actual results of the population. In this research, it is hoped that the samples taken can describe the actual results of the population. To conduct research, a researcher does not have to examine all members of the population (Sugiyono, 2018). Researchers can select several people who are considered to represent the population. The number of samples taken in this research was 100 people.

Research methods

The research design used is descriptive analysis with a quantitative approach, namely research which is then processed and analyzed to draw conclusions. The definition of descriptive research design is a research design that is prepared in order to provide a systematic picture of scientific information originating from the subject or object of research**.** (Suryabrata, 2014). The type of research used in this research is survey research, namely research that takes samples from consumers of PT Semen Baturaja (Persero) Tbk in the city of Palembang using a questionnaire as a data measurement tool.

Data analysis method

A. Validity Test

Validity testing can be done by looking at the correlation between the score of each item in the questionnaire and the total score you want to measure, namely using the Pearson Correlation Coefficient in SPSS. If the significance value (P Value) is > 0.05 then there is no significant relationship. Meanwhile, if the significance value (P Value) <0.05 then there is a significant relationship.

B. Reliability Test

Reliability testing is used to determine the consistency of the measuring instrument, whether the measuring instrument can be relied on for further use. The reliability test results in this study used the Cronbach alpha coefficient, where an instrument is said to be reliable if it has a Cronbach alpha coefficient equal to 0.60 or more.

C. Multiple Linear Regression Analysis

Multiple linear regression analysis was used to determine the influence between the independent variable and the dependent variable, namely between promotional strategies (X) on Brand Awareness of PT. Semen Baturaja (Persero) Tbk (Y). The multiple linear regression equation used in this research is:

$$Y = a + b1.X1 + b2.X2 + b3.X3 + b4.X4$$

Where :

a = Constant
Y = Brand Awareness
b1 = Regression coefficient of variable X1 (advertising)
b2 = Regression coefficient of variable X2 (personal sales)
b3 = Regression coefficient of variable X3 (sales promotion)
b4 = Regression coefficient of variable X4 (publicity)
X1= Advertising
X2 = Personal Sales
X3 = Sales Promotion
X4 = Publicity

D. Coefficient of Determination

The coefficient of determination (R^2) is intended to determine the best level of accuracy in regression analysis, which is indicated by the magnitude of the coefficient of determination (R2) between 0 (zero) and I (one). The coefficient of determination (R^2) of zero independent variable has absolutely no effect on the dependent variable. If the coefficient of determination is getting closer to one, then it can be said that the independent variable has an influence on the dependent variable. Apart from that, the coefficient of determination (R^2) is used to determine the percentage change in the dependent variable (Y) caused by the independent variable (X).

E. t test (partial test)

The t test is used to partially test each variable. The t test results can be seen in the coefficients table in the sig (significance) column. If the probability of the t value or significance is <0.05, then it can be said that there is a partial influence between the independent variable and the dependent variable. However, if the probability of the t value or significance is > 0.05, then it can be said that there is no significant influence between each independent variable on the dependent variable.

DISCUSSION

Quantitative analysis is used to prove the hypothesis proposed using a multiple linear regression analysis model, while qualitative analysis is used to examine the proof of quantitative analysis. This proof is intended to test variations of a regression model used to explain the independent variable (X) against the dependent variable (Y) by testing the significance of the regression coefficient. The regression equation is obtained as follows:

Y = 2.673+0.321X1+0.118X2+0.253X3+0.211X4

From this equation it can be explained that:

a. The Promotion Mix variable consisting of Advertising, Personal Sales, Sales Promotion and Publicity has a positive coefficient direction towards Brand Awareness.
b. The Advertising Coefficient gives a value of 0.321, which means that if the advertising strategy is improved assuming other variables remain constant, brand awareness will increase.

c. The Individual Sales Coefficient gives a value of 0.118, which means that if individual sales are increased assuming other variables remain constant, brand awareness will increase.
d. The Sales Promotion Coefficient gives a value of 0.253, which means that if sales promotion is increased assuming other variables remain constant, brand awareness will increase.
e. The Publicity Coefficient gives a value of 0.211, which means that if publicity is increased assuming other variables remain constant, consumer satisfaction will increase.

From the results of the regression analysis it can be seen that together the independent variables have a significant influence on the dependent variable. This can be proven from the Fcount value of 19.674 with a significance value (sig) of 0.000. Because the significance value (sig) is much smaller than 0.05, the regression model can be used to predict Brand Awareness or it can be said that the Promotion Strategy consisting of Advertising, Personal Sales, Sales Promotion and Publicity have a joint influence on Brand Awareness at PT .Semen Baturaja Persero.Tbk Palembang.

The influence of each Promotion Strategy variable on Brand Awareness can be seen from the direction of the sign and level of significance (probability). All Promotion Strategy variables consisting of Advertising, Personal Sales, Sales Promotion and Publicity all have a significant effect on Brand Awareness because the significant value is <0.005.

a. The influence of advertising on Brand Awareness
   The results of the partial test (t test) between the advertising variable and the Brand Awareness variable show a t value of 0.602 with a significance level of 0.001. This significance level is smaller than 0.005, which means that the hypothesis in this study rejects Ho and accepts Ha. This means that the hypothesis H1 "advertising" has a positive influence on Brand Awareness is "accepted".
b. The influence of personal sales on Brand Awareness
   The results of the partial test (t test) between the individual sales variable and the Awareness variable show a t value of 1,442 with a significance level of 0.003. This significance level is smaller than 0.005, which means that the hypothesis in this study rejects Ho and accepts Ha. This means that the hypothesis H2 "personal sales" has a positive influence on Brand Awareness is "accepted".
c. The influence of sales promotions on Brand Awareness
   The results of the partial test (t test) between the sales promotion variable and the consumer satisfaction variable show a t value of 1,209 with a significance level of 0.08. This significance level is smaller than 0.005, which means that the hypothesis in this study rejects Ho and accepts Ha. This means that the hypothesis H3 "sales promotion" has a positive influence on Brand Awareness and is "accepted".

d. The influence of publicity on Brand Awareness
   The results of the partial test (t test) between the publicity variable and the Brand Awareness variable show a t value of 1.117 with a significance level of 0.000. This significance level is smaller than 0.005, which means that the hypothesis in this study rejects Ho and accepts Ha. This means that the hypothesis H4 "publicity" has a positive influence on Brand Awareness is "accepted".

From the results of calculations using the SPSS 25.0 program, it can be seen that the coefficient of determination (R^2) obtained is 0.427. This means that 42.7% of Brand Awareness can be explained by the variables Advertising, Personal Sales, Sales Promotion and Publicity. Meanwhile, the remaining 57.3% of Brand Awareness is influenced by other variables not examined in this research.

From the research results above, it can be seen that the recapitulation results of the responses of respondents who were asked for their responses regarding the implementation of the promotional strategy of PT. Semen Baturaja Persero. Tbk Palembang were included in the "GOOD" category. With the results of this research, problems in this company have also been identified which have become a priority guideline

for improving promotional strategies in the future and improving and increasing the company's performance in order to achieve sales targets.

Promotion of a product has an important role in marketing success. Promotion is the core of a marketing campaign which is designed to stimulate the purchase of goods or services by consumers so that it is faster and in greater volume (Alma, 2016). Sales promotion is an incentive tool for purchasing through the provision of samples, coupons, premiums, discounts with the aim of encouraging consumers to try buying the product. Through promotions, it is hoped that it can attract consumers to try the product, increasing the level of repurchase for consumers who rarely buy. Therefore, it can be said that buying interest will arise if consumers have brand awareness of a product where the promotion is going well.

CONCLUSION

The implementation of the promotional strategy carried out by PT. Semen Baturaja Persero. Tbk Palembang, based on the research results, shows that consumers consider the promotional strategy carried out by PT. Semen Baturaja Persero. Tbk Palemban to be good. Because according to customer responses, PT. Semen Baturaja Persero. Tbk Palemban has delivered a promotional strategy quite well, and the company has also provided competitive discounts where consumers feel they are benefiting from buying PT. Semen Baturaja Persero. Tbk Palembang cement products. The obstacles faced by PT. Semen Baturaja Persero. Tbk Palemban in implementing promotional strategies are that so far the promotional strategies carried out have only been limited to highlighting the advantages of its products without understanding the desires or emotions of customers. As a result, customers are less interested in the offers presented, and tend to turn to other products with more guaranteed service. Salesmen often experience cases like this when they go directly into the field to offer products or services to potential consumers

ACKNOWLEDGEMENT

All praise and thanks are offered to the presence of God for His blessings and mercy who have protected and guide so that the author can complete a scientific article with the title Promotion Strategy Analysis to Increase Brand Awareness at PT Semen Baturaja Persero Tbk Scientific articles would not be possible without help and support from various sources. Therefore, with all humility, on this occasion The author would like to thank the University of Palembang, and the lecturers, especially the Faculty of Economics, University of Palembang, who have helped us a lot in writing this article so that we can complete it and present it well at this international seminar. We hope that this article will provide benefits to our almamater**s**

REFERENCES

Alma, B. (2016). *Manajemen Pemasaran dan Pemasaran Jasa*. CV.Alfabeta.

Assauri, S. (2017). *Manajemen Pemasaran Dasar dan Konsep Strategi*. PT.RaJa Grafindo Persada.

Octarinie, N. (2022). The Influence of Product Strategy and Price on The Design to Buy Honda Beat Motorcycles at Consumers of Daya Motor Prabumulih City. *Jurnal Terapan Ilmu Ekonomi, Manajemen Dan Bisnis*, *2*(Desember). http://jurnal.polsri.ac.id/index.php/jtiemb

Octarinie, N., & Rasjid, A. (2021). Analisis Strategi Penetapan Harga terhadap Keputusan

Konsumen dalam Membeli Produk Semen PT.Semen Baturaja (Persero)Tbk di Kota Palembang. *Jurnal Terapan Ilmu Ekonomi, Manajemen Dan Bisnis*, *1*(6), 288–297.

Ramadhona, P., Octarinie, N., Zubaidah, Z., & Dahlan, P. (2023). Analisis Bauran Pemasaran Untuk Meningkatkan Volume Penjualan Produk Logam Mulia Pada Pt. Pegadaian (Persero). *Jemasi: Jurnal Ekonomi Manajemen Dan Akuntansi*, *19*(2), 265–279. https://doi.org/10.35449/jemasi.v19i2.658

Sugiyono. (2018). *Metode Penelitian Kuantitatif, Kualitatif dan R & D*. CV.Alfabeta.

Suryabrata, S. (2014). *Metodologi Penelitian*. Rajawali Pers.

Tjiptono, F. (2019). *Strategi Pemasaran*. Penerbit ANDI.

Zubaidah. (2020). Pengaruh Kualitas Produk dan Harga terhadap Minat Beli Konsumen Kosmetik Wardah pada Gerai Kosmetik Careffour Palembang Square di Kota Palembang. *Jurnal Manajemen*, *8*(4), 73–90. https://www.jurnal.unpal.ac.id/index.php/jm/article/view/339

BIODATA

Heni Krismawati Gulo is an active student in the 4th semester in the management study program, Faculty of Economics, Palembang University. The author has an interest in the field of human resource management
Email : henikrismawatigulo@gmail.com

LITERATURE REVIEW ; THE INFLUENCE FINANCIAL BEHAVIOR AND KNOWLEDGE MANAGEMENT ON INVESTMENT DECISION

Randy Hidayat[1], Mohamad Adam[2], Isni Andriana[3], Luk Luk Fuadah[4]
Sriwijaya University [1,2,3,4]
randy30hidayat@gmail.com[1]

Abstract

Good knowledge of management or finance can make someone have good financial behavior too. Investors experience more anxiety if they have more information. This research is to see whether there is an influence of financial behavior and knowledge management on investment decisions. This research uses a literature review method by reviewing research articles that are relevant to this research. From the studies carried out, there are financial behavior and knowledge management on investment decisions.

Keywords: Financial behavior, Investment decisions, Knowledge management

INTRODUCTION

Human life is often guided by goals to be achieved. For most individuals, happiness and success are the pinnacle of life achievements. However, the journey towards that goal can vary significantly from one individual to another. One crucial aspect in achieving this goal is the financial sector. Financial success, or what is often referred to as financial freedom, is one of the main pillars in achieving true happiness and freedom in life. The concept of financial freedom includes several key elements. First, is being free from financial burdens, such as debt. Second, have enough cash available to meet your needs and plan for the future with peace of mind. And third, feel protected from financial risks that may arise at any time. When someone reaches this stage, activities and decisions in their life are no longer solely centered on money, but rather on achieving goals that provide meaning and usefulness (Ryu & Kim, 2018)

One effective step that can be taken is to invest (Hartono, 2019). Investing can be a powerful tool for accumulating wealth over time, building financial security, and achieving desired financial freedom. However, data from a survey conducted by the Financial Services Authority (OJK) shows that only a small portion of the Indonesian population has good financial planning, namely only 12.6% (Annur, 2020). This shows that there is still a lot that needs to be done in increasing financial literacy and awareness of the importance of planning finances carefully. However, according to data from a survey conducted by the Financial Services Authority (OJK), only 12.6% of the Indonesian population has good financial planning. (Annur, 2020). This is because financial happiness requires mediation by financial management (Nabila et al., 2023).

Today's popular lifestyles such as culinary, fashion and social media mean that proper understanding of financial literacy is less implemented. Moreover, social media makes it easier for someone to do anything with the touch of their finger, including making investments. Riski & Sulistianingsih (2020) said that social media makes a strong contribution to the influence of financial literacy on individual financial behavior. The 21st century began with a technological explosion with the internet expanding throughout the world (Pham et al., 2021). The greater individual access to information on social media channels that provide news and information to strengthen financial literacy tends to have an impact in influencing individual financial behavior.

*Behavioral finance*Someone who has an angry nature is a big problem for some people. Psychologist Nienke de Bles and colleagues (2019), from Leiden University in the Netherlands, the source of anger and angry episodes may lie in psychological disorders in the form of anxiety and depression. Anger correlates with optimistic risk estimates. Emotional states can influence the decisions they face, without cognitive assessment or personal interpretation, emotions cannot determine an interpretation of a situation. Meanwhile, Behavioral finance for someone who has trait anxiety is an event that easily occurs to someone due to certain non-specific factors (Sari & Batubara, 2017). Anxiety can arise through attention or concern for certain things or missions. Therefore, investors experience more anxiety if they have more information. Investors who are anxious tend to maintain their portfolio strategy and are reluctant to change it for reasons of inflexible strategy and investor financial inertia.

Knowledge about management or finance has a positive influence on a person's financial behavior. Knowledge about management can include how a person carries out financial planning, managing current and long-term finances (investments). With the knowledge about management or finance that a person has, it is hoped that they can make the right financial decisions. Good knowledge of management or finance can make someone have good financial behavior too (Fitriani & Widodo, 2020).The higher the accounting or financial knowledge possessed by an investor, the easier it will be to make an investment decision (Fadilah*et al.,*2022).Fadilah's research results*et al.,*(2022);Fitriani & Widodo (2020) stated that*knowledge management*significant effect onInvestation decisiongeneration Z.

METHOD

This research uses a literature review method from the data obtained. The research presents the results of searches for research on the internet according to the variables of this research. Literature reviews are carried out with a focus on original articles containing abstracts, introductions, methods and results. Literature review is a systematic, explicit and reproducible method for identifying, evaluating and synthesizing research works and ideas that have been produced by researchers and practitioners. The aim of a literature review is to make an analysis and synthesis of existing knowledge related to the topic to be researched to find free space for the research to be carried out.

RESULTS AND DISCUSSION

The early 1990s were before behavioral finance entered the mainstream into the academic field. Shiller (2003), academic discussions began to shift from concepts such as time series of prices, dividends, and earnings, towards analyzes of how human psychology plays a role in financial markets. In 1991, Thaler and Shiller initiated a National Bureau of Economic Research conference series centered on Behavioral Finance (Shiller, 2003). The field of Behavioral Finance developed along with the revolution that occurred in psychology during the 1990s, which gave rise to the central role that feelings play in the decision-making process (Hirshleifer, 2015). These advances in psychology pair well with developments in Behavioral Finance to help apply how feelings can influence individual investment decisions.

Thaler (1999) successfully applied Behavioral Finance findings to predict the collapse of the Internet stock boom at the turn of the century and blamed the widely held EMH that credited all investors as rational and making unbiased forecasts about the future. At the time, regarding the

lack of data on investors' psychological biases, Thaler (1999) predicted, “Until such data is available, we will never fully understand what I think will be known as the Great Internet Stock Bubble.” Thaler believes that the market is 20-30% overvalued and the only reason why the market continues to rise is because investors who are willing to bet on a decline have too few dollars to win and influence the market as the masses drive up prices (Thaler, 1999). Thaler also believes that one important mistake that the greatest investors make is using rules of thumb, such as 60% dedicated to equity, allocated to their assets (Thaler, 1999).

Thaler (1999) argues that they should adjust their asset allocation based on certain signs in the market that indicate a potential crash. Sure enough, the Great Internet Stock Bubble burst in 2000, and the DJIA at one point lost more than 30% of its value. Shiller (2003) noted that emotions were tied into these market ups and downs because investor confidence increased dramatically during the period 1989 to 2000. Thaler argued that the media spread the false sentiment that the market would continue to rise without stopping, which many people believed (Shiller, 2003) . With Thaler's (1999) predictions and retrospective analyzes of technological improvements (Shiller, 2003), behavioral finance established itself as a legitimate tool for use in investment theory.

This financial behavior is seen as a goal-based theory, where all investors divide their wealth into the many layers of a portfolio pyramid that correspond to goals such as a secure retirement, tuition, or becoming rich enough to explore whatever pleases their minds. Friedman & Savage (1948) saw that the hope of wealth and protection from poverty share a role in our behavior, people who buy lottery tickets often buy insurance policies as well, therefore people were found to be more risk seeking to buy lottery tickets when they were risk averse enough to buy an insurance policy. Friedman & Savage (1948) further observed that people buy lottery tickets because they aspire to reach a high social class, whereas they buy insurance as protection against falling into a lower social class. Markowitz (1952) clarified Friedman & Savage by noting that people or investors aspire to move up from their current social class or wealth to become better. Kahneman & Tversky (1979) expanded Markowitz's (1952) work into what is known as prospect theory.

In addition to emotions, there are many psychological traps that behavioral finance has identified that can wreak havoc on investors. Thaler (2016) credits economic pioneer Adam Smith with first discovering key psychological concepts such as loss aversion and overconfidence. Since Smith's initial discovery, behavioral finance has evolved radically and established a framework to help classify predictable investor mistakes. The five main traps that investors can fall into include: heuristics, prospect theory, overconfidence, misperception, and herding. From this central theme of behavioral finance, eight psychological biases have been considered for this research. These eight biases and two outside influences are the main criteria that influence individual investor decision making. A brief introduction to the behaviors selected for this study is as follows.

a. *Overconfidence Bias*
   Overconfidence is the tendency of people to overestimate their own skills, cognitive abilities and accuracy of information (DeBondt & Thaler, 1995).
b. *Representative Bias*
   This bias is also known as familiarity bias. When there is a lack of information, neural connections in the brain process information using shortcuts, to achieve the desired goal. Information is usually processed based on experience.
c. *Anchoring Bias*
   Investors who experience this bias have a tendency to set stock buying and selling prices based on past information.
d. *Availability Bias*

Investors' preferences are based on available information and as a result irrelevant information sometimes influences investment decisions (Van Steen & Tanenbaum, 2002).

e. *Regret Aversion*

Regret avoidance is a psychological bias, arising from excessive focus on feelings of regret after learning that a wrong decision has been taken, especially because the outcome of the alternative was better than the outcome of the decision taken.

f. *Loss Aversion*

Loss aversion bias is a powerful bias, demonstrated by the originators of behavioral finance (Tversky & Kahneman, 1992). This refers to the tendency of people to save capital from reducing rather than focusing on increasing capital.

g. *Mental Accounting*

Mental accounting bias, also known as the "two pocket" theory, is a behavioral bias that occurs when individuals tend to treat each element of their portfolio separately.

h. *Herding*

Herd bias represents the tendency of investors to imitate the actions of a larger group, without independently considering whether those actions are rational or not.

i. *Trait anger*

Trait Anger refers to a long-standing personality characteristic that appears as a nearly constant tendency to become angry at the slightest provocation. People with high anger have a very low boiling point. Spielberger & Sydeman (1994) define that anger is an emotional state in which the mixture of feelings changes in terms of intensity, from low levels of annoyance or mild irritation to high levels of anger and anger.

j. *Trait anxiety*

Trait Anxiety refers to differences between people in terms of their tendency to experience anxiety in response to anticipated threats. Lazarus (1991) stated that anxiety and stress can be caused by long-lasting uncertainty.

Azizah (2020) financial behavior is behavior related to financial applications. Financial behavior is how individuals or households manage financial resources including planning, savings budgets, insurance and investments.

It can be concluded that financial behavior is a behavioral ability related to how to manage finances.

Lestari (2021) states that there are 2 (two) factors that influence financial behavior, namely:

a. Socioeconomic conditions of parents

Background of the economic situation of the family or parents as measured by income level, ownership of assets or facilities and parents' occupation.

b. Social media

Social media is an online facility that is often used today, useful for accessing information or online transactions.

Knowledge management is a process for disseminating, capturing and utilizing existing knowledge as a form of maintaining an organization's competitive advantage (Millmore, 2013). Dalkir (2015) stated that knowledge management is a systematic coordination within an organization that manages human resources, technology, processes and organizational structure in order to increase value through reuse and innovation. This coordination can be achieved through creating, sharing and applying knowledge using experience and actions that the company has taken for the continuity of organizational learning.

From various opinions about knowledge management, it can be concluded that knowledge management is a process within an organization managing existing knowledge, then this knowledge is utilized and conveyed to all stakeholders of the organization in order to achieve the vision and mission so that it continues to exist compared to other competitors**.**

According to Fachrunnisa et al., (2018) there are two forms of knowledge management, namely as follows: a) Knowledge management objective. In this first form, the emphasis is more on the exchange of knowledge. b) Knowledge management process. This second form places more emphasis on converting tacit knowledge to explicit knowledge. Meanwhile, according to Dalkir (2015), there are four stages of the knowledge management process, namely as follows.

1. *Knowledge Creation*. In this first process, it is an individual or organizational effort to find and create knowledge.
2. *Storage.*In this second process, the results of the first process are stored. This second process is very important because if the resulting knowledge is not saved, it will be useless. If on a large organizational scale, the human brain is not the ideal medium used to store the resulting knowledge. Because the human brain has limitations in remembering everything.
3. *Distribution.*The next stage is distribution. This is the stage of sharing knowledge throughout the organization. The success of knowledge management is where individuals can receive and contribute to knowledge well. The form of distribution is from individual to individual, individual to group, individual to explicit source, group to group, and group to organization (Nonaka, 2013).
4. *Application.*The final stage in this process is the implementation of the knowledge results.

According to Nonaka (2013) knowledge management has 4 (four) indicators, namely as follows:

1. Socialization. Socialization (tacit to tacit): in this first stage the knowledge management process is sharing and distributing ideas and interactions between tacit knowledge and tacit knowledge. At this stage, organizational members discuss what is more important and use other people's thinking. Socialization is also known as the conversion of new knowledge through shared experiences.
2. Externalization. Externalization (tacit to explicit): This process focuses on an explicit approach to explicit knowledge. Externalization requires the expression of tacit knowledge into a form that can be understood by others. This helps in creating new knowledge because tacit knowledge goes beyond boundaries and becomes the collective knowledge of the group.
3. Combination. Combination (explicit knowledge): in the form of a collection of different knowledge, which has been exchanged, distributed, documented or discussed during meetings, processed and categorized to create new knowledge.
4. Internalisation. Internalization (explicit to tacit): Internalization involves the process of converting explicit knowledge to tacit knowledge. Internalizing ideas is effective in creating understanding and developing a learning culture (learning through action). If this tacit knowledge is read or practiced by individuals, it expands learning and knowledge creation.

Investment can be interpreted as an investment in an asset with the hope of getting a profit in the future (Sunariyah, 2013). Investment is basically the placement of a certain amount of funds at this time with the aim of obtaining a certain amount of profit in the future. Investment can be

interpreted as a commitment to invest a certain amount of funds now with the aim of obtaining profits in the future (Herlianto, 2014). An investment decision is a decision to use funds. The appropriate use of funds is the use of funds that can make the owner of the funds more prosperous, or richer. Investment decisions can be grouped into long-term investments in the form of land, buildings, vehicles, machines, production equipment and other fixed assets as well as short-term investments such as investments in cash, short-term securities, receivables and inventories. According to Kasmir (2013), decisions regarding investment are related to the number of assets owned, then the placement of the composition of each asset, for example in the form of allocation of cash, fixed assets or other assets. Capital investment is one of the main aspects in investment decisions apart from determining asset composition. The decision to allocate capital to investment proposals whose benefits will be realized in the future must be considered carefully. Due to uncertainty in the future, the benefits obtained are uncertain, so the investment proposal contains risks. Consequently, investment proposals must be evaluated and linked to risks and expected returns.

People's goal in investing is basically to develop the funds they have or hope for future profits. In general, the objective of investment is to seek profit, but for certain companies there may be other main objectives besides seeking profit. In general, investment objectives are as follows: a). To obtain a fixed income in each period, such as interest, royalties, dividends, or rent and so on. 2b) To form a special fund, for example a fund for expansion, social interests. c) To control or control another company, through ownership as equity in that company. d) To ensure the availability of raw materials to obtain a market for the products produced. e) To reduce competition from similar companies. f) To maintain relationships between companies (Noor, 2013).

Types of investors according to their risk profile in investing can be classified as follows: 1) Devensive. This type of investor is an investor who tries to make a profit and avoids the slightest risk from the investment he makes. This type of investor does not have enough confidence in speculation, and chooses the right time to invest so that the possibility of risks that will arise is very small. 2) Conservative. Conservative, this type of investor usually invests to improve the quality of family life and invests over a long period of time. For example, to improve children's education at university or prepare provisions for life in old age. Even though conservative investors often invest, these investors generally allocate little time to analyze and study their investment portfolio (Marsis, 2014).

Investment can have three aspects as follows, namely: a) Aspects of money (invested) and (expected), so as to assess future (wealth). Therefore, to assess (feasibility) of investment the concept of money is also used. b) Time aspect (now and future) therefore to assess investments the time aspect is also used. c) Benefit aspect. From this benefit aspect, assessing the feasibility of an investment must also look at the benefits and costs it causes using the benefit principle or cost benefit ratio. Motivation and aspects that influence investment: a) Investment due to necessity or need, is investment that occurs automatically in accordance with the development of the life needs of a person or group of people, or an organization, even a country. This type of investment is driven by future needs. b) Investment because of hope, is investment that is made intentionally because there is hope of getting benefits or profits. This investment can be made by an individual, a group of people, or an organization because of a desire for the future (Noor, 2013).

Several things to consider when investing include: 1) Financial Assets. a). Investment Goals, Investors must determine the goals they want to achieve. Generally, the main goal of people investing is to seek profits or additional income in the future. b). Get to know the character, generally the investor's character consists of three characters, risk taker, risk avoider, and neutral.

The investor's character will influence behavior in investing. This character determines the right strategy in investing. c) Study Finance (Capital). The size of the capital depends on the needs and abilities of an investor. The greater the need for capital, the greater the expected profits later. d) Type of investment chosen, to choose the type of investment, investors need to make a plan regarding expenditure for the investment period, short, medium, long. Every expense requires a certain amount of money whose source of income must be found. By knowing the amount of expenses, both short-term and long-term expenses, investors can determine the type of investment they want to make. The investment period can help determine how much risk can be borne. In general, people who invest for the long term bear greater risks. This is because stock investments experience high fluctuations from time to time. e). Benefits and risks. The size of the profit from investment results depends on the size of the goal and a person's ability to make it happen and there must be harmony between the profit and the ability possessed in determining goals.

Rahardjo (2013), explains several investment benefits that investors can experience, including: a) Being able to obtain very varied profits. b) Providing a wide choice of investment instruments. c) Able to take advantage of every momentum of economic, political and business situations to generate profits. d) Able to develop the funds owned systematically and directed according to the desired profit target. e) Able to diversify investments to increase profits and reduce potential risks.

CONCLUSION

Based on the literature review that has been carried out using relevant research articles, there is the influence of financial behavior and knowledge management on investment decisions. Behavioral finance for someone who has trait anxiety is an event that easily occurs to someone due to certain non-specific factors. Anxiety can arise through attention or concern for certain things or missions. Therefore, investors experience more anxiety if they have more information. Anxious investors tend to maintain their portfolio strategies and are reluctant to change them for reasons of inflexible strategies and investor financial inertia.With the knowledge about management or finance that a person has, it is hoped that they can make the right financial decisions. Good knowledge of management or finance can make someone have good financial behavior too.

ACKNOWLEDGEMENTS

The author would like to thank all parties who have helped in the process of writing this article. Thank you also to the supervisors and Sriwijaya University.

REFERENCES

Annur, C. M. (2020). Indonesia Peringkat ke-4 Negara Berpenduduk Terbanyak Dunia [Indonesia is the 4th Most Populous Country in the World: https:// datab oks. katad ata. co. id/ datap ublish/ 2019/ 04/ 29/ jumlah- pendu dukindonesia- 269- juta- jiwa- terbe sar- keemp at- dunia

De Bondt, W. F., & Thaler, R. H. (1995). Financial decision-making in markets and firms: A behavioral perspective. *Handbooks in operations research and management science, 9, 385-410.*

Fitriani, A., & Widodo, A. (2020). Pengaruh Financial Knowledge Terhadap Financial Behavior dengan Financial Attitude Sebagai Variabel Intervening Pada Generasi Z. *Jurnal Ilmiah MEA (Manajemen, Ekonomi, & Akuntansi)*, *4*(2), 310–319. http://journal.stiemb.ac.id/index.php/mea/article/view/333

Hartono, H. (2019). Perbandingan Potensi Return Investasi Surat Berharga Negara (Sbn) Ritel Dan Return Saham Blue Chip. *Jurnal Ekonomi, 21(1), 32-45*. https://doi.org/10.37721/je.v21i1.528

Marsis, A.S. (2014). *Rahasia Terbesar Investasi: Agar Kekayaan Anda Berkembangbiak Lebih Cepat.* Yogyakarta: Second Hope.

Nabila, F. S., Fakhri, M., PRADANA, M., Kartawinata, B. R., & Silvianita, A. (2023). Measuring Financial Satisfaction of Indonesian Young Adults : A SEM-PLS Analysis. *Research Square*, 1–10. https://doi.org/10.1186/s13731-023-00281-4

Noor, H.D. (2013). *Investasi : Pengelolaan Keuangan Bisnis dan Pengembangan Ekonomi Masyarakat.* Jakarta : Indeks.

Pham, M., Chi, H., Dang, T. Y., Hong, T., Hoang, Y., Thanh, T., Tran, N., Huong, T., & Ngo, Q. (2021). The Effects of Online Social Influencers on Purchasing Behavior of Generation Z: An Empirical Study in Vietnam. *Journal of Asian Finance, Economics and Business*, *8*(11), 179–0190. https://doi.org/10.13106/jafeb.2021.vol8.no11.0179

Ryu, S., & Kim, Y. G. (2018). Money is not everything: A typology of crowdfunding project creators. *Journal of Strategic Information Systems, 27(4), 350–368*. https://doi.org/10.1016/j.jsis.2018.10.004

Shiller, R. J. (2003). From efficient markets theory to behavioral finance. *Journal of economic perspectives, 17(1), 83-104.*

Sunariyah. (2013). *Pengantar Pengetahuan Pasar Modal.* Yogyakarta: UPP STIM YKPN.

Tandelilin, E. (2017). *Pasar modal manajemen portofolio & investasi*. Yogyakarta: PT Kanisius.

Thaler, R. H. (1999). The end of behavioral finance. *Financial Analysts Journal, 55(6), 12-17.*

Van Steen, M., & Tanenbaum, A. (2002). Distributed systems principles and paradigms. *Network, 2, 28.*

Biodata

Randy Hidayat is a doctoral student in Sriwijaya University for the management program.His email is randy30hidayat@gmail.com.

.

COMPANY IMAGE ANALYSIS OF CONSUMER DECISIONS IN CHOOSING J&T EKSPRESS AS A GOODS DELIVERY EXPEDITION IN PALEMBANG CITY

Krisna Adhi Sanjaya[1]
Student of Management Study Program, Faculty of Economics, Palembang University
sanjayakrisnaaadhi@gmail.com

Nenny Octarinie[2]
Lecturer of Management Study Program, Faculty of Economics, Palembang
nennyoctarinie82@gmail.com

Pantani Dahlan[3]
Lecturer of Management Study Program, Faculty of Economics, Palembang
pantanidahlan75@gmail.com

Abstract

This research was conducted to analyze and test the influence of Company Image on Consumer Decisions in Choosing J&T Ekspress as a Goods Delivery Expedition in Palembang City. The research population is 70.800 consumers who used J&T Express expedition services from 21 drop points in the city of Palembang during the last year (2023). Samples were drawn using the Slovin method to obtain 100 consumers who represent the population. Hypothesis testing is carried out using simple linear regression analysis, as well as the t test (partial test), with the aim of being able to determine the influence of the independent variable, namely company image, on the dependent variable, namely consumer decisions at a confidence level of 95%. (a= 0.05). The results of the t test on the corporate image variable have a positive influence on consumer decisions, this can be seen from the t-count value of 1.891 > t-table 1.660 with p (sig) = 0.001 < 0.05. The coefficient of determination (R^2) is 0.408. This shows that 40.8% of consumer purchasing decisions can be explained by the company image variable while the remaining 59.2% is explained by other factors not included in this research.

Keywords : Expedition Services,Company Image, Consumer Decisions Making

INTRODUCTION

In the current era of increasingly advanced globalization, business competition is increasing and becoming tighter, characterized by competition between each company to seek maximum profits by coming up with their own business strategies(Warni et al., 2024). Companies whose marketing concept is oriented towards forming partnerships with customers (market driven partnership) through the development of interactive and intensive communication with consumers, on the other hand, are believed by marketing experts and practitioners to be able to easily form and strengthen customer loyalty of companies that already have partners in the eyes of consumers will get a good image in the eyes of consumers (Rinandy, 2024).

The development of the business world is currently increasing in proportion to the increasing demand of the Indonesian people for products to meet their needs(Warni et al., 2022). The high public need for goods delivery services has become a business opportunity for expedition business players. This can be seen from the large number of companies expanding their wings in the field of goods delivery.

One of the companies engaged in delivery services is J&T Express Palembang, which is a goods delivery and logistics services company that provides deliveries in the form of packages, documents, etc. J&T is the largest online-supported courier and logistics company that is widespread in Indonesia, serving Express delivery, handling and customs as well as distribution in Indonesia. Regular Services reach destination cities and districts throughout Indonesia. PT Global Jet Express (J&T Express) is an express

delivery company in Indonesia which was founded on August 20 2015 by Jet Lee and Tony Chen. J&T Express is present for the first time in Indonesia by providing pioneering operational services for 365 days without holidays and can reach all of Indonesia without third party intermediaries. J&T Express became the first brand in Indonesia to focus on online business by launching the slogan "Express Your Online Business".

The following is data regarding the number of consumers who use J&T Express Palembang expedition services:

Table 1 Number of J&T Express Palembang Expedition Consumers

No	Month	Total of Consumers
1	January	5.000
2	February	4.800
3	March	7.000
4	April	7.500
5	May	6.000
6	June	6.500
7	July	6.300
8	August	5.500
9	September	5.000
10	October	5.400
11	November	5.800
12	December	6.000
Total		70.800

Source : J&T Express Palembang 2023

From the data above, it can be seen that the number of consumers will continue to fluctuate every month in 2023. However, there are several months where the number of consumers has increased during that time, namely in March and April. This makes the J&T Express Palembang expedition service business continue to strive to combine its advantages to continue to attract consumer interest and defend its business from competition from other delivery service businesses.

There are several goods delivery companies that are quite popular among Indonesian people, including:

Tabel.2 Several Goods Delivery Companies in Indonesia

No	Name of Expedition
1	J&T Express
2	JNE
3	Pos Indonesia
4	Tiki
5	First Logistics

6	Indah Logistik
7	Pandu Logistik
8	Wahana Logistik
9	RPX
10	Cahaya logistik
11	Si Cepat
12	Anter Aja

The presence of more and more shipping companies has created increasingly fierce competition and made these companies have to increase their competitiveness to maintain the continuity of their business. To improve a consumer's purchasing decision, it is necessary to create brand awareness, maintain product quality perceptions, brand associations, and brand loyalty so that consumers can remember it so that consumers will not turn to other products Kotler & Armstrong (2008: 115). The success of a company in achieving its stated goals depends on the strategy implemented by the company. Company image is the entire impression that is formed in society about a company and is very important, where a positive image will benefit the company and a bad image will have a negative impact on the company's business so that the company is weak in competition(Warni et al., 2022).

For companies that operate in the field of goods delivery services, there are several things that can be done in developing a marketing strategy to get a response from consumers. One way is to create a good company image in the eyes of the public. The company image is one of the guidelines for many people in making various decisions such as buying goods or services, becoming a customer, and recommending goods or services to others. (Assauri, 2017). A company's image can be formed when customers feel satisfied because their needs are met, making them loyal to the company (Setiadi, 2013). Communication is an important element and needs to be considered in every marketing activity because in establishing interactions, communication is carried out as a process of conveying messages (Gunawan, 2017). It is important to carry out research on company image with the aim of finding out whether the image of a company in the eyes of the public is still poor or good because company image can also influence consumer decisions in making purchases and even consumer satisfaction and loyalty towards the company.

Based on the background above, the author is interested in conducting research with the title **"Company Image Analysis of Consumer Decisions in Choosing J&T Express as a Goods Delivery Expedition in Palembang City".**

METHODS

Object of the Research

This research took the research object at J&T Express which is located on Jalan Tanjung Api-api Pergudangan Prima Star, Talang Kelapa District, Palembang City.

Population and Sample

The population of this study are consumers who used J&T Express expedition services from 21 drop points in the city of Palembang during the last 1 year, with a total of 70,800 consumers (data based on table 1 in the introduction above). The sample is part of the number and characteristics of this population, or a small part of the population taken according to a certain procedure so that it can represent the population. One way to determine the sample size is to use the Slovin formula (Umar, 2017):

$$n = \frac{N}{N.d^2 + 1} \quad \textbf{(1)}$$

Keterangan :

n = number of samples,

N = number of population,

d^2 = desire precesion (misal 5 % atau 10 %)

$$n = \frac{70.800}{70.800(0,1)^2 + 1}$$

(2)

$$n = \frac{70.800}{70.800(0,01) + 1}$$

(3)

$$n = \frac{70.800}{709}$$

(4)

$n =$ **99,85, rounded up to 100 respondents**

Methods of the Research

The research used here is exploratory research (explanatory research), that is, this research was conducted to determine the factors that influence consumer decisions in choosing J&T Ekspress as a Goods Delivery Expedition in Palembang City and to carry out a quantitative analysis of this influence.

Methods of the Data Analysis

The data analysis method used in the research is descriptive. The data analysis steps used in this research are as follows (Sugiyono, 2018):

1. Distribute questionnaires
   Questionnaires were distributed to employees who were the objects of research using a liket scale.
   The Likert scale used is 1 to 5, with the following mapping:
   Scale 5 = Strongly Agree (SS)
   Scale 4 = Agree (S)
   Scale 3 = Neutral (N)
   Scale 2 = Disagree (TS)
   Scale 1 = Strongly Disagree (STS)
2. Calculate the questionnaire using the SPSS 25.0 program by testing validity, reliability, simple regression and t test
3. Index or Conclusion
   The results of the questionnaire data processing carried out by the researcher will be analyzed and conclusions drawn.

DISCUSSION

Based on questionnaire data processing using SPSS 25, the results of simple linear regression analysis were obtained with a constant value of 35.420, this means that if the Company Image is 0 (zero) then the Consumer Decision value is 35.420. Then, in a partial test, Company Image has a partial influence on Consumer Purchasing Decisions in choosing J&T as an expedition service. The results of the analysis with the help of SPSS 25.0 software show that the corporate image variable has a t count of 1.891, while

the t table is 1.660, so the t count is 1.891 > t table 1.660 and is significant 0.001 < 0.05, so it can be interpreted that the corporate image variable has a positive and significant effect. Apart from that, the results of computerized data processing using the SPSS 25.0 program obtained a coefficient of determination (R2) of 0.408. This shows that 40.8% of consumer purchasing decisions can be explained by the company image variable while the remaining 59.2% is explained by other factors not included in this research.

The results of this quantitative analysis prove that the company image variable has an influence on consumer purchases. If a qualitative analysis is carried out, each element of the Company Image has an impact on Consumer Purchasing Decisions in choosing J&T as an expedition service. Basically, the higher the level of competition between food companies, the more choices there will be for consumers to be able to choose products that meet their expectations, so that the consequence is that customers become more careful and thorough in choosing each product released by the company. Consumers see the company's image as an important part of a product to be used as a purchase consideration and can be an added value to the product (Thamrin, 2013). J&T as an expedition company can be the answer for consumers who want the best and fastest service in sending goods both domestically and internationally.

CONCLUSION

Based on the results obtained, Company Image influences consumers' decisions to choose J&T as an expedition service, so it is best that in every strategic policy decision you need to pay attention to the elements of the company's image. Another thing that needs to be considered is the focus on service to consumers, because consumers are potential resources for the organization. In order to retain and attract new consumers who can create a good company image, you can carry out promotions in various media containing the products offered and including prices(Octarinie, 2022). Apart from that, the company will be better known to the wider community. For future researchers, research should be carried out by including other variables such as promotion, price, service quality or others or can develop the indicators in this research variable, so that they can enrich knowledge and research in a company.

ACKNOWLEDGMENT

We would like to express my deepest gratitude to Palembang University for giving me the opportunity to present a paper at this international seminar. Next, we would like to thank the accompanying lecturers for the preparation of scientific research this time, namely Mrs. Nenny Octarinie and Mr. Pantani Dahlan for their support and guidance. Hopefully we can participate again in the next seminar activities and contribute to research results in the field of marketing management

REFERENCES

Assauri, S. (2017). *Manajemen Pemasaran Dasar dan Konsep Strategi*. PT.RaJa Grafindo Persada.

Gunawan, A. (2017). *Manajemen Pemasaran*. UPP STIM YKPN.

Octarinie, N. (2022). Pengaruh Strategi Pemasaran terhadap Keputusan Pembelian Semen (Study Kasus pada PT. Semen Baturaja (Persero) Tbk). *Jurnal Manajemen*, *9*(4), 71–95. https://doi.org/10.36546/jm.v9i4.504

Rinandy, A. A. (2024). *THE INFLUENCE OF WORDS OF MOUTH AND BRAND IMAGE ON MCDONALDS PRODUCT PURCHASE DECISIONS (CASE STUDY OF WORLD BRANDS THAT*

SUPPORT ISRAEL). *12*(2), 132–142.

Setiadi, J. . (2013). *Perilaku Konsumen dan Implikasi untuk Strategi dan Penelitian Pemasaran*. Penerbit Kencana.

Sugiyono. (2018). *Metode Penelitian Kuantitatif, Kualitatif dan R & D*. CV.Alfabeta.

Thamrin. (2013). *Perilaku Konsumen dan Komunikasi Pemasaran*. PT.Remaja Rosdakarya.

Umar, H. (2017). *Metode Penelitian Bisnis untuk Skripsi dan Tesis Bisnis*. PT.Gramedia Pustaka Utama.

Warni, Z., Fatmawati, T. F., & Dahlan, P. (2022). The Influence of Consumer Behavior on Purchasing Decisions of Martabak Manis. *Almana : Jurnal Manajemen Dan Bisnis*, *6*(3), 539–548. https://doi.org/10.36555/almana.v6i3.1959

Warni, Z., Rinandy, A. A., Dahlan, P., & Gunarti, T. S. (2024). the Effect of Digital Marketing on Increasing Interest in Purchasing Motor Vehicle Policies in Generation Z in Palembang City. *Jurnal Manajemen*, *12*(1), 84–91. https://doi.org/10.36546/jm.v12i1.1111

BIODATA

[1]Krishna Adhi Sandjaya is a student of the management study program at the Faculty of Economics, Management University who is currently entering semester 6. Currently studying marketing management concentration. Email : sanjayakrisnaaadhi@gmail.com

[2]Nenny Octarinie is a lecturer in the management study program, Faculty of Economics, Palembang University. The concentration area studied is marketing management concentration. In his study program she teaches several courses related to marketing management, service marketing management, marketing management seminars, marketing research, consumer behavior and entrepreneurship. Email : nennyoctarinie82@gmail.com

[3]Pantani Dahlan is a lecturer in the management study program, Faculty of Economics, Palembang University. The area of concentration studied is human resource management. In his study program he teaches several courses related to human resource management, seminars on human resource management, job analysis and labour and industrial relations. Email : pantanidahlan75@gmail.com

DIGITAL TRANSFORMATION MODEL OF ISLAMIC PHILANTHROPIC INSTITUTION IN INDONESIA

Rosalina Pebrica Mayasari
Tridinanti University
rosalina_mayasari@yahoo.com

Msy. Mikial
Tridinanti University
masayu_mikial@univ-tridinanti.ac.id

Firmansyah Arifin
Tridinanti University
firmansyah_arifin@univ-tridinanti.ac.id

Hendri Wijaya
Tridinanti University
Hendryplm1234@gmail.com

Rahmi Bayati
Tridinanti University
rahmibayati5@gmail.com

Abstract

This research aims to build a digital transformation model for philanthropic institutions in response to rapid digital development in the era of Society 5.0. This study employs a qualitative method with a case study research design at the DTP institution. The data used in this study include both primary and secondary sources. Primary data comprises interview results, while secondary data comprises documents related to the institution's digital transformation practices. Data collection methods in this study include in-depth interviews, participatory observation, documentation, and triangulation of techniques and time. The informants for this study include seven internal members of the DTP institution. Implementing digital transformation at DTP institutions encompasses four categories: transformation reasons, transformation objects, transformation processes, and transformation results. The Digital Transformation Model of the Philanthropic Institution is divided into three main parts: the first part is Digital Transformation Drivers (DTD), the second part is Digital Transformation Strategy (DTS) and Digital Transformation Process (DTP), and the final part is Digital Transformation Goals (DTG). Digital transformation has become essential for Islamic philanthropic institutions in the era of Society 5.0.

Keywords: Digital Transformation, Era society 5.0, Nonprofit Organization, Islamic Philanthropic Institution.

INTRODUCTION

Nonprofit organizations have experienced growth in both size and their role in development. The progress of philanthropy is also reflected in the increase in the collection and utilization of philanthropic funds by philanthropic institutions, with a growth of 6.45% from 2018 to 2019 and a rise of 23.05% from 2019 to 2020. Additionally, the number of beneficiaries reached 91.7 million from 2018 to 2020 (Kunto A Wibowo & Aryani, 2022). A key focus among nonprofit organizations is philanthropic institutions, as they

partner with the government in realizing Sustainable Development Goals (SDGs). Philanthropic institutions are expanding in Indonesia due to the high level of generosity among Indonesians. This is evidenced by Indonesia securing the first position in the 2020 World Giving Index (CAFonline.org, 2021). This generosity has significantly increased the potential for social fund contributions, mainly from religion-based philanthropy. According to the Indonesia Philanthropy Outlook 2022, religious philanthropy accounted for more than 80% of the total distribution of philanthropic funds in 2020. Over the past twenty years, philanthropic institutions have become important social service providers in Indonesia and several other countries. These organizations' activities' scope, scale, and reach extend beyond the traditional charitable domain, emphasizing empowerment and social justice philanthropy (Fauzia, 2016, p. 16; Lactative, 2013). Faith-based philanthropic organizations have seen rapid growth among various types of philanthropic institutions. In Indonesia, which has the largest Muslim population in the world, Islamic philanthropic institutions play a crucial role in addressing social issues through social funds in the form of zakat, *infaq*, *shadaqah*, and *waqf* (ZISWAF) (Arrazaq, 2023).

The Covid-19 pandemic has impacted all aspects of life, including philanthropic institutions. These institutions are increasingly required to survive and play an important role as partners with the government in helping to recover and improve the community's economy. At the same time, philanthropic institutions must also transform from conventional to digital philanthropy. They continue to innovate in their operational activities related to collecting, managing, distributing, and reporting organizational resources to stakeholders, ensuring that the principle of effectiveness is applied (Alfiyanti et al., 2022). Currently, 55.3% of philanthropic organizations use digital technology in fundraising (Kunto A Wibowo & Aryani, 2022). One of the factors supporting the strengthening of philanthropic institutions in Indonesia is user-friendly and accessible information technology through digital platforms and digital crowdfunding (Arifin & Pratama Putra, 2024). The rapid digital development in the current Society 5.0 era certainly encourages the digital transformation of philanthropic institutions. According to Baznas data, zakat digitization services are now available through platforms like Kitabisa.com, bank transfer services, and digital wallets such as Gopay, OVO, Shopeepay, Dana, and Paytren (Putri et al., 2023). Digital transformation makes fund management more extensive, efficient, and transparent. Digital fund management can reach a wider audience and simplify processes, thereby realizing the principle of efficiency (Hadi, 2020).

Digital transformation offers many benefits for institutions but also comes with shortcomings and threats. Hudaefi et al. (2019) stated that digital platforms carry technical risks such as transfer failures, cybercrime, technology and information risks, and non-compliance with sharia. The reduction of human roles in institutional management is also a threat to digital transformation (Utami, 2019), along with the high operational costs that may conflict with the institution's values and vision (Kunto A Wibowo & Aryani, 2022), and a lack of knowledge and expertise in information technology (Ninglasari & Muhammad, 2021).

Digital transformation has a broad meaning, extending beyond digital technology. It is a comprehensive transformation that includes crucial aspects of institutions such as strategy, processes, human resources, and values (Harmoko & Noviaristanti, 2022). Digital transformation involves more than just utilizing big data or creating digital applications; the main focus is transforming management and human resources (Rudito & Sinaga, 2017). It represents a fundamental change in various aspects of the institution, including the reconstruction of processes, strategies, and business models to improve efficiency, competitiveness, innovation, responsiveness, customer satisfaction, global access, data security and management, connectivity and collaboration, access to information, and sustainability (Abd-Rabo & Hashaikeh, 2021; Ismail, et al.; 2017). Verina and Titko (2019) identified three categories in digital transformation: technology, process, and management. Meanwhile, Mergel et al., (2019) outlined four categories of digital transformation: reasons, objects, processes, and results or values. The categories of digital transformation are presented in Figure 1.

DTP is one of Indonesia's Islamic boarding school-based philanthropic institutions that continues to transform in response to the challenges of digitalization, aiming to become an international philanthropic institution that excels in service. DTP has made significant changes within its organization. Traditional pesantren-based institutions have metamorphosed into professional philanthropic organizations by applying service quality standards and professionalism while maintaining their core Islamic values. This

transformation optimizes DTP's existence and function, not only in collecting funds for the community but also in empowering its beneficiaries. The transformation encompasses four aspects: management, strategy, infrastructure, and results.

This research aims to develop a digital transformation model for DTP, illustrating the significant transformation of an Islamic boarding school-based philanthropic institution within Indonesia's philanthropic industry. The study adopts the categories of digital transformation formulated by Mergel et al. (2019). Based on the background and phenomena presented, this research formulates the problem: How does the DTP digital transformation model respond to the rapid digital development in the current Society 5.0 era, considering the perspectives of transformation reasons, transformation objects, transformation processes, and transformation results?

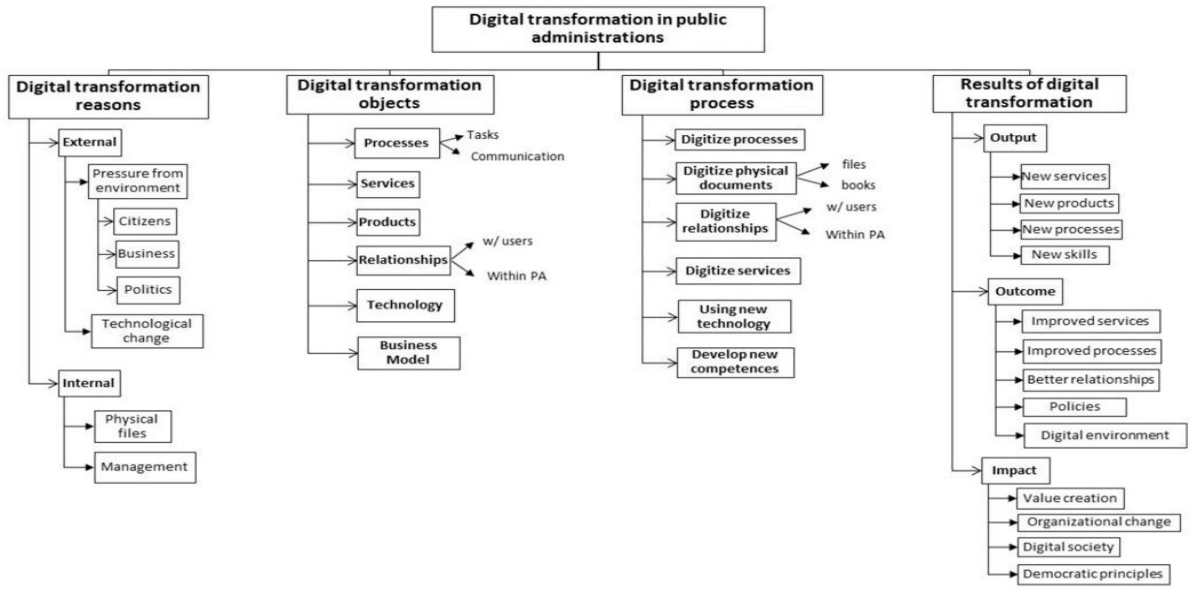


Figure 1: Digital Transformation in Public Administration
Source: (Mergel et al., 2019)

RESEARCH METHODS

The researcher determines informants who have roles and responsibilities as leaders, decision-makers, and technical implementers consisting of 1) directors, 2) secretariats, 3) sharia councils, 4) general managers, 5) quality assurance/audit, 6) finance and 7) branch heads so that data and information relevant to the research objectives are obtained. The seven informants selected by the researcher from within DTP played a role in helping the researcher triangulate sources to test the validity of the data. The data used in this study were obtained through in-depth interviews, participatory observation, and documentation of research objects in *a natural setting*. The data collection technique is carried out in three ways to see the credibility of the data obtained by triangulation of techniques and time. The test of data credibility on the data of research results can be carried out through extended observation, triangulation, increased diligence in research, discussion with peers, and *member checks* (Sugiyono, 2018, p. 365).

The data analysis technique is carried out through three stages: (1) data reduction, (2) data presentation, and (3) conclusion drawn/verification. At this stage, a qualitative researcher will generally code, formulate themes, and summarize and group the data before presenting it in a written description (Huberman & Miles, 1992, p. 16). The data analysis process is carried out by organizing the data, reading the relevance of the data to the research question, classifying the data based on themes and meanings,

stringing the meaning in a complete and structured way, and presenting a digital transformation model of Islamic philanthropic institutions.

This research focuses on the Central DTP in Bandung and the South Sumatra DTP in Palembang. These sites were selected based on the following considerations:

1. DTP has been established for over 25 years and has a well-developed organizational system and culture, encompassing both organizational aspects and Islamic values. It has undergone significant transformation from a traditional pesantren-based philanthropic institution to a professional philanthropic organization, making it a rich source of data and information for this research.
2. The researcher has a close psychological relationship with the South Sumatra DTP, being a donor, and having a close relationship with the head of the South Sumatra DTP branch. This relationship facilitates interaction and data collection.
3. DTP has received several awards, including National LAZ with the Best ZIS Distribution in 2018, National LAZ with the Best ZIS Growth and Association in 2019, Largest Collection Achievement Nominal award, Most Institutional Muzakki award, Most Digital Donations in 2022, and the institution with the best Sharia audit value in 2023. Additionally, DTP has received an Unqualified Opinion on its financial statements for 17 consecutive years since 2007.

The researcher selected informants with roles and responsibilities as leaders, decision-makers, and technical implementers, including directors, secretariats, sharia councils, general managers, quality assurance/audit personnel, finance officers, and branch heads. These informants provide relevant data and information for the research objectives. The seven selected informants help triangulate sources to test the validity of the data. Data were obtained through in-depth interviews, participatory observation, and documentation in a natural setting. The data collection technique uses three methods simultaneously to ensure the credibility of the data through triangulation of techniques and time. Data credibility was tested through extended observation, triangulation, increased diligence in research, peer discussions, and member checks (Sugiyono, 2018, p. 365).

The data analysis technique involves three stages: (1) data reduction, (2) data presentation, and (3) conclusion drawing/verification. In these stages, the researcher typically performs coding, formulates themes, summarizes, and groups the data before presenting it in a written description (Huberman & Miles, 1992, p. 16). The data analysis process includes organizing the data, reading its relevance to the research questions, classifying the data based on themes and meanings, structuring the meanings coherently, and presenting a digital transformation model for Islamic philanthropic institutions.

RESULT AND DISCUSSION

This research was conducted on one of the Islamic philanthropic institutions in Indonesia with a pesantren base, namely DTP. DTP employees are work students with specific duties according to their sections and directorates. Each section, directorate, head office, and representative office synergize to fulfill their responsibilities, ensuring the institution's vision and mission are achieved. DTP's vision is to become a "model philanthropic institution that is trusted, professional, accountable, and leading with an equitable area of operation." The mission of DTP is to "optimize the potential of the ummah through ZIS to empower the community in the fields of economy, education, da'wah, and social towards an independent society." The motto of DTP is "More Serving and Caring."

DTP is committed to transforming the institution, including management modernization, program diversification, and the reformulation of ZISWAF fiqh. DTP has modernized its management to improve professionalism. The institution has established a responsible and transparent administration that aligns with its vision and mission. Another renewal focus is enhancing the professionalism of amil (zakat management officers), including digital training.

> *"Over the past two years, we have focused on transforming DTP into a leading empowerment institution. The transformation process at DTP is divided into four stages: management*

transformation, strategy transformation, infrastructure transformation, and value transformation. We have completed the first stage (management transformation) and are now moving into the second stage (strategy transformation). However, these four stages do not need to be implemented sequentially. They can overlap, meaning the next stage can also begin while one stage is underway." (Informant 1)

"Human resources or students, known as work students (samil), are the main driving force for DTP. Samil must be willing to change from incompetent to competent, from not being able to apply digital tools to learning how to use them effectively." (Informant 2)

"In the digital era, it is common to use electronic money, the QRIS application from Bank Indonesia for payments, and bank facilities for donation transfers, among others. Therefore, we need to review the contemporary fiqh of zakat." (Informant 3)

"In the financial aspect, digital transformation is also beneficial, especially for digital funding, which will be integrated with our financial reports and accountability to stakeholders." (Informant 6)

The institutional transformation carried out by DTP includes several important aspects: human resources and digital technology encompassing all core businesses of DTP, from the collection, management, and utilization of funds at both the central and branch levels. 2022 marks a significant moment for DTP to transform its institutions, particularly focusing on human resources and systems (technology). This transformation aims to enhance good governance within the institution. Governance will be improved by emphasizing the pillars of the mechanism, such as the roles and responsibilities of the DPS, the presence of a robust internal supervision and risk management system, cooperation between external auditors, internal auditors, and DPS in financial reporting, transformation of institutional culture and values, and legal and regulatory tools from relevant institutions (Rusdiyanto et al., 2019: 5).

"Our initial institutional transformation focuses on human resources, particularly the work students (samil) at DTP. They are encouraged to exhibit professionalism in their work and to continuously enhance their skills through learning, alongside adjustments to internal institution policies that instill confidence in monotheistic values. The second transformation priority for DTP is digital technology. Over the past year, DTP has initiated digitalization efforts in various areas, such as optimizing digital technology for donation payments and developing internal applications or business process systems to streamline institutional governance processes. Digitalization encompasses fundraising, management, and ultimately fund utilization, although the current system remains partial and not fully integrated across all areas." (Informant 2)

"The trust in donor funds is crucial, spanning fundraising, program implementation, and management. Financial transparency, record-keeping, and accountability are paramount in fundraising, ensuring that every rupiah is accounted for. Regarding program implementation, precision in targeting is essential, with digital transformation playing a significant role in achieving this." (Informant 4)

"We have implemented various business processes, including the Business Model Canvas (BMC), management for Industry 4.0, and disciplined execution. We have developed 53 Standard Operating Procedures (SOPs) out of our target of 61. This effort aims to uphold trust in our management practices and address the challenges of the digital era." (Informant 5)

"In our work, synergy is essential for achieving our goals. We collaborate with fellow students within each unit, between branches, and with the central board of directors. Additionally, we synergize with foundations, government entities such as BAZNAS and BAZDA, FOZ, and other philanthropic institutions, as well as donors and beneficiaries. This cooperation and synergy are greatly facilitated by digital transformation, which significantly streamlines our work processes." (Informant 7)

Digital transformation within DTP institutions encompasses discussions regarding transformation reasons, objects, processes, and results. Digital transformation reasons undertaken by DTP include both internal and external factors. Internal reasons comprise institutional values and culture, expansion of the institution's usefulness and scope, human resources development, and improved efficiency and effectiveness in management. External reasons involve regulations from relevant parties such as governments and regulators, changes in partner behavior like donors and beneficiaries, market demands, and technological advancements. Technological advancements can enhance the reach of non-profit organizations in fundraising and resource utilization (Zhou & Ye, 2021). The objects of DTP's transformation include physical and non-physical assets such as offices, personal branding, information media, communication channels, and donations, as well as the quality of human resources and Standard Operating Procedures (SOPs), including business models and processes. Digital transformation aims to simplify business models and processes. The transformation process conducted by DTP consists of four stages: management transformation, strategy transformation, infrastructure transformation, and values and work ethic transformation. Process transformation plays a crucial role in the success of digital transformation (Tabrizi et al., 2019).

The expected results of digital transformation carried out by DTP encompass short-term outputs, long-term outcomes, and impact. Short-term outputs include institutional achievements, effectiveness and efficiency in core business operations, enhanced human resources, increased fundraising and program distribution, and improved financial management. Long-term outcomes entail an integrated digital system improving service quality and stakeholder satisfaction. The impact of digital transformation, although challenging to quantitatively measure (Mergel et al., 2019), can be both positive and negative (Harmoko & Noviaristanti, 2022). The impact realized includes good governance and fulfilling the institution's vision to become a model philanthropic institution.

The digital transformation model of philanthropic institutions is derived from in-depth interviews with informants, documentation related to the institution's digital transformation operations and practices, and direct field observations. The hexagonal shape of the model, resembling a beehive, is chosen for its optimal storage capacity without gaps or free space. This shape aligns with the Islamic Philanthropic Institute's philosophy of providing broad benefits to humanity, as evidenced by the institution's logo resembling a beehive. This reinforces the researcher's decision to adopt a hexagonal shape for the digital transformation model, symbolizing precision and perfection in benefit delivery (Hales, 2001; Schimmel, 2006: 129). The hexagonal shape of the honeycomb is one example of the "working" of the universe, which is precise and perfect compared to other shapes. This is in line with the philosophy of the Islamic Philanthropic Institute, which provides broad benefits to all humans. The Islamic philanthropic institution that is the site of this research has also used a logo in the shape of a beehive, symbolizing that this philanthropic institution seeks to benefit the community. This further strengthens the researcher's ability to build a perfect shape (*hexagonal*) for the digital transformation model in Figure 2.

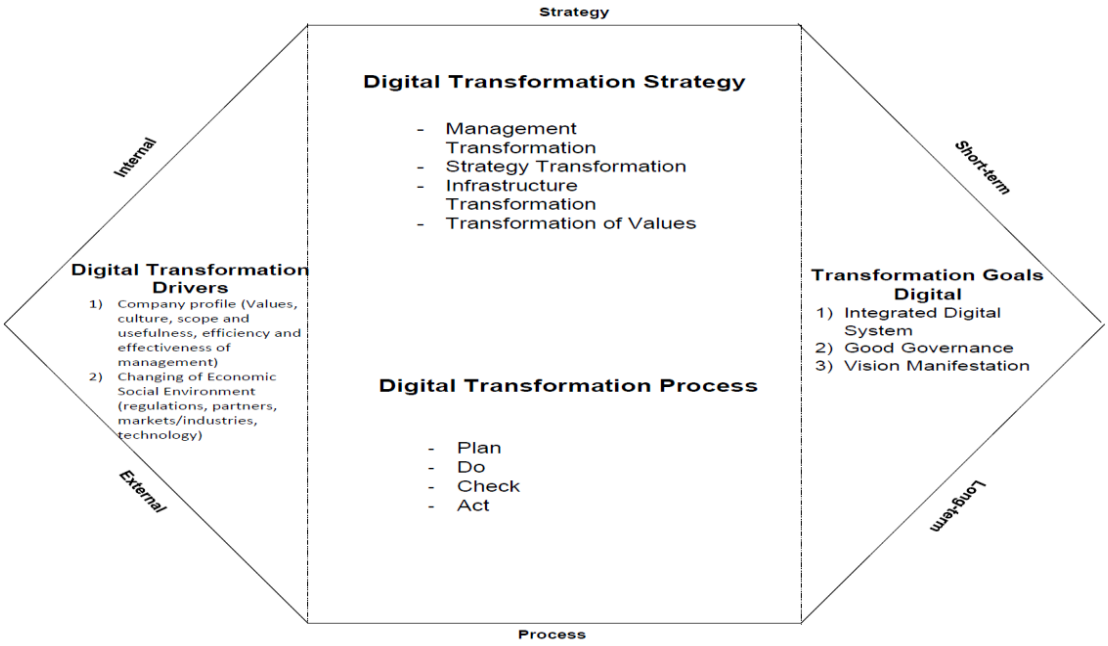


Figure 2: Digital Transformation Model of Islamic Philanthropic Institutions
Source: Researcher synthesis (2024)

The Digital Transformation Model of philanthropic institutions comprises three main parts: Digital Transformation Drivers (DTD), Digital Transformation Strategy (DTS), Digital Transformation Process (DTP), and Digital Transformation Goals (DTG). DTD encompasses two components: 1) Company profile, including values, culture, scope and usefulness, and efficiency and effectiveness of management; and 2) Changes in the Economic and Social Environment, such as regulations, partnerships, market/industry dynamics, and technology advancements. DTS encompasses Management Transformation, Strategy Transformation, Infrastructure Transformation, and Transformation of Values. DTP includes Plan, Do, Check, and Act (PDCA). DTG encompasses an Integrated Digital System, Good Governance, and Vision Manifestation.

CONCLUSION

Digital transformation has become imperative for Islamic philanthropic institutions in the era of Society 5.0. It represents a comprehensive and fundamental transformation. Implementing digital transformation in DTP institutions encompasses four categories: transformation reasons, transformation objects, transformation processes, and transformation results. Transformation reasons stem from both internal and external factors of the institution. DTP's transformation objects include physical and non-physical assets, quality of human resources, and Standard Operating Procedures. The transformation process conducted by DTP comprises four stages: management transformation, strategy transformation, infrastructure transformation, and value transformation. The outcomes of DTP's transformation encompass short-term outputs, long-term outcomes, and the impact of digital transformation. A model can be formulated for philanthropic institutions by implementing digital transformation. The Digital Transformation Model of philanthropic institutions is divided into three main parts: Digital Transformation Drivers (DTD), Digital Transformation Strategy (DTS), and Digital Transformation Process (DTP), with the last part being Digital Transformation Goals (DTG).

This research holds practical implications for philanthropic actors and digital transformation practitioners in other institutions implementing digital transformation models. It also provides insights for

regulators' policymaking related to digital transformation. Since digital transformation has positive and negative impacts, regulations are necessary to mitigate potential negative consequences.

ACKNOWLEDGEMENTS

The author would like to thank the Faculty of Economics and Business, Tridinanti University, for contributing to the author's conduct of this research. The author also expressed his gratitude to DT Peduli and all respondents who helped collect data for this research.

REFERENCES

Abd-Rabo, A. M., dan Hashaikeh, S. A. (2021). the Digital Transformation Revolution. *International Journal of Humanities and Educational Research*, *03*(04), 124–128. https://doi.org/10.47832/2757-5403.4-3.11

Alfiyanti, A., Lailiyah, A. R., dan Masfufah, F. (2022). Digitalisasi Filantropi Islam : Model Pemberdayaan Ziswaf. Jurnal Alsyirkah (Jurnal Ekonomi Syariah), 3(2)

Arifin, F., & Pratama Putra, D. (2024). *Asian journal of management entrepreneurship and social science mediating role of advertising finance in crowdfunding success factors for MSMEs in Indonesia*. *04*(01). https://ajmesc.com/index.php/ajmesc

Arrazaq, Z. (2023). Filantropi Pendidikan Islam Untuk Meningkatkan Kesejahteraan Masyarakat Era Transformasi Digital di Indonesia. *Nusantara: Jurnal Pendidikan Indonesia*, *3*(3), 505–522. https://doi.org/10.14421/njpi.2023.v3i3-9

CAF. (2021). CAF World Giving Index 2021: A Global Pandemic Special Report. (https://www.cafonline.org/docs/defaultsource/aboutresearch/cafworldgivingindex2021_report_web2_100621.pdf

Fatchan, A. (2013). *Metode Penelitian Kualitatif: 10 Langkah Penelitian Kualitatif Pendekatan Konstruksi dan Fenomenologi.* Malang: UM Press

Fauzia, A. (2016). *Filantropi Islam: Sejarah dan Kontestasi Masyarakat Sipil dan Negara di Indonesia.* Yogyakarta: Gading Publishing

Hadi, R. (2020). Manajemen Zakat, Infaq, dan Shadaqah di Badan Amil Zakat Nasional (BAZNAS) Kabupaten Banyumas. *El-Jizya : Jurnal Ekonomi Islam*, *8*(2), 245–266. https://doi.org/10.24090/ej.v8i2.3750

Hales, T. C. (2001). *The Honeycomb Conjecture, Discrete and Computational Geometry* 25 (1): 1–22.

Harmoko, M. T., dan Noviaristanti, S. (2022). Digital transformation of Rumah Zakat to world digital philanthropy. In *Acceleration of Digital Innovation & Technology toward Society 5.0* (1st ed., pp. 214–219). Routledge

Huberman dan Miles. (1992). *Analisis Data Kualitatif*. Jakarta: Universitas Indonesia Press.

Hudaefi, F. A., Saoqi, A. A. Y., Junari, U. L., Farchatunnisa, H., Zaenal, M. H., Iqbal, M., dan Sudaisih, A. (2019). *Developing a framework of risk management in digital zakat collection: A preliminary study* (Puskas Working Paper)

Ismail M., Khater M., Zaki M. (2017). Digital Business Transformation and Strategy: What Do We Know So Far? *Cambridge Service Alliance*. URL: https://cambridgeservicealliance.eng.cam.ac.uk/resources/Downloads/Monthly%20Papers/2017NovPaper_Mariam.pdf

Kamayanti, A. (2017). *Metodologi Penelitian Kualitatif Akuntansi Pengantar Religiositas Keilmuan*. Jakarta: Rumah Peneleh.

Kunto A Wibowo, dan Aryani, S. (2022). Perkembangan dan Proyeksi Filantropi di Indonesia Tahun 2022. *Indonesia Philanthropy Outlook*, 1–50

Latief, H. (2013). Filantropi Dan Pendidikan Islam Di Indonesia Hilman Latief. *Jurnal Pendidikan Islam*,

28(1), 123–139. https://journal.uinsgd.ac.id/index.php/jpi/article/view/540/537
Mergel, I., Edelmann, N., dan Haug, N. (2019). Defining digital transformation: Results from expert interviews. *Government Information Quarterly*, *36*(4), 101385. https://doi.org/10.1016/j.giq.2019.06.002
Ninglasari, S. Y., dan Muhammad, M. (2021). Zakat Digitalization: Effectiveness of Zakat Management in the Covid-19 Pandemic Era. *Journal of Islamic Economic Laws*, *4*(1), 26–44. https://doi.org/10.23917/jisel.v4i1.12442
Putri, S., Sudiarti, S., dan Harahap, R. D. (2023). Analisis Pemberdayaan UMKM Melalui Filantropi Zakat Dalam Mewujudkan SDGs (Sustainable Development Goals). *Al-Kharaj : Jurnal Ekonomi, Keuangan & Bisnis Syariah*, *5*(6), 3058–3069. https://doi.org/10.47467/alkharaj.v5i6.3757
Rudito, P., dan Sinaga, M. F. (2017). Digital Mastery, Membangun Kepemimpinan Digital Untuk Memenangkan Era Disrupsi. Gramedia Pustaka Utama
Rusdiyanto. Susetyorini. dan Elan, U. (2019). *Good Corporate Governance Teori dan Implementasi di Indonesia*. Bandung: Refika Aditama
Schimmel, A. (2006). *The Mystery of Numbers. Misteri Angka-Angka* (Terj.). Bandung: Pustaka Hidayah
Strauss, A. dan Corbin, J. (2003). *Dasar-Dasar Penelitian Kualitatif, Tata Langkah dan Teknik-Teknik Teorisasi Data*. Yogyakarta: Pustaka Pelajar
Sugiyono. (2018). *Metode Penelitian Kombinasi (Mixed Methods)*. Bandung: Alfabeta
Tabrizi, B., Lam, E., Gerard, K., dan Irvin, V. (2019). *Reprint H04to3 Published On Hbr.Org Digital Transformation Is Not About Technology*
Tomkins, C., dan Groves, R. (1983). *The Everyday Accountant and Researching His Reality. Accounting, Organization and Society*, 8(4), 361-374
Utami, P. (2019). Digital banking reflection and zakat accountability sharia banking in Indonesia. *Eastern Journal of Economics and Finance*, *4*(1), 31–40. https://doi.org/10.20448/809.4.1.31.40
Verina, N., dan Titko, J. (2019). Digital transformation: conceptual framework. *In International Scientific Conference Contemporary Issues in Business, Management and Economics Engineering., May*. https://doi.org/10.3846/cibmee.2019.073
Zhou, H., dan Ye, S. (2019). Fundraising in the Digital Era: Legitimacy, Social Network, and Political Ties Matter in China. *Voluntas*. https://doi.org/10.1007/s11266-019-00112-9

Biodata

Rosalina Pebrica Mayasari is a lecturer at the Business Economics Department at the University of Tridinanti. She received her Master's Degree from Sriwijaya University and her doctoral degree from Brawijaya University. Her primary interest is Sharia accounting. Email:rosalina_mayasari@yahoo.com.

Msy. Mikial is a lecturer at the Business Economics Department at the University of Tridinanti. She received her Master's Degree from Padjajaran University and her Doctoral Degree from Sriwijaya University. Her primary interests are sustainability reporting, financial accounting, and auditing. Email: masayu_mikial@univ-tridinanti.ac.id.

Firmansyah Arifin is a lecturer at the Business Economics Department of the University of Tridinanti. He received his Master's Degree from Sriwijaya University. He is now taking his doctoral degree at Sriwijaya University. His primary interests are taxation, sustainability reporting, financial accounting, and auditing. Email: firmansyah_arifin@univ-tridinanti.ac.id.

Hendri Wijaya is a student at Tridinanti University's Department of Business Economics. He is pursuing a bachelor's degree in taxation, sustainability reporting, and financial accounting. His email is hendryplm1234@gmail.com.

Rahmi Bayati is a student at the Department of Business Economics at Tridinanti University. She is currently taking a bachelor's degree at Tridinanti University. Her main interests are taxation, sustainability reporting, and financial accounting. Email: rahmibayati5@gmail.com.

THE INFLUENCE OF ENTREPRENEURSHIP TRAINING ON THE ENTREPRENEURIAL INTEREST OF STUDENTS IN THE MANAGEMENT STUDY PROGRAM, FACULTY OF ECONOMICS, PALEMBANG UNIVERSITY

Suci Higiantri Asti[1], Sugeng Mianto Fane[2], Khaerul Budhy Nagara[3]

Suci Higiantri Asti[1]
Student of Management Study Program, Faculty of Economics, Palembang University
sucihigiantri2409@gmail.com

Sugeng Mianto Fane[2]
Lecturer of Management Study Program, Faculty of Economics, Palembang
paneunpal@gmail.com

Khaerul Budhy Nagara[3]
Lecturer of Management Study Program, Faculty of Economics, Palembang
kbudhynagara@unpal.ac.id

Abstract

This research was conducted to determine the influence of entrepreneurship training on students' interest in entrepreneurship in the Management Study Program, Faculty of Economics, University of Palembang. The research sample was all students from the Management Study Program, Faculty of Economics, University of Palembang who had taken entrepreneurship courses and entrepreneurship workshops as many as 51 students in 2023. Hypothesis testing was carried out using Simple Linear Regression Analysis, as well as the t test (partial test), with the aim of knowing the influence of the independent variable, namely Entrepreneurship Training, on the dependent variable, namely Entrepreneurial Interest at a confidence level of 95% (a= 0.05). The results of the t test on the Entrepreneurship Training variable have a positive influence on Entrepreneurial Interest in Final Students of the Management Study Program, Faculty of Economics, Palembang University, where the t-calculated value of the Entrepreneurship Training variable (X) is greater than the t-table value (4.219 > 2.007) and The significance value (sig.) is smaller than the required α (0.001<0.05). The coefficient of determination (R^2) is 0.435. This shows that 43.5% of the Entrepreneurial Interest variable can be explained by the Entrepreneurship Training variable while the remaining 57.50% is explained by other factors not included in this research.

Keywords: Entrepreneurship, Entrepreneurship Training, Interest in Entrepreneurship

INTRODUCTION

The country's economy is a common thing that is discussed and is closely related to monetary policy in a country. A country's economy cannot be separated from government interference. The executive and legislative roles as regulators want the monetary situation to improve or stabilize. However, in reality every country is very vulnerable to economic crises. This economic crisis has hit almost all countries in the world, from developing countries like Indonesia, to developed countries like the United States.

With the high population and the increasing number of job applicants, it is hoped that university graduates throughout Indonesia will explore their abilities to become entrepreneurs who are able to open new job opportunities, and can help the government in reducing poverty and unemployment levels in Indonesia. This condition shows the increasing importance of entrepreneurship in a country's economy. The national economic situation in a country will be successful if it is supported by entrepreneurs who can create

employment opportunities because the government's capacity is very limited. The government will also not be able to provide many jobs for the entire community. Unemployment is a serious problem in Indonesia that is still difficult to overcome. Government programs to reduce unemployment have not been able to reduce unemployment significantly. The reason is because the population is large and population growth is increasing, not accompanied by an increase in employment opportunities.

In 2022, open unemployment according to the highest level of education completed will also remain high. It can be said that unemployment occurs mostly among the educated population

Table .1 Number of Open Unemployed According to Education Level Year 2023

No	Education Level	Amount
1	No/never been to school	201.181
2	Have not/did not finish elementary school	441.292
3	Elementary school	2.072.902
4	Junior high school	1.662.892
5	Senior High School	2.772.343
6	Vocational High School	982.112
7	Diploma	322.291
8	University	618.342
Total		9.073.355

Source : data of BPS 2023

In the table above, open unemployment is highest in general high school education. Overall, the number of unemployed in 2023 will reach 9,073,355 people. It is also feared that the unemployment rate for graduate students will continue to increase if universities as graduate producing institutions do not have the ability to direct their students and alumni to create jobs after graduating. In addition, the low motivation of Indonesia's young generation in entrepreneurship is currently a serious consideration for various parties, including the government, the world of education, the industrial world and society (Hendro, n.d.).

Basically, education can be used as a bridge for humans to lead a better life. Entrepreneurship education is expected to be able to awaken the spirit of entrepreneurship, independence, work and develop the national economy (Suryana, 2016). Entrepreneurship education is also expected to be able to give rise to creative entrepreneurs who can create jobs and help reduce never-ending unemployment(Octarinie et al., 2023). Entrepreneurship education not only provides a theoretical foundation regarding the concept of entrepreneurship but shapes the attitudes, behavior and mindset of an entrepreneur(Winardi, 2013). This is a capital investment to prepare students to start a new business through the integration of experience, skills and knowledge essential to developing and expanding a business.

The Management Study Program, Faculty of Economics, Palembang University has implemented entrepreneurship courses. According to the Ministry of Cooperatives and Small and Medium Enterprises (UKM), in January 2022, the number of Indonesian entrepreneurs has now reached 3.1 percent of the total population of Indonesia. This figure has exceeded international standards, namely 2 percent. Even though Indonesia's entrepreneurial ratio level has exceeded international standards, it is still lagging behind when compared to neighboring countries, such as Singapore, where the entrepreneurial ratio level has reached 7 percent of its total population of 4 million, and Malaysia, which has reached 5 percent of its total population.

Entrepreneurship courses have been included in the curriculum which requires economic education students to take entrepreneurship education. Entrepreneurship education is divided into two courses, namely the entrepreneurship course which is taken in semester 6 (six) and the entrepreneurship workshop which is taken in semester 8 (eight). This course is applied in the form of theory and practice of entrepreneurship.

Entrepreneurship education in the form of theory is given in class for provision before students become entrepreneurs, while in the form of work practice through activities to establish small companies which are managed by students according to their groups. In accordance with the vision of the Management Study Program at the Faculty of Economics, University of Palembang, namely "To create a Management Study Program that produces Economics graduates with entrepreneurial insight, high quality and able to compete regionally in 2023" in line with the implementation of entrepreneurship courses which aim to equip students to build their spirit and spirit. entrepreneurial character, understand the concept of entrepreneurship and have entrepreneurial skills.

Based on observations and experience, only a small number of students continue to do business. Students' initial motivation in carrying out entrepreneurship is because they want to get grades and fulfill college requirements, so their motivation for entrepreneurship is still low (Achmad, 2015). Some students are also still afraid to enter the entrepreneurial field because they feel they do not have the skills to manage a business and are haunted by the risk of failure or loss. If students know the benefits of entrepreneurship, namely they can create jobs for other people and generate large incomes from employees. Based on the explanation above, the researcher took the initiative to conduct further research to determine the motivation and skills of economics education students in entrepreneurship with the title **"The Influence of Entrepreneurship Training on Entrepreneurial Interest in Management Study Program Students, Faculty of Economics, University of Palembang".**

METHODS

Object of Research

This research takes as its object the Faculty of Economics, Palembang University, located on Jalan Dharmapala No.1A Palembang.

Population and Sample

Population is a generalization area consisting of objects/subjects that have certain quantities & characteristics determined by researchers to be studied and then conclusions drawn (Sugiyono, 2018). The population in this research are all students of the Management Study Program, Faculty of Economics, Palembang University who have taken entrepreneurship courses and entrepreneurship workshops. Based on data obtained in the Academic section of the Faculty of Economics, University of Palembang, it was recorded that the number of students who had taken entrepreneurship courses and entrepreneurship workshops was 51 students who were registered as semester 8 (eight) students.

The sample is part of the population which is expected to represent the population in the research. The sampling technique used is a saturated sample or census, this is because the entire population will be used as a research sample because there are less than 100 respondents.

Research methods

This research uses Causal Design Research, where this design explains events, relationships and variables as well as correlational research, development and comparison and looks for the influence of the independent variable (entrepreneurship training) on the dependent variable (student interest in entrepreneurship) (Sugiyono , 2018).

Data Analysis Method

A. Validity Test

The validity test is used to measure whether a questionnaire is valid or not. A questionnaire is said to be valid if the questions in the questionnaire are able to reveal something that the questionnaire will measure. The method used to test validity is to correlate the question item scores with the total score of the construct or variable. The significance test is carried out by comparing the calculated r with the r table then the indicator is declared valid and vice versa if the r table is smaller than the calculated r then the indicator

is declared invalid. This validity testing is assisted by the SPSS program (Arikunto, 2016).

B. Reliability Test

Reliability testing is actually a tool for measuring a questionnaire which is an indicator of a variable or construct. A questionnaire is said to be reliable if a person's answers to statements are consistent or stable over time. Here the measurement is carried out only once and then the results are compared with other questions or measure the correlation between answers to questions. SPSS provides facilities for measuring reliability with the Cronbach Alpha statistical test. A construct or variable is said to be reliable if it provides a Cronbach Alpha value > 0.60 (Arikunto, 2016).

C. Simple Linear Regression Analysis

Simple linear regression analysis is a linear relationship between an independent variable (X) and a dependent variable (Y). This analysis is to determine the direction of the relationship between the independent variable and the dependent variable, whether positive or negative and to predict the value of the dependent variable if the value of the independent variable increases or decreases. The data used is usually on an interval or ratio scale. The simple linear regression formula is as follows:

$$\mathbf{Y = a + bX}$$

Information :

Y = Student Interest in Entrepreneurship
X = Entrepreneurship Training
a = Constant (Y value when X = 0)
b = Regression coefficient (value of increase or decrease)

D. Coefficient of Determination

The termination coefficient with the symbol R^2 is the proportion of variability in data that is calculated based on a statistical model. In general, R^2 is used as information about the suitability of a model. In regression, R^2 is used as a measurement of how well the regression line approaches the original data values created by the model. If R^2 is equal to 1, then the figure shows that the regression line fits the data perfectly (Arikunto, 2016).

E. t test (partial test)

The t test is used to determine whether the independent variables partially have a real effect on the dependent variable or not. The degree of significance used is 0.05. If the significant value is smaller than the degree of confidence then we accept the alternative hypothesis, which states that an independent variable partially influences the dependent variable (Arikunto, 2016).

DISCUSSION

An entrepreneurial spirit needs to be developed to overcome the problem of unemployment. With an entrepreneurial spirit, it is hoped that the attitude and willingness to be independent will grow in order to get a better life without having to depend on other people (Warni, 2022). The more advanced a country is, the more people are educated and the more people are unemployed, the more important the world of entrepreneurship is felt. Development will be more successful if it is supported by entrepreneurs who can create jobs because the government's capacity is very limited. The government will not be able to work on all aspects of development because it requires a lot of budget, personnel and supervision. The step to foster an entrepreneurial spirit is to instill an interest in entrepreneurship (Winardi, 2013).

Based on the results of the analysis and discussion above, it is proven that the Entrepreneurship Training variable has a positive and significant influence on Entrepreneurial Interest (Y) among students in the Management Study Program, Faculty of Economics, Palembang University. This is proven by the results of computerized data processing using the SPSS 25 program, a coefficient of determination (R) of 0.435 is obtained. This shows that 43.50% of Entrepreneurial Interest can be explained by the Entrepreneurship Training variable while the remaining 57.50% is explained by other factors not included in this research. Apart from that, the Correlation value also illustrates the strength of the relationship between the Entrepreneurship Training variable (X) and the Entrepreneurial Interest variable of students in the Management Study Program, Faculty of Economics, Palembang University. (Y) is 0.660. This means that the relationship between all the independent variables and the dependent variable is close because the R value is close to 1.

Training is a means of changing perceptions, attitudes and increasing skills, increasing abilities for the purposes of assessing and knowing performance (Rivai, 2018). It is hoped that the entrepreneurship training program carried out by the government and universities will be able to motivate students to be interested in entrepreneurship. Enthusiasm or encouragement, coaching, entrepreneurial training and providing facilities are one of the motivations needed to instill an entrepreneurial spirit (A.Rusdiana, 2014).

In lectures, entrepreneurial theories and entrepreneurial practices are given. Apart from that, Palembang University also often holds seminars on entrepreneurship. One of the goals is to form students with an entrepreneurial spirit so that after graduating they can become entrepreneurs who can create jobs so that the number of unemployed will decrease. Based on the results of interviews with a number of students, when they graduate they tend to work according to their major. This is based on their greater knowledge of the lecture material compared to the entrepreneurship material they received during lectures. The entrepreneurial knowledge gained in entrepreneurship courses cannot be maximized by students because students are only value-oriented, but do not use entrepreneurship courses as momentum in starting a business**.**

CONCLUSION

Entrepreneurship training has a significant effect on students' interest in entrepreneurship in the Management Study Program, Faculty of Economics, University of Palembang. The more Entrepreneurship Training you receive, the more Entrepreneurial Interest will grow among Palembang University students. It is hoped that Palembang University, especially the Management Study Program, Faculty of Economics, will be able to instill an entrepreneurial spirit in its students by providing entrepreneurial training and motivation such as seminars and bazaars, so that students' interest in entrepreneurship will increase. Future researchers can add other factors outside this research which can explain the dependent variable of Entrepreneurial Interest in Palembang University students such as Opportunities, Personality, Entrepreneurial Motivation after students become alumni and so on.

ACKNOWLEDGMENT

We give praise and gratitude to God, because of His blessings and grace, we was able to finish the article this scientific. The writing of this scientific article was carried out in order International seminar organized by Palembang University.We realize that without help and guidance, it is quite difficult for us to complete this scientific article. Therefore, I would like to thank the entire academic community of the Faculty of Economics, Palembang University, especially Mr. Sugeng Mianto Fane and Mr. Khaerul Budhy who always guided us during the writing of this scientific article. We hope that this article can become a reference for further research.

REFERENCES

A.Rusdiana. (2014). *Kewirausahaan : Teori dan Praktek*. CV.Pustaka Setia.
Achmad, N. (2015). *Kewirausahaan : Suatu Alternatif lain Menuju Kesuksesan*. BPK FEB UMS.
Arikunto, S. (2016). *Prosedur Penelitian suatu Pendekatan Praktik*. PT.Rieneka Cipta.
Hendro. (n.d.). *Dasar-dasar Kewirausahaan : Panduan bagi Mahasiswa untuk Mengenal, Memahami dan Memasuki Dunia Bisnis*. PT.Rineka Cipta.
Octarinie, N., Maliki, M. U., Afandi, A., Tember, E., Aminus, R., Budhy, K., Putri, I. T., Fitriyani, S. A., & Mahendra, R. (2023). Kiat-Kiat Belajar Berwirausaha. *Jurnal Ekonomi Mengabdi*, *2*(2), 89–95.
Rivai, V. (2018). *Manajemen Sumber Daya Manusia untuk Perusahaan : dari Teori ke Praktik*. PT.RaJa Grafindo Persada.
Suryana. (2016). *Kewirausahaan*. Salemba Empat.
Warni, Z. (2022). Pengaruh Kepribadian, Demografi Dan Lingkungan Terhadap Minat Berwirausaha Penjual Martabak Manis Di Kayu Agung Kabupaten Ogan Komering Ilir. *Jurnal Ekonomika*, *15*(1), 1–23.
Winardi. (2013). *Entrepreneur dan Entrepreneurship*. Kencana Prenada Media Grup.

BIODATA

Suci Higiantri Asti is an active student studying in the management study program at the Faculty of Economics, Palembang University, currently entering her fourth semester. She has an interest in human resources management concentration**. Email :** sucihigiantri2409@gmail.com

LITERATURE REVIEW ; THE INFLUENCE GREEN TRAINING, GREEN COMPENSATION, GREEN INVOLVEMENT ON GREEN PERFORMANCE

Delvina Yulanda[1], Isnurhadi[2], Muhammad Ichsan Hajri[3], Isni Andriana[4]
Sriwijaya University[1,2,3,4]
Delvinayulanda22@gmail.com[1]

Abstract

Green Performance greatly influences the company's success in achieving its goals. Environmentally friendly performance is a real behavior displayed by each person as a work achievement produced by employees in accordance with their role in the company, especially related to company sustainability. This research is to see whether there is an influence of green training, green compensation, green involvement on green performance. This research uses a literature review method by examining research articles that are relevant to this research. From the studies carried out there are green training, green compensation, green involvement on green performance.

Keywords: Green Training, Green Compensation, Green Involvement, Green Performance

INTRODUCTION

The concept of sustainability is becoming increasingly relevant and needed throughout the world. Organizations, companies and governments' awareness of the importance of sustainability is increasing (Wu et al., 2024; Dawod et al., 2023). Many organizations and companies have adopted a sustainability-focused approach to ensure that today's needs are met without compromising the ability of future generations to meet their needs (Kweh et al., 2017; Grewal et al., 2016; Alareeni and Hamdan, 2020; Alsayegh et al., 2016; al., 2020; Jan et al., 2019; Cho et al., 2019; Corporate sustainability (CS) is becoming a strategic focus for most companies in highlighting their contribution to environmental protection and social development. Companies also understand the importance of implementing long-term environmentally friendly practices to ensure future business success (Nazeri, 2021 et al., 2021; Buallay et al., 2020; Duque and Aguilera, 2021).

Sustainability is very important for employees and is an important indicator of employee engagement, retention, performance and well-being (Abdelwahet et al., 2023; Amjad, 2021). Furthermore (Andel et al., 2019; Chauhan, 2017) stated that the long-term success of a company depends on its ability to attract and retain the best talent and involve employees who care about the company's position on social and environmental issues. (Opatha, 2013; Andel et al., 2019, Abdelwahet et al., 2023; Amjad, 2021) states that to achieve company sustainability, high-performance employees are needed, especially related to environmentally friendly performance.

Employee environmentally friendly performance or Green Performance greatly influences the company's success in achieving its goals (Soelton et al., 2023; Gokcearslan et al., 2018; Sofyanty 2019). Environmentally friendly performance is a real behavior displayed by each person as a work achievement produced by employees in accordance with their role in the company, especially related to company sustainability (Gokcearslan et al., 2018; Rivai, 2020).

There are several factors that influence employees' environmentally friendly performance related to sustainability, one of which is Green Human Resource Management (GHRM) practices or environmentally friendly HRM practices. Currently, the topic of GHRM not only includes awareness of environmental problems, but also represents the social and economic welfare of both organizations and employees in a broader perspective (Ahmad, 2013). GHRM is one of the significant green business programs because this program refers to the organization's efforts in changing normal employees into green employees (employees who engage in pro-environmental behavior) with all the activities involved in developing, implementing and maintaining an ongoing system. GHRM aims to ensure that employees are given the opportunity to demonstrate environmental responsibility in their daily work (Opatha & Arulrajah, 2014; Zientara & Zamojska, 2018; Jerónimo et al., 2020).

According to Mandip (2012) green training can be used to prepare employees to meet several new challenges and organizational changes with environmental considerations. Jabour (2018) further stated that green training can increase employee involvement, regenerate their skills and motivate them to perform well in the organization and develop environmental skills. Ismail et al. (2016) stated that skill development and exploratory learning are potential ways to encourage innovation in organizations.

Among other environmentally friendly HRM practices, environmentally friendly compensation and rewards (Green Compensation) is an important practice in which organizations provide rewards and compensation to their employees (Maderazo, 2016; Mandago, 2018).Achievement of an organization's greening goals can be enhanced by rewarding employees for their performance and commitment to environmental practices (Jabbour 2015).

Another factor that influences employees' environmentally friendly performance related to sustainability is green involvement. Green involvement is a GHRM practice that refers to providing opportunities to encourage employees' voices in managing the environment and expressing solutions to environmental problems in an organization (Dubois et al., 2012). The involvement of each employee encourages the organization to engage in environmental activities that can improve employee performance. A clear environmental vision and the dissemination of information about the environment both formally and informally make employees involved in environmental initiatives (Tang, 2018).

METHOD

This research uses a literature review method from the data obtained. The research presents the results of searches for research on the internet according to the variables of this research. Literature reviews are carried out with a focus on original articles containing abstracts, introductions, methods and results. Literature review is a systematic, explicit and reproducible method for identifying, evaluating and synthesizing research works and ideas that have been produced by researchers and practitioners. The aim of a literature review is to make an analysis and synthesis of existing knowledge related to the topic to be researched to find free space for the research to be carried out.

RESULTS AND DISCUSSION

GreenTrainingor environmentally friendly training can be defined as a process of on-the-job training and continuing education designed to achieve corporate environmental management targets and goals (Daily and Huang, 2001). Among GHRM Practices, Green Training is one of the

most widely implemented in organizations and is also recognized as an important practice for the successful implementation of EM, cleaner production and green supply chain management (Jabbour et al., 2010; Diana et al., 2017 ; Teixeira et al., 2016).

GreenTrainingis an important function of human resource management (HR) which aims to foster employee awareness of environmental influences, equip them with core environmental skills, and increase the level of "environmental literacy" and environmental expertise in the organization (Renwick et al., 2013). According to Zoogah (2011), Greem Training ends the erosion of attitudes, skills and knowledge related to the environment that arises from training and development practices. This training can increase employee awareness, attitudes, knowledge and skills in carrying out pro-environmental activities in the workplace (Jabbour, 2011). Furthermore, this makes individuals sensitive to their environment so that it can help them carry out prevention processes (del-Río et al., 2012).

Bau et al., 2018 explains Greem Training as an environmental management training program to create an employee's emotional involvement, green knowledge, attitudes, awareness and skills in environmental management and a course structure to develop management students in green activities. Greem Training can also create a green climate through a series of programs and events such as waste reduction and energy conservation in the workplace, to provide opportunities for employees to contribute to solving environmental problems (Perron et al., 2006). Although HRM researchers admit that providing training cannot achieve the desired results (Liebowitz, 2010), readiness, criticism and acceptance of training participants are also necessary (Jackson et al., 2011).

According to AMO theory employees perform better when they are given appropriate abilities, motivation and organizational opportunities. In this context, Green Training is a capacity building practice (Renwick et al., 2013), which increases awareness, knowledge and skills related to the environment (), which underlies several solutions to reduce environmental impacts (Renwick et al., 2013; Siyambalapitiya et al., 2018; Pinzone et al., 2016).

Based on the literature review, several studies have shown the main impact of environmentally friendly training. (Daily et al., 2012) stated that green training can increase the awareness of managers and employees about how work activities and daily decisions can affect the environment. Research by Jabour et al., 2010 explains that green training can equip employees with the ability to recognize environmental issues. Apart from that, Green training also aims to understand and manage the complexity of environmental topics (Salazar et al., 2012); and equip employees with the ability to recognize environmental issues and enable them to fulfill their environmental responsibilities and achieve organizational goals (Daily and Huang, 2001). Therefore, existing research has revealed the importance of environmentally friendly training as a driver of pro-environmental employee behavior so that it can improve employee environmentally friendly performance.

Green compensation is a financial and non-financial reward system that aims to attract, retain and motivate employees to contribute to green environmental goals (Rael, 2018).Mandip (2012) and Jabbour et al. (2010) refer to green compensation management (GCM) as the practice of using rewards, which aims to recruit and motivate workers to work to achieve environmental goals. A combination of business-specific incentives and benchmarking of industry best practices will stabilize resource allocation problems (Lothe & Myrtveit, 2003). Ramus and Montiel (2005) recognize the importance of nonmonetary rewards in influencing strategy implementation in European businesses. It has been observed that perceived supervisory support and increased recognition increase employee commitment to environmental strategy implementation. According

to Jackson et al. (2011), non-monetary rewards such as praise and recognition are important for motivating employees. Tang et al. (2018) theorized that in addition to financial incentives, employees should also be paid non-monetary rewards such as green recognition, green tax incentives, and green travel allowances.

Green compensation is a monetary and non-monetary incentive program intended to capture, preserve, and encourage communities to support green environmental priorities (Mandago, 2018). In contrast, green awards contribute to the best quality of work life, which significantly improves environmental performance (Jabbar and Abid, 2015). The use of incentives and recognition based on environmental performance has a positive impact on staff's willingness to try environmentally friendly projects (Rawashdeh, 2018). This condition shows that environmentally friendly and environmentally focused compensation and rewards are expected to be directly linked to this.

In line with a strategic approach to reward management, green compensation is a system of financial and non-financial rewards, aimed at attracting, retaining and motivating employees to contribute to environmental goals (Jabbour et al., 2013). It has been suggested that employees may feel more motivated by nonfinancial rewards through pay and environmentally friendly rewards, such as recognition and praise (Jabbour et al., 2008; Jackson et al., 2011). Incentives and rewards may be more powerful measures for aligning employee performance with company goals than other practices in the HRM system. However, in general, most researchers acknowledge that combining monetary and non-monetary rewards is more effective in motivating employees (Jabbour et al., 2008; Renwick et al., 2013). Non-financial rewards should be provided alongside financial incentives, in the form of green travel benefits, green taxes and green recognition.

In line with a strategic approach to reward management, green compensation is a system of financial and non-financial rewards, which aims to attract, retain and motivate employees to contribute to environmental goals (Jabbour et al., 2013; Mandip 2012). There are some opinions that suggest that employees may feel more motivated by non-financial rewards through green compensation, such as recognition and praise (Jabbour et al., 2008; Jackson, 2017; Tang et al., 2011). Jackson and Seo (2010) stated that incentives and rewards are stronger measures of aligning employee performance with company goals than other practices in the HRM system. However, in general most researchers acknowledge that combining monetary and non-monetary rewards is more effective in motivating employees (Jabbour et al., 2008; Renwick et al., 2013).

Green Involvementis very important for the organization's sustainable performance (Matthes et al., 2014). Green Involvment refers to the opportunities provided to employees to learn environmentally friendly strategies and implement them to prevent pollution and other environmental problems (Renwick et al., 2013; Gupta, 2018). The more employees are involved and involved in environmental protection activities, the greater their orientation and focus towards environmental responsibility (Matthes et al., 2014). This will improve the quality of organizational and learning environment activities (Tang et all., 2018).

Green Involvementaims to develop a clear development-based vision in environmental management and produce a shared learning environment for environmentally oriented behavior. Furthermore, it allows the development of structured and unstructured (informal) communication channels to develop an organizational culture that tends to support the environment. Green Involvment also allows increasing values and problem-solving abilities on environmental-related issues by increasing awareness of environmental management practices and to develop a culture of environmental protection (Tang et al., 2018; Renwick et al., 2013; Gani et al., 2017) .

Several studies have found empirical evidence that work engagement is positively related to in-role and extra-role performance as well as job, team and organizational performance (Bakker et al., 2004; Salanova et al., 2005; Bakker and Demerouti, 2007; Tim et al., 2004; ., 2013; Makikangas et al., 2016;). In the same vein, Kim (2014) found evidence showing that work engagement not only influences job and financial performance and benefits, but also physical and mental health.

Individual and organizational performance is one of the results related to work engagement. According to Bakker and Demerouti (2007) employees who are involved in work are more creative, more productive, and more willing to work extra. These characteristics influence job performance, thereby strengthening an organization's ability to improve its sustainability in the long term (Macey and Schneider, 2008; Kim et al., 2012).

According to (Arulrajah et al., 2016) environmentally friendly performance by employees is defined as the extent to which certain employees have engaged in environmentally friendly behavior (actions and activities) and produced achievements related to environmental activities over a certain period of time. The environmental performance of an organization's employees over a predetermined period of time is known as “green performance”. Adopting environmentally friendly practices will improve the long-term competitiveness of chemical companies and reduce energy consumption costs (such as electricity and water costs) to achieve sustainable development (Pham et al., 2020). The environmentally friendly performance of each employee is essential to ensure business compliance with regulations and standards (Shammre et al., 2023).

Every employee is responsible for the environmental performance of an organization. Therefore, an employee's quantitative and qualitative contributions to reducing the organization's negative environmental impact as well as increasing the organization's positive environmental impact within a certain period of time can be considered as green job performance by the employee. This interpretation reflects the adequate meaning of employees' environmentally friendly performance in the organizational context.

CONCLUSION

Based on the literature review that has been carried out using relevant research articles, there is an influence of green training, green compensation, green involvement on green performance. Green training can increase the awareness of managers and employees about how work activities and daily decisions can affect the environment. Green training can equip employees with the ability to recognize environmental issues. In line with a strategic approach to reward management, green compensation is a system of financial and non-financial rewards, which aims to attract, retain and motivate employees to contribute to environmental goals. Several studies have found empirical evidence that work engagement is positively related to in-role and extra-role performance as well as job, team and organizational performance.

ACKNOWLEDGEMENTS

The author would like to thank all parties who have helped in the process of writing this article. Thank you also to the supervisors and Sriwijaya University.

REFERENCES

Arulrajah, A. A., Opatha, H. H. D. N. P., & Nawaratne, N. N. J. (2016). Employee green performance of job: a systematic attempt towards measurement. *Sri Lankan Journal of Human Resource Management*, *6*(1), 37. https://doi.org/10.4038/sljhrm.v6i1.5631

Bakker, A.B. (2017) "Strategic and proactive approaches to work engagement," Organizational Dynamics, 46(2), pp. 67–75. Available at: https://doi.org/10.1016/j.orgdyn.2017.04.002.

Jabbour, C. J. C. (2015). Environmental training and environmental management maturity of Brazilian companies with ISO14001: Empirical evidence. *Journal of Cleaner Production*, *96*, 331–338. https://doi.org/10.1016/j.jclepro.2013.10.039

Jackson, S. E., Renwick, D. W. S., Jabbour, C. J. C., & Muller-Camen, M. (2011). State-of-the-art and future directions for green human resource management. *German Journal of Research in Human Resource Management*, *25*(2), 99–116. https://doi.org/10.1688/1862-0000

Opatha, H. H. D. N. P. (2013). Green Human Resource Management : A Simplified introduction Green Human Resource Management : A Simplified Introduction

Pham, N. T., Phan, Q. P. T., Tučková, Z., Vo, N., & Nguyen, L. H. L. (2018). Enhancing the organizational citizenship behavior for the environment: The roles of green training and organizational culture. *Management and Marketing*, *13*(4), 1174–1189. https://doi.org/10.2478/mmcks-2018-0030

Pham, N. T., Vo-Thanh, T., Shahbaz, M., Duc Huynh, T. L., & Usman, M. (2020). Managing environmental challenges: Training as a solution to improve employee green performance. *Journal of Environmental Management*, *269*(May), 110781. https://doi.org/10.1016/j.jenvman.2020.110781

Phan, C., Le, A. T. T., Nguyen, T. H., & Nguyen, H. (2021). Determinants of employee performance in tourism industry. *International Journal of Productivity and Quality Management*, *1*(1), 1. https://doi.org/10.1504/ijpqm.2021.10040545

Pinzone, M., Guerci, M., Lettieri, E., & Huisingh, D. (2019). Effects of 'green' training on pro-environmental behaviors and job satisfaction: Evidence from the Italian healthcare sector. *Journal of Cleaner Production*, *226*, 221–232. https://doi.org/10.1016/j.jclepro.2019.04.048

Prof . HHDNP Opatha Department of HRM University of Sri Jayewardenepura. *Proceedings of the HR Dialogue*, *1*(1), 11–21.

Opatha, H. H. D. N. P., & Arulrajah, A. A. (2014). Green Human Resource Management: Simplified General Reflections. *International Business Research*, *7*(8). https://doi.org/10.5539/ibr.v7n8p101

Rael, J.M. (2018), Influence of green reward and compensation practice on environmental sustainability in selected service based state corporations in Kenya. European Journal Of Business And Strategic Management, 3(6), 1-12.

Renwick, D. W. S., Redman, T., & Maguire, S. (2013). Green Human Resource Management: A Review and Research Agenda*. *International Journal of Management Reviews*, *15*(1), 1–14. https://doi.org/10.1111/j.1468-2370.2011.00328.x

Shah, M. (2019). Green human resource management: Development of a valid measurement scale. *Business Strategy and the Environment*, *28*(5), 771–785. https://doi.org/10.1002/bse.2279

Shah, M. (2019). Green human resource management: Development of a valid measurement scale. *Business Strategy and the Environment*, *28*(5), 771–785. https://doi.org/10.1002/bse.2279

Srivastava, A. P., & Shree, S. (2019). Examining the effect of employee green involvement on perception of corporate social responsibility: Moderating role of

green training. *Management of Environmental Quality: An International Journal*, *30*(1), 197–210. https://doi.org/10.1108/MEQ-03-2018-0057

Tang, G., Chen, Y., Jiang, Y., Paillé, P., & Jia, J. (2018). Green human resource management practices: scale development and validity. *Asia Pacific Journal of Human Resources*, *56*(1), 31–55. https://doi.org/10.1111/1744-7941.12147

Wu, M. H., Thongma, W., Leelapattana, W., & Huang, M. L. (2016). Impact of hotel employee's green awareness, knowledge, and skill on hotel's overall performance. *Advances in Hospitality and Leisure*, *12*, 68–81. https://doi.org/10.1108/S1745-354220160000012004

Rael, JM (2018), Influence of green rewards and compensation practices on environmental sustainability in selected service based state corporations in Kenya. European Journal Of Business And Strategic Management, 3(6), 1-12.

Renwick, D.W.S., Redman, T., & Maguire, S. (2013). Green Human Resource Management: A Review and Research Agenda*. International Journal of Management Reviews, 15(1), 1–14.https://doi.org/10.1111/j.1468-2370.2011.00328.x

Shah, M. (2019). Green human resource management: Development of a valid measurement scale. Business Strategy and the Environment, 28(5), 771–785. https://doi.org/10.1002/bse.2279

Shah, M. (2019). Green human resource management: Development of a valid measurement scale. Business Strategy and the Environment, 28(5), 771–785.https://doi.org/10.1002/bse.2279

Srivastava, A. P., & Shree, S. (2019). Examining the effect of employee green involvement on perception of corporate social responsibility: Moderating role of

greentraining. Management of Environmental Quality: An International Journal, 30(1), 197–210.https://doi.org/10.1108/MEQ-03-2018-0057

Tang, G., Chen, Y., Jiang, Y., Paillé, P., & Jia, J. (2018). Green human resource management practices: scale development and validity. Asia Pacific Journal of Human Resources, 56(1), 31–55.https://doi.org/10.1111/1744-7941.12147

Wu, M. H., Thongma, W., Leelapattana, W., & Huang, M. L. (2016). Impact of hotel employees' green awareness, knowledge, and skills on hotel's overall performance. Advances in Hospitality and Leisure, 12, 68–81. https://doi.org/10.1108/S1745-354220160000012004

Biodata

Delvina Yulanda is a doctoral student in Sriwijaya University for the management program.Her email is Delvinayulanda22@gmail.com.

.

Critical Review : Factors Affecting Artificial Intelligence Based Marketing to Consumer Behaviour on Business Platforms

Yolanda Veybitha
University of Tridinanti
yolanda@univ-tridinanti.ac.id (corresponding author)

Sari Sakarina
University of Tridinanti
sarisakarina@univ-tridinananti.ac.id

Yusro Hakimah
University of Tridinanti
yusro_hakimah@univ-tridinanti.ac.id

Muhammad Yunus Alfian
University of Tridinanti
yunus.alfianm@gmail.com

Nicki Astria
University of Tridinanti
astrianicki@gmail.com

Abstract

This research aims to study the extent of the developing phenomenon related to the use of Artificial Intelligence (AI) technology in marketing using Virtual Influencers (VI). The author carries out a critical literature review of books and several articles from reputable journals, makes a discussion and finally draws conclusions. The results of the literature review show that in the current digital era marketers are required to have high creativity in offering their products to consumers. Consumers showed positive responses to marketing video content that used Virtual Influencers (VI). However, marketing must maintain VI credibility because the trust factor is the main consideration for consumers when making transactions. In this literature review, the author found that consumer interest in Virtual Influencers is due to marketers' creativity and that transactions can occur after there is trust. Therefore, for further research, it is recommended to use trust as a mediating variable between Virtual Influencer and Purchase Intention.

Keywords: Artificial Intelligence, Marketing, Consumer Behavior, Business Platform

1. INTRODUCTION

Marketing is the most important part of business. Through marketing, potential consumers can find out about the existence of a product. From time to time, marketing has developed, starting from very simple (traditional) to modern where products and marketing strategies are adapted to consumer needs and desires. Technological developments, especially the internet, have changed the way individuals make transactions. The evolution of digital technology has changed consumer behavior in the digital economy to a significant concern (Kalashnikova et al., 2023). The evolution of marketing in the digital era began with online marketing where business people offered their products via email and websites. Then marketing

developed towards marketing via social media such as Facebook, Instagram, Twitter, YouTube and TikTok. Next, marketers introduce their products through video content and develop further with marketing that offers memorable experiences through interactive applications, events, and so on. Consumers utilize the Internet to gather information about products and services, with online reviews, social media comments, and other online content influencing their decisions (Ebrahimi et al., 2023).

Currently, Artificial Intelligence (AI) technology has developed. This technology can help business people market their products efficiently and effectively. Technology in AI can replace the duties of a staff/employee so that it can save marketing operational costs and increase profits. Artificial Intelligence Marketing is a method in marketing that uses concepts with artificial intelligence models such as machine learning to reach customers to achieve marketing goals. The content produced by Virtual Influencers is very much sophisticated, which differentiates these characters from other AI-based technologies such as chatbots or virtual assistants that are programmed to answer questions according to scripts (Tsai et al., 2021). In the ever-evolving social media influencer landscape, Virtual Influencers (VI) are becoming increasingly popular. A VI can be a human-like entity or not that is controlled autonomously by artificial intelligence and visually represented as interactive, real-time rendering in a digital environment (Sands et al., 2022).

2. LITERATURE REVIEW

2.1 Types and Functions of Artificial Intelligence in E-Commerce

There are several main applications of Artificial Intelligence that are often used in E-Commerce (Song et al., 2019)

1) Artificial Intelligence Assistant/chatbots (Artificial Intelligence Assistant)

An artificial intelligence assistant (chatbot) whose main function is to automatically respond to customer questions, respond to simple voice commands and provide product recommendations using a natural language processing system. Chat dialogs on e-commerce sites and mobile pages are based on machine learning algorithms programmed to communicate with customers on a personalized basis.

2) Recommendation Engine

The recommendation engine is a complete recommendation system based on a machine learning algorithm framework. Using AI algorithms can realize deep learning, statistical programming, prediction and analysis of customer behavior, huge data sets, and predicting which products are likely to attract customers. First, based on recent searches by potential customers, the machine learning algorithm in the recommendation engine is able to record important details of the product being searched for based on the calculation results. The recommendation engine then generates appropriate Suggestions for the browser and lists them on the personal page, which ultimately helps consumers find the product by fast.

3) Smart Logistics

Intelligent logistics refers to a logistics development mode in which equipment and controls are made intelligent by using information technology, so as to replace humans with technical equipment. Compared with traditional logistics modes, intelligent logistics can greatly improve service quality and operation efficiency. The Smart Logistics concept was first put forward by IBM in 2009.

4) Optimal Pricing

The e-commerce industry is currently booming, Even for online retailers with small inventories, this kind of sustainable price adjustment in the long term is a big challenge. Artificial intelligence technology, which can process big data quickly, has essentially solved the problem of automatically pricing a large number of products.

2.2 Three Dimensions of Artificial Intelligence (AI)

The book Marketing Artificial Intelligence (Simarmata et al., 2023) explains that there are three dimensions of AI, namely as follows:

1) Level of Intelligence

Davenport, et al. (2020) explained that there are two different things at the level of AI intelligence, namely task automation and context awareness. Task automation is the implementation of tasks in AI that are standardized or based on standard rules, which require consistency (Huang & Rust, 2018). One example of task automation is the application of AI to IBM's deep blue, where standardized rules and "brute force" algorithms are applied to beat human chess players.

2)Task Type

In this dimension, task type refers to AI applications that analyze data in the form of numbers (numerical) versus non-numerical data (such as text, sound, images, or facial expressions). All types of data presented can provide input in decision making. Many companies have implemented AI and categorized data in various formats, whether in list form (tabular) or not. For example, the Stitch Fix company takes data from customers in the form of questions regarding their preferences for products (where the data is entered in tabular form), considering that customers are not always able to articulate their preferences on a scale.

numeric.

3) Application of AI to Robots

Most AI applications are in virtual form, for example by using digital platforms and smartphones, which are widely adopted by many companies. However, AI applications can also take the form of entities such as robots. Like the Tipsy Robot (robot barista) in Las Vegas, which is between virtual and reality. Where the robot is only able to operate on a limited scope and tasks.

2.3 The Role of Artificial Intelligence (AI) in Improving Marketing Mix Activities

Several marketing activities that can be carried out in relation to the marketing mix according to (Sanjeev, et al., 2021) are as follows:

1) The existence of AI can help marketers with marketing strategy and planning, namely by carrying out segmentation, targeting and positioning (STP) which is strategically oriented towards the company's vision (Huang & Rust, 2017); (Shangkar, 2018). By utilizing data mining and machine learning algorithms in AI, marketers are able to implement marketing strategies and plans that are more focused and segmented on the potential customers they are targeting.

2)The Role of AI in Product Management

In product management, the use of AI (artificial intelligence) in marketing analysis tools is able to identify and measure the suitability of product designs required by customers and is able to provide satisfactory results for customers (Dekimpe, 2020).

3) The Role of AI in Price Management

Determining a price for a product is not an easy thing for a marketer. Apart from the many factors that must be considered in determining a price, marketers must also pay attention to price variations which must be adjusted to fluctuating customer demand. For this reason, algorithms based on AI or artificial intelligence are able to provide solutions for marketers to determine appropriate and dynamic prices in real time. so that it is able to compete with prices offered by competitors (Misra, et al., 2019); (Dekimpe, 2020) also explains that algorithms in artificial intelligence are able to summarize customer choice responses.

4) The Role of AI in Promotion Management

Promotion management is the management of a series of marketing activities that have been planned and prepared by the marketing team. This series of activities consists of planning and scheduling promotions in the media, as well as product campaigns that will be carried out, optimizing the use of search engines, and so on. The promotional tactics used are now shifting from physical to digital. The existence of global digital transformation has triggered new breakthroughs in digital marketing and product campaigns on various social media platforms, where customers can determine the content, place and time to be used. Here AI (artificial intelligence) plays a role in personalizing and adapting existing messages, according to customer profiles and preferences (Huang & Rust, 2020).

5)The Role of AI in Distribution Management

One important component in the marketing mix to increase customer satisfaction is product access and product availability. Product distribution relies on network relationships, logistics, inventory management, warehousing and transportation, most of which are mechanical and repetitive. Artificial intelligence is the perfect solution in terms of place management by offering cobots for packaging, and the use of drones in delivery (Huang & Rust, 2017).

2.4 Consumer Behavior

According to Schiffman and Kanuk (2019) consumer behavior is the behavior shown by consumers in searching for, purchasing, using, evaluating and disposing of products and services that they hope will satisfy their needs. The factors that influence consumer behavior according to Schiffman and Kanuk (2019) are external and internal factors. External factors include culture, social class, and social factors. Internal factors include motivation, perception, learning experiences, personality and self-concept, as well as beliefs and attitudes.

Literature on consumer behavior in the digital era has discussed a variety of topics, including increasing interest in financial needs, consumer independence, the shift from image advertising to product advertising, and increasing interest in the quality of financial product features (Korobov, 2020). The application of Artificial Intelligence (AI) to marketing science plays an important role in understanding the impact of AI on consumer behavior. Due to the evolution of technology consumers are able to search, discover and choose the best solution for their needs. Researchers in this new era are examining how they can increase the number of satisfied users. Large amounts of personalized web data are continuously processed, revealing consumer behavior patterns that enable buyers and customers to experience qualitative experiences (Q. Andre, 2017).

2.5 Business Platforms

A business platform is hardware and software, which functions as an organizer in an ecosystem and with network effects, resources, transactions and relationships between individuals and various actors such as consumer-users, professionals, the business world, institutions, business partners, etc. other. To jointly create value. Another unique feature is that in Platform, assets and output value have moved outside the organization and come from the ability to orchestrate interactions among ecosystem actors, requiring new leadership styles, new approaches to storytelling, new business disruption strategies and new service logic, which is always connected with consumers thanks to a device (Harvard Business Review, 2016). A business platform is a business model that creates value by facilitating exchange between two or more interdependent groups, usually consumers and producers. What is included in the business platform is E-Commerce. Several E-Commerce applications in Indonesia include Shoope, Lazada, Tokopedia, Bukalapak, and Blibli.

Tabel 1: Review of Artificial Intelligence Based Marketing to Consumer Behavior

Nu	Authors	Findings
1	Song, et al., (2019)	Currently, e-commerce giants are actively implementing and optimizing

		Artificial Intelligence technology to increase competitiveness. Alibaba, Jingdong and Amazon are launching intelligent service robots. In the logistics sector, e-commerce giants have also launched their own products. In terms of recommendation engines, Alibaba has the Artificial Intelligence visual platform DT PAI, jingdong introduced the zhong kui image information system platform and character recognition system. With the rapid development and continuous progress in research technology, deep learning platforms, voice analysis technology, biometric technology, image recognition technology, video analysis technology, robot automatic processing systems, text analysis, and Natural Language Processing (NLP) and other Artificial Intelligence technologies will continues to develop. Artificial Intelligence techniques are increasingly being applied, having an increasingly greater impact on aspects such as customer retention and customer satisfaction in e-commerce transactions. Over time, AI will become an important driving force for e-commerce transformation. With the support of AI technology, e-commerce will have broader development prospects for the establishment of better customer relationship management and sales promotion.
2	Davenport (2020)	This research outlines how AI could influence marketing strategies and customer behavior in the future. The main focus is to develop a multidimensional framework for the evolution of AI, taking into account the importance of dimensions related to the level of intelligence, type of task, and whether the AI is embedded in a physical robot. All three dimensions are integrated into a single framework. What is of concern in the research is First, the impact of AI in the short to medium term may be greater. Second, it is suggested that AI will be more effective if applied in ways that augment (not replace) humans. To fully examine the impact of AI, a research agenda that covers three broad areas is recommended: (1) how companies' marketing strategies will change, (2) how customer behavior will change, and (3) issues related to data privacy, bias, and ethics.
3	Thomas & Fowler (2020)	The results show that AI influencers can generate positive brand benefits similar to the benefits generated by human celebrity endorsers. In addition, just like humans, AI influencers can also commit violations that result in degradation of the brands they support. Importantly, however, AI influencers differ from human celebrity endorsers in that consumers are less likely to perceive them as unique. Therefore, consumers are more likely to perceive violations committed by an AI influencer as behavior that can be applied to all AI influencers, but they are not. It is unlikely to view celebrity endorsement behavior as interchangeable. Therefore, once an AI influencer commits a violation, it replaces the AI influencer with a celebrity endorser to reduce negative brand perception, an effect that cannot be realized if the replacement is another AI influencer.
4	Longoni (2020)	The findings in this study demonstrate the “word-of-machine” effect, a novel phenomenon in which utilitarian/hedonic attribute trade-offs determine preference or rejection of AI-based recommendations compared to traditional word-of-mouth recommendations. or human-based recommendations. The word-machine effect stems from the common belief that AI recommenders are more competent than human recommenders in utilitarian areas and less competent than human recommenders in hedonic areas. As a consequence, the importance or salience of utilitarian attributes determines the preference of AI recommenders over humans, and the importance or salience of hedonic attributes determines the resistance of AI recommenders over humans. Word-of-machine effects can relate complexity, number of options

		considered, and transaction costs. The word-of-machine effect is reversed for utilitarian purposes if recommendations need to be tailored to a person's unique preferences. Interventions based on protocol considerations in contrast weakened the word-of-machine effect
5	Mustak, et al., (2020)	Based on a review of research on Artificial Intelligence, there are ten research themes that stand out, namely as follows: (1) understanding consumer sentiment, (2) AI industry opportunities, (3) analyzing customer satisfaction, (4) electronic word of mouth based insights, (5) improving market performance, (6) using AI for brand management, (7) Measuring and increasing customer loyalty and trust, (8) AI and new services, (9) using AI to improve customer relationships, and (10) AI and strategic marketing. Scientometric analysis reveals key concepts, keyword occurrences, authorship networks, top research themes, important publications, and the evolution of the research field over time.
6	Yu, et al,. (2021)	Focusing on the application of Artificial Intelligence, this research investigates the impact of emotional displays on user engagement with computer-generated image influencers through the lens of a computer-based social actor framework (CASA). It breaks down emotions into individual muscle movements (i.e. facial action units). Using facial recognition based on 1,028 images shared by Lil Miquela, these findings reveal the importance of happiness, sadness, disgust, and surprise in triggering user engagement when promoting a variety of visually arresting product content. These findings highlight the importance of balancing the intensity of muscle movements to simplify interactions between technology, human behavior and digital communication.
7	Saygili (2021)	Important categories for the field of artificial intelligence applications in marketing are as follows: Smart Assistants, Recommendation Systems, Customer Segmentation, Purchasing in Program Environment, Predictive analytics (Smart Assays), Advertising and Retargeting, Web and App Personalization, Chatbots, Visual Artificial Intelligence, Visitors Analysis, Customer Experience, Dynamic Pricing. These categories consist of many important applications that make consumers' daily lives easier and have an important function in terms of marketing activity processes for businesses and marketing practitioners. For example, while ease of use is offered to consumers with mobile applications and interfaces such as navigation, virtual assistants with smart assistants, on the other hand, customer segmentation applications provide convenience to businesses by analyzing and synchronizing customer data. What is common is that the aim of the categories and application areas in Artificial Intelligence (AI) is to improve the standards of its users (businesses or consumers) in practical life.
8	Verma, et al., (2021)	Artificial Intelligence and Machine Learning have played a vital role in big data analytics to anticipate and provide guided experiences to meet customer expectations. AI and predictive analytics are key to offering customer experiences that build lifelong customers. Disruptive technologies such as the internet, big data analytics, blockchain, and artificial intelligence have changed the way businesses operate. Of all the disruptive technologies, artificial intelligence (AI) is the latest technological disruptor and has enormous potential in manufacturing, pharmaceuticals, health, agriculture, logistics and digital marketing. Many practitioners and academics across are trying to find the most suitable AI solutions that their organizations can implement. However, research in this area is still lacking.
9	Sand, et al., (2022)	The findings show that several previous studies have shown there are both similarities and differences in how consumers view AI and human influencers. The authors found no differences in intent to follow or

		personalization. This shows that consumers are equally open to following AI, and they understand the level of personalization provided by one such type of influencer. Although an AI influencer is generally considered to have lower source trust, they are more likely to generate intent through word of mouth. The research results show that social distance mediates the relationship between influencer type and influential people. The research results also show that AI influencers can have a greater influence on consumers who have a high need for uniqueness.
10	Haleem, et al., (2022)	AI refers to techniques that enable machines to perform cognitive functions that require human intelligence. Among them are learning, reasoning, and interacting with the environment around the machine. Machine Learning and Deep Learning are two of the most famous AI techniques. AI can create a more personalized brand experience, thereby cultivating user engagement and loyalty more easily. Marketers use language-based AI as a sales tool, payment processor, and engagement manager to improve user experience. Customers can now rely on chatbots to carry out the purchasing process. Language-based AI can help marketers by identifying relevant content that users want to read. Personalization of content through observation, data collection and analysis can now be done with the help of AI. This technology in digital marketing helps marketers with email campaigns, allowing them to maximize results. Email marketing is a digital marketing service that helps reach target audiences at the right time and ensures relevant conversion strategies. Analyzing data is the most important thing in AI-based marketing. This technology will analyze large amounts of data and provide marketers with information about the facts on the ground.
11	Ganesh & Kandi (2022)	The rise of artificial intelligence in marketing has far-reaching consequences. The ability to properly integrate and manage AI solutions is becoming increasingly important for marketers as AI continues to advance and gain traction in the industry. Just as important for individuals, the success of companies is an appreciation of their position in the value creation and distribution of AI-enabled processes in the workplace. AI makes it easier for marketers to build and share value at scale with the right people, at the right time, and in the right way, and this has huge benefits for marketers, consumers and society at large. This potential may be achieved through cultivating empathetic and creative thinking among staff and maintaining a data-driven system culture that prioritizes excellence. With the help of AI, marketers can devote more time and resources to initiatives that directly benefit customers, employees, and society as a whole, such as developing new products, fostering a more positive work environment, and encouraging innovative ideas. Marketers' interactions with clients, the strategies and technologies they use, the knowledge and abilities valued in the workplace, and the nature of their daily tasks will all change drastically in the Age of AI Marketing. AI has the potential to transform marketing in ways comparable to those of computers.
12	Chintalapati & Pandey (2022)	Based on conclusions from previous research, the study categorizes marketing into five different functional themes namely integrated digital marketing, content marketing, experiential marketing, marketing operations, and market research. AI will continue to develop to become smarter to improve human thinking abilities which will ultimately dominate human creativity and thinking abilities. The evolution of AI will increase security concerns. AI's ability to continuously learn and interpret/predict customer purchasing intent and emotions will help channel and focus future marketing efforts, leading to extreme automation and personalization.

13	Basha, M (2023)	The findings reveal that competitive pressure, media attention, digital maturity, and customers are important influencing variables in incorporating AI into marketing. According to respondents, the use of AI in marketing has increased the effectiveness of the marketing function, better understanding of customer information, more feasible marketing decisions, increased ROI, insight, improved service and customer satisfaction. According to them, AI helps in the development of sales and marketing strategies resulting in significant improvements in company performance. AI can change the marketing environment and help modernize outdated marketing strategies. Organizations will experience significant difficulty in adapting to changes in the marketing environment. With the emergence of innovation, the business world must plan for the future and train its personnel continuously. Respondents also felt that having data is very important as this is the most important aspect of AI; as a result, data is also the biggest hurdle. According to respondents, data is the most important factor to consider when dealing with clients.
14	Um (2023)	This research finds that social interactions with virtual influencers have a positive effect on attitudes towards virtual influencers. Furthermore, perceived human-likeness, perceived predictability, and perceived authenticity also influence positive attitudes toward virtual influencers. Lastly, research findings show that attitudes towards virtual influencers have a positive impact on attitudes towards advertising.
15	Bashang & K (2023)	Based on relevant research regarding AI (2017–2023), it shows that the world of digital marketing is changing due to AI, so AI is very important in digital marketing. In this article, the application of AI in digital marketing includes chatbots, automatic content creation, personalized advertising, customer segmentation, targeted marketing campaigns. A key challenge for digital marketers is balancing personalized advertising experiences and respecting user privacy. As AI develops, digital marketers must keep up with the latest developments and successfully utilize AI technology to increase business success. In addition, large financial investments are required to implement AI in digital marketing. Small businesses with limited resources and insufficient funding may find it difficult to implement AI. The absence of rapid adaptation to AI can result in missed opportunities or ineffective strategies necessitating continuous learning and professional development at the digital marketing level. AI has been able to manage several tasks in digital marketing independently. However, human creativity and intuition in creating efficient marketing campaigns are needed. As for the negative impacts, reliance on AI can lead to the erosion of human contact and authenticity.
16	Guram (2023)	AI can be utilized in marketing. For example, by incorporating AI into programmatic advertising and social media marketing, a more complete picture of consumer behavior, predictive analytics and deeper insights can be achieved. Speeches and conversations on virtual influencers are some examples of innovative new marketing techniques that may benefit both businesses and customers. Utilization of AI can increase efficiency and effectiveness for businesses. Before AI is widely used, there are important concerns that must be addressed, such as its potential impact on job losses. The rapid development of AI in marketing over the last few years means that its use is becoming more widespread. The long-term impact of AI on business is that it requires different skills to succeed, influences the way marketers and brands function, and changes consumer expectations.
17	Gerlic (2023)	The findings reveal that virtual influencers are preferred over human

		influencers, and factors such as trustworthiness, reliability, relevance, and expertise contribute significantly to their acceptance and preference. These factors also influence customers' opinions, considerations, and purchase likelihood. Descriptive statistical results show that virtual influencers' trustworthiness and expertise received the highest scores, indicating that customers trust their opinions in their expertise.
18	Yan (2024)	In the digital era, with the enormous influence of marketing media that spreads messages, consumers find it difficult to distinguish which content can be trusted when making purchasing decisions or seeking purchasing advice from opinion leaders (AI influencers) (Davidaviciene & Palulis, 2019). The credibility of a communicator or message source is an important factor in persuasiveness (Hovland & Weiss, 1951). Therefore, AI influencers' perceived credibility has become important for consumers to mitigate perceived risks in the market purchasing process (Aytuna, 2019). According to research by Hovland and Weiss, Kelman and Hovland (1953); Ohanian (1990), the perceived credibility of AI influencers has three dimensions: attractiveness, trustworthiness, and expertise.
19	Looi & Kahlor (2024)	The prominence and profitability of influencer marketing has facilitated the proliferation of virtual influencers—fictitious digital personalities created and managed using artificial intelligence. Virtual influencers may offer advertisers greater creative control and greater results than engaging human influencers. Results of 99,680 English language Instagram posts uploaded by 424 human and virtual influencers in the beauty, fashion and lifestyle domains from 2020 to 2022 show that posts from both types of influencers mostly convey positive sentiments. Human influencers engage in active self-promotion, while virtual influencers emphasize their identity. A natural experiment found that human influencers generated greater engagement than virtual influencers. Influencer level also interacts significantly with Instagram verification to influence engagement.
20	Babu, et al., (2024)	The research found that although AI influencers are less authentic than human influencers, they can still build trust by increasing their credibility through effective promotions and brand alignment. AI influencers can also play a role in shaping consumer behavior. Although consumers may be skeptical at first about AI influencers. Quality might help them win customers' trust. To stand out in the digital marketplace, marketers can leverage the novelty and adaptability of AI influencers to create memorable experiences for customers. Marketers can maximize their use of AI influencers and increase the effectiveness of their campaigns by tailoring messages to suit customer preferences and closely observing consumer reactions.
21	Igarashi, et al., (2024)	The popularity of Virtual Influencers is increasing on social media. This often occurs due to their stylish appearance, unique personality, interesting background, and biography (Sands, Ferraro, et al., 2022). While Virtual Influencers were created to perform the same function as Human Influencers, namely persuading followers to purchase certain products and services, it is unclear how effective they are compared to Human Influencers specifically in the context of prosocial behavior. Current research finds that Human Influencers are more effective than Virtual Influencers in encouraging prosocial behavior among consumers when they promote prosocial causes independently. This is because consumers see a stronger similarity with the Human Influencer in terms of morals, values, and behavior which in turn increases their perception of authenticity and thus the prosocial nature they are referring to. However, when a Virtual Influencer's brand affiliate stands out, the

		impact will be huge, making Virtual Influencers as effective as Human Influencers.
22	Yan, et al., (2024)	This research categorizes Virtual Influencers (VI) into three types (i.e. human-imitating VIs, human-animated VIs, and non-human VIs) and examines how consumers' emotional attachment and profit-seeking behavior varies among them and the mechanisms underlying the effects the. Results showed that human-animated and non-human-animated VIs elicited stronger emotional attachment than human-imitating VIs (Study 1). Additionally, animated human and non-human VIs had greater levels of social presence than human-mimicking VIs (Study 2). Furthermore, social presence partially mediates the relationship between type VI and emotional level attachment. Specifically, social presence mediated the effects of human imitation and non-human VI on emotional attachment, but did not mediate the effect of human-animated VI on emotional attachment (Study 3).
23	Ramchandran, et al.,(2024)	The research results show that Artificial Intelligence (AI) stimulation tools are better than traditional methods in selecting the right influencer tools, leveraging the community to carry out campaigns, and mastering a good return on investment. AI drives influencer marketing to better enable commerce to produce personalized content and target specific people, thereby increasing brand recognition and getting more people to interact with the brand. Despite problems such as limited access to data and moral concerns, AI is still the main force behind new ideas in influencer marketing. Future trends show greater advances in algorithms and the emergence of virtual leaders, which will change the way brands and customers interact with each other. Using AI influencers in marketing can help businesses adapt to the changing digital world and build real business relationships with the people they want to reach.
24	Gerrath, et al., (2024)	Findings revealed that participants showed openness towards both Social Media Influencers (SMI) and Virtual Influencers (VI) but there were differences in how the two were evaluated. With respect to SMI humans, participants showed a general hesitancy to trust the motives behind posts. Overall, respondents had an interest and positive acceptance of the same content shared by VI. Initial qualitative studies suggest that users' curiosity and interest in VI can help overcome their reluctance to engage with environmental issues as well as alleviate associated negative emotions. The contrived nature of VIs creates an inconsistency between their lifestyle and their message, resulting in a heightened focus on VIs' pro-environmental messages.

3. RESEARCH METHODS

The author collected information regarding the phenomenon of using Artificial Intelligence (AI) technology by reading several articles from several reputable journals and books about Marketing AI. Next, the author then critically analyzes these publications which are related to the research problem. Through this literature review, it provides a comprehensive description of the issues that are currently developing. This paper contains conceptual categories related to AI for marketing. The author summarizes the findings in the research then discusses them and finally draws conclusions.

4. DISCUSSION

The digital era is an era where human life activities are moving towards digital. This is marked by the emergence of the internet, digital mobile phones, mobile data, laptops, and so on. With the emergence of the internet, it has changed the way individuals make transactions, who initially tended to go to shops in person, now prefer to shop online because they are busy and time-consuming. This encourages business platforms to compete to attract the attention of consumers to carry out transactions on their platforms.

As for consumer behavior in the digital era regarding online transactions, they always look at reviews from previous consumers, understand better what their needs and wants are, buy popular/viral products. In the current digital era, it really supports Artificial Intelligence-based marketing because digital technology uses a computerized system that is connected to the internet. Thus, it is an opportunity for marketers to innovate in marketing their products, one of which is through Artificial Intelligence influencers. If previously marketers tended to use celebrities (humans), then with AI technology, marketers can create AI influencers by providing unique characters that can attract consumers' attention. However, you must remain focused on building consumer trust because currently consumers are still confused about which content can be trusted.

The results of a review of 24 studies show that the most important factor for AI influencers is credibility. However, if this AI influencer makes a mistake, marketers can switch to human influencers (celebrities). AI influencers are an adaptation of changes in the digital world so that they can build businesses and reach a wider market. AI influencers are currently more popular on social media platforms. This is an opportunity for marketers because potential consumers usually have at least one social media account.

5.CONCLUSION

In the digital era, marketers are required to be more creative in marketing their products. One of the most popular ways to offer products today is by utilizing Artificial Intelligence (AI) technology, namely using virtual influencers who can replace human functions as salespeople. The most important thing that marketers focus on is how to gain consumer trust in content created using Virtual Influencers (VI).

6. ACKNOWLEDGEMENTS

I would like to express my thanks to the economics faculty at Tridinanti University, especially to the dean and his staff as well as fellow lecturers and students who were involved in supporting the completion of this article. Hopefully this article is useful for the development of science and can be a reference for further research.

REFERENCES

Aytuna, E. S. (2019). *Marketing Through Instagram Influencers: The Effect of Source Credibility on Millennials' Purchase Intention* (Doctoral dissertation, Marmara Universitesi (Turkey).

Babu, E., C, R.P., Joseph, N., & Jhonson, J. Conceptualising The Role of AI Influencers in Shaping Consumer Behaviour. IPE Journal of Management. Volume 14, No 7,pg.143-147.

Basha, M. (2023). Impact of artificial intelligence on marketing. East Asian Journal of Multidisciplinary Research (EAJMR). Vol. 2, No.3. https://doi.org/10.55927/eajmr.v2i3.3112

Bashang, S., & K. P. (2023).The Role of Artificial Intelligence in Digital Marketing: A Review. IRJEMS International Research Journal of Economics and Management Studies. Volume 2 Issue 3 July 2023 / Pg. 125-133. Doi: 10.56472/25835238/IRJEMS-V2I3P118

Chintapalati, S., & Pandey, S.K. (2022). Artificial intelligence in marketing: A systematic literature review. International Journal of Market Research, Vol 64(1) 36-68. DOI: 10.1177/14707853211018428

Davidaviciene, V., Meidute-Kavaliauskiene, S., & Paliulis, R. (2019). Research on the influence of social media on generation Y consumer purchase decisions. http://doi.org/10.21272/mmi.2019.4-04

Davenport, T. et al. (2020) 'How artificial intelligence will change the future of marketing', Journal of the Academy of Marketing Science, 48(1), pp. 24– 42. Available at: https://doi.org/10.1007/s11747-019-00696-0.

Dekimpe, M., (2020). Retailing and retailing research in the age of big data analytics. International Journal of Research in Marketing.

Ebrahimi, P., Khajeheian, D., Soleimani, M., Gholampour, A., & Fekete-Farkas, M. (2023), "User engagement in social network platforms: what key strategic factors determine online consumer

purchase behaviour?", Economic Research-Ekonomska Istraživanja, 36(1), 2106264. https://doi.org/10.1080/1331677X.2022.2106264

Ganesh, K., & Kandi, P. (2022). Critical Review on Impact of Artificial Intelligence on Marketing. Ijfans International Journal of Food and Nutritional Sciences. DOI : 10.48047/IJFANS/V11/ISS12/1042

Gerrath, M.H.E.E., Olya, H., Shah, Z., & Li, H. (2024). Virtual influencers and pro-environmental causes: The roles of message warmth and trust in experts . Journal of Business Research. Published by Elsevier Inc. https://doi.org/10.1016/j.jbusres.2024.114520

Gerlich, M. (2023). The Power of Virtual Influencers: Impact on Consumer Behaviour and Attitudes in the Age of AI. https://doi.org/10.3390/.

Guram, R.K., Konka, S., Murti, BGK., & Rahaman, MD, S. (2023). Critical Review on Impact of Artificial Intelligence on Marketing. Rivista Italiana di Filosofia Analitica Junior, Vol 14, No. 1

Haleem, A., Javaid, M., Qadri, M.A., Singh, R.P., & Suman, R. (2022). Artificial intelligence (AI) applications for marketing: A literature-based study. International Journal of Intelligent Networks | ScienceDirect.com by Elsevier.

Harvard Business Review (2016), "The Platfirm Age".

Hovland, Carl I., & Weiss, W. (1951). The Influence of Source Credibility on Communication Effectiveness. *Public Opinion Quarterly*, *15*(4), 635–650. https://doi.org/10.1086/266350

Hovland, C.I., Janis, I. L., & Kell ey, H. H. (1953). *Communication and Persuasion. Psychological Studies of Opinion Change*. New Haven, CT, US: Yale University Press

Huang, M. H. & Rust, R. T., (2017). Technology-driven service strategy. Journal of the Academy of Marketing Science.

Huang, M. H. and Rust, R. T. (2018) 'Artificial intelligence in service', Journal of Service Research, 21(2), pp. 155–172.

Huang, M. H. & Rust, R. T., (2020). A strategic framework for artificial intelligence in marketing. Journal of the Academy of marketing Science.

Igarashi, R., Bhoumik, K., & Thompson, J. (2024). Investigating the effectiveness of virtual influencers in prosocial marketing. wileyonlinelibrary.com/journal/mar. DOI: 10.1002/mar.22031

Kalashnikova, T., Panchuk, A., Bezuhla, L., Vladyka, Y., & Kalaschnikov, A. (2023), "Global trends in the behavior of consumers of retail enterprises in the digital economy", Iop Conference Series Earth and Environmental Science, 1150(1), 012023. https://doi.org/10.1088/1755-1315/1150/1/012023

Korobov, Y. (2020), "Impact of digitalization on consumer behaviour and marketing activity in financial markets", In SHS Web of Conferences (Vol. 73, p. 01013). EDP Sciences. https://doi.org/10.1051/shsconf/202073010

Looi, J., & Kahlor, L.A. (2024). Artificial Intelligence in Influencer Marketing: A Mixed-Method Comparison of Human and Virtual Influencers on Instagram. Journal of Interactive Advertising vol. 24, no. 2, 107–126 . https://doi.org/10.1080/15252019.2024.2313721

Longoni, C., & Cian, L. (2020). Artificial Intelligence in Utilitarian vs. Hedonic Contexts: The "Word-ofMachine" Effect. Journal of Marketing. https://www.researchgate.net/publication/343750244. DOI: 10.1177/0022242920957347

Ohanian, R. (1990). Construction and validation of a scale to measure celebrity endorsers' perceived expertise, trustworthiness, and attractiveness. *Journal of advertising*, *19*(3), 39-52. https://doi.org/10.1080/00913367.1990.10673191

Misra, K., Scwartz, E. M. & Abernethy, J., (2019). Dynamic online pricing with incomplete information using multiarmed bandit experiments. Marketing Science.

Mustak, M., Salminen, J., Ple, L., Wirtz, J. (2020). Artificial intelligence in marketing: Topic modeling, scientometric analysis, and research agenda. Journal of Business Research. Elsevier Inc. All rights reserved. journal homepage: www.elsevier.com/locate/jbusres

https://doi.org/10.1016/j.jbusres.2020.10.044
Q. André, Z. Carmon, K. Wertenbroch et al., Consumer choice and autonomy in the age of

artificial intelligence and big data. Cust. Needs Solut. (2017). https://doi.org/10.1007/s40547- 017-0085-8
Ramachandran, K.K., S. S., Banerjee, D., Mathew, B., Cheepurupalli, R., & Mohan, C.R. (2024). The Effectiveness of Influencer Marketing in the Age of AI. Journal of Informatics Education and Research, Vol 4, Issue 2. https://www.researchgate.net/publication/380604430
Sanjeev, V., Rohit, S., Subhamay, D. & Debojit, M., (2021). Artificial intelligence in marketing: Systematic review and future research direction. International Journal of Information Management Data Insights.
Sands, S., Campbell, C.,Palngger, K., & Ferraro, C. (2022). Unreal influence: leveraging AI in influencer marketing. European Journal of Marketin. DOI 10.1108/EJM-12-2019-0949
Schiffman, L. G. & Wisenblit, J.. 2019. Consumer Behavior, 20 th Edition, Global Edition. United Kingdom : Pearson.
Saygili, M., Ersoy, A.Y., Torkul, B., & Torkul Y.E. (2021). Artificial Intelligence in the Context of Marketing 5.0: A Critical View of Applications. 1st International Conference on Interdisciplinary Applications of Artificial Intelligence. Yalova, Turkey.
Shangkar, V., (2018). How artificial intelligence (AI) is reshaping retailing. Journal of Retailing.
Simamarta, J., et al (2023). Artificial Intelligence Marketing. Jakarta: Yayasan Kita Menulis
Song, X. et al. (2019) 'The Application of Artificial Intelligence in Electronic Commerce', Journal of Physics: Conference Series, 1302(3). Available at: https://doi.org/10.1088/1742-6596/1302/3/032030.
Thomas, V.L., & Fowler, K. (2020). Close Encounters of the AI Kind: Use of AI Influencers As Brand Endorsers. Journal of Advertising.Routledge Taylor & Francis Group. https://www.tandfonline.com/action/journalInformation?journalCode=ujoa20 https://doi.org/10.1080/00913367.2020.1810595
Tsai, W.-H.S., Liu, Y. and Chuan, C.-H. (2021), "How chatbots' social presence communication enhances consumer engagement: The mediating role of parasocial interaction and dialogue", *Journal of Research in Interactive Marketing*, Vol. 15 No. 3 pp. 460-482.

Um, N. (2023). Predictors Affecting Effects of Virtual Influencer Advertising among College Students. https:// doi.org/10.3390/su15086388
Verma, S., Sharma, R., Deb, S., & Maitra, D. (2020). Artificial intelligence in marketing: Systematic review and future research direction. International Journal of Information Management Data Insights. Journal homepage: www.elsevier.com/locate/jjimei https://doi.org/10.1016/j.jjimei.2020.100002
Yan, X., Tat, H.H., & Sade, A.B. (2024). AI Influencers' Perceived Credibility and Purchase Intention: Product-Endorser Fit with the Brand as a Moderator. International Journal of Academic Research in Business and Social Sciences Vol 14, Issue 3. http://dx.doi.org/10.6007/IJARBSS/v14-i3/21092
Yan, J., XIa, S., Jian, A., & Lin, Z. (2024). The effect of different types of virtual influencers on consumers' emotional attachment. Journal of Business Research | ScienceDirect.com by Elsevier. https://doi.org/10.1016/j.jbusres.2024.114646

BIODATA

Yolanda Veybitha, Sari Sakarina, and Yusro Hakimah are permanent lecturers at the Faculty of Economics and Business, Tridinanti University. Meanwhile, Muhammad Yunus Alfian and Nicki Astria are Master of Management students at Tridinanti University. Yolanda & Sari are alumni of the management science doctoral program at Bengkulu University. Meanwhile, Yusro is an alumnus of the Borobudur University economics doctoral program.

PURCHASE DECISION: CASE STUDY ON GEN Z OF BUKALAPAK IN PALEMBANG

Yuni Adinda Putri
Tridinanti University
yuni_adinda@univ-tridinanti.ac.id

Djatmiko Noviantoro*
Tridinanti University
Djatmiko.univtridinanti@gmail.com

Frecilia Nanda Melvani
Tridinanti University
frecilianda@univ-tridinanti.ac.id

Chika Adhelina
Tridinanti University
chikaadhelina@gmail.com

Marulam Damanik
Tridinanti University
ulam.damanik@gmail.com

**Corresponding Author*

Abstract

Gen Z is a generation that likes online shopping more than other generations. Bukalapak is one of the e-commerce sites that is least visited, so there are fewer purchasing decisions compared to other competing e-commerce sites. This research examines Gen Z's purchasing decisions, especially on the Bukalapak application. This research uses quantitative research with a sample of 400 respondents. The data analysis uses the help of the PLS (Partial Least Squares) application. The research results show that seller reputation and trust influence purchase decisions, while online customer reviews do not directly influence purchase decisions. However, online customer reviews indirectly influence purchase decisions mediated by trust.

Keywords: purchase decision, seller reputation, online customer review, trust

9. INTRODUCTION

Generation Z, born between 1995 and 2010, exhibits different purchasing behaviour influenced by various factors. Research shows that Gen Z consumers prefer shopping online on e-commerce (Koch *et al.*, 2020). This is driven by values such as environmental awareness, ethical considerations, and desires (Kara & Min, 2024). Research shows that Gen Z consumers are willing to pay more for responsible and sustainable products, reflecting ethical consumption priorities (Gazzola *et al*., 2020; Irvin Perono et al., 2022)

Examining purchasing decisions in Generation Z is critical because of this group's unique characteristics and behaviours. Generation Z differs from previous generations regarding preferences, motivations, and retail interactions (Agrawal, 2022). In contrast to the Gen Y group, Gen Z tends to focus more on fun, learning, exploration, and deal-hunting behaviour when shopping online (Agrawal, 2022).

Understanding these behavioural differences is essential for businesses to adapt their marketing strategies effectively. In addition, Generation Z's lifestyle, self-esteem and social media presence significantly influence their purchasing decisions (Sutanto & Aubelia, 2022; Korombel & Ławińska, 2019).

As Generation Z's purchasing power increases, marketers must understand their behaviour and preferences (Wijaya *et al.,* 2020). The increasing presence of this group in the labour market also requires a deeper understanding of their expectations and attitudes towards work (Savić *et al.,* 2023). Additionally, considering the demands and needs of Generation Z is essential for businesses that want to attract and retain young consumers (Savić *et al*., 2023). In conclusion, researching purchasing decisions in Generation Z is critical for businesses to adapt their strategies to meet this group's unique needs and preferences. By understanding the factors influencing Gen Z purchasing behaviour, companies can develop targeted marketing campaigns, increase brand engagement, and drive sales among this influential consumer group.

Based on Databoks.katadata.co.id (2023) Bukalapak is the e-commerce with the lowest visitors. The number of visitors on this platform will only be 168.2 million in 2023. Meanwhile, Shopee has 2.35 billion visitors, Tokopedia has 1.25 billion, Lazada has 762.4 million, and Blibli has 337.4 million. This means there are still very few consumers interested in using Bukalapak as an e-commerce platform for shopping.

Seller reputation is an essential factor that influences purchasing decisions in the online market. Huang *et al.*, (2023) found that seller reputation influences selling price, number of sales, and total revenue. Melnik & Alm (2002) also highlight the importance of seller reputation in e-commerce, where buyers are very dependent on the seller's reputation due to the inability to physically examine the product before purchasing. Chen *et al.,* (2019) studied the detection of fake reviews and manipulation behaviour by sellers, emphasizing that understanding sellers' motivations for manipulation can help consumers make informed purchasing decisions.

On the other hand, Wang *et al.,* (2016) identified seller reputation as a factor that influences purchasing decisions. Tadelis (2016) shows how reputation and feedback systems influence sellers' sales levels on online platforms. These studies collectively emphasize the critical role of seller reputation in shaping consumer trust and overall purchasing decisions in online marketplaces. A positive reputation influences prices and sales and increases consumer perceptions of product quality and trust, ultimately impacting purchasing behaviour.

Additionally, research has shown that online customer reviews are a powerful interpersonal influence in consumer decision-making. Research results state that information sources influence consumers' purchase intentions (Xu *et al.,* 2020). Consumers' perceived website quality acts as an environmental cue that directly influences the likelihood of purchasing behaviour (Wells *et al.,* 2011). Online customer reviews have been shown to positively impact consumer purchases by offering valuable insights and increasing trust (Hu, 2022; Rahayu & Oktafani, 2021). Consumers often rely on online customer reviews to assess product quality and make informed purchasing decisions (Rahayu & Oktafani, 2021; Li & Nan, 2023).

The impact of online customer reviews on consumer behaviour is increasingly underscored by research emphasizing the role of online reviews in shaping purchasing behaviour (Xu *et al.,* 2020; Akram *et al.,* 2018; Adnan & Osman, 2022). Consumers' emotional experiences, which are influenced by online reviews, can positively impact purchasing decisions (Karim *et al.,* 2021). Online customer reviews are considered necessary in influencing purchasing decisions, with positive reviews encouraging purchases and negative reviews leading consumers to seek alternatives (Colantonio & Di Pietro, Roberto Petrocchi, Marinella Spognardi, 2015; Bo *et al.,* 2023; Kinari *et al.,* 2023). In conclusion, online customer reviews are fundamental to the trust decision-making process and purchasing behaviour across various industries. Understanding online customer reviews' importance and impact on consumer behaviour is critical for businesses looking to attract and retain customers in the digital age.

Seller reputation and online reviews are fundamental aspects of e-commerce and essential for building trust between buyers and sellers. Trust in e-commerce is often built through online word-of-mouth, including feedback mechanisms such as comments, reviews, and ratings related to e-sellers or products (Awad & Ragowsky, 2008). Research has emphasized the importance of the credibility and usefulness of online reviews in attracting customers and driving review adoption, ultimately increasing customer trust

and engagement (Shaheen *et al.*, 2020). Reputation systems in e-commerce are designed to collect and disseminate feedback to increase trust (Ghazizadeh Ehsaei *et al*., 2013).

However, it is essential to consider that calculating reputation points can sometimes lead to differences, potentially favouring sellers with high sales and low quality over high-quality sellers with low sales (Xue *et al.*, 2023). Reputation systems are critical for buyers in assessing the reliability of sellers in e-commerce. This system relies on ratings from buyers to evaluate sellers' trustworthiness in online transactions (Liu *et al.*, 2014). Seller reputation has been proven to impact prices positively; this shows the influence of reputation on buyer behaviour (Jolivet *et al.*, 2016). The reputation model aims to help customers choose trustworthy sellers and is essential in forming purchase intentions (Thomas & Joseph, 2015).

9. METHODOLOGY

This research uses quantitative research. The research population is Palembang people who were born from 1995 to 2010. Based on BPS, the number of people born from 1995 to 2010 was 16,814,443. The sample used the Slovin formula with an e of 5%, so a sample size of 400 respondents was obtained. The criteria for respondents were having the Bukalapak application and having made purchases at least 3 (three) times. We developed an online questionnaire for this study. The research technique uses non-probability sampling using purposive samples. Partial least squares (PLS) are generally known to work well with relatively small sample sizes and are suitable for initial modelling and exploratory research (Gefen et al., 2011; Lowry & Gaskin, 2014). Given the exploratory nature of this research, we used the partial least squares (PLS) method to analyze the data. We followed the two-step procedure Hair et al. (1998) suggested in the analysis: measurement and structural models.

10. RESULTS

Table 1. Analysis of Direct and Indirect effects

Influence of variables	Direct Effect		Indirect Effect	
	coef	*t*count	coef	*t*count
Seller Reputation ->Purchase Decision	0.689	3.204	-	-
Seller Reputation -> Trust	0.881	3.589	-	-
Online Customer ->Purchase Decision	-0.238	1.142	-	-
Online Customer ->Trust	-0.678	2.774	-	-
Trust -> Purchase Decision	0.208	4.002	-	-
Seller Reputation -> Trust -> Purchase Decision	-	-	0.184	2.396
Online Customer Review -> Trust -> Purchase Decision	-	-	-0.141	2.396

This research shows that the direct influence of seller reputation on purchase decisions shows a positive and significant influence on purchase decisions, with a coefficient value of 0.689 and P-Values of 0.001<0.05, meaning that a high seller reputation will impact increasing purchase decisions. Furthermore, the direct influence of seller reputation on trust shows a positive and significant influence, with a coefficient value of 0.0.881 and P-Values of 0.000<0.05. The direct influence of online customer reviews on purchase decisions shows a negative and insignificant influence, with a coefficient value of -0.238 and P-Values 0.254>0.05, meaning there is low trust in online customer reviews due to non-objective assessments of needs and preferences. Individuals can be a supporting factor for someone not paying too much attention to reviews from other consumers. The direct influence of online customer reviews on trust shows a positive and significant influence, with a coefficient value of -0.678 and P-Values 0.006<0.05. The direct influence of trust on purchase decisions shows a positive and significant influence, with a coefficient value of 0.208 and P-Values 0.000<0.05. The indirect influence between seller reputation and purchase decisions mediated by trust shows a positive and significant influence, with a coefficient value of 0.184 and P-Values 0.005<0.05. The indirect influence of online customer reviews on purchase decisions mediated by trust

shows a positive and significant influence, with a coefficient value of -0.141 and P-Values of 0.017<0.05, meaning that the greater the contribution of trust as a mediating variable, the stronger the relationship between online customer reviews—and purchase decisions.

11. CONCLUSION

The research results show that seller reputation and trust influence purchase decisions, while online customer reviews do not directly influence purchase decisions. However, online customer reviews indirectly influence purchase decisions mediated by trust. Further research should consider including other factors, such as brand image and awareness, that can influence purchase decisions.

12. ACKNOWLEDGEMENTS

We would like to thank the financial support for research provided by the Faculty of Economics and Business, Tridinanti University.

REFERENCES

Adnan, N. F., & Osman, S. (2022). Factors Influencing Online Impulse Buying Behavior During Covid-19 Pandemic. *International Journal of Academic Research in Business and Social Sciences*, *12*(12), 2204–2221. https://doi.org/10.6007/ijarbss/v12-i12/16015

Agrawal, D. K. (2022). Determining behavioural differences of Y and Z generational cohorts in online shopping. *International Journal of Retail & Distribution Management*, *50*(7), 880–895. https://doi.org/10.1108/IJRDM-12-2020-0527

Akram, U., Hui, P., Kaleem Khan, M., Tanveer, Y., Mehmood, K., & Ahmad, W. (2018). How website quality affects online impulse buying. *Asia Pacific Journal of Marketing and Logistics*, *30*(1), 235–256. https://doi.org/10.1108/APJML-04-2017-0073

Ameen, N., Cheah, J. H., & Kumar, S. (2022). It's all part of the customer journey: The impact of augmented reality, chatbots, and social media on the body image and self-esteem of Generation Z female consumers. *Psychology and Marketing*, *39*(11), 2110–2129. https://doi.org/10.1002/mar.21715

Awad, N. F., & Ragowsky, A. (2008). Establishing Trust in Electronic Commerce Through Online Word of Mouth: An Examination Across Genders. *Journal of Management Information Systems*, *24*(4), 101–121. https://doi.org/10.2753/MIS0742-1222240404

Bo, L., Chen, Y., & Yang, X. (2023). The Impact of Contradictory Online Reviews on Consumer Online Purchase Decision: Experimental Evidence From China. *Sage Open*, *13*(2), 21582440231180108. https://doi.org/10.1177/21582440231180107

Chen, L., Li, W., Chen, H., & Geng, S. (2019). Detection of fake reviews: Analysis of sellers' manipulation behavior. *Sustainability (Switzerland)*, *11*(17). https://doi.org/10.3390/su11174802

Colantonio, A., & Di Pietro, Roberto Petrocchi, Marinella Spognardi, A. (2015). Visual detection of singularities in review platforms. *SAC '15: Proceedings of the 30th Annual ACM Symposium on Applied Computing*. https://doi.org/10.1145/2695664.2696044

Databoks.katadata.co.id. (2023). *5 E-Commerce dengan Pengunjung Terbanyak Sepanjang 2023*. https://databoks.katadata.co.id/datapublish/2024/01/10/5-e-commerce-dengan-pengunjung-terbanyak-sepanjang-2023

Friscilla, S. D., & Yap, N. (2023). Celebrity Endorsers and Purchase Decisions for Generation Z: Brand Image of Loreal Products. *JEM17: Jurnal Ekonomi Manajemen*, *8*(1), 131–142. https://doi.org/10.30996/jem17.v8i1.8665

Gazzola, P., Pavione, E., Pezzetti, R., & Grechi, D. (2020). Trends in the Fashion Industy. The Perception of Sustainability and Circular Economy: A Gender/Generation Quantitative Approach. *Sustainability (Switzerland)*, *12*, 1–12.

Ghazizadeh Ehsaei, F., Hussin, A. R. C., & Kianian, M. (2013). Developing a Model of Social Relation Support for Online Reputation Systems. *International Journal of Future Computer and*

Communication, *2*(3), 179–183. https://doi.org/10.7763/ijfcc.2013.v2.147

Guo, C., Yang, Z., & Zhao, S. (2023). The Impact of Interactivity on Live E-commerce Platform on The Intention of Generation Z 's Consumption Behavior. *Lecture Notes in Education Psychology and Public Media*, *3*(1), 256–266. https://doi.org/10.54254/2753-7048/3/2022548

Hu, Y. (2022). The Influence of Online Review on Consumers' Purchase Intention. *Proceedings of the 2022 2nd International Conference on Economic Development and Business Culture (ICEDBC 2022)*, *AEBMR 225*, 276–282. https://doi.org/10.35609/jmmr.2019.4.3(4)

Huang, E. Y., Lin, S.-C., & Hsieh, I.-T. (2023). Online marketplace sellers' influence on rating scores and comment orientation. *Electronic Commerce Research*, *23*(2), 1241–1270. https://doi.org/10.1007/s10660-021-09511-x

Irvin Perono, Joan Camille Ilagan, Emmanuel Dotong, & Eunice Mareth Areola. (2022). The Relationship of Sustainable Buying Behavior Demensions Among the Gen z. *Journal of Sustainable Community Development*, *4*(1), 30–39. https://jscd.ipmi.ac.id/index.php/jscd/article/view/66/48

Jolivet, G., Jullien, B., & Postel-Vinay, F. (2016). Reputation and prices on the e-market: Evidence from a major French platform. *International Journal of Industrial Organization*, *45*, 59–75. https://doi.org/https://doi.org/10.1016/j.ijindorg.2016.01.003

Joyce Buenafe, N. D., Mae Espedido, H. G., Rainier Samonte, K. G., Karmen Vitto, A. M., & Magsino-Marasigan, M. (2022). *Journal of Business and Management Studies An analysis of Gen Z's Electronic Gadgets Purchase Intention in Selected Cities in Metro Manila*. https://doi.org/10.32996/jbms

Kara, A., & Min, M. K. (2024). Gen Z consumers' sustainable consumption behaviors: influencers and moderators. *International Journal of Sustainability in Higher Education*, *25*(1), 124–142. https://doi.org/10.1108/IJSHE-08-2022-0263

Karim, M. W., Chowdhury, M. A. M., Al Masud, M. A., & Arifuzzaman, M. (2021). Analysis of factors influencing impulse buying behavior towards e-tailing sites. *Contemporary Management Research*, *17*(2), 97–126. https://doi.org/10.7903/CMR.20457

Kinari, K., Citra, A., & Drupadi, V. (2023). A literature review study of electronic word- of-mouth factors that influence purchasing decisions A literature review study of electronic word-of-mouth factors that influence purchasing decisions Introduction Currently marketing can be viralized through. *Gema Wiralodra*, *14*(3), 1504–1515.

Koch, J., Frommeyer, B., & Schewe, G. (2020). Online shopping motives during the COVID-19 pandemic—lessons from the crisis. *Sustainability (Switzerland)*, *12*(24), 1–20. https://doi.org/10.3390/su122410247

Korombel, A., & Ławińska, O. (2019). Impact of an enterprise's company profile on social media on purchasing decisions of representatives of generation Z. *IBIMA Business Review*, *2019*. https://doi.org/10.5171/2019.671964

Li, B., & Nan, Y. (2023). Warmth or competence: understanding the effect of brand perception on purchase intention via online reviews. *Journal of Contemporary Marketing Science*, *6*(3), 210–227. https://doi.org/10.1108/JCMARS-06-2023-0018

Liu, Y., Liu, S., Fang, H., Zhang, J., Yu, H., & Miao, C. (2014). RepRev: Mitigating the negative effects of misreported ratings. *Proceedings of the National Conference on Artificial Intelligence*, *4*(1), 3124–3125. https://doi.org/10.1609/aaai.v28i1.9089

Melnik, M. I., & Alm, J. (2002). Does a seller's ecommerce reputation matter? Evidence from ebay auctions. *Journal of Industrial Economics*, *50*(3), 337–349. https://doi.org/10.1111/1467-6451.00180

Pan, M., Kuo, C., Pan, C., & Tu, W. (2013). Antecedent of purchase intention: online seller reputation, product category and surcharge. *Internet Research*, *23*(4), 507–522. https://doi.org/10.1108/IntR-09-2012-0175

Rahayu, D., & Oktafani, F. (2021). *The Effect of Online Customer Review on Trust and its impact on Purchase Intention in Cinema Films on Subscribers of YouTube Channel Review Film Cine Crib*. https://doi.org/10.4108/eai.9-10-2020.2304779

Savić, N., Lazarević, J., & Grujić, F. (2023). Generation Z's letter to CEOs. *Ekonomika Preduzeca*, *71*(1–

2), 129–143. https://doi.org/10.5937/ekopre2302129s
Shaheen, M., Zeba, F., Chatterjee, N., & Krishnankutty, R. (2020). Engaging customers through credible and useful reviews: the role of online trust. *Young Consumers*, *21*(2), 137–153. https://doi.org/10.1108/YC-01-2019-0943
Shetu, S. (2023). User-generated content and micro-celebrity posts encourage Generation Z consumers to search social media for online purchase: A study on Dhaka City, Bangladesh. *The Electronic Journal of Information Systems in Developing Countries*, e12300. https://doi.org/10.1002/isd2.12300
Sutanto, E. M., & Aubelia, S. (2022). Lifestyle and Self-Esteem of Generation Z in Gadget Purchasing Decision. *Trikonomika*, *21*(2), 54–63. https://doi.org/10.23969/trikonomika.v21i2.5410
Tadelis, S. (2016). Reputation and Feedback Systems in Online Platform Markets. *Annual Review of Economics*, *8*, 321–340. https://doi.org/10.1146/annurev-economics-080315-015325
Thomas, O., & Joseph, S. (2015). Literature Analysis on Reputation Models for Feedback in E-commerce. *Ijarcce*, *4*(1), 293–297. https://doi.org/10.17148/ijarcce.2015.4167
Wang, Z., Li, H., Ye, Q., & Law, R. (2016). Saliency effects of online reviews embedded in the description on sales: Moderating role of reputation. *Decision Support Systems*, *87*, 50–58. https://doi.org/https://doi.org/10.1016/j.dss.2016.04.008
Wells, J. D., Parboteeah, D. V., & Valacich, J. S. (2011). Online impulse buying: Understanding the interplay between consumer impulsiveness and website quality. *Journal of the Association for Information Systems*, *12*(1), 32–56. https://doi.org/10.17705/1jais.00254
Wijaya, T., Darmawati, A., & Kuncoro, A. M. (2020). e-Lifestyle Confirmatory of Consumer Generation Z. *International Journal of Advanced Computer Science and Applications*, *11*(10), 27–33. https://doi.org/10.14569/IJACSA.2020.0111004
Xu, H., Zhang, K. Z. K., & Zhao, S. J. (2020). A dual systems model of online impulse buying. *Industrial Management & Data Systems*, *120*(5), 845–861. https://doi.org/10.1108/IMDS-04-2019-0214
Xue, H., Jin, S., Wu, Q., & Geng, X. (2023). How does platform certification affect the marketing performance of sellers in food e-commerce? Interaction with reputation mechanisms. *China Agricultural Economic Review*, *15*(4), 758–776. https://doi.org/10.1108/CAER-07-2022-0146
Adnan, N. F., & Osman, S. (2022). Factors Influencing Online Impulse Buying Behavior During Covid-19 Pandemic. *International Journal of Academic Research in Business and Social Sciences*, *12*(12), 2204–2221. https://doi.org/10.6007/ijarbss/v12-i12/16015
Agrawal, D. K. (2022). Determining behavioural differences of Y and Z generational cohorts in online shopping. *International Journal of Retail & Distribution Management*, *50*(7), 880–895. https://doi.org/10.1108/IJRDM-12-2020-0527
Akram, U., Hui, P., Kaleem Khan, M., Tanveer, Y., Mehmood, K., & Ahmad, W. (2018). How website quality affects online impulse buying. *Asia Pacific Journal of Marketing and Logistics*, *30*(1), 235–256. https://doi.org/10.1108/APJML-04-2017-0073
Ameen, N., Cheah, J. H., & Kumar, S. (2022). It's all part of the customer journey: The impact of augmented reality, chatbots, and social media on the body image and self-esteem of Generation Z female consumers. *Psychology and Marketing*, *39*(11), 2110–2129. https://doi.org/10.1002/mar.21715
Awad, N. F., & Ragowsky, A. (2008). Establishing Trust in Electronic Commerce Through Online Word of Mouth: An Examination Across Genders. *Journal of Management Information Systems*, *24*(4), 101–121. https://doi.org/10.2753/MIS0742-1222240404
Bo, L., Chen, Y., & Yang, X. (2023). The Impact of Contradictory Online Reviews on Consumer Online Purchase Decision: Experimental Evidence From China. *Sage Open*, *13*(2), 21582440231180108. https://doi.org/10.1177/21582440231180107
Chen, L., Li, W., Chen, H., & Geng, S. (2019). Detection of fake reviews: Analysis of sellers' manipulation behavior. *Sustainability (Switzerland)*, *11*(17). https://doi.org/10.3390/su11174802
Colantonio, A., & Di Pietro, Roberto Petrocchi, Marinella Spognardi, A. (2015). Visual detection of singularities in review platforms. *SAC '15: Proceedings of the 30th Annual ACM Symposium on Applied Computing*. https://doi.org/10.1145/2695664.2696044

Databoks.katadata.co.id. (2023). *5 E-Commerce dengan Pengunjung Terbanyak Sepanjang 2023*. https://databoks.katadata.co.id/datapublish/2024/01/10/5-e-commerce-dengan-pengunjung-terbanyak-sepanjang-2023

Friscilla, S. D., & Yap, N. (2023). Celebrity Endorsers and Purchase Decisions for Generation Z: Brand Image of Loreal Products. *JEM17: Jurnal Ekonomi Manajemen*, *8*(1), 131–142. https://doi.org/10.30996/jem17.v8i1.8665

Gazzola, P., Pavione, E., Pezzetti, R., & Grechi, D. (2020). Trends in the Fashion Industy. The Perception of Sustainability and Circular Economy: A Gender/Generation Quantitative Approach. *Sustainability (Switzerland)*, *12*, 1–12.

Ghazizadeh Ehsaei, F., Hussin, A. R. C., & Kianian, M. (2013). Developing a Model of Social Relation Support for Online Reputation Systems. *International Journal of Future Computer and Communication*, *2*(3), 179–183. https://doi.org/10.7763/ijfcc.2013.v2.147

Guo, C., Yang, Z., & Zhao, S. (2023). The Impact of Interactivity on Live E-commerce Platform on The Intention of Generation Z 's Consumption Behavior. *Lecture Notes in Education Psychology and Public Media*, *3*(1), 256–266. https://doi.org/10.54254/2753-7048/3/2022548

Hu, Y. (2022). The Influence of Online Review on Consumers' Purchase Intention. *Proceedings of the 2022 2nd International Conference on Economic Development and Business Culture (ICEDBC 2022)*, *AEBMR 225*, 276–282. https://doi.org/10.35609/jmmr.2019.4.3(4)

Huang, E. Y., Lin, S.-C., & Hsieh, I.-T. (2023). Online marketplace sellers' influence on rating scores and comment orientation. *Electronic Commerce Research*, *23*(2), 1241–1270. https://doi.org/10.1007/s10660-021-09511-x

Irvin Perono, Joan Camille Ilagan, Emmanuel Dotong, & Eunice Mareth Areola. (2022). The Relationship of Sustainable Buying Behavior Demensions Among the Gen z. *Journal of Sustainable Community Development*, *4*(1), 30–39. https://jscd.ipmi.ac.id/index.php/jscd/article/view/66/48

Jolivet, G., Jullien, B., & Postel-Vinay, F. (2016). Reputation and prices on the e-market: Evidence from a major French platform. *International Journal of Industrial Organization*, *45*, 59–75. https://doi.org/https://doi.org/10.1016/j.ijindorg.2016.01.003

Joyce Buenafe, N. D., Mae Espedido, H. G., Rainier Samonte, K. G., Karmen Vitto, A. M., & Magsino-Marasigan, M. (2022). *Journal of Business and Management Studies An analysis of Gen Z's Electronic Gadgets Purchase Intention in Selected Cities in Metro Manila*. https://doi.org/10.32996/jbms

Kara, A., & Min, M. K. (2024). Gen Z consumers' sustainable consumption behaviors: influencers and moderators. *International Journal of Sustainability in Higher Education*, *25*(1), 124–142. https://doi.org/10.1108/IJSHE-08-2022-0263

Karim, M. W., Chowdhury, M. A. M., Al Masud, M. A., & Arifuzzaman, M. (2021). Analysis of factors influencing impulse buying behavior towards e-tailing sites. *Contemporary Management Research*, *17*(2), 97–126. https://doi.org/10.7903/CMR.20457

Kinari, K., Citra, A., & Drupadi, V. (2023). A literature review study of electronic word- of-mouth factors that influence purchasing decisions A literature review study of electronic word-of-mouth factors that influence purchasing decisions Introduction Currently marketing can be viralized through. *Gema Wiralodra*, *14*(3), 1504–1515.

Koch, J., Frommeyer, B., & Schewe, G. (2020). Online shopping motives during the COVID-19 pandemic—lessons from the crisis. *Sustainability (Switzerland)*, *12*(24), 1–20. https://doi.org/10.3390/su122410247

Korombel, A., & Ławińska, O. (2019). Impact of an enterprise's company profile on social media on purchasing decisions of representatives of generation Z. *IBIMA Business Review*, *2019*. https://doi.org/10.5171/2019.671964

Li, B., & Nan, Y. (2023). Warmth or competence: understanding the effect of brand perception on purchase intention via online reviews. *Journal of Contemporary Marketing Science*, *6*(3), 210–227. https://doi.org/10.1108/JCMARS-06-2023-0018

Liu, Y., Liu, S., Fang, H., Zhang, J., Yu, H., & Miao, C. (2014). RepRev: Mitigating the negative effects

of misreported ratings. *Proceedings of the National Conference on Artificial Intelligence*, *4*(1), 3124–3125. https://doi.org/10.1609/aaai.v28i1.9089

Melnik, M. I., & Alm, J. (2002). Does a seller's ecommerce reputation matter? Evidence from ebay auctions. *Journal of Industrial Economics*, *50*(3), 337–349. https://doi.org/10.1111/1467-6451.00180

Pan, M., Kuo, C., Pan, C., & Tu, W. (2013). Antecedent of purchase intention: online seller reputation, product category and surcharge. *Internet Research*, *23*(4), 507–522. https://doi.org/10.1108/IntR-09-2012-0175

Rahayu, D., & Oktafani, F. (2021). *The Effect of Online Customer Review on Trust and its impact on Purchase Intention in Cinema Films on Subscribers of YouTube Channel Review Film Cine Crib*. https://doi.org/10.4108/eai.9-10-2020.2304779

Savić, N., Lazarević, J., & Grujić, F. (2023). Generation Z's letter to CEOs. *Ekonomika Preduzeca*, *71*(1–2), 129–143. https://doi.org/10.5937/ekopre2302129s

Shaheen, M., Zeba, F., Chatterjee, N., & Krishnankutty, R. (2020). Engaging customers through credible and useful reviews: the role of online trust. *Young Consumers*, *21*(2), 137–153. https://doi.org/10.1108/YC-01-2019-0943

Shetu, S. (2023). User-generated content and micro-celebrity posts encourage Generation Z consumers to search social media for online purchase: A study on Dhaka City, Bangladesh. *The Electronic Journal of Information Systems in Developing Countries*, e12300. https://doi.org/10.1002/isd2.12300

Sutanto, E. M., & Aubelia, S. (2022). Lifestyle and Self-Esteem of Generation Z in Gadget Purchasing Decision. *Trikonomika*, *21*(2), 54–63. https://doi.org/10.23969/trikonomika.v21i2.5410

Tadelis, S. (2016). Reputation and Feedback Systems in Online Platform Markets. *Annual Review of Economics*, *8*, 321–340. https://doi.org/10.1146/annurev-economics-080315-015325

Thomas, O., & Joseph, S. (2015). Literature Analysis on Reputation Models for Feedback in E-commerce. *Ijarcce*, *4*(1), 293–297. https://doi.org/10.17148/ijarcce.2015.4167

Wang, Z., Li, H., Ye, Q., & Law, R. (2016). Saliency effects of online reviews embedded in the description on sales: Moderating role of reputation. *Decision Support Systems*, *87*, 50–58. https://doi.org/https://doi.org/10.1016/j.dss.2016.04.008

Wells, J. D., Parboteeah, D. V., & Valacich, J. S. (2011). Online impulse buying: Understanding the interplay between consumer impulsiveness and website quality. *Journal of the Association for Information Systems*, *12*(1), 32–56. https://doi.org/10.17705/1jais.00254

Wijaya, T., Darmawati, A., & Kuncoro, A. M. (2020). e-Lifestyle Confirmatory of Consumer Generation Z. *International Journal of Advanced Computer Science and Applications*, *11*(10), 27–33. https://doi.org/10.14569/IJACSA.2020.0111004

Xu, H., Zhang, K. Z. K., & Zhao, S. J. (2020). A dual systems model of online impulse buying. *Industrial Management & Data Systems*, *120*(5), 845–861. https://doi.org/10.1108/IMDS-04-2019-0214

Xue, H., Jin, S., Wu, Q., & Geng, X. (2023). How does platform certification affect the marketing performance of sellers in food e-commerce? Interaction with reputation mechanisms. *China Agricultural Economic Review*, *15*(4), 758–776. https://doi.org/10.1108/CAER-07-2022-0146

Sujana M.G., Anand S. (2011). Fluoride removal studies from contaminated ground water by using bauxite. *Desalination*, 267, 222-227.

Moradi M., Etemad S. Gh., Moheb A. (2010). Synthesis of Magnetic Polyvinyl Alcohol Nanoparticles for Fast Adsorption of Pb(II) Ions from Water "*Proc. of Int. Conf. Nanotech. Fundam. Appl*.," Ottawa, Canada, Aug. 4–6, pp. 587-1–587-7.

Vallero D. (2007)." *Fundamentals of Air Pollution* 4th edition" Elsevier.

Biodata

Yuni Adinda Putri is a lecturer Faculty of Economics and Business, University of Tridinanti. She received her Doctor Degree in Sriwijaya University. Her major interests in Management Marketing. Email: yuni_adinda@univ-tridinanti.ac.id.

Djatmiko Noviantoro is a lecturer Faculty of Economics and Business, University of Tridinanti. He received her Doctor Degree in Persada Indonesia Y.A.I University. His major interests in Human Resource Management. Email: Djatmiko.univtridinanti@gmail.com.
Frecilia Nanda Melvani is a lecturer Faculty of Economics and Business, University of Tridinanti. She received her Doctor Degree in Sriwijaya University. Her major interests in Human Resource Management. Email: frecilianda@univ-tridinanti.ac.id.
Chika Adhelina is a student in master of management, University of Tridinanti. Email: chikaadhelina@gmail.com.
Marulam Damanik Adhelina is a student in master of management, University of Tridinanti. Email: ulam.damanik@gmail.com

LITERATUR REVIEW ; THE INFLUENCE LECTURER COMPETENCE AND ORGANIZATIONAL TRUST ON LECTURER PERFORMANCE

Yussi Rapareni[1], Mohamad Adam[2], Isnurhadi[3], Muhammad Ichsan Hadjri[4]
Sriwijaya University[1,2,3,4]
yussirapa@gmail.com[1]

Abstract

Lecturer a learning agent, lecturers are required to be creative in preparing methods and strategies that are suitable for their students' conditions, selecting and determining a learning method that is appropriate to the learning material so that lecturers are required to have good competence in their field as well as good organizational credentials.The inherent knowledge capacity can be translated into work so that it can influence employee performance. This research is to see whether there is an influence of organizational competence and trust on lecturer performance. This research uses a literature review method by reviewing research articles that are relevant to this research. From the study carried out, there was an influence between deosen's competence and trust on lecturer performance.

Keywords: Competence,Lecturer Performance, Organizational trust

INTRODUCTION

Lecturers as professional lecturers and scientists (Chadha D, 2022) are tasked with transforming, developing and disseminating science, technology and art through the tridharma, namely education, research and community service (Anggraeni, 2014; Nyoto, 2021; Nusantari, 2022). The results of the implementation of lecturers' duties are performance that can be assessed by their superiors (Rabiah, 2019).

(Tone, et.al., 2015; Mukminat, 2021; Rozi, 2023) explains that the success of an institution is a manifestation of lecturer performance. This means that the various achievements of educational institutions are the result of the hard work of lecturers. It is important for educational institutions to respect lecturers and valued figures by providing comprehensive appreciation. Moreover, if a university is very dependent on its teaching staff (Pietila, et., al, 2021; Putera, Shofiah, 2021), the more qualified the teaching staff is, the popularity of the institution will increase, and can attract public interest in studying at that institution. (Silzer Rob & Dowel, 2017)

(Lucky & Yusof 2015) stated that the main foundation of educational institutions is the performance of their lecturers. The low performance of lecturers shows the poor quality of education (Aboudahr, et.,al, 2023; Okanya, et.,al, 2021; Sugiarti, 2020). Educational institutions have no chance in the future (Zulfa, et.al., 2021). Where institutions suffer many losses due to low performance of lecturers, such as low reputation (Savitska, 2021), little cooperation and government grants, and small number of students. (Savitska, 2021; Mukminat, 2021).

According to (Runi, et.al., 2017), the first and main thing in education is the lecturer. So, the quality of good lecturers is a reflection of the institution's educational progress in the future (Kyrylenko, 2021; Baleni, et., al, 2022). Furthermore, lecturers can provide hope by achieving good accreditation, so that they can attract public interest in becoming part of an educational institution. (DeFeoandBerman, 2023;Susiani, 2022)

In Indonesia, lecturer performance is measured by filling in Lecturer Workload (BKD) (Ristekdikti, 2021). The operational guidelines for lecturer workload state that lecturer performance assessments in Indonesia are carried out periodically every six months by filling in the lecturer workload report (BKD) through an application regulated in the policy of the Director of Resources of the Directorate General of Higher Education, Ministry of Education and Culture of the Republic of Indonesia (Islahuzzaman, 2014).

According to (Ravhuhali et.al., 2017), stating that lecturer performance issues have become an interesting and relevant topic to research in recent years (Bai, et.,al, 2021). In the world of education, the role of lecturers is very important (Santosa, 2022) because they are responsible for providing quality education to students (Adiawati, 2020). However, there are several issues that often arise related to lecturer performance. (Aisyah, 2020) states that low lecturer performance can be caused byaspects of cognitive ability, organizational culture, individual characteristics, and work ethics.

An organization expects its employees to have a high commitment to the organization (Ruvina & Zamralita, 2017). One of the factors that an organization needs is employee commitment. According to (Robbins and Judge, 2017) organizational commitment is the extent to which an employee identifies with his organization and its goals and wants to maintain membership in the organization (Tsertsvadze, 2023; Pamungkas, 2017; Sari and Amri, 2022). These employees also have an attitude of loyalty and willingness to work optimally for the organization where the employee works (Siagian et.al., 2017; Hisan, et.al., 2021)

Organizational commitment is an important factor in building the success and sustainability of an organization (Chu ha and Le woo, 2022; Adelia, 2017). This commitment refers to the level of attachment and involvement of organizational members towards the goals, values and culture of the organization (Tuvilla, Potane, 2023; Pamungkas, 2021). When individuals feel emotionally connected to the organization where they work, they tend to be more dedicated, try harder, and contribute optimally (Byrne, 2023).

According to (Amantara, 2020) Organizational commitment has a strong sense of acceptance within the individual towards the company's goals and values (Orosa, 2023) so that the individual will work and have a strong desire to remain in the company. In order for a professional work climate to be created, good commitment is needed between the organization and employees (Singal, 2018). It is clear that organizational commitment greatly influences performance (Gemedu, et., al, 2023) because employees who have high commitment to the organization tend to have an attitude of partiality, a sense of love, a sense of pride in the organization, and feel obliged to advance the organization (Qamar, 2021; Griep , 2023). The results of research conducted by (Malik 2015; Salma, 2016; Ningsih, 2016) show that organizational commitment has been proven to have a positive and significant impact onperformance (Aldasem,et.,al, 2022). This strengthens and confirms that the thinking concept or framework built in this research is strong, because it is supported theoretically and empirically (results of previous research). Therefore, it can be concluded that there is an influence of organizational commitment on performance (Irvansyah, et.,al, 2023; Yates & Matthews, 2022).

Organizational commitment is very necessary to improve and develop lecturer performance (Tolon, Olivia, 2022; Younus et.al., 2022). Career management and development will increase the effectiveness and creativity of human resources which can foster strong commitment and improve performance in an effort to support the organization to achieve its goals (Robbins, 2020; Tamaela; 2022; Cianni & Wnuck 1997), stating that employees who have the opportunity Highly increasing its performance will make it work better. With clear and steady organizational

support, it is hoped that individuals will have more confidence in advancing their organization in achieving its goals (Dessler, 2020). Apart from lecturer performance, there are other factors that influence this performance, one of which is organizational trust. (Bromiley and Cummings 1995) organizational trust should be understood as an individual's belief (or usually belief in a group) that when another individual (another group) obtains support to carry out an action in accordance with a promise, he believes and puts forward a promise, and he do not reduce the benefits of others even when the opportunity arises. Meanwhile (Barber, 2020) argues that organizational trust is a set of learned and socially approved expectations that individuals have about other people, the organizations and institutions where a person belongs, social and moral rules that form basic understandings for life (Tebay , 2021)

Previous research conducted by (Leovigildo et.al., 2019) entitled Competency Skills And Performance Level Of Faculties in The Higher Education Institution (HEI). One measure of higher education performance is the level of competence and skills. This is in accordance with their profession because lecturers are one of the most noble of all professions. Teachers or lecturers involve challenges in their technical teaching as innovators for young minds. This study examines the profile of respondents and the competency skills and performance levels of faculty in higher education in terms of communication, planning and administration, teamwork, strategic action, and self-management.

METHOD

This research uses a literature review method from the data obtained. The research presents the results of searches for research on the internet according to the variables of this research. Literature reviews are carried out with a focus on original articles containing abstracts, introductions, methods and results. Literature review is a systematic, explicit and reproducible method for identifying, evaluating and synthesizing research works and ideas that have been produced by researchers and practitioners. The aim of a literature review is to make an analysis and synthesis of existing knowledge related to the topic to be researched to find free space for the research to be carried out.

RESULTS AND DISCUSSION

Spencer and Spencer (1993) say that competency is a basic characteristic related to the effectiveness of individual performance in their work, in accordance with what the organization expects in achieving its goals. There are five basic characteristics of competency (core competency) according to Spencer and Spencer (1993) which include: Knowledge, Skills, Character, Motive, Self-Concept.Competency According to Spencer and Spencer (1993) competence is formed from five characteristics, namely: a)Motive: Something a person consistently thinks or desires that causes an action. Motives encourage, direct, and select behavior toward certain actions or goals.b)Traits: Physical characteristics and consistent responses to situations or information. Reaction speed and eye sharpness are physical characteristics of a fighter pilot's competence.c)Self-Concept: A person's attitudes, values, or self-image. Self-confidence is people's belief that they can be effective in almost any situation and is part of people's self-concept.d)Knowledge: The information people have in a specific field. Knowledge is a complex competency. Scores on knowledge tests often fail to predict job performance because they fail to measure knowledge and skills in the way they are actually used on the job.e)Skill: The ability to perform a specific physical or mental task. Mental competence or cognitive skills include analytical and conceptual thinking.

Lecturer competency is a set of knowledge, skills and behavioral abilities that must be possessed, internalized and mastered by lecturers (Yusof, et., el, 2023) in carrying out professional duties with the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students through the field of education (Legislation, 2011). Lecturer competency is a combination of knowledge, skills and attitudes that take the form of intelligent and responsible actions in carrying out their duties as learning agents (Kin, et., al, 2022). As learning agents, lecturers are required to be creative in preparing methods and strategies that are suitable for their students' conditions, selecting and determining a learning method that is appropriate to the learning material. According to (Budiada 2012) a lecturer who has adequate competence will certainly have a positive influence on student potential.

In line with the issuance of Law of the Republic of Indonesia Number 14 of 2005 concerning teachers and lecturers which states the competencies that must be possessed by a lecturer, namely including pedagogical competence, personality competence, social competence and professional competence. Which obtained through professional education, The meaning of each competency is as follows:

1) Pedagogical Competence
2) Personality competencies
3) Social Competence

Social competence is the ability of teachers or lecturers as part of society who have the

Meanwhile, according to Law of the Republic of Indonesia Number 14 of 2005, social competence is the ability of lecturers to communicate and socialize effectively with students, fellow educators, education staff, parents or guardians of students, and the surrounding community. The lecturer's social competencies include:

a. Communicate
b. Using information technology
c. Communicate

Professional Competency

According to Anwar, professionalism can be defined as the commitment of someone who has a profession to improve their professional abilities by continuously developing the strategies they use in carrying out work according to their profession. Professional competence is broad and in-depth mastery of learning material which includes mastery of the curriculum material for learning subjects on campus and the scientific substance that covers the material, as well as mastery of the scientific structure and methodology. (Yahya and Hidayati, 2014) From the opinion above, it is clear that someone who is said to be a professional is someone who is considered an expert in their field, where the person concerned can make decisions independently and fairly.

Law of the Republic of Indonesia Number 14 of 2005 states that professional competence is the ability of lecturers to master knowledge in the fields of science, technology and arts which they teach, which at least includes broad and in-depth mastery of subject matter in accordance with the standard content of educational unit programs, courses whom he holds. As with lecturers' duties in general, lecturers are required to study the lecture material they will teach to students. By mastering the material, lecturers will be able to deliver the material dynamically. Mastering the material in this case means not only mastering the material in the field of study that will be taught as stated in the curriculum or syllabus, but also being required to master the enriching or supporting material in that field of study. (Indrawati 2016).

According to (Fathoni 2021) Professional competency is the ability to master learning material broadly and in depth which includes:

a) Concepts in scientific/technological/artistic methods that are shady/coherent with teaching materials,
b) Teaching materials in the curriculum
c) Conceptual relationships between related subjects,
d) Application of scientific concepts
e) Professional competition in a global context

According to (Hewit, 2015) states that trust is very important to determine the level of work engagement of an employee, this trust will be a benchmark for employees, whether the employee will tell good things about the company or vice versa (Brandl, 2021). Similar things were also found by other research, that trust in the organization makes a huge contribution to employee work engagement (Ozturk, et., al, 2021).

Trust is the foundation or most valuable asset for anyone who will achieve success. Trust becomes an emotional glue that unites people in an organization (Hendriyadi et.al., 2019). This is reasonable because if there is no longer any trust in someone, then no matter what he says, does, and no matter how good his vision is, everyone will no longer trust him. Trust is a basic understanding that almost everyone understands, although it is difficult to define precisely. Trust is basically belief in something with positive thoughts. Several experts provide different definitions, but essentially trust is a positive hope (Carter, 2021). According to Rousseau et al,. Trust in an organization is a psychological state that consists of a state of resignation to accept shortcomings based on positive expectations of the intentions or behavior of others.

Relationships with little or no trust can motivate employees to be more skeptical, less driven, less loyal, and more doubtful in matters related to the organization (Carnevale & Wechsler, 1992). Lack of trust also hinders employees' full potential (Nedkovski et al., 2017), their ability to work in teams and serve clients and customers. Furthermore, organizational trust is defined as how much its members anticipate the expertise, dependability, and goodwill of the organization. Organizational trust can be divided into two, namely interpersonal trust and institutional trust (Mayer et.al., 1995). Institutional trust is more relevant in the context of superior–subordinate relationships in IHEs. Furthermore, institutional trust is gained by institutions when employees see promising career development by contributing to the institution (Birkenmeier & Sanséau, 2016). Therefore, superiors must play a role in motivating employees to develop and utilize this potential. Trust is complex and multifaceted and must be recognized as an important motivational driver of organizations. Commitment and trust are useful in creating high-quality relationships between superior and subordinate organizations, thereby increasing employee job satisfaction and productivity (Sheik-Mohamed et.al., 2012). We also postulate that combining trust with organizational commitment will improve the performance and productivity of lecturers at IHE.

Lecturer performance influences their contribution to the organization. This can be seen in the form of quality and quantity, output, cooperative attitude, long periods of time and presence at work (Mathis & Jackson, 2001). Several factors that influence performance include competence and characteristics. Competence is one of the characteristics that underlies a person or persons in achieving high performance. These characteristics appear in the form of knowledge, skills and attitudes to create individuals who have a high spirit of dedication in serving society, are always efficient, rational, transparent and accountable (Mathis & Jackson, 2001).

Educational performance criteria according to (Blazey, et.al., 2001) aim to:
(1) Improving educational performance, capability and output,

(2) Facilitate communication and exchange of information about best educational practices with various types of educational institutions, and
(3) As a tool for understanding and improving the performance of educational institutions as well as guidance in strategic planning

The study (Miller, 2009) notes that there is evidence that students can evaluate lecturers' teaching performance fairly. That way, the results will be more objective than if carried out by the dean, chancellor or vice chancellor. Finally, the author conceptualizes lecturer performance as: teaching planning, teaching activities, mastery of material, class management, communication skills with students, discipline and student assessment. There seems to be no end to the performance measures that writers and researchers should use. However, whatever the performance measurement, a researcher must be able to justify which performance measure he chooses in his research (Lucky, 2011).

One of the lecturers' performance is producing new scientific knowledge through a number of research studies. (Fisher et.al., 1998) stated that the ability of a lecturer is the main requirement for a lecturer (Alzeebaree and Hasan, 2021). With more relevant and latest theories supported by research skills and experience (Fadli, 2021). And lecturer performance is increasingby participating in decision making (Sukirno and Siengthai, 2017), the indicators consist of:

1. Teaching performance
2. Research performance,
3. Publication performance,
4. Public involvement and
5. Miscellaneous performance.

According to (Erna Kusmawati, 2017) climate and subjective beliefs/beliefs regarding grades influence lecturers' intentions in carrying out work. This intention influences lecturers' performance in research. (Dorasamiy and Balkaran, 2013) state that a lecturer is assessed by his ability to provide information and knowledge references. Lecturers who are accustomed to conducting research with novelty on objects of knowledge can provide scientific references to students (Souisa et.al., 2017)

Based on the definition above, lecturer performance here is operationalized in the form of effectiveness, professionalism and overall performance. On the global stage, the shortage of qualified lecturers is widely known (Daniel, 2011; Sahan, 2009; Lucky and Yusoff, 2013). Research conducted by (Sahan, 2009) shows that one of the main problems causing low achievement in the education sector throughout the world is the lack of trained lecturers. He noted that both experts and practitioners agree that the lack of trained lecturers around the world is contributing

According to (Fah and Osman, 2011) in assessing the overall performance of lecturers, two dimensions are used, namely effective lecturers and the best lecturers. Likewise (Halim, 2009) in measuring the performance of lecturers in higher education using an objective approach. He noted that the performance of lecturers in higher education is often based on three main objectives of their professional responsibilities, namely educational and teaching duties, research duties, and community service duties. Halim also emphasized that the performance dimension of educational and teaching tasks includes the achievement of teaching tasks, starting from preparation to carrying out evaluations. He further noted that to test lecturers' performance in education and teaching effectively, students must be used as respondents because they are the only people who can evaluate their lecturers effectively.

The performance in question is the work of private university lecturers related to carrying out learning tasks, research and writing scientific papers, community service (Jacob, et., al, 2023) as well as tri dharma supporting tasks that are in accordance with predetermined standards and are effective and efficient in carrying out these tasks. Thus, the indicators of lecturer performance are suitability for carrying out learning tasks, research and writing scientific papers, community service, and supporting the lecturer's tri dharma with predetermined standards, as well as being effective and efficient in implementing these activities. (Nur Aisyah, 2019)

CONCLUSION

From the literature review that has been studied, it can be concluded that there is an influence between lecturer competence and organizational trust on lecturer performance. Knowledge creation in an organization is achieved through understanding the process of changing existing knowledge into knowledge that is easy to communicate and easy to document, and through process design. social by transferring knowledge into explicit knowledge to create new knowledge. Sharing knowledge in educational organizations such as universities is influenced by things such as trust and organizational commitment. Trust and organizational commitment influence the extent to which lecturers will share knowledge with their colleagues. The higher the trust between lecturers and colleagues and organizational commitment in an educational organization, the greater the tendency for them to share knowledge. If organizational commitment and job satisfaction are high then performance will be high, that is what increases lecturer performance which correlates with their commitment and satisfaction.

ACKNOWLEDGEMENTS

The author would like to thank all parties who have helped in the process of writing this article. Thank you also to the supervisors and Sriwijaya University.

REFERENCES

Anggraeni, D., & Riswanto, A. (2022). The Role In House training Activities in improving teacher pedagogic competence ... *International Conference on ...*. https://prosiding.appipgri.id/index.php/icdess/article/view/9

Anwar, S., Hijriyyah, U., & ... (2023). Arabic Teacher Pedagogic Competence in Managing Learning at Madrasah Aliyah Negeri 1 bandar lampung| Al Kafa'ah At Tarbawiyyah Li Mu'alim Al Lughoh Al ' …. *Mantiqu Tayr ...*. http://journal.iaimnumetrolampung.ac.id/index.php/mantiqutayr/article/view/3783

Ernazarova, G. O. (2023). Development Criteria of Auto pedagogic Competence. *Diversity Research: Journal of Analysis and ...*. http://academiaone.org/index.php/2/article/view/115

Estiani, S. W., & Hasanah, E. (2022). Principal's Leadership Role in Improving Teacher Competence. *Nidhomul Haq: Jurnal Manajemen ...*. https://e-journal.uac.ac.id/index.php/nidhomulhaq/article/view/2281

Fachriza, A., Baqi, S. Al, & ... (2023). AN ANALYSIS OF LECTURER'S PEDAGOGIC COMPETENCE IN TEACHING LISTENING USING PODCAST AT PESANTREN UNIVERSITY. ... *Conference on Language ...*. https://incollt.unipasby.ac.id/proceedings/index.php/incollt/article/view/51

Hadi, S., Rajiani, I., Abbas, E. W., Studi, P., Ilmu, P., Sosial, P., Pendidikan, J., Pengetahuan, I., & Mangkurat, U. L. (n.d.). *MANAJEMEN Sumber Daya Manusia*.

Halim Perdana Kusuma, A., & Hendra Syam, A. (2018). International Review of Management and Marketing The Main Role of *Locus of control* and Professional Ethics on Lecturer's Performance (Indonesian Lecturer Empirical Study). *International Review of Management and Marketing*, *8*(5), 9–17. http:www.econjournals.com

Hendra, T., & Gitituati, N. (2022). The Principal's Contribution to the Implementation of Supervision and Work Ethics on the Pedagogic Competence of Padang City Junior High School Teachers. *International Journal Of Humanities Education and …*. http://ijhess.com/index.php/ijhess/article/view/293

Indrawati, M. (2016). Pelatihan Widyaiswara Penyesuaian/Inpassing. *Modul Pelatihan Widyaiswara Penyesuaian/ Inpassing Berbasis E - Learning*, 6–8. file:///C:/Users/ACER/Downloads/Documents/Metode Pembelajaran (OK).pdf

Indrawaty, A., Ramli, A., & Rakib, M. (2021). Analysis On Interpersonal Communication Means And Infrastructure Versus Competency And Performance Of The Lecturers At Private Universities In Makassar City. *IOSR Journal of Business and Management (IOSR-JBM)*, *23*(3), 14–21. https://doi.org/10.9790/487X-2303071421

Khiong, K., & Utomo, B. (2023). *The Effect of Kepercayaan organisasi , Perceived Organisasi Support (POS) and Innovative Work Behavior (IWB) on University Performance during Digital Era*. *4*(2), 98–106.

Nur, J., Arahim, A., & Hasrianto, H. (2021). The Analysis of PPKn Teacher Pedagogic Competency in Learning Activities at state high school 9 Sinjai, Tellulimpoe District. *JED (Jurnal Etika Demokrasi)*. https://journal.unismuh.ac.id/index.php/jed/article/view/5653

Orteza, Alijanpour, MahAlijanpour, M., & Dousti, M. (2013). The relationship between organisasi commitment and Kepercayaan organisasi of staff. *Annals of Applied Sport Science*, *1*(4), 45–52.

Patent, V. (2022). Dysfunctional trusting and distrusting: Integrating trust and bias perspectives. *Journal of Trust Research*, *12*(1), 66–93. https://doi.org/10.1080/21515581.2022.2113887

Rusmini, R. (2021). Building Lecturer Performance Through Organisasi Culture and Work Motivation. *JMiE (Journal of Management in Education)*, *6*(1), 15–28. https://doi.org/10.30631/jmie.2021.61.15-28

Yusuf, H., Syah, M., Ramdhani, M. A., & ... (2020). The Effect of Interpersonal Communication and Teacher Competence on the Quality of Character Education and Student Learning Achievement. In *International Journal of …*. academia.edu. https://www.academia.edu/download/89373168/pdf.pdf

Zakaria, Z., Nik Hassan, N. F., Ngah, N. E., Abdullah, N. K., Ismail, R., & Siahaan, E. (2021). A Review of Organisasi Relationship Quality, Trust, Commitment and Lecturers' Perceived Performance in Institution of Higher Learning. *Jurnal Intelek*, *16*(2), 70–78. https://doi.org/10.24191/ji.v16i2.402. https://doi.org/10.53106/181653382022091702001

Biodata

Yussi Rapareni is a doctoral student in Sriwijaya University for the management program.Her email is yussirapa@gmail.com

Green Human Capital as The Competitve Advantage of Private Universities in South Sumatra

Irayani
[1]Universitas Tridinanti Palembang, Fakultas Ekonomi dan Bisnis
irayani0707@gmail.com
Ima Andriyani
[2]Universitas Tridinanti Palembang, Fakultas Ekonomi dan Bisnis
ima_andriyani@univ-tridinanti.ac.id
Mariam Zanariah
[3]Tridinanti Palembang, Fakultas Ekonomi dan Bisnis
mariyam0222096301@gmail.com
Prety Sinta
[4]Palembang, Fakultas Ekonomi dan Bisnis
pretysinta0818@gmail.com
Tarisya Idris
[5]Palembang, Fakultas Ekonomi dan Bisnis
tarisyaidris1810@gmail.com

Abstract

This article aims to explore how private universities in South Sumatra leverage green human capital to enhance their competitive positioning. It investigates the strategies employed to integrate environmental sustainability into their educational and operational frameworks, thereby attracting students, faculty, and partnerships aligned with green values. Green human capital refers to the environmentally-focused knowledge, skills, attitudes, and values possessed by university staff, faculty, and students. Utilizing a qualitative research approach, including in-depth interviews, focus groups, and document analysis, insights were gathered from various stakeholders, including university administrators, faculty members, students, and sustainability officers.

Findings reveal a growing recognition of the importance of sustainability issues among stakeholders, though the level of institutional commitment varies. Challenges such as financial constraints, a lack of expertise in green technologies, and resistance to change were identified. However, universities that effectively integrate green practices report significant benefits, including cost savings from energy-efficient technologies, enhanced reputations attracting environmentally-conscious individuals, and the formation of strategic partnerships with governmental and non-governmental organizations.

The study underscores the importance of developing comprehensive sustainability policies, integrating sustainability into the academic curriculum, and fostering a culture of environmental awareness on campus. By strategically leveraging green human capital, private universities in South Sumatra can attain a significant competitive advantage while contributing to broader environmental sustainability goals.

The strategic use of green human capital is essential for advancing ecological sustainability and serves as a significant economic asset that can enhance the competitive edge of private universities in South Sumatra. The insights from this research provide a valuable framework for higher education institutions seeking to integrate sustainability into their core strategies and operations, thereby contributing to a more sustainable future while achieving institutional excellence.

Keywords: Green Human Capital, Competitive Advatage, Sustainable Campus Operations, Resource Based View (RBV), Strategic Positioning, Private Universities

INTRODUCTION

In the era of globalization, rapid technological development, increasing customer demands, Amid global economic turmoil, companies are looking for new solutions to survive in a highly competitive

market. To achieve and maintain competitive advantage, companies must utilize resources more effectively and develop new technologies. A specific knowledge-based intangible resource is intellectual capital (IC). Numerous studies have shown that IC is a major source of competitive advantage in the knowledge economy. But new crises and economic changes political structures require companies to review their strategies to ensure this, sustained competitive advantage. Increased awareness and special interest in the environment. Investment in sustainable management leads to investment in intellectual greenness capital (GIC) can be an effective strategy to gain competitive advantage (Bombiak, 2023).

Digital economy brings new opportunities and threats to modern reality, covering almost all the fields of life of the population, including education especially the private universities. Digital economy opens up new strengths and weaknesses of a university. In this regard, a relevant task is to determine a set of goals for the development of the university and ensure movement towards these goals. University purposes to provide complete, updated and regular facts on their key fact of property to their many customers through diverse virtual offerings and communique channels. Key college property included people, studies results, instructional courses, and studies projects. The primary issue lies with inside the inner fragmentation and variety of facts on key property is scattered across numerous facts repositories, facts is frequently duplicated and hard to in shape because of variations in format, meta data, conventions and terminology used (Safiullin, 2019).

In the current global landscape, educational institutions are increasingly being called upon to address environmental challenges while maintaining academic excellence and market competitiveness. The concept of sustainability is no longer limited to industries like manufacturing or agriculture; it has also permeated the higher education sector, where universities are now expected to foster sustainable development both within their operations and through the education they provide. One key element in achieving this is the development of green human capital.

Green human capital is a resource of a company that can improve the implementation of green policies. Lopes de Sousa Jabbour et al., 2019 said Green man capital includes the skills, abilities, know-how and experience of the employees who have been trained effective implementation of green practices. Studies show that knowledge, skills and Employee skills are essential to the successful implementation of sustainable practices (Neyati etc., 2017) and constitute a competitive advantage. Sustainability and environmental protection have become a global concern. Growing environmental concern encourages the implementation of environmental management in organizations (Ouyang et al., 2019; Singjai et al.,2019), because companies operate in a competitive global environment. Economy in which they must be not only efficient but also responsible, especially environmentally responsible. In fact, implementing environmental management is very essential for your organization. This is because responding to external changes increases customer demand for an organization's products or services and strengthens its competitive position(Pham et al., 2020).

Green human capital refers to the skills, knowledge, attitudes, and competencies that individuals possess to address environmental issues, promote sustainability, and innovate toward greener practices. In the context of higher education, green human capital encompasses faculty, staff, and students who are not only well-versed in their respective academic fields but are also advocates and practitioners of sustainability principles. This includes promoting energy efficiency, reducing waste, encouraging responsible consumption, and embedding environmental ethics into daily university operations and curriculum design.

For private universities, which often face fierce competition for students, resources, and reputation, green human capital represents an untapped source of competitive advantage. Universities that invest in the development of green human capital can position themselves as leaders in sustainability, attract eco-conscious students and faculty, and differentiate themselves from other institutions. However, the concept of green human capital and its impact on competitiveness remains underexplored, particularly in the context of private universities in regions like South Sumatra, Indonesia (Arizqa Setiadi et al., 2022.).

To achieve a competitive advantage, an organization can analyse internal and external factors that help the organization specially universities. The internal factors behind the company's competitive advantage are important for success. The notion of competitive advantage through management actions during the management of structure, processes, culture and people. Organizations can identify and improve

analysis of their competitive advantage resources, skills and key capabilities develop a strategy that uses assets to create value for customers and earn a competitive advantage over competitors (Irayani et al., 2023).

In this complex environment, organizations must strategically leverage these multifaceted strengths to ensure long-term sustainability and achieve sustainable competitive advantage (Rouf et al., 2022). This study explores the complex network of relationships that combine sustainability, technological investment and government action, focusing on their collective impact. The impact on a company's competitive advantage in the context. We mainly focus on the critical moderating roles of these factors, especially intellectual capital (Abdelfattah et al., 2024).

Based on the resource-based view and dynamic capabilities theory (Eisenhardt & Martin, 2000) said in order to implement and thrive within business models, firms must use and combine their specific resources and capabilities (e.g. organizational procedures, technologies) in such a way as to outperform their competitors (Hitt et al., 2016). Therefore, resources and capabilities, including decisions must be reconfigured to help firms adapt to their market environment (Eisenhardt & Martin, 2000). Sustainable campus operations, universities adopting green building standards and certifications. Implementing comprehensive recycling and composting programs. Academic Programs, Degree programs in environmental science, sustainable business, and renewable energy. Interdisciplinary courses that incorporate sustainability into business and social sciences (Amin et al., 2022)

In the rapidly evolving landscape of higher education, institutions are increasingly seeking innovative strategies to achieve and maintain a competitive edge. Among the various approaches, the concept of green human capital has emerged as a pivotal factor in fostering sustainability and enhancing institutional reputation. Green human capital refers to the integration of environmentally sustainable skills, knowledge, and practices within an organization’s workforce. For private universities in South Sumatra, Indonesia, harnessing green human capital presents a unique opportunity to distinguish themselves in a competitive market while contributing to broader environmental goals (Agyabeng-Mensah & Tang, 2021).

In today’s competitive academic environment, private universities must continuously seek ways to differentiate themselves and create lasting value. One approach is through the development of green human capital, which refers to the combination of environmental awareness, sustainability-driven skills, and green leadership qualities possessed by individuals within an institution. Green human capital not only enhances the university's contribution to global sustainability but also strengthens its position as a leader in the education sector.

The region of South Sumatra, with its diverse ecosystem and growing urban centres, faces significant environmental challenges, including deforestation, pollution, and climate change. As educational institutions, private universities have a critical role in addressing these issues through education, research, and the implementation of sustainable practices. By embedding green human capital into their strategic framework, these universities can lead by example, promoting environmental stewardship and sustainability. These initiatives not only contribute to ecological sustainability but also offer competitive advantages such as cost savings from efficient resource management, enhanced institutional reputation, and increased attractiveness to prospective students and staff who prioritize environmental values.

Despite the clear benefits, the integration of green human capital in private universities in South Sumatra is not without challenges. Financial constraints, limited expertise, and resistance to change are some of the barriers that institutions must overcome. However, with effective leadership and policy support, these challenges can be addressed, enabling universities to capitalize on the strategic advantages offered by green human capital.

The study will assess the existing strategies that universities employ to promote environmental responsibility and how well these initiatives are integrated into the university’s broader educational mission and investigate the ways in which green human capital enhances a university’s ability to attract students, faculty, and funding, as well as its capacity to form strategic partnerships with industries and governments focused on sustainability. The research will explore how universities that excel in this area differentiate themselves from competitors and create unique value propositions in the higher education market.

LITERATURE REVIEW

The study's theoretical framework is built on the principles of the natural resource-based view (RBV) and resource-based view theories (RBV). The RBV theory explains how a firm can create bundles of strategic resources and/or capabilities to achieve competitive advantage. According to the RBV, a firm can maximize sustainable competitive advantage when its resources are rare, inimitable, valuable, non-substitutable and non-tradable (Barney, 2001). The RBV theory encourages firms to develop and protect resources that can be identified with these attributes (Crook et al., 2008) and focus on using its resources to develop unique "core competencies," "dynamic capabilities" and "imitable capabilities" (Eisenhardt and Martin, 2000). Green human capital is regarded as a core strategic resource for sustainable competitive advantage for firms (Yong et al., 2019).

The concept of "green human capital," which is described as the collective knowledge, skills, attitudes, and leadership capacities that support sustainability, is comparatively underexplored, despite the rising corpus of research on sustainability in higher education. Most research tends to concentrate on how colleges might lessen their carbon footprint or on green initiatives (such as energy-saving plans or recycling projects). There is a dearth of research on human capital development, especially when it comes to the strategic value that human capital with an emphasis on sustainability can have in higher education.

By examining the creation and application of green human capital as a competitive advantage for South Sumatra's private colleges, this study directly fills this gap. It investigates how colleges might use the abilities and expertise of their teachers, staff, and students to create a competitive edge in a crowded educational market, going beyond merely looking at environmental measures.

A large portion of the literature on sustainability in higher education concentrates on reputable, frequently public colleges in industrialised nations. There is a knowledge vacuum about the sustainability strategies used by private universities in poor nations, especially in areas like South Sumatra, as these studies typically focus on sizable establishments with ample funding. Private universities may take a different approach to sustainability and the development of green human capital than their larger counterparts because of their financial limitations and particular competitive problems in these areas.

Resource Based View (RBV)

This study is based on the resource-based view (RBV) theory of the firm. The RBV theory of the firm originated in the early 1980s and became progressively more visible in the 1990s playing an important role in legitimizing the importance of HRM to strategy research. According to the RBV of the firm, a competitive advantage can be attained when organizations use their resources to leverage internal strengths and neutralize weaknesses in their external environment. The extent to which an organization possesses and manages such resources determines the height of a firm's performance. It includes education, experience, attitudes, knowledge, professional skills, mental abilities, competencies, and creativity. The results of Wright et al. (1994) demonstrated that having strong human capital is advantageous to organizations as it is not only valuable but also very difficult to imitate (Haldorai et al., 2022).

A foundational concept in strategic management, the Resource-Based View (RBV) asserts that companies can obtain a competitive edge through the acquisition and efficient application of uncommon, precious, unique, and non-replaceable resources. RBV contends that when carefully created, intangible assets like human capital can give private colleges a sustainable competitive advantage. This theory, when applied to green human capital, shows how faculty, staff, and students with sustainability-oriented knowledge, skills, and behaviours may make a significant difference in the fiercely competitive education market.

RBV theory demonstrates that organizations that make continuous efforts to increase intellectual capital can heighten their long-term growth and performance. IC has traditionally been categorized into three components: "human capital," "structural capital," and "relational capital" (Roos et al., 1997). "Human capital" refers to the skills and knowledge that an organization's employees have generally

acquired during their working life and Firms can achieve sustainable competitive advantage through the accumulation of strategic assets that are hard to imitate, substitute or trade (Eloranta & Turunen, 2015)

Looking at economic units in terms of their resource endowments has a long tradition in economics. The analysis is typically confined, however, to categories such as labour, capital, and perhaps land. The idea of looking at firms as a broader set of resources goes back to the seminal work of Penrose (1959), but, apart from Rubin (1973), has received relatively little formal attention. The reason, no doubt. is the unpleasant properties (for modelling purposes) of some key examples of resources, such as technological skills. The mathematics used by economists typically require that resources exhibit declining returns to scale, as in the traditional theory of factor demand (Wernerfelt, 1984).

Resource-based theory (RBT) is understood as a resource-based theory. A theory for analyzing the competitive advantage of companies that shows economic or learning outcomes Benefits of relying on intangible assets. This RBT believes that the company has superior financial performance and superior competition because it is in control. Possess and utilize important strategic resources (Wernerfelt, 1984). Call Connection Tone Discuss how Source Energy Ownership Companies and Companies Manage Source Energy The original ownership power company has total assets, properties, knowledge of technology, information, organizational processes, etc. (Barney, 1990) The theory is consistent with green intellectual capital, and the application areas are as follows: The source of intellectual power based on the environment will have the best positive effect. A complete superior company (Kilicli, 2022)

Building on RBV by examining conditions underlying sustainable economic rents. They emphasize the fact that uncertainty about which future scenarios may prevail (Schoemaker, 1991) gives rise to idiosyncratic managerial decisions across firms. This in turn creates asymmetries as to which R&C firms develop, and thus can become a source of sustainable economic rent (Amit & Schoemaker, 2016).

RBV focuses on internal and institutional factors, emphasizing the slow evolutionary paths by which firm-specific resources and capabilities typically develop and two important extensions of RBV strategies are currently emerging, namely: (1) the role of network based capabilities that are only partly owned and controlled by the firm; and (2) the increasingly important role of business models in which a focal firm leverages its own R&C with those of its partners (Ahmar & Astuti, 2023).

Additionally, green human capital cannot be replaced. Universities may try to replace this with other intellectual or physical capital (such as new research programmes, technology, or infrastructure investments), but these resources fall short of the benefits that come with having green human capital. A cutting-edge campus building with cutting-edge technology, for instance, might be a showpiece for sustainability, but the investment is wasted if there are no academics and staff members dedicated to teaching students how to extend and use these technologies sustainably. Similarly, private colleges lose out on developing green leadership when they only provide environmental studies programmes without encouraging a sustainable culture. Other resources cannot match the expertise, experience, and values that green human capital brings to the table.

Competitive Advantage

Michael Porter, the charge of strategic management, introduces five power to lead university leaders. It must be adopted and observed by adopting a business approach and competitive advantage. it is very important to consider politicians considering technology and globalization fury. Competitiveness excellence includes powerful incentives for competition and establishment partnerships between universities. Therefore, higher education institution must design a more effective strategy by understanding the gap between the levels between the level. It is considered a company that produces and sells. The development of research on innovation-based competitive advantages indicates high interest among academics and practitioners in this topic and the capabilities of institutions to perceive and respond strategically to opportunities and threats (David et al., 2023).

Competitive advantage is a concept that has been extensively studied in the fields of business and management. It refers to the unique attributes or capabilities that a firm possesses, which enable it to outperform its competitors and achieve superior performance in the market. Creating and Sustaining

Superior Performance." Porter defined competitive advantage as a firm's ability to create a unique and sustainable position in the market that allows it to outperform its competitors. This concept is central to strategic management and is often linked to a firm's ability to create value for its customers and stakeholders (Eloranta & Turunen, 2015).

Competitive advantage is a relational term between a focal firm and rival(s) within a specific context of competition. Competitive advantage is not a universal, general, and overall characterization of a firm or certain aspects of a firm. Similar terms to competitive advantage could be found in competence and strengths, which seem to be generally regarded as firm-specific traits, but are also argued to be meaningful primarily within a certain context. We first discuss the situational nature of these terms and then explore the context-specific nature of competitive advantage (Ma, 2000) .

To build a competitive advantage, a hospitality company needs to build unique competence and strategic resources that create superior customer value (Kovaltchuk1 et al., 2022.) According to resource-based view (RBV, Barney, 1991, Barney, 2001), green intellectual capital, which includes green human capital, green structural capital, and green relational capital, is often viewed as strategic resources of a hospitality company because a hospitality company that possesses green knowledge, skills, experience, organizational structure, organizational culture, Haldorai et al. (2022). Management system, and relationship network is more likely to form green capabilities that help establish competitive advantage (Liu, 2010, Yong et al., 2019). In other words, managers of a hospitality company can use a strategic orientation that focuses on green innovation to guide and encourage the company to seek and build green intellectual capital and then use these strategic resources for green innovation to establish a competitive advantage (Chen, 2008, Yusliza et al., 2020).

Finally, it was mentioned that green human capital helps institutions maintain their long-term strategic positioning. Universities were prepared for a future in which environmental stewardship would be a critical element of organisational success by cultivating staff and students who were focused on sustainability. Its believed that sustainability is not just a trend, it's the future. it is putting itself in a successful long-term position by making this investment in green human capital now. When all institutions are required to be sustainable, it will be ahead of the curve.
Several interviewees endorsed this long-term outlook, its emphasized that sustainability was about developing resilience and adaptation in the face of future problems, such tighter environmental restrictions or changing student preferences, rather than only about achieving quick wins.

Green Human Capital

Green human capital refers to the intellectual and social capital that individuals possess, which can be leveraged to drive innovation, collaboration, and sustainability within institutions. This concept encompasses the knowledge, skills, and values that faculty and staff bring to the table, such as expertise in environmental sustainability, digital literacy, and community engagement. Green human capital is knowledge, skills, abilities, experience, Action, wisdom, creativity and employees Commitment to environmental protection (Y. - S. Chen, 2008). Even though technological development is accelerating, human resources still remain important in determining the value of a company and its ability to grow and survive.

Many researchers argue that human capital characteristics will be a valuable tool. All Companies must hire environmentally sustainable human capital. Build robust and difficult to imitate green human capital (GHC) (Jackson et al., 2004; Zada et al., 2022). Malik (2020) reports that GHC will transform workers into strategic assets due to their environmental impact. Knowledge and dedication. These employees can give your company a competitive advantage. Kong and Thomson (2009) argue that human capital should be a key feature of strategic human resource strategy and management. GHR plays an important role in creating green and environmental awareness among employees by promoting deep organizational engagement (Shoaib, 2021). This knowledge to improve human resource policies for environmental management (Huang et al., 2011; Khan et al. as. , 2022). GHC service companies embrace green HR

strategies and support organizations. Recruit the best human capital (Chang et al., 2012). Many scholars believe that companies should improve their environmental capabilities and prepare their employees to integrate them. The company's GHR strategy to implement corporate environmental ethics in practice (Helfat & Peteraf, 2015; Tees, 2014).

Green intellectual capital is a type of intellectual capital. It is described as the entire knowledge the organization has and employs in environmental management. Similarly, Liu has defined GIC as the integration of the green and environment knowledge sources and knowing capability of companies for improving a competitive advantage. On the other hand, Chen has described green intellectual capital as the kinds of knowledge, capabilities and relationships about environmental protection or green innovation at the individual and the organization levels.

Although the value of sustainability in higher education is becoming more widely acknowledged, the strategic influence of green human capital has not been thoroughly studied in empirical research. The majority of this field's research stays theoretical, concentrating on issues such as the significance of sustainability and the best ways for universities to advance it. Nevertheless, there is a dearth of empirical data demonstrating the real returns on investment (i.e., increased student enrolment, better institutional performance, or improved reputation) from investing in green human capital. Although the value of sustainability in higher education is becoming more widely acknowledged, the strategic influence of green human capital has not been thoroughly studied in empirical research. The majority of this field's research stays theoretical, concentrating on issues such as the significance of sustainability and the best ways for universities to advance it. Nevertheless, factual data demonstrating the real benefits of investing in green human capital such as enhanced institutional

METHODS

This study employs a qualitative research approach to explore the strategic utilization of green human capital for achieving competitive advantage in private universities in South Sumatra, Indonesia. The methodology consists of several stages: research design, data collection, data analysis, and validation of findings.Data Collection Methods using Semi-Structured Interviews: In-depth semi-structured interviews were conducted with key stakeholders. This method allows for flexibility in exploring various aspects of green human capital while maintaining a consistent line of inquiry. Interview Guide: An interview guide was developed, consisting of open-ended questions that explore participants' understanding of green human capital, its implementation, challenges faced, and perceived benefits. Duration: Each interview lasted between 45-60 minutes. Recording and Transcription: Interviews were recorded (with participants' consent) and transcribed verbatim for detailed analysis. Document Analysis: Relevant documents such as university sustainability reports, strategic plans, and curriculum outlines were reviewed to gather contextual information and triangulate interview and focus group data.

Research Design The research adopts an exploratory qualitative design, suitable for gaining in-depth understanding of complex phenomena such as the integration of green human capital in educational institutions. This approach allows for a detailed examination of the perceptions, experiences, and strategies of various stakeholders involved in the process. In addition to interviews, document analysis was conducted to gather further insights into the universities' sustainability policies, green initiatives, and internal reports on human capital development. Documents such as strategic plans, sustainability reports, and training materials were reviewed to corroborate the information gathered in interviews and to provide context for each university’s approach to sustainability.

The interviews were designed to explore how green human capital is fostered within each institution, how it contributes to institutional competitiveness, and what challenges or opportunities are associated with its development. The semi-structured format allowed for flexibility, enabling participants to express their views freely while ensuring that the key themes related to the study’s objectives were covered.

RESULTS/ DISCUSSION

Results

Universities which effectively leveraged green human capital reported numerous strategic advantages, including cost savings from energy-efficient technologies and waste management systems. Enhanced institutional reputations attracted environmentally-conscious students and faculty, contributing to increased enrollment and recruitment efforts. Strategic partnerships with governmental agencies, and private sector organizations provided additional resources and collaborative opportunities, further strengthening the universities' competitive positioning. Resistance to change among faculty and staff, rooted in traditional practices, posed challenges to the adoption of new, environmentally-friendly approaches.

Stakeholders exhibited varying levels of awareness regarding sustainability issues, with some displaying a strong commitment to integrating green practices into university operations. Institutional commitment to sustainability initiatives varied across private universities in South Sumatra, with some institutions leading the way in implementing comprehensive green policies and programs.

The significant potential of green human capital as a competitive advantage for private universities in South Sumatra. Despite challenges, institutions that strategically leverage their green resources and capabilities stand to gain substantial benefits, including cost savings, enhanced reputations, and strategic partnerships. By embracing sustainability as a core value and investing in green human capital, private universities can not only strengthen their competitive positioning but also contribute to broader environmental sustainability goals.

The value of green leadership came up repeatedly in the interviews. As part of the institution's goal, university authorities stressed the need for leaders who not only understand sustainability but also actively promote it. As one administrator put it, "We need green leadership." We enable our employees to spearhead change within their areas and encourage them to take responsibility of sustainable efforts. Sustainability coordinators were hired by certain colleges with the responsibility of supervising and directing the adoption of eco-friendly measures throughout the school. It was said that this leadership position was essential to coordinating the university's sustainability objectives with day-to-day activities. Several challenges faced by private universities in South Sumatra in developing green human capital.

The improved reputation that institutions acquired as a result of their dedication to sustainability was one of the main competitive benefits that was found. Green initiatives, according to administrators and faculty, have enhanced the public's impression of their respective universities. One administrator put it like way: "Our university's identity now revolves around sustainability. Students that care about the environment and wish to attend a progressive university are drawn to it.

Discussion

A competitive advantage is the ability of a company to outperform its competitors. In modern economies, the main factor of a competitive advantage is intellectual capital (IC), which is viewed as the principal strategic asset and the key source of economic value. Unanticipated changes in the economic structure of an industry may make what was, at one time, a source of sustained competitive advantage, no longer valuable for firm, and thus not a source of any competitive advantage.

Private universities should prioritize efforts to raise awareness about sustainability issues and embed environmental considerations into their institutional values and strategic planning. Building a strong reputation for sustainability can differentiate universities in the competitive higher education landscape, attracting individuals who prioritize environmental responsibility in their academic and career pursuits.

Financial constraints, a lack of expertise in green technologies, and resistance to change pose significant challenges to the effective implementation of green initiatives. Addressing these challenges requires strategic planning, external funding opportunities, and investment in staff training and development. Competitive advantage is sustained does not imply that it will last forever. It only suggests

that it will not be competed away through the duplication effort of other firms especially private universities in South Sumatra.

Green human capital has been identified as a significant contributor to the competitive advantage of private universities in South Sumatra. This concept refers to the intellectual and social capital that individuals possess, which can be leveraged to drive innovation, collaboration, and sustainability within institutions. In the context of private universities, green human capital encompasses the knowledge, skills, and values that faculty and staff bring to the table, such as expertise in environmental sustainability, digital literacy, and community engagement. By fostering a culture that values and develops green human capital, private universities in South Sumatra can differentiate themselves from competitors and attract students and talent who share similar values and goals.

The integration of green human capital into the strategic planning of private universities in South Sumatra can have a profound impact on their competitive advantage. For instance, institutions that prioritize green human capital can develop innovative programs and services that address pressing environmental and social issues, such as sustainable development, climate change, and social justice. This can lead to enhanced reputation, increased student enrollment, and improved alumni engagement. Furthermore, the emphasis on green human capital can also foster a sense of community and shared purpose among faculty, staff, and students, which can drive collaboration, creativity, and entrepreneurship. By leveraging green human capital, private universities in South Sumatra can not only enhance their competitive advantage but also contribute to the broader goals of sustainability and social responsibility.

CONCLUSION

The study highlights the significant potential of green human capital in achieving a competitive edge for private universities in South Sumatra. While there are challenges to overcome, the strategic advantages are substantial, including cost savings, enhanced reputation, and new partnership opportunities. By adopting comprehensive sustainability policies, developing green curricula, and fostering a culture of sustainability, universities can not only contribute to environmental goals but also strengthen their competitive positioning in the higher education landscape.

The development of green human capital, particularly in the form of sustainability-focused training for faculty and students, remains underutilized as a strategic tool. Institutions that do invest in green human capital are positioned to attract eco-conscious students, enhance their reputation, and build partnerships with organizations that prioritize sustainability.

Moreover, the research highlights that green human capital provides a clear competitive edge by differentiating universities from their peers, not only in terms of educational offerings but also in their commitment to global sustainability efforts. Universities that excel in this area tend to perform better in university rankings, secure more research funding, and enjoy stronger community support.

The implications of these findings are twofold. First, private universities in South Sumatra should prioritize the development of green human capital as a core component of their long-term strategic planning. This involves embedding sustainability into their curriculum, faculty development programs, and campus operations. Second, policymakers and education leaders should recognize the role of green human capital in shaping the future of higher education, promoting its integration across the sector to ensure that universities contribute meaningfully to both local and global sustainability goals.

In conclusion, this study provides a clear roadmap for private universities seeking to leverage green human capital as a source of competitive advantage. By aligning educational initiatives with sustainability and environmental stewardship, these institutions can not only meet the demands of today's students and society but also position themselves as leaders in the future of higher education.

By improving reputation, reducing operational costs, opening up opportunities for collaboration, integrating sustainability in the curriculum, establishing a strong environmental culture, and gaining higher recognition, universities can position themselves as leaders in sustainable and innovative education. Investing in green human capital is not only a smart move for a more sustainable future but also an effective strategy to achieve long-term competitive advantage.

ACKNOWLEDGEMENTS

We would like to express our sincere gratitude to all those who have contributed and supported the completion of this research. Without the help and cooperation of various parties, this research would not have been completed properly. We hope that the results of this research can make a meaningful contribution to the development of Green Human Capital as The Competitve Advantage of Private Universities in South Sumatra and be useful for interested parties. We also realise that this research still has limitations, so we are open to constructive criticism and suggestions for future improvements.

REFERENCES

Abdelfattah, F., Salah, M., Dahleez, K., Darwazeh, R., & Al Halbusi, H. (2024). The future of competitive advantage in Oman: Integrating green product innovation, AI, and intellectual capital in business strategies. *International Journal of Innovation Studies*, *8*(2), 154–171. https://doi.org/10.1016/j.ijis.2024.02.001

Agyabeng-Mensah, Y., & Tang, L. (2021). The relationship among green human capital, green logistics practices, green competitiveness, social performance and financial performance. *Journal of Manufacturing Technology Management*, *32*(7), 1377–1398. https://doi.org/10.1108/JMTM-11-2020-0441

Ahmar, N., & Astuti, T. (2023). COMPETITIVE ADVANTAGE BASED ON GREEN INTELLECTUAL CAPITAL AND GREEN INNOVATION. In *Asian Journal of Engineering, Social and Health* (Vol. 2, Issue 11). https://ajesh.ph/index.php/gp

Amin, A., Rubbab, Dr. U., & Irshad, Dr. M. (2022). Green Human Capital and Green Human Resource Management as Critical Factors for Organizational Competitive Advantage. *International Journal of Business and Economic Affairs*, *7*(4). https://doi.org/10.24088/ijbea-2022-74006

Amit, R., & Schoemaker, P. J. H. (2016). Firm Resources. In *The Palgrave Encyclopedia of Strategic Management* (pp. 1–6). Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-94848-2_481-1

Arizqa Setiadi, N., Saraswati, A., Dwi Astuti, C., & Ekonomi dan Bisnis, F. (n.d.). *THE EFFECT OF GREEN INTELLECTUAL CAPITAL ON COMPETITIVE ADVANTAGE WITH CORPORATE SOCIAL RESPONSIBILITY AS A MEDIATING*. http://devotion.greenvest.co.id

Bombiak, E. (2023). Effect of Green Intellectual Capital Practices on the Competitive Advantage of Companies: Evidence from Polish Companies. *Sustainability (Switzerland)*, *15*(5). https://doi.org/10.3390/su15054050

David, Abdurachman, E., Bandur, A., & Kosasih, W. (2023). Improving Competitive Advantages of Higher Education Institutions through IT Governance, IT Excellence, and IT Innovation: A Case Study in School of Informatics Management & Computing in Indonesia. *CommIT Journal*, *17*(1), 103–119. https://doi.org/10.21512/COMMIT.V17I1.8505

Eisenhardt, K. M., & Martin, J. A. (2000). DYNAMIC CAPABILITIES: WHAT ARE THEY? In *Strategic Management Journal Strat. Mgmt. J* (Vol. 21).

Eloranta, V., & Turunen, T. (2015). Seeking competitive advantage with service infusion: A systematic literature review. *Journal of Service Management*, *26*(3), 394–425. https://doi.org/10.1108/JOSM-12-2013-0359

Haldorai, K., Kim, W. G., & Garcia, R. L. F. (2022). Top management green commitment and green intellectual capital as enablers of hotel environmental performance: The mediating role of green human resource management. *Tourism Management*, *88*. https://doi.org/10.1016/j.tourman.2021.104431

Hitt, M. A., Carnes, C. M., & Xu, K. (2016). A current view of resource based theory in operations management: A response to Bromiley and Rau. *Journal of Operations Management*, *41*, 107–109. https://doi.org/10.1016/j.jom.2015.11.004

Irayani, Kamaludin, Fachruzzaman, & Muhammad Rusdi. (2023). The Moderatoring Role of Digital Transformation Strategy on the Relationship between Intellectual Capital and Competitive Advantage in Private Universities in South Sumatra, Indonesia. *Asian Journal of Economics, Business and Accounting*, *23*(19), 36–54. https://doi.org/10.9734/ajeba/2023/v23i191071

KILIÇLI, Y. (2022). The Relationship Between Intellectual Capital and Competitive Advantage: A Meta-Analysis Study. *Akademik Araştırmalar ve Çalışmalar Dergisi (AKAD)*, *14*(27), 335–360. https://doi.org/10.20990/kilisiibfakademik.1149041

Kovaltchuk1, A. P., Miloradov2, K. A., Nikolskaya3, E. Y., & Gunare, M. L. (n.d.). *ENVIRONMENTAL PROJECT MANAGEMENT IN THE HOSPITALITY INDUSTRY IN RUSSIA USING THE CRITERIA "RISK-PROFITABILITY" GESTIÓN DE PROYECTOS AMBIENTALES EN LA INDUSTRIA DE LA HOSPITALIDAD EN RUSIA UTILIZANDO EL CRITERIO "RIESGO-RENTANCIA."*

Lopes de Sousa Jabbour, A. B., Rojas Luiz, J. V., Rojas Luiz, O., Jabbour, C. J. C., Ndubisi, N. O., Caldeira de Oliveira, J. H., & Junior, F. H. (2019). Circular economy business models and operations management. *Journal of Cleaner Production*, *235*, 1525–1539. https://doi.org/10.1016/j.jclepro.2019.06.349

Ma, H. (2000). Competitive advantage and firm performance. *Competitiveness Review*, *10*(2), 15–32. https://doi.org/10.1108/eb046396

Pham, N. T., Vo Thanh, T., Tučková, Z., & Thuy, V. T. N. (2020). The role of green human resource management in driving hotel's environmental performance: Interaction and mediation analysis. *International Journal of Hospitality Management*, *88*. https://doi.org/10.1016/j.ijhm.2019.102392

Rouf, Md. A., Hossain, M. S., Habibullah, Md., & Ahmed, T. (2022). Online classes for higher education in Bangladesh during the COVID-19 pandemic: a perception-based study. *PSU Research Review*. https://doi.org/10.1108/prr-05-2021-0026

Safiullin, M. (2019). Digital transformation of a university as a factor of ensuring its competitiveness. *International Journal of Engineering and Advanced Technology*, *9*(1), 7387–7390. https://doi.org/10.35940/ijeat.A3097.109119

Wernerfelt, B. (1984). A Resource-based View of the Firm. In *Strategic Management Journal* (Vol. 5).

Biodata

Irayani is a lecturer of Management Department, University of Tridinanti Palembang. She received her Doctoral Program under BPPDN Scholarship in Bengkulu University in Bengkulu. Her major interests cover literacy in Management, academic writing, and English language proficiency.
Email: irayani0707@gmail.com

LITERATURE REVIEW ; THE INFLUENCE DIRECTIVE LEADERSHIP AND HARDINESS PERSONALITY ON WORK DISCIPLINE

Fansiscus Ari Susetio[1], Mohamad Adam[2], Isnurhadi[3], Muhammad Ichsan Hadjri[4]
Sriwijaya University[1,2,3,4]
Fast97echa@gmail.com[1]

Abstract

Work discipline is a concept in the workplace or management to require employees to behave regularly. Discipline is a condition that causes or gives encouragement to employees to act and carry out all activities in accordance with the rules that have been established. This research is to see whether there is an influence of directive leadership and hardiness personality on work discipline. This research uses a literature review method by reviewing research articles that are relevant to this research. From the research carried out, there is the influence of directive leadership and hardiness personality on work discipline.

Keywords: Directive leadership, Hardiness personality, Work Discipline

INTRODUCTION

Discipline is very necessary in life, whether personal or group or organizational. Discipline, which has its essence in strictness and compliance with applicable provisions, rules or customs, is one of the factors in achieving certain goals. Work discipline is essentially the awareness of workers in carrying out their duties which is grown through formal and non-formal education.

Helmi (1996) states that there are 2 factors that influence work discipline, namely internal factors and external factors. Internal factors are factors that originate from within an individual, this includes a person's personality. One personality is a tough personality. Kreitner and Kinicki (2005) said that Hardiness involves the ability from perspective or behavior to change negative stressors into positive challenges. The personality trait of hardiness has a positive influence on various individual statuses and functions as a source of resistance when individuals encounter stressful events. Kobasa, et al. (1982) explained that personality hardiness is a series of traits that function as a source of resistance when an individual encounters a problem. Individuals with a hardiness personality believe that all the problems they face, including all existing problems and workloads, are something that cannot be avoided, so they can do what they think is right to solve the problem.

Another factor that can influence discipline is directive leadership (Kong et al., 2018). Directive leadership is a form of traditional leadership in which a person has and exercises the authority to provide direction to subordinates through legitimate authority that comes from a formal position in an organization (French, Raven, & Cartwright, 1959). This directive leadership has a structure that sets specific goals and directions for members in a topdown format and influences member behavior through instructions and commands (Pearce et al, 2003; Sims Jr et al., 2009). In addition, directive leadership has characteristics such as emphasizing goal achievement, allocating tasks and suggesting certain methods for the performance expected by the leader, as well as closely monitoring organizational members and providing feedback on tasks (Bass & Stogdill, 1990; Pearce et al, 2003) . Because of these characteristics, the Ohio State leadership study identified directive leadership as an initiating structure.

Directive leader behavior focuses on achieving goals, he controls the behavior of organizational members for efficient work performance. In addition, leaders monitor members' behavior and play a determining role in discussion styles and decision-making processes among members (Burke et al, 2006). Directive leader behavior can be seen that communication occurs only through formally determined channels between the leader and subordinates and prevents free communication. In fact, in an experimental study of the influence of group decision making on leadership, directive leader behavior exerted a strong influence on group decision making, and it was found that it had a negative effect on communication among team members (Cruz, Henningsen, & Smith, 1999). In a study of communication methods by leadership type, it was found that task-oriented leadership similar to directive leadership communicated significantly less than people-oriented and charismatic leadership (De Vries, Bakker-Pieper, & Oostenveld, 2010).

METHOD

This research uses a literature review method from the data obtained. The research presents the results of searches for research on the internet according to the variables of this research. Literature reviews are carried out with a focus on original articles containing abstracts, introductions, methods and results. Literature review is a systematic, explicit and reproducible method for identifying, evaluating and synthesizing research works and ideas that have been produced by researchers and practitioners. The aim of a literature review is to make an analysis and synthesis of existing knowledge related to the topic to be researched to find free space for the research to be carried out.

RESULTS AND DISCUSSION

The directive leadership style is a leadership style that has a positive relationship with subordinate satisfaction and expectations. Superiors often give specific orders or orders (autocracy). This type is an authoritarian leadership practice, members or subordinates never have the opportunity to participate in expressing opinions, especially in decision making this style is based on the use of force, power and authority to provide specific instructions for the performance of their subordinates. The leader of this type of directive leadership considers his leadership to be his personal right and believes that he can determine anything in the organization, without consulting with his subordinates. The implementation of tasks tends to be tense, so it is more appropriate if this type of leadership or leader is used in emergency situations, where consultation with subordinates is no longer possible (House, 1996). Directive Leadership is divided into 3 dimensions, namely (House, 1996):

a. clear guidelines,
b. Ask subordinates to follow guidelines,
c. Sanctions to subordinates who violate.

Paul Hersey and Ken Blanchard first developed their 'Life cycle theory of leadership' in 1969. They later renamed the theory 'situational leadership' and continued to develop it both together and individually. This theory describes four different leadership styles and four levels of individual or team maturity or readiness. It then combines these to suggest which leadership style best suits which maturity level.

1. The leadership style is:

S1: Saying. This style is characterized by one-way communication in which managers define roles and are very directive about how work will be done.
S2: Selling. Managers still provide direction but use two-way communication. Teams or individuals are now encouraged to buy into the decisions made by managers.

S3: Participate.
Managers and teams (or individuals) share decision making about some aspects of how work will be done. Managers focus less on directive behavior and more on supportive behavior.

S4: Delegating.
While still involved in decisions, managers have delegated much of the responsibility for job performance to teams or individuals but still have responsibility for monitoring progress.

2. A P3 manager must be competent in all four styles. While 'S1' may be appropriate when a project manager has requested assistance from a short-term contractor, 'S4' is very much the relationship to be seen between, for example, a program manager and a project manager.

3. These styles correlate with points on Tannenbaum and Schmidt's leadership continuum and can also be easily aligned with the stages in Tuckman's team development model.

4. Next to leadership style are team or individual characteristics. In earlier versions of the model this was called 'maturity level' but in newer versions it has become 'follower readiness'. The four levels of readiness are:
   R1: Can't and don't want to or it's not safe.
   R2: Can't but willing or confident
   R3: Can but doesn't want to or isn't safe
   R4: Can and willing or confident

5. Putting leadership styles together with the following levels of readiness:
   a. Telling
      When team members first arrive there may be anxiety, tension or confusion. Managers must adopt a task-oriented approach, giving specific instructions and monitoring performance closely.

   b. Selling
      As individuals begin to understand what is required, managers will spend more time building relationships of mutual trust and understanding. Because the individual has not yet developed sufficient competence to assume full responsibility for the task, it is still necessary to explain decisions and provide opportunities for clarification.

   c. Participate.

When individuals develop high levels of competence and motivation, greater delegation and group decision making are possible. Leaders concentrate on developing relationships with individuals.

d. Delegate.
Eventually, a point is reached when team members are confident in their abilities, trusted to carry on with the task and have a good relationship with the manager. Both task and relationship behavior dropped to low levels. Complacency on the part of administrators is now, perhaps, the greatest danger.

According to Kobasa (1979), hardiness is a personality characteristic that involves the ability to control unpleasant events and give positive meaning to these events so that they do not cause stress to the individual concerned. Psychologically, people with high psychological resilience tend to be more effective in dealing with stress by using a coping approach that focuses on problems actively. Kobasa (1979) showed that people with high psychological resilience are better at handling stress because they see themselves as people who choose the stressful situation themselves. They consider the stressors they face to make life more interesting and challenging, rather than simply burdening them with additional pressures. The dimensions of hardiness according to Kobasa (1979) are as follows:

a. Controls. It is a tendency to accept and believe that individuals can control and influence events with their experiences when faced with unexpected things. People who have strong control will always be more optimistic in facing problems than individuals who have low control. Apart from that, they also have the ability to take real action in solving a problem. Individuals with hardiness have the ability to control what happens to them.
b. Commitment. Individuals who have high commitment believe in their own abilities and what they are doing. Individuals who have whatever activity they are doing and normal feelings will lead them to identify or give meaning to every event and everything in their environment. Individuals who have strong commitment will not give up easily when faced with difficult situations. They will use coping strategies that suit their values, goals and abilities when facing stress. On the other hand, individuals who have low commitment will easily feel bored, give up, withdraw from the tasks they have to do, and be passive from various activities. Individuals who have low commitment will assess events that cause stress as something that can only be complained about, not faced.
c. Challenges. Challenge refers to the tendency to view change as an incentive or opportunity for growth rather than a threat to security. Individuals with hardiness who are high in challenge expect change and see stressful conditions as a challenge that offers an opportunity for growth. They always move dynamically, have a strong desire to progress, and find easier ways to eliminate or reduce stressful situations and do not consider stress as an obstacle. When they are faced with something difficult, they view it as a challenge, not an obstacle.

According to Lateiner (2002), "Discipline is a person's awareness and willingness to comply with existing regulations within the organization and applicable social norms." Work discipline is a form of self-control and is also carried out regularly as an indicator of the level of work seriousness. The dimensions of work discipline according to Lateiner (2002) are;

a. Punctuality. Such as coming to the office on time, leaving the office on time, and employees being able to behave in an orderly manner, it can be said that members of the organization have good work discipline.

b. Utilization of facilities. Organization members who are careful in using office equipment to avoid damage to office equipment are a reflection of organizational members who have good work discipline.
c. High responsibility. Members of an organization who always complete the tasks assigned to them according to procedures and are responsible for the results of their work can also be said to have high work discipline.
d. Compliance with organizational rules. Organization members who wear uniforms according to the rules, wear identity cards, and have permission when they are absent from work, are also a reflection of high discipline.

CONCLUSION

Based on the literature review that has been carried out using relevant research articles, there is an influence on directive leadership and personality hardiness on work discipline. There are 2 factors that influence work discipline, namely internal factors and external factors. Internal factors are factors that originate from within an individual, this includes a person's personality. One personality is a tough personality. Another factor that can influence discipline is directive leadership (Kong et al., 2018). Directive leadership is a form of traditional leadership in which a person has and exercises the authority to provide direction to subordinates through legitimate authority that comes from a formal position in an organization.

ACKNOWLEDGEMENTS

The author would like to thank all parties who have helped in the process of writing this article. Thank you also to the supervisors and Sriwijaya University.

REFERENCES

Bass, B. M. (1990). Bass & Stogdill's handbook of leadership: Theory, research, and managerial applications (3rd ed.). New York: Free Press.

Burke, C. S., Stagl, K. C., Klein, C., Goodwin, G. F., Salas, E., & Halpin, S. M. (2006). What type of leadership behaviors are functional in teams? A meta-analysis. *The Leadership Quarterly, 17*(3), 288-307.

Cruz, M. G., Henningsen, D. D., & Smith, B. A. (1999). The impact of directive leadership on group information sampling, decisions, and perceptions of the leader. *Communication Research, 26*(3), 349-369.

De Vries, R. E., Bakker-Pieper, A., & Oostenveld, W. (2010). Leadership= communication? The relations of leaders' communication styles with leadership styles, knowledge sharing and leadership outcomes. *Journal of Business and Psychology, 25*(3), 367-380.

French, J. R., Raven, B., & Cartwright, D. (1959). The bases of social power. *Classics of Organization Theory, 7*, 311-320.

Helmi, A.F. (1996). Disiplin Kerja. Buletin Psikologi, IV (2). Diunduh dari http://avin.staff.ugm.ac.id/data/jurnal/disiplinkerja_avin.pdf diakses tanggal 21 Maret 2022

Kobasa, S.C., Maddi, S.R., & Kahn, S. (1982). Hardiness and Health: Aprospective Study. *Journal of Personality and Social Psychology, 42, 168-177.*

Kobasa, S. C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. Journal of Personality and Social Psychology, 37(1), 1-11.

Kong, M., Park, J., Shin, Y., and Sohn, Y.W. (2018). The Relationship between Empowering Leadership, Directive Leadership, Safety Communication, and Safety Behavior for Air Force Combat Pilots: The Moderated Mediating Effect of Safety Motivation. *Journal of the Korean Society for Aviation and Aeronautics (한국항공운항학회지)*, 26(2), 8-30.

Pearce, C. L., Sims Jr, H. P., Cox, J. F., Ball, G., Schnell, E., Smith, K. A., & Trevino, L. (2003). Transactors, transformers and beyond: A multi-method development of a theoretical typology of leadership. *Journal of Management Development, 22*(4), 273-307.

Zimbardo, D.G., and *Gerrig*, R.J. (*1996)*. *Psychology and Life*. Singapore: Harper.

Biodata

Fansiscus Ari Susetio is a doctoral student in Sriwijaya University for the management program.His email is Fast97echa@gmail.com.

.

THE POTENTIAL OF PGPR (PLANT GROWTH PROMOTING RHIZOBACTERIA) TO REDUCE INROGANIC FERTILIZERS NEEDS IN PEANUTS CULTIVATION

Marulak Simarmata
Department of Crop Production, University of Bengkulu
marulak@unib.ac.id

Masdar
Department of Crop Production, University of Bengkulu
masdar@unib.ac.id

Reny Herawati
Department of Crop Production, University of Bengkulu
reny.herawati@unib.ac.id

Abstract

Plant growth promotion rhizobacteria (PGPR) can be applied around the roots of plants and function as biofertilizers, biostimulants, and biopectants. When PGPR improves soil fertility in plant area, the dose of inorganic fertilizers can be lowered. On the other hand, it may also affect the growth of weeds around the crops. The objectives of the research were to study the interaction of PGPR with the dose of inorganic fertilizers on the growth and yield of peanuts, as well as the impact of the PGPR application on the appearance of weeds around the planting area. The results showed that there was a significant interaction of PGPR with the doses of fertilizers on peanut yields. The yield of peanuts was not significantly different from 100% recommended dose (RD) of inorganic fertilizers if 1.0% PGPR was combined with 75 and 50% RD of inorganic fertilizers, and 2.0% PGPR was combined with 75, 50 and 25% RD of inorganic fertilizer. The application of PGPR has no effects on the appearance of weeds in peanut fields. It is concluded that applying PGPR at 1.0% or 2.0% in peanut cultivation in coastal lands of ultisol showed the potential in reducing the need for inorganic fertilizers of nitrogen and phosphor down to 50% or 25%, respectively.

Key words: biofertilizers, inorganic fertilizers, coastal areas, peanuts, PGPR, ultisol

1. INTRODUCTION

Peanut (*Arachis hypogaea* L.) is one of the legumes in Fabaceae family, an important groundnut that ranks second after soybeans (Friend et al., 2010). Peanuts can be used for food or raw materials for the food industry, cooking oil, margarine and soap (Prasad et al., 2010). Peanuts are rich in protein, iron, vitamins E, B complex, A and K, as well as phosphorus, calcium and the amino acid lecithin and choline (Sadras and Calderini. 2021). As an industrial raw material, peanuts have a high oil content, reaching 40 – 48%, followed by protein and carbohydrates of 27 and 18%, respectively (Kumar et al., 2014).

The yield and production of peanuts in Indonesia are still low compared to other countries such as China, India and the USA. According to Sadras and Calderini (2021), China and India are the world's largest peanut producers, accounting for more than 40% and 15% of world production respectively, followed by the USA (7.2%). Now day, crop yields often fluctuate due to changes in global climate, genetic resources, and cultivation aspects (Wei et al., 2022).

Demand for peanuts continues increasing along with the increase in human population. Various efforts continue to be made to increase peanut production, including expanding planting areas and improving production facilities and technology. In Indonesia, expanding planting areas by managing marginal land in coastal areas can be an opportunity to increase crop production including peanuts (Gunadi 2002; Arianto, 2020). Most coastal areas are marginal ultisol which have low productivity and can be used for crop cultivation by optimizing production facilities, especially fertilization (Ray et al., 2014; Simarmata et al., 2015). The use of inorganic fertilizers in sufficient doses can increase crop yields, but if done continuously it will cause saturation and even damage to the physical, biological and chemical properties of the soil (Mahrous et al., 2015; Ahmed et al., 2017). According to Utami et al. (2018), inorganic fertilizer will be more effective and beneficial if combined with biological fertilizer such as PGPR (plant growth promoting rhizobacteria) because PGPR can regenerate soil from inorganic fertilizer residues.

PGPR is a group of bacteria that can be developed around the roots (rhizosphere) of plants and can colonize aggressively so that PGPR can stimulate the root system architecture (RSA) which supports plant growth (Kalita et al., 2015). Several types of microbes formulated in PGPR are nitrogen fixing bacteria, namely *Rhizobium azobacterer* and *Azospirillium* sp. and phosphate solubilizing bacteria such as the genus *Bacillus pseudomonas, Arthrobacter, Bacterium* and *Mycobacterium* (Munees and Mulugeta, 2014; Biswas et al., 2010). The *Azotobacter* genus is generally a nitrogen-fixing bacteria that is often found in agricultural soil and has various beneficial roles by producing vitamins, amino acids and auxin (Sharma et al., 2009). Azotobacter produces indole acetic acid (IAA), gibberllic acid (GA) which are important growth hormones and these hormones will help in germination and growth (Dodd et al., 2010).

PGPR also functions as a control agent for soil pathogens (bioprotectants) by producing antipathogenic metabolites such as siderophore, chitinase, β1,3-glucanase, cyanide, and antibiotics (Riaz et al., 2021). As a biopectan, it can control pathogens and plant pest organisms through the production of compounds that function as anti-fungals and antibiotics (Pineda et al., 2013; Riaz et al., 2019). In more detail we explain the beneficial effects of PGPR as a biopectan against root-dwelling microbial pathogens that have systemic effects on above-ground insect communities at several trophic levels and can trigger physiological changes and induction of defense in host plants.

The practical consideration for using PGPR is to increase the effectiveness of fertilizer doses, especially on ultisol which has never been managed for peanut cultivation. A'yun et al., (2013) reported that applying PGPR at a concentration of 10 ml/L to cayenne pepper could reduce the intensity of TMV (Tobacco Mosaic Virus) attacks by up to 89.92%, increase plant height and increase chili plant production. Munees and Mulugeta (2014), reported that PGPR can increase crop yields by 20-30%, increase nitrogen and phosphate in the soil by 25%, stimulate soil biological activity, and increase plant growth and biomass production.

The application of PGPR will increase soil fertility in the planting area which stimulates the growth of the main crops, therefore it may reduce the need for inorganic fertilizer as source of nitrogen and phosphorous. On the other hand, it is possible that it may stimulate the emergence and growth of weeds and cause competition to crops if it is not controlled as early as possible. The research was conducted aimed to determine the interaction of PGPR with N and P fertilizer doses on the growth and yield of peanuts, as well as analysis of the emergence of weeds around the peanut planting area.

2. MATERIALS AND METHODS

2.1. Site preparations and experimental design

The research was carried out at the Bengkulu University Experimental Station from April to August 2023. The coordinates of the areas are 3.45206^0 LS 102.1618^0 BT with the latitude ± 10 meter above the sea level. Two experimental factors that will be tested are the PGPR concentration and the dose of urea and SP-36 fertilizers, which arranged in completely randomized bloc design with 3 replications. The first factor consisted of 3 PGPR concentrations, namely 1.0, 2.0% v/v, and without PGPR as a control. The second factor consists of 4 doses of fertilizers namely 100% recommended dose (DR) 100 kg/ha of Urea (46% N) and 150 kg/ha SP-36 (36% P_2O_5), 75%, 50%, and 25% DR, while KCl (60% K_2O) fertilizer was 150 kg/ha for each treatment.

The research began by clearing weeds, tilling the soil and creating experimental plots measuring 2m x 1m. Liming is carried out with one ton of dolomite per ha to raise the soil pH to (6 – 7), optimal for peanut plants. Planting is carried out two weeks after liming. Peanuts were planted 2 seeds in a hole with a depth of 3 cm and a spacing of 20 cm x 20 cm or a population of 250,000 plants per ha.

Plant maintenance is carried out according to standards cultivation in the field. Plant were fertilized using Urea, SP-36, and KCl fertilizer to following to the treatment dose. Urea fertilizer is applied 2 times, at planting time and 3 weeks after planting (WAP) at half dose for each, while SP-36 and KCl are applied at planting time. Replanting and thinning were at 7 days old. PGPR was applied 5 times starting at planting with an interval of 7 days. PGPR application is carried out by watering PGPR solutions at 200 ml/plant according to the treatment concentration. Pest control was carried out by using pesticides that are appropriate to the symptoms. Weed control is carried out manually using kored at the age of 2 and 4 WAP. Harvesting plants was carried out at 95 WAP.

2.2. Variables observed and data analysis

Some of the variables observed include plant height, flowering time, flowering time, plant canopy, greenness leaf, leaf chlorophyll content, number of nodules, number of pithy pods, yields (weight of pods from one plot were converted into yield per hectare, plant stover weight (dry biomass), soil bacterial population, dry weight of weed (harvested from 2 square sample plots in each treatment plot).

Chlorophyll content in leaves is carried out during plant growths followed procedures of Rahimi et al. (2019). One gram of peanut leaves is crushed using a mortar in 100 mL of 70% alcohol and filtered with filter paper. The aliquots was put into a cuvette to measure the chlorophyll content using a spectrophotometer (Cray 100 UV-Vis) at wavelengths A662 and A645. The contents of Chlorophyll a, Chlorophyll b, and total Chlorophyll are calculated as follows:

$$\text{Chlorophyll } \alpha = 11{,}24 \times A_{662} - 2{,}04 \times A_{645}$$

$$\text{Chlorophyll b} = 20{,}13 \times A_{645} - 4{,}19 \times A_{662}$$

Soil bacterial was analyzed following the procedures of Simarmata et al. (2018). Inoculation media was prepared by diluting 20 g of NA and 15 g of agar in 1liter distilled H2O, cooked and stirred homogeneously, cooled at room temperature and then stored in a refrigerator at 4 C. The inoculant material collected from the soil around the roots of peanut plants. composite. One gram of soil sample was diluted homogeneously in 9 ml of water (1×10^{-1} g soil suspension). The dilution was repeated to make a 1×10^{-5} soil suspension. The media stock is heated to 50 C and allowed to cool in room temperature. One ml of the inoculant suspension was pipetted into the petridish and media was poured up to two thirds, then shaken so that the inoculant was evenly distributed in the media. The petridish was wrapped and incubated in a room temperature. Bacterial population was observed after 2 x 24 hours of inoculation in Colony Counter and data were presented as CFU (colonies forming unit) in one g of soil calculated according to 5 times dilution

Weeds growing in the plant area were harvested by cutting the weeds above the ground from each treatment unit, put into paper bags to dry at a temperature of 72 C for 72 hours. Data collected were analyzed

statistically for ANOVA and separated by Least significant difference (LSD) with confident level at $P < 0.05$.

3. RESULTS AND DISCUSSION

Laboratory analysis of the soil in the field research was observed that C-organic = 2.63%, N-total = 0.22%, P available = 2.01 ppm (very low), K-dd = 0.23 me 100 g-1 (low), and pH = 3.5 (Soil Science Laboratory, University of Bengkulu). These data were indicated the low level of soil fertility but the field can still be used for peanuts cultivation. Climatological data during the study from January to April 2023 including the average rainfall were 114, 116, 147, and 200 mm, relative humidity were 98.53, 82.96, 83.19, and 84.26%; light intensity were 51.19, 57, 64, 65.41, and 70.9%, respectively. According to Friend et al., (2010) the climatological conditions are suitable to grow peanuts. To raise the soil pH, the field was applied with agricultural limestone at 1 ton/Ha. Statistical analysis showed significant interaction between PGPR and the dose of inorganic fertilizers of urea (N) and SP36 (P) on the yield and number of pithy pods (Table 1). PGPR had a significant effect on the number of root nodules, shoot biomass weight, number of pithy pods, the weight of 100 seeds and peanut yield. The doses of inorganic fertilizer had a significant effect on the plant canopy, number of pithy pods, weight of 100 seeds and peanut yield.

3.1. Interaction of PGPR with inorganic fertilizer

Further tests of the interaction between PGPR treatment and inorganic fertilizer doses on yield and number of pithy pods are shown in Tables 2 and 3. Without applying PGPR, peanut yields decreased significantly with reductions of inorganic fertilizer doses to 75, 50 and 25% of recommended doses (RD). If 1.0% PGPR is applied, plant yields are not significantly different even though the fertilizer dose were reduced to 75 and 50% RD, but yields decrease significantly with the 25% RD of inorganic fertilizer. With applying PGPR of 2.0%, there was no significant difference in crop yields in all level of inorganic fertilizer doses, namely 100, 75, 50, and 25% RD (Table 2). The similar pattern was observed on the number of pithy pods when using PGPR 10 and 20% combined with inorganic fertilizers at 100, 75, 50 and 25% of RD (Table 3).

Table 1. The summary of analysis of variance (ANOVA) on variables observed.

Variables observed	Source of variations			CV (%)
	Interaction	PGPR	Inorganic Fertilizer	
Plant height	0.53 ns	1.83 ns	1.12 ns	6.92
Plant canopy	0.94 ns	2.88 ns	3.81*	9.07
Flowering time	1.74 ns	4.73ns	2.71ns	2.21
The number of nodules	0.33ns	38.00*	0.10 ns	16.46
Chlorophyll content	1.04 ns	2.37 ns	0.56 ns	23.31
Plant stover weight	1.78 ns	6.17 *	1.04 ns	8.82
Number pods	3.91*	6.60 *	3.14*	20.60
Weight of 100 seeds	1.55 ns	7.01*	3.43*	3.82
Yield	3.21 *	6.91 *	3.46 *	19.23
Weed dry weight (T)	0.46 ns	0.86 ns	0.07 ns	28.33

Soil bacterial population	0.58 ns	1.35 ns	0.79 ns	18.61

ns = not significant, * = significant at P<0.05, T = data transformed by ($\sqrt{x + 0.5}$).

Table 2. The interaction of PGPR with the dose of inorganic fertilizers on peanut yields (ton ha^{-1})

PGPR	Recommended dose of inorganic fertilizers			
% v/v)	100%	75%	50%	25%
0	4.24 Aa	3.48 Bb	3.46 Bb	3.00 Bb
1.0	4.60 Aa	4.92 Aa	4.82 Aa	2.80 Bb
2.0	4.98 Aa	4.66 Aa	4.78 Aa	4.58 Aa

The means were separated by LSD test (P < 0.05), capital letters valid in a column and lowercase letters valid in a row; Recommended doses of Urea and SP-36 are 100 and 150 kg ha^{-1}, respectively.

Table 3. The interaction of PGPR with dose of inorganic fertilizers on the number of pithy pods per plants (pods plant^{-1})

PGPR	Recommended dose of inorganic fertilizers			
% v/v)	100%	75%	50%	25%
0	16,1 Aa	13,6 Bb	10,4 Bc	10,1 Bc
1.0	16,8 Aa	18,4 Aa	17,0 Aa	10,3 Bb
2.0	16,6 Aa	17,6 Aa	16,6 Aa	17,8 Aa

The means were separated by LSD test (P < 0.05), capital letters valid in a column and lowercase letters valid in a row; Recommended doses of Urea and SP-36) are 100 and 150 kg ha-1, respectively.

PGPR is a microorganism that can live and develop around plant roots and functions as a biofertilizer by binding nitrogen from the air and dissolving phosphorus to make them available to plants (Alexander et al., 2019; Aquilanti et al., 2004). Another role of PGPR is as a biostimulant and biopectan. As a biostimulant, namely by synthesizing various growth regulators (phytohormones) such as IAA, gibberellins, cytokinins, ethylene in the rhizosphere. Indole Acetic Acid (IAA) plays a role in cell division so that it can increase the quality and quantity of harvest results. Basically, plants are unable to produce sufficient IAA for plant growth and development, but PGPR contains the microbes *Pseudomonas flourescens*, *Azospirillum* and *Azotobacter* which can synthesize IAA (Alexander et al., 2019; Nazir et al., 2019).

The benefit of using PGPR is that it can reduce the need for N and P nutrients which are usually provided through urea and phosphate fertilizers (Mahrous et al., 2015). The results of this study illustrate

that with 1.0% PGPR application, the application of N and P nutrients via urea and SP-36 can be reduced to half or 50% of the recommended dose and if the PGPR application is increased to 2.0% then the application of peanut plant fertilizer can be reduced to a quarter. or 25% of the recommended dose.

3.2. The effects of PGPR

Further test of PGPR effects showed that there were no significant differences due to the PGPR dose treatment on flowering age, plant height, plant stand canopy and chlorophyll content, but the number of root nodules, shoot biomass weight and weight of 100 peanut seeds increased significantly with PGPR doses of 1.0 and 2.0% (Table 4).

Table 4. The effect of PGPR doses on the growth and yield components of peanuts.

PGPR v/v)	**ring time** days)	**t height** cm)	**canopy** %)	**of nodules** es plant^{-1})	**hyll content** ng g^{-1})	**ht of plant stover** (g plant^{-1})	**of 100 seeds** (g)
0	31	0.98	.33	38 b	2.915	5.77 b	.33 b
.0	30	1.23	.92	36 a	2.950	9.21 a	2.55 a
2.0	30	3.53	.58	51 a	2.429	0.05 a	2.75 a
A (P,0.05)	ns	ns	ns	*	ns	*	*

The means were separated by LSD test ($P \leq 0.05$) valid in one column; ns = not significant, * = significant

The application of PGPR will further stimulate the formation of root nodules. It is suspected that PGPR can be functioned as a biostimulant around the rhizosphere which can be observed by increasing the number of root nodules. As the impact of PGPR which fixes N from the air and dissolves phosphate around the rhizosphere, there is an increase in plant biomass weight and an increase in peanut seed size which is visible in the variable weight of 100 seeds. The same thing has been reported in previous research on pea plants (Marom et al., 2017). PGPR application will help in cultivating legumes in planting areas that have never been cultivated with legumes (Dey et al., 2004).

The effect of inorganic fertilizer (urea and SP36) Further tests on treatment doses of inorganic fertilizer, namely urea (N) and SP36 (P) showed significant differences in plant stand canopy, plant stover weight, and weight of 100 seeds, but there were no significant differences in flowering age, plant height, number of root nodules, and plant chlorophyll content (Table 5). The dominant canopy growth of peanut stands was seen in the 100% DR treatment and decreased significantly when the fertilizer dose was reduced to 75, 50 and 25% DR. The similar pattern was happened to the weight of shoot biomass and the weight of 100 seeds.

inorganic fertilizers	**ing age**	**height**	**canopy**	**umber of nodules**	**hyll content**	**f plant stover**	**ht of 100 seeds**

	ays)	:m)	%)	les plant^{-1})	mg/g)	plant$^{-1)}$	(g)
00%	30	,84	40 a	212	2.924	9.91 a	,44 a
75%	30	,00	40 b	206	2.690	8.43 a	,89 a
50%	30	,11	30 b	205	2.835	8.61 a	,86 b
25%	31	,71	20 b	212	2.554	6.52 b	,56 b
A (P<0.05)	ns	ns	*	ns	ns	*	*

Table 5. The effect of the doses of inorganic fertilizers nitrogen and phosphate doses on the growth and yield components of peanuts.

The means were seperated by LSD test (P doses of Urea and SP-36 are 100 and 150 kg ha^{-1}, ($P \leq 0.05$) valid in one column; ns = not significant, * = significant; RD=Recommended doses of Urea and SP-36 are 100 and 150 kg ha^{-1}, respectively.

N fertilizer functions for vegetative plant growth while P fertilizer functions for seed formation of plant generative (Silitonga et al., 2018). Reducing N fertilizer will reduce total growth which is visible in plant biomass weight (Mahrous et al., 2015; Shi-cheng et al., 2021). In this study, plant height was not affected by the dose of N & P fertilizer, so it is possible that differences in canopy biomass occurred in other growth components such as stem diameter, number of branches, and number of plant leaves observed as a stand canopy. Reducing the nutrient N to 25% DR reduced the stand canopy from 89.40 to 78.20% (11.20%), stover weight from 39.91 to 36.52 grams (3.39 grams). Likewise, the size of peanut seeds was observed at the weight of 100 seeds which was reduced significantly by reducing the phosphate dose to 25% DR which reduced the weight of 100 seeds from 42.44 to 40.56 grams (1.88 grams).

4. CONCLUSIONS

The research results showed that there was a real interaction between PGPR and the dose of nitrogen and phosphate fertilizer on peanut crop yields. With the application of 1.0% PGPR, it can reduce the need for nitrogen and phosphate fertilizers by 50% of the recommended dose (DR) to obtain yields and number of peanut pods that are not significantly different from the DR standard. If the PGPR dose is increased to 2.0%, the nitrogen and phosphate fertilizer dose can be reduced to 25% DR to achieve results that are not significantly different from the DR. The results of this research recommend the use of PGPR up to 2.0% in peanut cultivation on coastal land with ultisol soil types. The novelty obtained is the reduction or efficiency of the application of nitrogen and phosphate inorganic fertilizers by using the PGPR biofertilizer

5. ACKNOWLEDGEMENT

Appreciation is expressed to Dean of Agricultural Faculty, the University of Bengkulu that provided fund this research in 2023. Thank you were expressed to the staffs of Agriculture Research Center, the University of Bengkulu for cooperation to facilitate field experiments. Special thanks are also presented to the students who helped the works at the laboratory and for field experiments.

REFERENCES

Ahmed Y.E.M., Osman A.A.M., Makeen M.A., Suliman T.E.A. (2016). Effect of NPK micro doses fertilizer on leaf area, leaf area index and pods and hay yield of six genotypes of groundnut North Kordofan State Sudan. *Int. J. Sci. & Tech. Res.* 5(5): 59 - 63.

Alexander A., Singh V.K., Mishra A., Jha B. (2019). Plant growth promoting rhizobacterium Stenotrophomonas maltophilia BJ01 augments endurance against N_2 starvation by modulating physiology and biochemical activities of *Arachis hypogea*. *PLOS ONE* 14(9):1-20.

Aquilanti L., Favilli F., Clementi F. (2004). Comparison of different strategies for isolation and preliminary identification of Azotobacter from soil samples. *Soil Biology and Biochemistry*, 36(9):1475-1483. DOI: 10.1016/j.soilbio.2004.04.024.

Arianto M.F. (2020). Potensi wilayah pesisir di negara Indonesia. *JURNAL GEOGRAFI*, 20(20):1-7

A'yun K.Q., Hadiastono T., Martosudiro M. (2013). Pengaruh pengggunaan Rhizobacteria Growth Promoting Rhizobacteria terhadap Intensitas TMV (Tobacco Mosaic Virus), pertumbuhan dan produksi pada tanaman cabai rawit (*Capsicum frutescens* L.). *Jurnal Hama dan Penyakit Tumbuhan*, 1(1): 47-56.

Biswas J.C., Ladha J.K., Dazzo F.B., Yanni Y.G., Rolfe B.G. (2010). Rhizobial Inoculation Improves Seedling Vigor and Yield of Rice. *Agronomy Jurnal*, 92(5):880-886. DOI:10.2134/agronj2000.925880x.

Dey R., Pal K.K., Rhatt D.M., Chauhan S.M. (2004). Growth promotion and yield enhancement of peanut (*Arachis hypogaea*) by application of plant growth promoiting rhizobacteria. *Microbial Research*, 159(4):371-394. DOI: 10.1016/j.micres.2004.08.004.

Dodd I.C., Zinovkina N.Y., Safronova V.I., Belimov A.A. (2010). Rhizobacterial mediation of plant hormonr status. *Annals of Applied Biology*. 157: 361-379.

Friend S.A., Quandt D., Tallury S.P., Stalker H.T., Hilu K.W. (2010). Species, genomes and section relationships in genus *Arachis* (Fabaceae): a molecular phylogeny. *Plant Syst Evol* 290:185–199. DOI:10.1007/s00606-010-0360-8.

Gunadi S. (2002). Utilization technology of marginal land in coastal regions. *J Environ Technol*, 3:232-236.

Kalita M., Bharadwaz, Dey T., Gogoi K., Dowarah P., Unni B.G., Ozah D., Saikia I., (2015). Developing novel bacterial based bioformulation having PGPR properties for enhanced production of agricultural crops. *Indian Journal of Experimental Biology*, 53(1):56-60.

Mahrous N.M., Safina S.A., Abo-Taleb H.H., El-Sayed El-Behlak S.M. (2015). Integrated use of organic, inorganic and bio fertilizers on yield and quality of two peanut (*Arachis hypogaea* L.) cultivars grown in a sandy saline soil. *American-Eurasian J. Agric. & Environ. Sci.*, 15 (6):1067-1074. DOI: 10.5829/idosi.aejaes.2015.15.6.12690.

Marom N., Rizal, Bintoro M. (2017). Uji Efektivitas Waktu Pemberian dan Konsentrasi PGPR (Plant Growth Promoting Rhizobacteria) Terhadap Produksi dan Mutu Benih Kacang Tanah *(Arachis hypogaea* L.). *Agriprima, Journal of Applied Agricultural Sciences*, 1(2):174-184. DOI:10.25047/agriprima.v1i2.43.

Munees A., Mulugeta K. (2014). Mechanism and applications of plant growth promoting rhizobacteria. *Journal of King Saud University Science*, 26(1):1-20. https://doi.org/10.1016/j.jksus.2013.05.001.

Nazir N., Kamili A.N., Shah D. (2019). Mechanism of Plant Growth Promoting Rhizobacteria (PGPR) in enhancing plant growth – A Review. *International Journal of Management, Technology and Engineering*, 8(7):709-721.

Prasad V.P.V., Kakani V.G., Upadhyaya H.D. (2010). Growth and Production of Groundnut, In. Willy H., Verheye (Eds). Encyclopedia of Life Support Systems. pp. 1-26. EOLSS Publishers.

Ray P., Meena B.L., Nath C.P. (2014). Management of Coastal Soils for Improving Soil Quality and Productivity. *Popular Kheti*, 2:95-99.

Rahimi A, Moghaddam S.S., Ghiyasi M., Heydarzadeh S., Ghazizadeh K., Popovic-Djordjevic J. (2019).The influence of chemical, organic and biological fertilizers on agrobiological and antioxidant properties of syrian cephalaria (*Cephalaria syriaca* L.). *Agriculture*, 9(122):1-13. DOI:10.3390/agriculture9060122.

Riaz U., Murtaza G., Anum W., Samreen T., Sarfraz M., Nazir M.Z. (2021). Plant Growth-Promoting Rhizobacteria (PGPR) as Biofertilizers and Biopesticides. In: Microbiota and Biofertilizers (pp.181–196). Springer International Publishing. https://doi.org/10.1007/978-3-030-48771-3_11

Sadras V., Calderini D.F. (2021). Crop Physiology Case Histories for Major Crops, 2021. Academic Press.

Shi-cheng Z., Ji-long L., Xin-peng X., Xiao-mao L., Rosso L.M., Shao-jun Q., Ciampitti I., Ping H. (2021). Peanut yield, nutrient uptake and nutrient requirements in different regions of China. *Journal of Integrative Agriculture*, 20(9): 2502–2511. DOI:10.1016/S2095-3119(20)63253- 1.

Silitonga L., Turmudi E., Widodo. (2018). Growth and yield response of peanut (*Arachis hypogaea* L.) to cow manure dosage and phosphorus fertilizer on ultisol. *Akta Agrosia*, 21:11-18. DOI:10.31186/aa.21.1.11-18.

Simarmata M., Sitanggang C.D., Jamilah D. (2015). The shifting of weed compositions and biomass production in sweet corn field treated with organic composts and chemical weed controls. *Agrivita*, 37:226-236. DOI:10.17503/agrivita.v37i3.582.

Simarmata M., Harsono P., Hartal H.. (2018). Sensitivity of legumes and soil microorganisms to residue of herbicide mixture of atrazine and mesotrione. *Asian J Agri & Biol*, 6(1):12-20.

Utami A.P., Agustiyani D., Handayanto E. (2018). Pengaruh PGPR (Plant Growth Promoting Rhizobacteria), Kapur, dan Kompos pada Tanaman Kedelai di Ultison Cibinong, Bogor. *Jurnal Tanah dan Sumberdaya Lahan*, 5(1): 629-635.

Wei S., Li K., Yang Y., Liu C., Zhang Z. (2022). Comprehensive climatic suitability evaluation of peanut in Huang-Huai-Hai region under the background of climate change. *Scientific Reports*, 12:1-18. DOI:10.1038/s41598-022-15465-3

Biodata

Marulak Simarmata is a faculty member in the Department of Agroecotechnology, University of Bengkulu, Bengkulu. He has been a professor since 2018, specialized in Weed Science and Plant Biotechnology. He received his bachelor degree in Department of Agronomy, Bogor Agricultural University, Master and Doctoral degrees at Michigan State University, USA. He had experienced as a postdoctoral entitled a research associate in the Department of Crop and Soil Sciences, Michigan State University from 2004 to 2007. Email: marulak@unib.ac.id, marulak_simarmata@yahoo.com.

AGRONOMIC PERFORMANCE AND RESPONSE OF GORONTALO UPLAND RICE VARIETIES TO SEVERAL PESTS AND DISEASE

Nanang Buri
Gorontalo Agricultural Instrument Standardization and Implementation Institute, Jalan Mohamad Van Gobel No. 270. Iloheluma, Tilongkabila District, Bone Bolango Regency, Gorontalo 96119, Indonesia
nanangburi@gmail.com

Surianto Sipi
Research Center for Food Crops – Research Organization for Agriculture and Food – National Research and Innovation Agency (BRIN), Jalan Raya Jakarta-Bogor KM. 46, Bogor, West Java 16911, Indonesia
surianto.sipi@gmail.com

Ernawati Djaya
Research Center for Food Crops – Research Organization for Agriculture and Food – National Research and Innovation Agency (BRIN), Jalan Raya Jakarta-Bogor KM. 46, Bogor, West Java 16911, Indonesia
ernawatidjaya@gmail.com

Rohimah Handayani Sri Lestari
Gorontalo Agricultural Instrument Standardization and Implementation Institute, Jalan Mohamad Van Gobel No. 270. Iloheluma, Tilongkabila District, Bone Bolango Regency, Gorontalo 96119, Indonesia
rohimahhsl@gmail.com

Abstract

Upland rice is one of Indonesia's local genetic resources, and one of the provinces with several upland rice cultivars is Gorontalo Province. A study evaluating agronomic performance and the response of new local varieties is necessary for first conservation purposes and to assist the selection process in the rice breeding program. This study aimed to evaluate the agronomic performance and response of local Gorontalo upland rice to pests and diseases. The study used a randomized block design with five treatments of local Gorontalo rice genotypes: Ponelo, Pulo, Ponda, Buruna Kuning, and Pale Da'a. Each treatment was repeated three times. The research results showed that the agronomic performance, such as plant height, harvest age, and number of filled grains, significantly differs among varieties. Agronomic performance, such as the number of filled grains and flowering age, has a high and positive correlation with the weight of 1000 grains. The number of filled grains has a positive correlation with flowering age. Response of all varieties to pests and disease is moderate until high based on the symptoms of damage due to bacterial leaf blight, brown planthopper, stem borer, and black rice bug.

Keywords: local varieties, upland rice, agronomic characteristics, pests and disease

1. INTRODUCTION

Rice is the leading staple food in Indonesia (Bantacut, 2014). National rice needs in 2018 were 30 million tons, and to secure food reserves, the government imported 2.2 million tons of rice (Saragih, 2023). Various efforts have been made to meet domestic rice needs, including exploring local genetic resources

(Widyayanti et al., 2020). Local rice can potentially be a source of genes in breeding to develop excellent rice varieties (Sadimantara et al., 2018). One of Indonesia's wealth of rice germplasm is upland rice (Mau et al., 2017). The genetic richness of local upland rice is spread throughout the archipelago. Nine accessions from Jambi (Bobihoe et al., 2022), 17 from South Sumatera (Sasmita & Kodir, 2020), 82 from Java island (Sutoro et al., 2015), 53 from Kalimantan island and 11 from East Nusa Tenggara (Afza et al., 2020), five from Central Sulawesi (Saidah et al., 2022), nine from Gorontalo Province (Buri et al., 2020).

Upland rice production is generally lower than lowland rice because it is usually planted in a limited environment (Kikuta et al., 2016). Almost all provinces in Java had a productivity rate of above 40 quintals per hectare, while most provinces outside Java were less than that (Ruslan, 2021). One limited factor is pests and diseases (Jamal et al., 2023). Another factor is the high percentage of empty grain, which is a significant factor in the low productivity of rice (Parida et al., 2022).

Many local varieties of upland rice are being lost. Exploring and preserving local upland rice from various regions is necessary to avoid landrace erosion (Sutoro et al., 2015). Exploration includes search and collection activities followed by identification, characterization, documentation, and evaluation (Afza, 2016). A study assessing agronomic performance and response of new local varieties is necessary for first conservation purposes and to assist the selection process in rice breeding programs. This study aimed to evaluate the agronomic performance and response of local Gorontalo upland rice to pests and diseases.

2. MATERIAL AND METHODS

This research was conducted in Bulotalangi village, East-Bulango subdistrict, Bone Bolango Regency, from January to May 2018. The study used a randomized block design with five local rice cultivars: Ponelo, Pulo, Ponda, Buruna Kuning, and Pale Da'a. Each treatment was replicated three times. The plot area of each treatment is 4m x 4m with a spacing of 25cm x 25cm.

The agronomic performance observations of plants included plant height, number of productive tillers, flowering age, harvest age, panicle length, number of filled grains, number of empty grains, and the weight of 1000 grains. Pengamatan respon terhadap hama dan penyakit dilakukan berdasarkan *standard evaluation system for rice* (SES) 5th Edition (IRRI, 2013a). Pengamatan dilakukan pada empat jenis hama dan penyakit tanaman padi yaitu: bacterial leaf blight, stem borer, brown planthopper, and black rice bug. Data were analyzed using analysis of variance (ANOVA) and continued with the 5% level of significant difference test using the Duncan's Multiple Range Test (DMRT) and cluster analysis using *K-means* clustering with R-Studio version 4.3.3.

3. RESULTS AND DISCUSSION

3.1. Agronomic performance

The agronomic performance of five local upland rice varieties is shown in Table 1. Plant height, flowering age, and number of grain contents showed significant differences among upland rice lines ($P<0.05$). The number of productive tillers, flowering age, panicle length, number of empty grains, and weight of 100 seeds were not significantly different.

Table 1 Agronomic performance of local Gorontalo varieties of upland rice

Variety	PH	NPT	FA	HA	PL	NFG	NEG	W1000G
Ponelo	113.50 a	24.33 a	71.76 a	146.67 a	26.53 a	100.73 a	40.13 a	26.50 a
Pulo	104.73 c	23.33 a	68.00 a	133.33 c	24.23 a	86.93 b	42.93 a	21.87 a
Ponda	107.83 b	21.67 a	71.00 a	131.67 c	24.70 a	103.71 ab	44.30 a	23.77 a
Buruna Kuning	113.03 a	24.67 a	67.33 a	140.67 ab	23.83 a	84.95 b	39.83 a	21.80 a
Pale Da'a	108.37 b	22.67 a	67.33 a	135.00 bc	26.57 a	89.45 b	43.18 a	21.13 a

The numbers followed by the same letter in the same column were not significantly different according to Duncan's test at the 0.05 level. PH: plant height (cm), NPT: number of productive tiller, FA: flowering age

(days), HA: Harvest age (days), PL: panicle length (cm), NFG: number of filled grains, NEG: number of empty grains, and W1000G: weight of 1000 grains (gram).

The plant height of the five local Gorontalo upland rice varieties (104.73-113.50. Table 1) is in the medium category based on the classification from the International Rice Research Institute (short < 90 cm), (medium 90-125 cm) and (high > 125 cm) (IRRI, 2013a). The plant height is one of the significant predictor variables (20.6%) for estimating rice yield per hill and rice yield per square meter (Liu et al., 2023). Furthermore, the character of medium plant height makes Gorontalo's local upland rice more resistant to lodging because plant height is highly correlated to lodging, especially in plants that receive high nitrogen fertilization during the maximum tillering phase until mature (Wu et al., 2022).

Harvest age is different between varieties (Table 1). The harvest time for the five local Gorontalo upland rice varieties (131-146 days after planting) is in the medium category (125-150 days after planting). The classification of rice harvest age is based on the criteria set by the Balai Besar Penelitian Tanaman Padi, namely ultra-early (<90 days), very early (90-104 days), early (105-124), medium (125-150 days) and late (>150 days) (Dewi et al., 2012).

The number of filled grains shows significant differences among varieties (Table 1). The number of filled grains was determined by environmental and genetic. According to Yono et al. (2018), environmental factors are more influential than genetic factors. Parida et al. (2022) explain that genetic factors are related to the genetic inability to fill the grain due to weak starch synthesizing enzymes due to high ethylene content, low accumulation of cytokinin and Indole 3 acetic acid (IAA) content, which can increase grain filling, insufficient endosperm cell division for nucleus multiplication for seed filling.

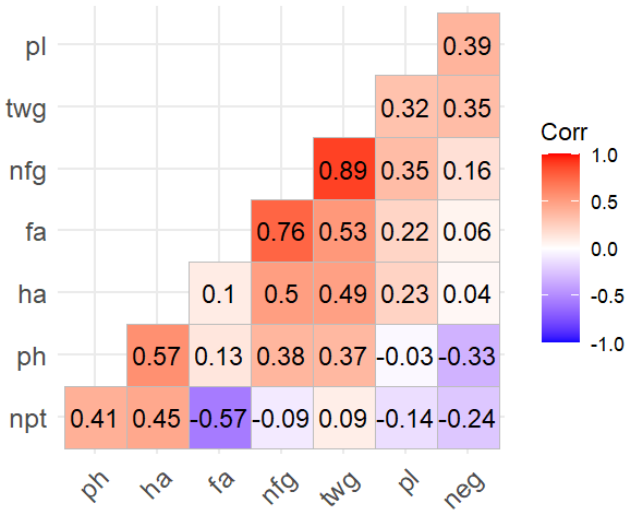


Figure 1. Pearson correlation analysis of agronomic performance of five Gorontalo local upland rice varieties. ph: plant height, npt: number of productive tiller, fa: flowering age, ha: harvest age, pl: panicle length, nfg: number of filled grains, neg: number of empty grains, and twg: weight of 1000 grains.

Correlation analysis shows that the performance of weight 1000 grains has a significant and positive correlation with the number of filled grains (r = 0.89) and flowering age (r = 0.53). The number of filled grains correlates significantly with flowering age (r = 0.76). The results of this study indicate that the grain weight of these five varieties influences flowering time and seed filling. The high number of filled grains represents the completeness of the grain-filling process (Li et al., 2019). Flowering and post-flowering age affect grain yield indirectly via grain number and number of filled grains per panicle (Zhao et al., 2020).

3.2. Respons to pests and disease

Response of five local Gorontalo upland rice varieties to bacterial leaf blight (*Xanthomonas oryzae*), white stem borer (*Scirpophaga innotata*), brown planhopper (*Nilaparvata lugens*), and black rice bug (*Scotinophara coarctata*) was shown in table 2. Significant differences in the response of the varieties were shown in bacterial leaf blight (P<0,05), whereas stem borer, brown planthopper, and black rice bug didn't show significant differences among varieties.

Table 2. Percent of local upland rice varieties attacked by pests

Variety	Bacterial leaf blight	Stem borer	Brown planthopper	Black rice bug
Ponelo	16,67 c	25,00 a	16,67 a	33,33 a
Pulo	33,33 b	33,33 a	41,67 a	41.67 a
Ponda	16,67 c	25,00 a	33,33 a	41.67 a
Buruna Kuning	50,00 a	41,67 a	25,00 a	33.33 a
Pale Da'a	16,67 c	33,33 a	33,33 a	33.33 a

The numbers followed by the same letter in the same column were not significantly different according to Duncan's test at the 0.05 level.

Symptoms of bacterial leaf blight show significant differences among varieties. The lowest symptom is 16,67% (Ponelo, Ponda, and Pale Da'a), and the highest is 50% (Buruna Kuning). The value of symptom 16,67% is categorized as moderately susceptible. The value 50% is classified as susceptible until highly susceptible based on IRRI standard (highly resistant until moderately resistance (0-5%), moderately susceptible (6-25%), susceptible until highly susceptible (>25%)) (IRRI, 2013b). The severity of bacterial leaf blight symptoms in rice is controlled by genetics and environment. The presence of resistance genes (*Xa*) such as *Xa*1, *Xa*4, *Xa*7, *Xa*10, and *Xa*13 can reduce the symptoms and severity of the disease (Rasmiyana et al., 2019). Environmental factors such as air humidity, pH of soil, and air temperature can worsen damage symptoms (D. Lestari et al., 2023).

3.3. Cluster analysis.

Cluster analysis aims to group test varieties into several clusters based on the similarity of characters, which is determined by the proximity of a variety to the nearest centroid point.

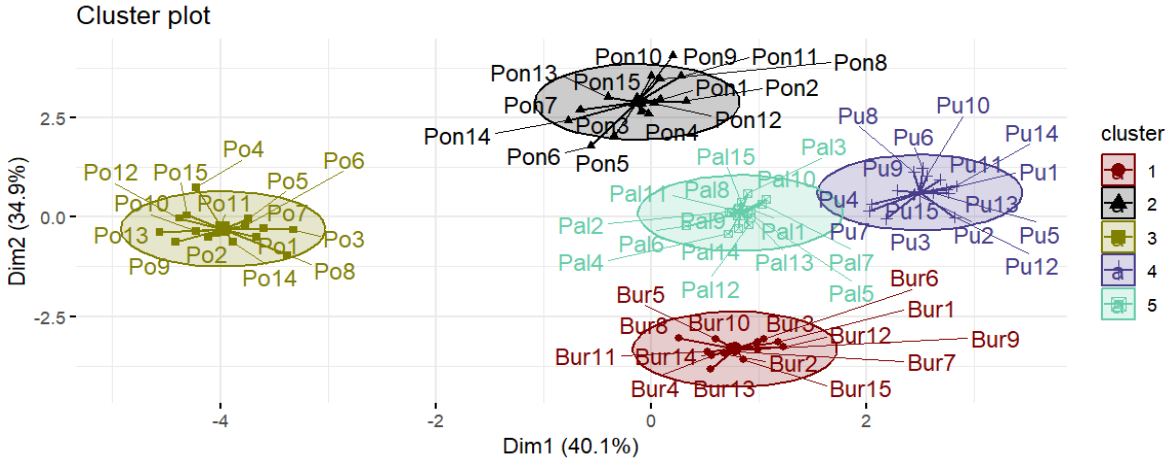


Figure 1. *K-means* cluster analysis of five local Gorontalo upland rice varieties based on agronomic performance and response to pests and diseases. Po: Ponelo, Pu: Pulo, Pon: Ponda, Bur: Yellow Buruna and Pal: Pale Da'a

K-means cluster analysis of five local Gorontalo upland rice varieties shows that each variety forms its cluster centroid point. This result indicates that these five varieties have distinct character differences. However, based on the cluster plot, the pale da'a and pulo clusters are in one section, while Ponelo, Ponda,

and Buruna Kuning are each in different sections. This result indicates that Pale Da'a and Pulo still have close characters, while Ponelo, Ponda, and Buruna Kuning are very different. The results of this analysis assumed that these five varieties have high genetic diversity, as it is known that Indonesia has high plant genetic diversity. High genetic diversity is most important for improving rice varieties and overcoming the stagnation of rice production in Indonesia (Anas et al., 2022). The assumption that these five local upland rice varieties have high genetic diversity can be strengthened by the significant differences in plant height and harvest age between the varieties (Table 1). Plant height and harvest age are classified as rice characters with a narrow level of genetic diversity (Yono et al., 2018). So, if there are fundamental differences in plant height and harvest age between cultivars, it can be strongly suspected that they are genetically very different/separate clusters (Figure 1)

4. CONCLUSION

The differences in the agronomic performance of five local upland rice in Gorontalo are plant height, harvest age, and number of filled grains. Response of all varieties to pests and disease is moderate until high based on the symptoms of damage due to bacterial leaf blight, brown planthopper, stem borer, and black rice bug.

4. ACKNOWLEDGEMENTS

Thanks to the working team, the national research and innovation agency, and the research and development agency of the Ministry of Agriculture of the Republic of Indonesia.

REFERENCES

Afza, H. (2016). Peran konservasi dan karakterisasi plasma nutfah padi beras merah dalam pemuliaan tanaman. *Jurnal Penelitian Dan Pengembangan Pertanian*, *35*(3), 143–153. https://doi.org/10.21082/jp3.v35n3.2016.p143-153

Afza, H., Andarini, Y. N., & Risliawati, A. (2020). Tiller profile diversity of upland rice germplasm in ICABIOGRAD gene bank. In P. Lestari, M. Sabran, Chaerani, D. Satyawan, T. Hadiarto, E. I. Riyanti, J. Prasetyono, K. Kusumanegara, R. T. Terryana, A. Risliawati, V. N. Arief, & B. Akter (Eds.), *The 1st International Conference on Genetic Resources and Biotechnology* (Vol. 482). IOP Conference Series: Earth and Environmental Science. https://doi.org/10.1088/1755-1315/482/1/012041

Anas, Damayanti, F., Kadapi, M., Carsono, N., & Sari, S. (2022). The shifting genetic diversity pattern of Indonesian rice improved varieties from 1943-2019 based on historical pedigree data. *Biodiversitas*, *23*(9), 4649–4656. https://doi.org/10.13057/biodiv/d230931

Bantacut, T. (2014). Indonesian staple food adaptations for sustainability in continuously changing climates. *Journal of Environment and Earth Science*, *4*(21), 202–215.

Bobihoe, J., Salvia, E., Hendri, J., Hernita, D., & Endrizal. (2022). Potential for development of local rice genetic resources into excellent varieties in Merangin regency, Jambi province. In A. G. Flor, A. A. Koesoema, G. Rajagopal, E. Nikitina, D. P. Lubis, S. Gorgin, F. R. Eris, & Y. L. A. Salampessy (Eds.), *The 3rd International Conference on Agriculture and Rural Development (The 3rd ICARD)* (Vol. 978, p. 012004). IOP Conf. Series: Earth and Environmental Science. https://doi.org/10.1088/1755-1315/978/1/012004

Buri, N., Riadi, M., Dungga, N. E., Hipi, A., & Mantau, Z. (2020). Gorontalo local rice plant response which planted with the lowland system and upland system. In D. A. Pulubuhu, Baharuddin, Y. Kawamura, M. Mii, P. Mcmahon, S. Stobert, G. Moh, A. Ala, & B. Arifin (Eds.), *2nd International Conference on Food Security and Sustainable Agriculture in the Tropic (IC-FSSAT 2019)* (Vol. 486, p. 012155). IOP Conference Series: Earth and Environmental Science. https://doi.org/10.1088/1755-1315/486/1/012155

Dewi, I. S., Ambarwati, A. D., Apriana, A., Sisharmini, A., Somantri, I. H., Suprihatno, B., & Ridwan, I.

(2012). Pembentukan genotipe padi berumur sangat genjah melalui kultur antera. *Buletin Plasma Nutfah*, *18*(2), 54–61. https://doi.org/10.21082/blpn.v18n2.2012.p54-61

IRRI. (2013a). Standard Evaluation System for Rice. In *International Rice Research Institute* (5th Editio). International Rice Research Institute. http://www.clrri.org/ver2/uploads/SES_5th_edition.pdf

IRRI. (2013b). Standard evaluation system for rice (SES). In *International Rice Research Institute* (5th Editio).

Jamal, M. R., Kristiansen, P., Kabir, M. J., & Lobry de Bruyn, L. (2023). Challenges and Adaptations for Resilient Rice Production under Changing Environments in Bangladesh. *Land*, *12*(6), 1–21. https://doi.org/10.3390/land12061217

Kikuta, M., Yamamoto, Y., Pasolon, Y. B., Rembon, F. S., Miyazak, A., & Makihara, D. (2016). How growth and yield of upland rice vary with topographic conditions: a case of Slash-and-burn rice farming in South Konawe Regency, Southeast Sulawesi Province, Indonesia. *Tropical Agriculture and Development*, *60*(3), 162–171.

Lestari, D., Prasetyawati, E. T., & Suryaminarsih, P. (2023). Modeling intensity of bacterial leaf blight on rice plants due to influence of abiotic factors in Babaksari Village, Gresik. *Agric*, *35*(1), 149–158. https://doi.org/10.24246/agric.2023.v35.i1.p149-158

Li, R., Li, M., Ashraf, U., Liu, S., & Zhang, J. (2019). Exploring the relationships between yield and yield-related traits for rice varieties released in China from 1978 to 2017. *Frontiers in Plant Science*, *10*(May). https://doi.org/10.3389/fpls.2019.00543

Liu, B., Liu, Y., Huang, G., Jiang, X., Liang, Y., Yang, C., & Huang, L. (2023). Comparison of yield prediction models and estimation of the relative importance of main agronomic traits affecting rice yield formation in saline-sodic paddy fields. *European Journal of Agronomy*, *148*(May), 126870. https://doi.org/10.1016/j.eja.2023.126870

Mau, Y. S., Markus, J. E. R., Oematan, S. S., Ndiwa, A. S. S., Handoko, D. D., Nasution, A., & Makbul, K. (2017). Genetic diversity of red and black upland rice accessions from East Nusa Tenggara, Indonesia as revealed by agro-morphological characters. *Biodiversitas*, *18*(1), 197–211. https://doi.org/10.13057/biodiv/d180127

Parida, A. K., Sekhar, S., Panda, B. B., Sahu, G., & Shaw, B. P. (2022). Effect of Panicle Morphology on Grain Filling and Rice Yield: Genetic Control and Molecular Regulation. *Frontiers in Genetics*, *13*(May), 1–23. https://doi.org/10.3389/fgene.2022.876198

Rasmiyana, Addy, H. S., & Narulita, E. (2019). Detection of genes resistant to bacterial leaf blight in rice cultivars from Situbondo and Jember, Indonesia. *Journal of Tropical Plant Pests and Diseases*, *19*(2), 127–134. https://doi.org/10.23960/j.hptt.219127-134

Ruslan, K. (2021). Food and horticulture crop productivity in Indonesia. In *Food and Horticulture Crop Productivity in Indonesia* (37; Issue 37).

Sadimantara, G. R., Nuraida, W., Suliartini, N. W. S., & Muhidin. (2018). Evaluation of some new plant type of upland rice (Oryza sativa L.) lines derived from cross breeding for the growth and yield characteristics. In Y. Kawamura, M. Muin, I. Menzler-Hokkanen, Salengke, H. Iswoyo, R. Alimon, Asmuddin, C. Lopulisa, D. Rukmana, K. Walters, A. Nasruddin, R. Ifayanti, K. Toriyama, M. Riadi, Y. Musa, H. Ehara, R. Padjung, Rismaneswati, Zaenal, … H. M. T. Hokkanen (Eds.), *1st International Conference on Food Security and Sustainable Agriculture in The Tropics (IC-FSSAT)* (Vol. 157, Issue 1, p. 012048). IOP Conference Series: Earth and Environmental Science. https://doi.org/10.1088/1755-1315/157/1/012048

Saidah, Wahyuni, A. N., Syafruddin, Suwitra, I. K., & Rahayu, H. S. P. (2022). Diversity of local upland rice in Sigi Regency. In E. P. Purnomo, K. Hubacek, A. Enrici, & P. B. Anand (Eds.), *International Conference on Sustainability and Technology in Climate Change: Adaptation Action (IC-STCC 2022)* (Vol. 1105, p. 012045). IOP Conference Series: Earth and Environmental Science. https://doi.org/10.1088/1755-1315/1105/1/012045

Saragih, J. P. (2023). Rendahnya produksi beras dalam negeri dan restriksi negara eksportir ancam ketahanan pangan. *Info Singkat*, *15*(24), 11–15.

Sasmita, P., & Kodir, K. A. (2020). Inventory and morphological characterization of local upland rice in

the highlands of South Sumatra province. In P. Lestari, M. Sabran, Chaerani, D. Satyawan, T. Hadiarto, E. I. Riyanti, J. Prasetyono, K. Kusumanegara, R. T. Terryana, A. Risliawati, V. N. Arief, & B. Akter (Eds.), *The 1st International Conference on Genetic Resources and Biotechnology* (Vol. 482, p. 012049). IOP Conference Series: Earth and Environmental Science. https://doi.org/10.1088/1755-1315/482/1/012049

Sutoro, S., Lestari, P., & Kurniawan, H. (2015). Genetic diversity of upland rice landraces from Java island as revealed by SSR markers. *Indonesian Journal of Agricultural Science*, *16*(1), 1–10. https://doi.org/10.21082/ijas.v16n1.2015.p1-10

Widyayanti, S., Hidayatun, N., Kurniawan, H., Kristamtini, & Sudarmaji. (2020). Local rice genetic resource management in AIAT Yogyakarta: for supporting industrial revolution 4.0. *The 6th International Conference on Biological Science ICBS 2019*, 050001.

Wu, D. H., Chen, C. T., Yang, M. Der, Wu, Y. C., Lin, C. Y., Lai, M. H., & Yang, C. Y. (2022). Controlling the lodging risk of rice based on a plant height dynamic model. *Botanical Studies*, *63*(1). https://doi.org/10.1186/s40529-022-00356-7

Yono, S., Herawati, R., & Pujiwati, H. (2018). Genetic diversity and agro-morphological characteristics of 50 upland rice genotypes derived from recurrent selection. *Akta Agrosia*, *21*(2), 33–40.

Zhao, H., Mo, Z., Lin, Q., Pan, S., Duan, M., Tian, H., Wang, S., & Tang, X. (2020). Relationships between grain yield and agronomic traits of rice in southern China. *Chilean Journal of Agricultural Research*, *80*(1), 72–79. https://doi.org/10.4067/s0718-58392020000100072

Biodata

Nana Buri is a staff of the Gorontalo Agricultural Instrument Standardization and Implementation Institute. Email: nanangburi@gmail.com

Surianto Sipi is a Junior Researcher at Research Center for Food Crops- Research Organization for Agriculture and Food – National Research and Innovation Agency (BRIN). He received his master's in Agriculture Entomology at Brawijaya University.Email: surianto.sipi@gmail.com.

Ernawati Djaya is a young researcher of Research Center for Food Crops- Research Organization for Agriculture and Food – National Research and Innovation Agency (BRIN). She received her master's in the Plant Pests and Disease department at Hasanuddin University. Email : ernawatidjaya@gmail.com

Rohimah Handayani Sri Lestari is a staff of the Gorontalo Agricultural Instrument Standardization and Implementation Institute. Email : rohimahhsl@gmail.com

SHALLOT (*Allium ascalonicum* L.) GROWTH AND YIELD RESPONSE TO CONCENTRATION AND APPLICATION TIME OF LIQUID ORGANIC FERTILIZER

Vally Tamora Manurung
Department of Crop Production, University of Bengkulu, Indonesia

Widodo
Department of Crop Production, University of Bengkulu, Indonesia

Hasanudin
Department of Crop Production, University of Bengkulu, Indonesia

Abstract

Shallot (Allium ascalonicum L.) is an annual plant that is widely used as a mixture of cooking spices. Shallot plants can grow in is 0-400 m above sea level, air temperature between 25-32^{0}C and rainfall of 1000-1500 mm per year. Therefore it is necessary to cultivate shallots through organic fertilization in the form of Liquid Organic Fertilizer (LOF) and followed by right time of LOF application. This study aims to determine the interaction of concentration and application time of LOF, determine the optimum concentration of LOF, and determine the appropriate application time of LOF. This research was conducted during March 2021 – May 2021 in Kandang Limun Village, Bengkulu City. This study used a completely randomized design of 2 factors and 3 replications. The first factor was the concentration of LOF which consisted of 4 levels, namely: K_0: 0 ml l$^-$; K_1 = 3 ml l-, K2 = 6 ml l$^-$ and K_3 = 9 ml l$^-$. The second factor is LOF application time which consists of 3 levels, namely: W_1 = 1 Week after Planting (WAP), W_2 = 2 WAP, W_3 = 3 WAP. Afterward there were 12 treatment combinations and replicated 3 times thus consist of 36 experimental units. Each experimental unit consisted of 3 sets then there were 108 polybags. The data obtained were analyzed using Analysis of Variance at the 5% level of the F test. The results showed that there was no interaction between concentration and time of application of LOF on the growth and yield of shallots. There was no significant effect on the concentration of LOF for the growth and yield of shallots. There was no significant effect on the timing of application for the growth and yield of shallots.

Keyword: shallot, liquid organic fertilizer, time, concentration.

1. INTRODUCTION

Shallots (Allium ascalonicum L) are annual plants that are often used as a spice in cooking. Apart from being used as a spice, shallots are also sold in processed forms such as extracts, powder, essential oils, and are even used as medicine to lower blood sugar, prevent blood clots, lower blood pressure, lower cholesterol levels, and improve blood flow. According to Suriani (2012), as an annual crop that is widely consumed by the public, shallots have broad development potential for both domestic and international needs. Based on data from the Central Statistics Agency (2019), shallot production in Bengkulu province increased from 2016 to 2018. In 2016, shallot production reached 351 tonnes, increased to 478 tonnes in 2017, and reached 911 tonnes in 2018 However, in 2019, production decreased to 523 tons.

There are several factors that cause low shallot production yields, including the use of non-uniform and low quality seeds, as well as low levels of soil fertility (Purnomo, 2007). Low soil fertility in many areas in Bengkulu requires the application of improved technology to increase shallot production, one of

which is through fertilization. Fertilization is also an alternative to increase the organic material content needed in shallot cultivation.

Organic fertilizer is divided into two types, namely solid organic fertilizer and liquid organic fertilizer. However, for onion plants, liquid organic fertilizer is considered more effective and can increase soil fertility (Hadisuwito, 2012). Liquid organic fertilizer is a type of fertilizer in liquid form that dissolves easily in the soil and contains important elements for plant growth. According to Syefani and Lilia (2003), liquid organic fertilizer has many advantages, including containing microorganisms that are rarely found in solid organic fertilizer in dry form.

Liquid organic fertilizer (LOF) is a type of fertilizer that can be applied to leaves and soil, contains complete macro and micro nutrients, and can reduce the use of chemical fertilizers (Hanisar and Bahrun, 2012). The LOF content can improve the consistency of hard soil and dissolve SP-36 quickly. Apart from that, LOF is able to accelerate plant growth, reduce disease attacks, has no side effects that are detrimental to plants and the environment, and is safe for farmers (Nusantara, 2018). LOF stimulates an increase in compounds that help plants increase disease resistance. However, the use of pesticides is still necessary if disease attacks exceed the threshold, because LOF only reduces pest and disease attacks, not eliminates them completely (Kardinan, 2011). One disease that can cause major losses is purple spot (trotol) caused by the fungus Alternaria porri (Nur, 2005).

Providing liquid organic fertilizer (LOF) often can cause excessive consumption and waste of fertilizer. Therefore, it is necessary to set the right time to apply fertilizer. According to research by Jamilah *et al*. (2017), the highest fresh tuber weight and dry tuber weight in shallot plants was found at once a week fertilizer application intervals, with fresh tuber weight reaching 56.80 g and dry tuber weight reaching 46.18 g. Research by Sara *et al*. (2020) showed that the highest number of tubers was found in the combination of control gibberellin treatment with a LOF interval of every 14 days. Nugrahini (2013) stated that the use of liquid organic fertilizer on shallot plants had a significant influence on plant height at 20, 40 and 60 days after planting (DAP), the number of leaves at 20, 40 and 60 DAP, and the number of tillers at 20, 40 and 60 days after planting. age 40 and 60 DAP, tuber weight per plot, and tuber production (Nusantara, 2018).

2. RESEARCH METHODS

This research was carried out from March to May 2021 in Kandang Limun Village, Bengkulu City, at an altitude of ±5 meters above sea level. The materials used in this research include shallot bulbs of the Batu Ijo variety, water, labels, polybags (40x40 cm), liquid organic fertilizer that has received permission from the Department of Agriculture, Urea, SP36, and KCl.

The equipment used includes a hoe, measuring tape, raffia rope, machete, stick, stake, waring, calculator, camera, gembor, scissors, digital scales, 1 m ruler, books and writing tools. This research used a Completely Randomized Design (CRD) with 2 factors and 3 replications. The first factor is the concentration of liquid organic fertilizer which consists of four levels, namely: K0: 0 ml I-; K1 = 3 ml l-, K2 = 6 ml l- and K3 = 9 ml l-. The second factor is the time to apply LOF which consists of 3 levels, namely: W1 = 1 MST (MST), W2 = 2 MST, W3 = 3 MST. Then 12 treatment combinations were obtained and repeated 3 times to obtain 36 experimental units. Each experimental unit consists of 3 sets and there are 108 polybags. The data obtained were analyzed using Variance Analysis at an F test level of 5%.

The stages of conducting the research began with soil analysis, the nutrients analyzed were N, P, K, C-organic and soil pH, the soil was analyzed at the Soil Science Laboratory, Bengkulu University. Then the planting media used is a mixture of top soil and husk charcoal in a ratio of 2:1. First, take the soil, then sift it first and when finished sifting, then put it in the warehouse to air dry for 1 week. Then add the mixed charcoal husk and stir until homogeneous before placing it in a polybag.

Next is filling the polybag with soil mixed with 8 kg of husk charcoal. The size of the polybag used is 10 kg (40 cm x 40 cm) with a diameter of 30 cm. The container is not filled completely, but leave 5 cm of the top of the polybag and fold it, then arrange it according to the experimental plan.

Then the preparation of shallot seeds of the Batu Ijo variety is selected with a relatively uniform shape and size, healthy and good with the criteria of shiny color, not porous and without wounds, weighing 3-4 grams/bulb, medium sized with a diameter of 1, 5–2 cm symmetrical tuber shape, not peeling, free of

pest organisms. The selected seeds are then cut off 1/4 of the tip of the tuber using a knife. Cutting the top of the seedlings is done to facilitate shoot growth and ensure uniform growth when planting.

Next is the installation of shade and labeling which aims to make it easier to provide treatment and observation in each experimental unit. Labeling using a plastic folder cut into a rectangular shape is written using a permanent marker. The next stage is planting with the tubers planted in an upright position in the planting hole by immersing all parts of the tuber so that they are flush with the soil surface.

Fertilize by providing Urea, SP36, and KCl as much as 1.8; 1.3 and 0.9 grams/polybag respectively. Fertilizer is given at planting time, except Urea is given twice and applied at planting time and 3 WAP. Fertilizer is applied around the plant roots. LOF is given in the morning according to the treatment, namely 1 WAP, 2 WAP and 3 WAP. LOF is given by spraying onto plants with volumes of 3, 6, and 9 ml per plant. Replanting is carried out after 1 WAP by replacing plants that do not grow with prepared spare tubers. Next is manual weeding by pulling out weeds in and around the polybags, when the plants are 2 WAP until harvest.

Pest and disease control is carried out if symptoms are found on the plants. The final stage is harvesting when the plants are 60-70 days old. The physical characteristics of shallot plants ready for harvest include signs of 60% soft stem necks, drooping plants, and yellowing leaves (Sumarni and Hidayat, 2005). The plant variables measured were plant height (cm), number of leaves per clump (pieces), fresh stem weight (g), number of tubers per clump (g), wet weight of tubers per clump (g), tuber diameter (cm). All observational data were analyzed using analysis of variance with an F test at 5% level. Results that have a real effect are further tested using Orthogonal Polynomials.

The variance analysis results indicate that neither the concentration of liquid organic fertilizer (LOF) nor the timing of its application had a significant interaction with any of the observed variables (Table 1). Specifically, variations in LOF concentration did not yield significant effects on plant height, number of leaves, fresh stem weight, number of clump tubers, wet weight of clump tubers, or tuber diameter. Similarly, the timing of fertilizer application did not result in significant changes in these measured variables.

Table 1 provides a summary of the F-calculated growth and yield response of shallot plants to different concentrations and application times of liquid organic fertilizer.

Measured Variables	Liquid Organic Fertilizer Concentration	Application Time	Interaction	diversity coefficient (%)
Plant height	$0,87^{ns}$	$2,87^{ns}$	$0,85^{ns}$	6,58
Number of Leaves•	$0,59^{ns}$	$0,29^{ns}$	$1,35^{ns}$	12,32
Fresh Start Weight•	$0,44^{ns}$	$0,39^{ns}$	$2,09^{ns}$	14,43
Number of Tubers•	$0,99^{ns}$	$0,53^{ns}$	$0,84^{ns}$	14,43
Weight of fresh tubers per hill•	$0,91^{ns}$	$0,97^{ns}$	$2,12^{ns}$	16,67
Tuber Diameter	$0,97^{ns}$	$0,22^{ns}$	$1,24^{ns}$	17,13

Note: ns = no significant effect at the 5% level; • = Transformed data

In the summary analysis of variance results (Table 1), it's evident that there's no interaction between LOF concentration and application time across all measured variables. This suggests that each treatment factor independently influences the outcomes without any mutual influence.

Table 2 displays the average values of growth and yield variables for shallot plants, including plant height, leaf count, fresh stem weight, bulb count, fresh tuber weight, and tuber diameter.

Treatment	Plant Height (cm)	Number of Leaves (pieces)	Wet Weight of Bulbs (g)	Number of Bulbs (tubers)	Fresh Weight of Tubers (g)	Tuber Diameter (mm)

K_0W_1	44,72	21,44	115,55	3,88	69,22	30,45
K_0W_2	40,77	15,55	88,55	2,55	47,55	29,62
K_0W_3	42,72	19,22	99,44	3,55	60,88	29,27
K_1W_1	43,88	23,44	126,22	4,55	72,44	31,89
K_1W_2	40,16	19,55	93,77	3,66	46,77	27,32
K_1W_3	39,61	17,11	76,55	3,55	39,44	25,41
K_2W_1	41,88	15	79,55	2,66	41,22	30,12
K_2W_2	41,11	16,55	83,44	3,11	46,11	30,16
K_2W_3	43,05	21,55	131	3,66	75,44	34,27
K_3W_1	41	15,55	70,44	3,33	37,11	23,64
K_3W_2	38,88	18,22	92,66	3,33	46,66	28,52
K_3W_3	42,55	17,77	97	3,22	52,55	31,63

Note: K0 = Control, K1 = 3ml/L K2 = 6ml/L, K3 = 9ml/L W1 = 1MST, W2 = 2MST, W3 = 3MST

2.1. Response of Shallot Plant Yields to Liquid Organic Fertilizer Concentration

Below is presented the average data on the observation variables of fresh fruit weight, number of tubers, fresh tuber weight per cluster, bulb diameter and LOF concentration in shallot growth.

Based on the average data above, it is known that the control treatment is the treatment that produces the highest fresh tuber weight, namely 101.18 grams and the highest fresh tuber weight, namely 59.22 g. Treatments K1, K2 and K3 have not been able to exceed the results from K0. This is thought to be because the initial condition of the media (soil and husk charcoal) already has sufficient microorganisms and nutrients in the form of Nitrogen nutrients from the soil and husk charcoal provided. According to Triadiawarman et al. (2022), nitrogen (N) is used by plants for overall plant growth and also functions for the synthesis of amino acids and proteins in plants. Apart from that, it increases vegetative growth and is the formation of chlorophyll which affects the green substance of leaves.

Table 3 Response of shallot Plant Results to Liquid Organic Fertilizer Concentration

Variabel	BBS	JU	BUS	DU
K0	101,18	3,33	59,22	29,78
K1	98,85	3,92	52,88	28,21
K2	98	3,0	54,25	31,52
K3	86,70	3,2	45,44	27,93
Rata-rata	96,18	3,38	52,95	29,36

BBS: Wet Weight of Tubers, JU: Number of Tubers, BUS: Weight of Fresh Tubers, DU: Diameter of Tubers

In addition to the sufficient nitrogen (N) content in the soil, the soil also exhibits a relatively high potassium (K) level, measuring 1.08. As highlighted by Rosmarkan and Yuwono (2002), potassium plays a significant role in tuber formation and functions in carbohydrate formation and transportation, stem strengthening, enhancing seed plumpness and density, improving fruit quality, imparting resistance to pests and diseases, and fostering root development.

However, in terms of the variable "Number of Tubers," it's notable that treatment K1 (3 ml) resulted in the highest tuber count compared to treatments K0, K2, and K3. This indicates that the 3 ml concentration treatment effectively provided adequate nutrients for shallot bulb formation. Nonetheless, genetic factors play a pivotal role in determining tuber count, with the number of tillers and tubers being more genetically influenced than by environmental factors. Research findings by Napitupulu and Winarto (2010) suggest that the application of organic or inorganic fertilizer has minimal impact on shallot plant tiller and bulb counts. This could be attributed to the fact that the number of tillers and bulbs is predominantly determined by genetic variety rather than fertilization methods. The green stone variety typically yields an average of 2-5 tubers.

Moving on to the variable of tuber diameter, the data table indicates that the highest tuber diameter was recorded in treatment K2 (6 ml), reaching 62 mm. Treatments K0, K1, and K3 failed to surpass the results of treatment K2. Although the effect is not significant, at a concentration of 6 ml, plants exhibit the ability to absorb nutrients, especially nitrogen (N) and potassium (K) from the liquid organic fertilizer (LOF). According to Sumiati and Gunawan (2007), the input of N and K is crucial for the generative phase formation. N serves as a building block for proteins, nucleic acids, enzymes, nucleoproteins, and alkaloids, while K aids in the photosynthesis process by forming organic compounds that are then transported to storage organs. This aligns with Prasetiya's statement (2015) that optimal N levels foster a fertile canopy, and adequate K levels facilitate better photosynthate translocation, resulting in superior tuber quality. This notion is further supported by Salisbury and Ross (1999), who assert that potassium activates enzymes essential for starch and protein formation. Additionally, Zulkarnain (2013) suggests that shallot bulb formation is optimized when nutrients are available in optimal conditions.

Organic carbon (C-organic) serves as a crucial indicator of soil quality. Its presence significantly influences soil physical quality and productivity (Komatsuzaki and Ohta, 2007) and helps maintain soil fertility levels, thereby safeguarding soil and water quality in relation to nutrient cycles, water, and biology (Lal, 2004). It's worth noting that the C-organic content in the provided liquid organic fertilizer is 9.69%, which falls into the low category compared to other organic fertilizers. BPTP SUMUT (2020) indicates that the C-organic content required to meet organic fertilizer standards, as per Minister of Agriculture Regulation No.28/Permentan/SR.130/5/2009, should exceed 12%. The relatively low C-organic level in the provided liquid organic fertilizer is a factor influencing the shallot plant growth results, which are not significantly different.

Liquid organic fertilizer is characterized by slow availability (slow release), which means that the nutrients in the LOF are not fully absorbed by shallot plants until the harvest phase when applied after planting. Application of LOF before planting is anticipated to enhance shallot growth and yield.One of the weaknesses of LOF is that it is easily washed and evaporated. This is the basis that when watering the nutrients given to the plants are washed away by the water. Even though liquid organic fertilizer is applied through the leaves, the nature of shallot leaves which stand upright means that most of the concentration given falls to the ground. So the nutrients provided do not work optimally for the plants. This is also the basis that giving concentration has no real effect on the growth and yield of shallot plants.

In general, the factors that influence plant growth and development consist of environmental factors (A'yuningsih, 2017), one of which is humidity. According to the Ministry of Agriculture (2019) the optimum humidity for the growth and development of shallot plants is 50-70%. It is known that humidity at shade temperatures ranges above 70%. if humidity is high, the transpiration rate is low and nutrient absorption is also low. This will reduce the availability of nutrients for the growth of shallot plants so that their growth will be hampered. The development of shallot plants is directed at optimal suitability to environmental physical factors. In this case, it is a factor that directly influences the yield and adaptation of the variety to the growth of shallots.

2.2. Response of Shallot Plant Yields to the Time of Application of Liquid Organic Fertilizer

Below is presented the average data for observation variables: fresh fruit weight, number of tubers, fresh tuber weight per cluster, tuber diameter and LOF concentration in shallot growth.

Based on average data, giving W3 (3MST) provides the best growth in the fresh fruit weight variable, namely 101 grams. when compared with treatment W1 of 97.94 grams and W2 of 89.61 grams. the number of W1 and W2 is smaller compared to treatment W3. Next, the weight of fresh tubers per hill at W3 weighs 57.08 grams. This value is greater when compared to treatment W1 of 55 grams and W2 of 46.77 grams.

Table 4 Response of Shallot Plant Yield to Time of Application of Liquid Organic Fertilizer

Variabel	BBS	JU	BUS	DU
W1	97,94	4	55	29,03
W2	89,61	3	46,77	28,90
W3	101	3	57,08	30,15
Rata-rata	96,18	3	52,95	29,36

Note: BBS: Wet Weight of Tubers, JU: Number of Bulbs, BUS: Weight of Fresh Tubers, DU: Diameter of Tubers

Furthermore, in treatment W3, the tuber diameter was also larger compared to treatments W1 and W2, measuring 30.15 mm as opposed to 29.03 mm and 28.90 mm, respectively. As for the variable "number of tubers," it tended to yield an average of 3 tubers per plant, with treatment W1 (1 week after planting) producing the highest number of tubers at 4 tubers per plant. The variance analysis results (Table 1) indicate that the timing of LOF administration did not yield significantly different effects on all observed variables, including the weight of fresh stems, number of tubers, weight of fresh tubers per stem, and tuber diameter.

Although the differences are not statistically significant, the overall findings from Table 4 suggest that administering LOF at 3 weeks after planting yields better results compared to other timings. There's no substantial difference among the three administration timings, likely because the intervals between LOF applications are not significantly varied, thus having an insignificant impact on LOF spraying. When administering LOF, several factors should be taken into consideration, such as the type and nutrient content of LOF, solution concentration, and administration timing. According to Schroth and Sinclair (2003) as cited in Jumini et al. (2012), plants receiving nutrients in optimal amounts and at the right time tend to grow and develop optimally. This aligns with the notion expressed by Hakim et al. (1986), emphasizing the importance of timing and method in fertilizer application to enhance nutrient absorption efficiency in plants.

Application times at 1, 2, and 3 weeks after planting exhibited no significant effects on all observed variables. This could be attributed to the rapid application of liquid organic fertilizer, preventing shallot plants from efficiently processing the nutrients for growth and yield. Plant nutrient requirements vary throughout growth stages, necessitating varied timing and quantities of fertilization for optimal growth and development.

Single application of LOF treatment can also have consequences, as the recommended administration frequency for the LOF used is more than once. Consequently, plants may not absorb sufficient nutrients, as highlighted by Saptarini et al. (2009), who stress the importance of correctly applying fertilizer according to recommended dosages and application timings. Multiple applications of fertilizer are expected to enhance shallot growth and yield.

3. CONCLUSIONS:

There was no significant interaction between LOF concentration and administration timing on all observed growth and yield variables of shallot plants. LOF concentration treatment did not significantly affect all growth and yield variables of shallot plants. Both concentration treatment and administration timing did not significantly influence all growth and yield variables of shallot plants; however, the best results were observed with administration 3 weeks after planting.

REFFERENCES

Hadisuwito, S. 2012. Making Liquid Organic Fertilizer. Agromedia Pustaka, Jakarta.

Hakim, N; M.Y. Nyakpa; A.M. Lubis, S.G. Nugroho; M.R. Saul; M.A Diha; Go ban Hong and H.H. Bailey. 1986. Basics of Soil Science, University of Lampung.

Muchamad Iqbal, E. Tadjudin, and Subandi Nur. (2022). The Effect of Various Doses of Liquid Organic Fertilizer and Planting Distance on the Growth and Yield of Three Varieties of Shallots (Allium Ascalonicum L) AGROSWAGATI Journal 10 (2)

Jamilah, Erianto, Fatimah 2017. Response of red onion (Allium Cepa L.) On Time Interval and Type Of Liquid Organic Fertilizer. Agroecotechnology Study Program, Faculty of Agriculture, Taman Siswa Padang University. Bibiet Journal 2(1) March 2017 (27-36)

Jumini, H.A.R. Hasinah, and Armis. 2012. Effect of Time Interval of Application of Enviro Liquid Organic Fertilizer on the Growth and Yield of Two Cucumber Varieties (Cucumis sativus L.). Floratec 7: 133-140.

Komatsuzaki, M., Syuaib, M.F. (2010). Comparison of the Farming System and Carbon Sequestration between Conventional and Organic Rice Production in West Java, Indonesia. Sustainability, 2(3): 833-843.

Krispedana, I.W., Setiyo, Y., and Madrini, B. (2022). Study of the Effectiveness of Several Models in Piles on Composting Cow Manure and Rice Straw. BETA JOURNAL Volume 10, No 1

Kurnianingsih, A., Susilawati, and Sefrila, M. (2018). Growth Characteristics of Shallot on Various Planting Media Composition. J. Hort. Indonesia, December 2018, 9(3): 167-173

Lal, R. (2004). Soil Carbon Impact on Global Climate Change and Food Security. Science, 304: 1623-1627.

Napitupulu, D and Winarto, L. (2010). The Effect of Providing N and K Fertilizer on the Growth and Production of Shallots. Agricultural Technology Assessment Center

Neli, S, Jannah, N and Rahmi, A. (2016). Effect of Nasa Liquid Organic Fertilizer and Ratu Biogen Growth Regulator on the Growth and Yield of Eggplant (Solanum Melongena L.) Antaboga-1 Variety. AGRIFOR Journal Volume XV Number 2.

Nusantara, N. (2018). Nasa LOF Product Guide. Karya Anak Bangsa, Yogyakarta.

Prasetiya, A. Mawarni, L. Ginting, J. (2015). Response of Shallots (Allium Ascalonicum L.) Medan Varieties on Soil Exposed to Volcanic Dust with the Application of Organic Materials. Online Journal of Agroecotechnology. Vol.3, No.2 : 476 ± 482.

Purnomo, J., Sutomo, S., Hartatik, W. and Rachman, A. (2007). Soil Fertility Management for Shallots in Donggala Regency. Proceedings of the National Seminar on Encouraging Agricultural Innovation on Marginal Land

Saptarini, N., Widayati, E., Sari, L, and Sarwono, B. (2009). So that plants bear fruit quickly and diligently. Self-Help Spreader. Jakarta.

Sara, A.Y., Tumbelaka, S., and Mamarimbing. (2019). Growth And Yield Response of Shallots (Allium ascalonicum L. var Lembah Palu) On Liquid Organic Fertilizers Concentration. Cocos Vol. 11 No. 1

Salisbury, F. B and Ross C. W. (1999). Plant Physiology. ITB Press, Bandung.

Sumarni, N and Hidayat, A. (2005). Shallot Cultivation. Shallot PTT Technical Guide No. 3. Vegetable Crop Research Institute (BALITSA) Lembang. Bandung.

http://balitsa.litbang.pertanian.go.id/ind/images/isi_monografi/M-33%20Guide%20Technical%20Budidaya%20Bawang%20Merah.pdf

Sumiati, E. and Gunawan O. S. (2007). Application of Mycorrhizal Biological Fertilizer to Increase the Efficiency of NPK Nutrient Uptake and Its Effect on the Yield and Quality of Shallot Bulbs. J. Hort. 17(1):34-42

Syefani and Lilia. (2003). Organic Farming Training. Malang: Faculty of Agriculture, Unibraw.

Triadiawarman, D., Aryanto, D., and Krisbiyantoro, J. (2022). The Role of Macro Nutrients on the Growth and Yield of Shallots (Allium Cepa L.). Jurnal AGRIFOR Volume XXI Nomor 1.

Willy Andrew Tambunan, , Rosita Sipayung, , Ferry Ezra Sitepu. (2014). Growth and Production of Shallot (Allium ascalonicum L.) to the Application of Biofertilizer in the Variety of Plants Media. Online Journal of Agroecotechnology. Vol.2, No.2 : 825 – 836.
Zulkarnain. (2013). Tropical Vegetable Cultivation. PT. Bumi Aksara. Jakarta

INCIDENCE OF SPODOPTERA FRUGIPERDA J.E SMITH AND ENTOMOPATHOGENIC FUNGI IN CORN PLANTS IN THREE DISTRICTS OF BENGKULU PROVINCE (REJANG LEBONG, KEPAHIANG, AND BENGKULU UTARA)

Sempurna Ginting
Departement of Plant Protection, Faculty of Agriculture, University of Bengkulu
sempurnaginting@unib.ac.id
Hartal
Departement of Plant Protection, Faculty of Agriculture, University of Bengkulu
hartal@unib.ac.id
Dicky Agus Afriyanto
Departement of Plant Protection, Faculty of Agriculture, University of Bengkulu
dickyaf46@gmail.com

Abstract

Spodoptera frugiperda is an important pest that attacks corn plants and causes economic losses. This study aims to evaluate the incidence of attacks S. frugiperda and entomopathogenic fungi on corn plants in three districts in Bengkulu (Rejang Lebong, Kepahiang, and Bengkulu Utara). Observations of sample plants were carried out using purposive sampling. The total sample of corn plants at each research location was 30 plants with an area of 500 m2 for each corn plant. Observations of corn plant pests were carried out on the plants 30 days after planting. The highest incidence of S. frugiperda occurred in Rejang Lebong district (Talang Rimbo 4 was 75.83%), then Kepahiang, and the lowest attack was in North Bengkulu (Tanjung Agung: 31.67%). The highest incidence of entomopathogenic fungi-infected larvae in the field was also found in Talang Rimbo 4 was 33.3%. The identification results showed that the entomopathogenic fungus found in the field was Metarhizium sp. and laboratory testing on S. frugiperda larvae was able to resulted in mortality was 95% at a spore density of 107 conidia/ml.

Keywords: Corn, Entomopathogenic fungi, Mortality, Spodoptera frugiperda, Pest

1. INTRODUCTION

Corn is one of the important commodities in Indonesia because it is the staple food of some of the population in Madura and East Nusa Tenggara, besides corn is also used as feed for the poultry industry, and corn flour (Center for Socio-Economic and Agricultural Policy, 2014). Global corn production continues to increase along with the increasing need for corn in the future. Corn plant productivity in Indonesia is still relatively low at only 5.33 tons/ha, when compared to corn plant productivity in the world (FAO, 2020).

One of the obstacles to increasing corn plant productivity is pest attacks. Pests that usually attack corn plants include earthworms (Agrotis ipsilon), seed flies (Atherigona sp.), stem borers (Ostrinia furnacalis), cob borers (Helicoverpa armigera), armyworms (Spodoptera litura), aphids (Aphis sp.), and grasshoppers (Locusta sp.) (Subandi, 2004). Pests found in recent years was S. frugiperda (Herlinda et al., 2022, Ginting et al., 2020). Corn crop yield losses due to S. frugiperda attacks are 4 to 8 million tons per year with nominal losses of between US$ 1 - 4.6 million per year in African countries. Infestation of S. frugiperda larvae on corn plants when young leaves are still rolled up causes yield losses of 15-73%, with the incidence of attacked plants reaching 55-100% (Nonci, 2019).Controlling plant pests is very important for success in corn farming, farmers are generally still fixated on the use of chemical pesticides that hurt the environment. Entomopathogenic fungi have the potential to control pests. These fungi can attack larvae and imago from various orders of Coleoptera, Lepidoptera, Homoptera, Hemiptera and Isoptera (Sallam, et

al., 2007). However, in Bengkulu province, farmers are not yet widely aware of the existence of S. frugiperda, therefore it is necessary to obtain information about the incidence of S. frugiperda on corn plants in various regions in Bengkulu. Based on this, this study needs to be conducted. This study aims to evaluate the incidence of S. frugiperda and Metarhizium sp. attacks on corn plants in three districts in Bengkulu (Rejang Lebong, Kepahiang, and Bengkulu Utara).

2. MATERIALS AND METHODS

This research was conducted in Rejang Lebong, Kepahiang, and Bengkulu Utara, and the Plant Protection Laboratory, Department of Plant Protection, Faculty of Agriculture, University of Bengkulu. This research was conducted from March to August 2022.

2.1. Survei Insidensi Spodoptera frugiperda

The survey was conducted on corn plants that were 30 days old after planting, during the survey the incidence of S. frugiperda attacks and entomopathogenic fungi that infect S. frugiperda larvae in the field was observed, observations of sample plants were carried out by purposive sampling. The total sample of corn plants in each research location was 30 plants with an area of 500 m2 for each plant. Observations of the incidence of attacks were carried out by calculating the intensity of attacks carried out by observing the symptoms of damage to plants. The scale of damage to plants is determined based on scoring. The intensity of attacks is calculated using the formula

$$IS = \frac{\sum(ni \times vi)}{NxZ} \times 100\ \%$$

Description:
IS = intensity of pest attack
ni = number of leaves attacked with scale i
vi = value of scale damage i
Z = highest scale of damage
N = total number of leaves observed

Scale of Damage

Scoring	Description
0	No damaged plant parts
1	Damaged plants > 0-25%
2	Damaged plants > 25-50%
3	Damaged plants > 50-75%
4	Damaged plants > 75% -100%

2.2. Identification of Entomopathogenic Fungi

The larvae infected by entomopathogenic fungi in the field were taken to the laboratory for isolation. The infected larvae were sterilized first, then the conidia or mycelium were inoculated on Sabouraud Maltose Agar yeast (SMAY) media and incubated at 25oC for 14 days. The pure cultures obtained were morphologically identified using an Olympus CX-21 microscope at 40x magnification, morphological observations refer to Lubilosa (2005). The pure cultures obtained were used as a source of inoculum for further propagation and testing.Uji Patogenisitas Cendawan Entomopatogen terhadap Larva Spodoptera frugiperda.

The test was conducted using a completely randomized design with the treatment of Metarhizium sp. conidia suspension at a concentration of 103, 104, 105, 106, 107 conidia/ml and control (sterile water). The pathogenicity test of entomopathogenic fungi was carried out referring to the method of Dutta et al., (2014). The third instar larvae of S. frugiperda maintained in the laboratory were applied with Metarhizium sp.

conidia by spraying S. frugiperda larvae containing conidia suspension according to the treatment. Each treatment was repeated four times, each repetition consisting of 10 larvae. Observations of the mortality of the test larvae were carried out every day starting from the first day after application until four weeks. Observation variables include: time of larval death, percentage of S. frugiperda larval mortality, percentage of pupa and imago formation, percentage of deformed pupa and imago.

2.3. Data Analysis

Larval mortality data were analyzed using Anova, and if there were differences between treatments, further testing was carried out using BNT at 5% level, the effect of treatment application on pupa and imago formation was carried out using Chi-Square analysis.

3. RESULTS AND DISCUSSION

3.1. Incidence of Spodoptera frugiperda

Spodoptera frugiperda attacks were found in all research locations, marked by symptoms of pest attacks, the presence of larval movement marks, and the presence of coarse powder resembling sawdust on the leaf surface, or around the tops of corn plants. Larvae also attack plant growth points. Larvae are cannibalistic so that 1-2 larvae are found on one corn plant (Figure 1), this cannibalistic behavior occurs in instars 2 and 3. Advanced instar larvae can cause severe damage which often only leaves the leaf veins and stems of corn plants (Nonci, et al., 2019).

Attack intensity

The results showed that the highest attack intensity was in the Rejang Lebong Regency area (Talang Rimbo 4) on the Bisi 18 variety reaching 75.83%, then kepahiang and the lowest attack in Bengkulu Utara (Table 1.)

Table 1. The intensity of *Spodoptera frugiperda* attacks on various varieties at the observation location.

Districts	Location	Varieties	Intensity (%)	Altitude (m asl)
Rejang Lebong	Sumber Bening	Bonanza	31.6	1.133.4
	Curup Selatan	Bonanza	50	754.4
	Sambil Rejo	Bonanza	41.67	1071.5
	Talang Rimbo 1	Bonanza	54.17	745.5
	Talang Rimbo 2	Pioner 27	60	745.5
	Talang Rimbo 3	Bisi 18	61.67	745.5
	Talang Rimbo 4	Bisi 18	75.83	745.5
	Sumber Urib	Pioner 18	41.67	1135
Kepahiang	Merigi	Pioner 18	42.50	617.7
	Tabat Manok	Pioner 18	55	507.3
	Kabawetan	Pioner 18	31.67	1114.3
Bengkulu Utara	Tanjung Agung 1	Pioner 27	35.83	57.5
	Tanjung Agung 1	Pioner 18	31.67	46.9

The high intensity of attacks that occurred in Rejang Lebong was because corn planting was not carried out simultaneously so there was a source of imago invasion originating from corn plantations around the research location. Supartha et al. (2021a) reported that the source of moth invasion could come from host plants around the planting location. The intensity of S. frugiperda attacks on corn plants was also greatly supported by the availability of host plants as a food source. Lepidoptera larvae prefer young plants

to older plants (Speight et al., 2008), so that S. frugiperda attacks in the vegetative phase cause more severe damage in the field (Trisyono et al., 2019). In addition to food availability factors, altitude and temperature also affect the physiology, abundance, and distribution of insects (Shi et al., 2011).

The intensity of S. frugiperda attacks was generally related to its population level, the higher the population of S. frugiperda, the higher the percentage of plants attacked, as well as the intensity of the attack (Wilyus et al., 2021). In addition, damage due to S. frugiperda larvae attacks will also expand along with the development of the larvae, marked by several symptoms of attack, such as the presence of holes in the leaves, up to the growing points (Nonci et al., 2019). The intensity of S. frugiperda shows different variations at each altitude (Table 1). The results of the study showed that pest attacks had occurred in lowlands to highlands.

The distribution area in the highlands was found at an altitude of >1000 masl, namely in Rejang Lebong and Kepahiang Regencies, while in the medium plains <700-500 m asl, namely in Bengkulu Utara. According to Syarkawi et al. (2015) altitude is also one of the factors that influences the spread of insects. The highest intensity of S. frugiperda larvae was found at plant age 4-5 (MST) at an altitude of >1000 masl with an attack intensity of 38.92% and the lowest in plants aged 6-7 (MST) with an altitude of <700 masl, namely 11.78% (Putu et al., 2022). According to Nonci et al. (2019), the lower the intensity of S. frugiperda larvae attacks in higher areas due to the influence of the temperature which ranges between 19°C - 27°C in the field so that it is less suitable.

The corn cultivation system in Rejang Lebong and Kepahiang uses a monoculture planting pattern for corn plants, while in North Bengkulu it uses an intercropping pattern of corn and papaya plants. Zulza (2020) reported that the intercropping pattern of corn with soybeans increases corn yields and can reduce pest attacks. Supartha et al., (2021b) reported that environmental factors such as temperature, food sufficiency, and natural enemies were extrinsic factors that greatly influenced the development of pest populations in the field, in addition to intrinsic factors such as high fecundity and short life cycles (Plessis, 2020).



Figure 1. Symptoms of S. frugiperda attack in the field, (A) Bonanza variety in South Curup, (B) Pioneer 18 variety in Kepahiang, and (C) Pioneer 27 variety in Bengkulu Utara.

Farmers also use chemical pesticides to control larvae that attack corn plants. Various brands of pesticides are used, including Prevathon 50 SC (Rejang Lebong), Jayam 50 EC (Kepahiang), and Lannate 40 SP (Bengkulu Utara). These chemical pesticides are applied by spraying. The application is carried out twice a week. Farmers use pesticides to reduce pest populations, so the use of pesticides is increasingly widespread and farmers become dependent. Yatim (2018) stated that the use of chemical pesticides makes farmers dependent and has bad effects on humans because it can kill natural enemies that should be useful for biological control and also pollute the surrounding environment.

3.2. Incidence of Entomopathogenic Fungi

The percentage of larvae infected with entomopathogenic fungi in the field was highest in Rejang Lebong Regency at Talang rimbo 1-4 locations, while in Rejang Lebong (South Curup and Sumber Urip), Kepahiang (Merigi and Kabawetan), North Bengkulu (Tanjung Agung 1) there were no infected larvae (Table 2). This is caused by environmental factors that do not support the development of entomopathogenic fungi in the field. Geographical location, climate, habitat, altitude, soil pH and organic matter affect the presence of fungal species (Abdel-Raheem, 2020). In this study, Metarhizium sp. infection

in S. frugiperda varied in various regions, because it was influenced by environmental conditions. Manjula et al. (2003) stated that temperature, rainfall, and humidity affect the incidence of disease in insects. Choudhary et al. (2012) reported that temperature, humidity, and rainfall play an important role in the incidence, distribution, prevalence, and effectiveness of entomopathogenic fungi.

Table 2. Larvae infected with entomopathogenic fungi at the research location

Districts	Location	Infected larvae	Healthy larvae	Infected larvae(%)
Rejang Lebong	Sumber Bening	3	30	10
	Curup Selatan	0	30	0
	Sambil Rejo	2	30	6.6
	Talang Rimbo 1	6	30	20
	Talang Rimbo 2	5	30	16.6
	Talang Rimbo 3	7	30	23.3
	Talang Rimbo 4	10	30	33.3
	Sumber Urib	0	30	0
Kepahiang	Merigi	0	30	0
	Tabat Manok	0	30	0
	Kabawetan	0	30	0
Bengkulu Utara	Tanjung Agung 1	0	30	0
	Tanjung Agung 1	0	30	16.6

Entomopathogenic fungi found in the field have characteristics of a slightly green mycelium color and cover the entire body of the insect. The larvae are found under and above the leaf surface and at the base of the leaf. Lubis (2020) reported that S. frugiperda larvae in corn plants infected with M. rileyi fungi in the field, with characteristics of mummification (stiff body), the formation of white mycelium that covers the entire surface of the larval integument, and finally changes in color to green. According to Arsi et al. (2020) spores will fly blown by the wind, then the spores will stick to the leaves or parts of the plant so that insect pests that come to the plant and eat parts of the plant will be infected by the fungus that sticks to the plant. These spores can also stick directly to larvae or insects that are spread by the wind.

Based on the results of observations of the morphological characteristics of fungal isolates that have been obtained from the field. Macroscopic morphological characteristics, the color of the colony in the early growth phase is white and changes color to green. The lower surface of the colony in the center of the colony is yellow and the edges are white. Alvarez et al., (2018) stated that at the beginning of the growth of the M. rileyi fungus, the colony is white and changes to pale green and dark green. The results of microscopic morphological identification of the fungus Metharizium sp. show that the fungus has a slightly elliptical conidia shape, straight conidiophores, septate hyphae, and hyaline. Alvarez, et al., (2018) reported that Metarhizium has the characteristics of septate and hyaline hyphae.

3.3. Mortality and time of death of larvae

Mortality percentage is one of the important indicators in testing the effectiveness of insecticides against test insects. Laboratory test results showed that different concentrations of conidia produced different mortality responses. The higher the concentration of conidia, the higher the insect mortality. For all treatments tested, the mortality of S. frugiperda larvae increased with increasing concentration of conidia. This means that the higher the number of conidia, the greater the chance of the target pest being infected or dying (Shanthakumar et al., 2010).

Table 3. Mortality of Spodoptera frugiperda at various concentrations

No	Concentration (Conidia/ml)	Mortality (%)	Time of death (Days)

1	107	95a	4.53
2	106	55b	5.44
3	105	45bc	5.80
4	104	30bc	5.82
5	103	25c	6
6	Control	0d	0

The results of the larval mortality test after the application of the tested Metarhizium sp. fungus resulted in mortality in S. frugiperda larvae (Table 3). The average percentage of S. frugiperda larval mortality was the lowest and highest at concentrations of 103 and 107 conidia/ml with mortality reaching 25% and 95%. Mortality values differed between each treatment, these results indicate that local isolates of this fungus can infect and kill S. frugiperda larvae even with the lowest concentration treatment, namely a conidia density of 103 conidia/ml. The results of this study indicate that the higher the concentration of conidia, the higher the mortality. The success of entomopathogenic fungi in controlling target pests is highly dependent on conidia density, growth media quality, type of target pest, pest stage, application method, and environmental factors including ultraviolet light, rainfall, and humidity (Junianto 2000). B. bassiana applied to S. litura mortality reached 82.5%, 7 days after application with a conidial density of 1010 conidia/ml (Rosmiati et al., 2019).

Increasing the concentration of conidia from 102 conidia/ml to 108 conidia/ml caused an increase in the mortality of H. armigera instar 2 larvae from 12.5% to 92.50% (Gundannavar et al., 2005). The increase in the percentage of mortality of H. armigera instar 2 larvae occurred at a concentration of 1.25 x 105 conidia/ml to 1.25 x 107 conidia/ml with mortality reaching 45% to 85.2% (Tang et al., 1999).

Larvae infected by the entomopathogenic fungus Metarhizium sp. show symptoms such as slow movement, not wanting to eat, and discoloration, then stiff death. Uge et al. (2021) stated that the process of fungal infection in the body of the larvae begins when the conidia attach to the host cell, which the fungus uses to penetrate the insect's body with the help of enzymes (protease, chitinase, quitobiase, upase, and lipoxygenase) and spreads to the body tissue of the larvae and causes death in S. frugiperda larvae.

The effectiveness of this fungus can be seen from the time required to kill S. frugiperda larvae, there is no significant difference in time because each treatment has almost the same value, in the range of five to six days after application (Table 3). Montecalvo and Navasero (2020) stated that larval death began to occur significantly on the fourth to fifth day. Mortality of S. frugiperda larvae reached 95% within 4.53 days. Fronza et al. (2017) reported that the process of entomopathogenic fungal infection to the death of the host insect took an average of six to eight days and varied according to the strain and species of the host.

3.4. Percentage of deformed pupae and imago

The results of the application of conidial suspension did not kill all larvae, but showed a further effect on the larvae. The difference in each suspension concentration resulted in a different percentage of pupae and imago formed, there were also deformed pupae due to the further effect of the application of entomopathogenic fungi applied to S. frugiperda larvae and caused the pupae to fail to become imago (Table 4). The higher the concentration of Metarhizium sp. given to S. frugiperda larvae, the percentage of the number of imago formed also decreased.

Table 4. Percentage of healthy and defective pupae and imago at various concentrations.

No	Treatment	Pupae	Abnormal pupae	Imago
1	Control	100	0	100
2	10^3	75	25	50
3	10^4	70	25	45
4	10^5	55	15	40
5	10^6	45	20	25
6	10^7	5	5	0

Table 5. Chi-Square analysis of the effect of conidia application on pupa and imago formation

Quadrant Unit	Value	Conclusion
X2	28.992	X 2 hitung > X2 tabel
X2	24.995	
Degrees of freedom		

Based on the table above, entomopathogenic fungi can cause a decrease in the number of pupae formed and cause infection in the pupae, the higher the concentration applied tends to decrease the percentage of the number of pupae formed. Nelly (2022) reported that larvae that were applied with B. bassiana fungi experienced mortality, larvae that were still alive would still become pupae, and some pupae that were formed experienced imperfect organ damage (defects). Chi-Square analysis was carried out to determine the significance of deformed pupae in larvae due to the application of entomopathogenic fungi. The results of the Chi-Square analysis showed that the calculated χ^2 results were greater than the χ^2 table (Table 5), so it can be concluded that the deformed pupae formed were due to the treatment given. Indrayani et al. (2011) M. rileyi can interfere with the development process of H. armigera larvae which results in abnormalities in the pupa and imago stages. Nelly (2022), reported that entomopathogenic fungi produce toxins that are toxic and inhibit the metabolism of insects.

4. CONCLUSION

The highest incidence of S. frugiperda occurred in Rejang Lebong district (Talang Rimbo 4: 75.83%), then Kepahiang, and the lowest attack in Bengkulu Utara (Tanjung Agung: 31.67%). The highest incidence of entomopathogenic fungi in infected larvae in the field was also found in Talang Rimbo 4 at 33.3%. The identification results showed that the entomopathogenic fungi found in the field were Metarhizium sp. and laboratory testing of S. frugiperda larvae was able to cause mortality of 95% at a spore density of 107 conidia/ml.

5. ACKNOWLEDGEMENTS

Thank you to the Laboratory of the Plant Protection Department, Faculty of Agriculture, UNIB for facilitating this research.

REFERENCES

Abdel, R. M. (2020). Isolation, mass production, and application of entomopathogenic fungi for insect pest control. In: El-Wakeil N, Saleh M, & Abu Hashim M (Eds.). Cottage Industry of Biocontrol Agents and their Application.

Alvarez, S.P., A.M. Guerrero., B.N.D. Duarte., M.A.M. Tapia., C.A.C. Medina, and Y.D. Rodriguez. (2018). First Report of a New Isolate of Metarhizium rileyi from Maize Fields of Quivica'n, Cuba. Indian. J Microbiol. 58(2): 222-226.

Arsi, P. Yulia., S.H.K Suparman, dan G. Bambang. (2020). Exploration, isolation, and identification of entomopathogenic fungi that infect insect pests. Journal of Tropical Plant Protection. 1(2): 70-76

Barros, R.M. Pitta., R.B. Lopes, and E.G. de Almeida. (2020). Susceptibility of Spodoptera frugiperda and Chrysodeixis includens (Lepidoptera: Noctuidae) to infections caused by Metarhizium rileyi. Pesq. Agropec. Trop. 50(3): 1-7.

Choudhary, J.S., C.S. Prabhaker., S. Maurya., R. Kumar., B. Das, and S. Kumar. (2012). New report of Hirsutella sp. infecting mango hopper Idioscopus clypealis from Chotanagpur Plateau, India. Phytoparasitica. 40(3): 243–245.

Dutta, P., P. Patgiri., J. Pegu., H. Kaushik, and S. Boruah. (2014). First record of Nomuraea rileyi (Farlow) Samson on Spodoptera litura Fabricius (Lepidoptera: Noctuidae) from Assam, India. Curr Biotica. 8(2):187–190.

Fronza, E., A. Specht., H. Heinzen, and N.M. de Barros. (2017). Metarhizium (Nomuraea) rileyi as biological control agent. Biocontrol Science and Technology 2(2): 122-123.

Ginting, S., A. Zarkani., R.H. Wibowo., and Sipriyadi. (2020). New Invasive Pest, Spodoptera frugiperda (J. E. Smith) (Lepidoptera: Noctuidae) Attaking Corn in Bengkulu, Indonesia. Serangga. 25(1): 105–117.

Gundannavar, K.P., S. Lingappa, and R.S. Giraddi. (2005). Dose mortality response between Helicoverpa armigera (Hubner) and mycopesticide Nomuraea rileyi (Farlow) Samson. Karnataka. J. Agric. Sci. 18(1): 141-143.

Indrayani, Igaa. (2011). The potential of entomopathogenic fungus Nomuraea rileyi (Farlow) Samson for control of Helicoverpa armigera Hubner on cotton. Perspective: Industrial Crops Research Review. 10(1): 11-21.

Junianto, Y.D. (2000). The use of Beauveria bassiana for controlling coffee and cocoa plant pests. National Workshop on Biological Control of Plantation Plant OPT, Cipayung. Coffee and Cocoa Research Institute. Jember.

Lubis, A.A.N., R. Anwar., B.P.W. Soekarno., B. Istiaji., D. Sartiami., Irmansyah, and D. Herawati. (2020). Coray Wood Corn (Spodoptera frugiperda) Caterpillars in Corn Crops in Petir Village, Dramaga Sub-District, Bogor District, and Its Control Potential Using Metarhizium rileyi. Pusat Inovasi Masyarakat. 2(6): 931-939.

Manjula, K., B. Nagalingam, and R.P. Arjuna. (2003). Occurrance of Nomuraae rileyi on Spodoptera litura and Helicoverpa armigera in Guntur District of Andhra Pradesh. Ann. Plant Prot. Sci. 11(2): 224–227.

Montecalvo, M.P. and M.M. Navasero. (2020). Effect of entomopathogenic fungus Metarhizium (Nomuraea) rileyi (Farl.) Samson on the third instar larvae of the onion armyworm, Spodoptera exigua Hübner (Lepidoptera: Noctuidae), under laboratory conditions. Philipp. Agric. Sci. 103(2): 159–164.

Nelly. (2022). Several local food plants with the potential as hosts for Spodoptera frugiperda (Lepidoptera: Noctuidae). Biodiversitas. 22(2): 169-173.

Nonci N., S.H. Kalqutny., H. Mirsam., A. Muis., M. Azrai, dan M. Aqil. (2019). Introduction of Fall Armyworm (Spodoptera frugiperda J.E. Smith) New Pest on Corn Plants in Indonesia. Maros. Cereal Research Institute 5(1): 38 – 43.

Plessis, H., M.L. Schlemmer, and J. B. Van. (2020). The effect of temperature on the development of Spodoptera frugiperda (Lepidoptera: Noctuidae). Insects. 11(4): 228-235.

Pusat Sosial Ekonomi dan Kebijakan Pertanian. (2014). Focus Group Discussion on Policy Formulation to Support the Achievement of Rice and Corn Self-Sufficiency. J. Agroscience. 5(2):45-56.

Putra, IG.F.M. (2020). Characteristics of Attacks and Distribution Patterns of Invasive Pests Spodoptera frugiperda J. E. Smith (Lepidoptera: Noctuidae) on Corn Plantations in Bali. Thesis. Faculty of Agriculture, Udayana University, Bali. 6(4):43-50.

Putu, S.L., W. Inyoman., W. Dwi, dan S. Iwayan. (2022). Distribution and Adaptability of Spodoptera frugiperda (J. E Smith) (Lepidoptera: Noctuidae) to Host Plants at Several Altitudes in Bali. Journal on Agriculture Science. 12(1): 110-126.

Rade, P.S.H. (2020). Biology of Fall Armyworm (Spodoptera frugiferda J. E. Smith) (Lepidoptera: Noctuidae) in the Laboratory. Thesis. University of North Sumatra. Medan.

Rosmiati, A., C. Hidayat., E. Firmansyah, dan Y. Setiati. (2019). The potential of Beauveria bassiana as a biological agent of Spodoptera litura Fabr. on soybean plants. Agriculture. 29(1): 43- 47.

Sallam, S. L. Ranamukha, and C. arach. (2007). Pest repellent plant for management of insect pests of Chinese kale, Brassica oleracea L. International Journal of Agriculture and Biology. 9(1): 64-67.

Shantha, K.S.P., P.D., Murali, S., Malarvannan, V.A. Pabavathy., and S. Nair. (2010). Laboratory evaluation on the potential of entomopathogenic fungi Nomuraea rileyi against tobacco caterpillar Spodoptera litura F. (Noctuidae: Lepidoptera) and its savety to Trichogramma sp. Journal of Biopesticides. 3 (Special issue): 132-137.

Shi, P., L. Zhong., H.S. Sandhu., F. Ge., X. Xu, and W. Chen. (2011). Population decrease of Scirpophaga incertulas (Walker) (Lepidoptera Pyralidae) under climate warming. Ecologi and Evolution. Ecol Evol. 2(1): 58-64.

Speight, M.R., M.D. Hunter., A.D. Watt. (2008). Ecology of Insect: Concepts and Application. West Sussex: Wiley-Blackwell.

Subandi, S., Saenong., Bahtiar., I.U. Firmansysah, dan Zubachtirodin. (2004). The role of corn research in efforts to achieve national corn self-sufficiency. Paper of the National Seminar on Agro Innovation Socialization Supporting Regional Agricultural Development, 10-11 August 2004, BPTP Sukarami, Solok.

Supartha, I. W., S. Susila., I.G. Sunari., Febri Mahaputra., I.K. Yudha, and Wiradana. (2021a). Damage characteristics and distribution patterns of the invasive pest, Spodoptera frugiperda (J.E Smith) (Lepidoptera: Noctuidae) on maize crop in Bali, Indonesia. Biodiversitas. 22 (6): 3378-3387.

Supartha, I. W., S. Sunari., P.B. Krisna., I.K. Yudha., F. Mahaputra, and Wiradana. (2021b). Invasion, Population Development, and Attack Intensity of The Fall Armyworm (Spodoptera frugiperda) J.E Smith (Lepidoptera: Noctuidae) On Two Varieties Corn In Serongga Village, Gianyar Regency, Bali –Indonesia. Technol Rep Kansai Univ. 10 (4): 645-654.

Syarkawi, S., H, Husni., M. Sayuthi. (2015). The effect of altitude on the level of cocoa fruit borer (Conopomorpha cramerella Snellan) attacks in Pidie Regency. Jurnal Floratek. 10(2): 52-60.

Trisyono, Y. A., V.E.B. Suputra., Aryuwandari., M. Hartaman, and Jumari. (2019). Occurrence of infestation by the fall armyworm Spodoptera frugiperda, a new alien invasive pest, in corn in lampung Indonesia. Jurnal Perlindungan Tanaman Indonesia 23 (1): 156-160.

Uge, E., E. Yusnawan, dan Y. Baliadi. (2021). Environmentally Friendly Control of Armyworm Pests (Spodoptera Litura Fabricius) on Soybean Plants. Palawija Bulletin. 9(1): 45-66.

Yatim, N. (2018). The Effect of Kirinyu Leaf Botanical Pesticide (Chromolaena odorata L.) on the Population and Attack of the Tritip Caterpillar Pest (Pluetella xylostella L.). Thesis. Faculty of Agriculture. University of Mataram. Mataram.

Biodata

Dr. Sempurna Ginting, SP, MSi and Ir. Hartal, MP are lecturer in the Department of Plant Protection, University of Bengkulu. Sempurna Ginting is majoring in Insect Pathology, and Hartal is majoring in Plant Diseases. Dicky Agus Afriyanto is an alumnus of Plant Protection, who is interested in Corn Pests. Hartal Email: hartal@unib.ac.id , Dicky Agus Afriyanto Email: dickyaf46@gmail.com

ANALYSIS OF THE IMPACT OF SUGAR CANE ASH WASTE AS A REPLACEMENT FOR FINE AGGREGATE IN MORTAR MIXTURE

Ikahariya Pratiwi Matra
Civil Engineering Program, Engineering Faculty, University of Palembang
ikahariyapratiwi.m@gmail.com
Asri Mulyadi
Civil Engineering Program, Engineering Faculty, University of Palembang
Rita Anggrainy
Civil Engineering Program, Engineering Faculty, University of Palembang

M.Rasyid Ridho
Civil Engineering Program, Engineering Faculty, University of Palembang

Abstract

One of the challenges faced by concrete technology experts is how to use industrial waste as an additive or partial substitute for mortar. In this case, experts study and research the use of existing industrial waste so that it can be utilized, especially the sugar factory industry's bagasse ash waste material. This is one of the many solutions for handling waste in the community. Bagasse is waste produced from the sugar cane milling process after the juice is extracted. In the sugar cane milling process, there are 5 grinding processes from the sugar cane stalks until they become bagasse. The compressive strength value of normal mortar without bagasse ash waste is 1.28 kg/cm^2. The compressive strength value of mortar with bagasse ash waste 10% of the weight of sand is 1.57 kg/cm^2 which is the optimum mixture content in this mixture. The compressive strength value of mortar with 15% of bagasse ash waste from the weight of sand has a compressive strength of 0.90 kg/cm^2. The compressive strength value of mortar with 20% bagasse ash waste of the weight of sand has a compressive strength of 1.61 kg/cm^2. Mortar mixed with bagasse ash 10% of the weight of sand will increase from normal mortar. Meanwhile, mortar mixed with 15% or 20% bagasse ash tends to decrease compared to mortar mixed with 10% bagasse ash.

Keywords : mortar, bagasse ash, sugarcane, mortar compressive strength

1. INTRODUCTION

Mortar is a mixture of adhesive (Portland cement), fine aggregate (sand) and water with a certain composition. Mortar as an adhesive for structural construction is used for crushed stone masonry on foundations. Mortar for nonstructural construction is used in masonry for wall filling. The compressive strength of mortar is influenced by several factors, namely density, age of mortar, type of cement, and aggregate properties (SNI 03-6825-2002). One of the challenges faced by concrete technology experts is how to use industrial waste as an additive or partial substitute for mortar. In this case, experts study and research the use of existing industrial waste so that it can be utilized, especially the sugar factory industry's bagasse ash waste material. This is one of the many solutions for handling waste in the community. To answer this challenge scientifically and at the same time help society in dealing with this problem appropriately, we as researchers will analyze and develop this technology so that it can be useful for the wider community, especially among mortar users for building structures and industries that produce waste, specifically sugarcane bagasse ash waste. resulting from sugar production.

Cement is an adhesive material that is smooth in shape. If water is added, a hydration reaction will occur and can bind solid materials into one solid mass. The largest percentage of cement content is CaO (calcium oxide) in the range of 60% -65%, SiO2 (silica) in the range of 20% -24% and Al2O3 (aluminum

oxide) in the range of 4% -8% (Marzuki, 2009). Bagasse is waste produced from the sugar cane milling process after the juice is extracted. In the sugar cane milling process, there are 5 grinding processes from the sugar cane stalks until they become bagasse. After the final grinding it produces dry bagasse. The abundant bagasse has been used as fuel for steam boilers (a machine that produces steam in a certain amount every hour at a certain pressure and temperature) where the energy produced is used as a steam power plant (Prasetyo A., 2009)

Based on the description above, it is necessary to carry out research regarding the use of bagasse ash waste (bagasse) as a substitute for sand which is lightweight, does not seep water and does not break easily and meets the requirements of SNI (Indonesian National Standards) and General Requirements for Building Materials in Indonesia. (PUBLIC). The most important thing is to create environmentally friendly building materials. Therefore, this research is entitled " Analysis of the Impact of Sugar Cane Ash Waste as a Replacement for Fine Aggregate in Mortar Mixture".

2. LITERATURE REVIEW

2.1. Mortar

Mortar is a mixture of cement, sand and water which have different percentages. The ratio of cement, sand and water needed for 3 mortars that meet the requirements according to SNI 03-6825-2002 is 250 gr : 687.5 gr : 121 ml. As a binding agent, mortar must have a standard concentration/viscosity. This mortar concentration will later be useful in determining the strength of the mortar used as a plaster or wall plaster so that it is hoped that the mortar will withstand the compressive force due to the load acting on it will not be destroyed (Concrete Technology, 2008). Mortar and concrete are made from cement and aggregate mixed with water. What you need to know about building materials is their density, porosity and compressive strength. In relation to heat, the properties of mortar also need to be known, for example a wall made of concrete has a different conductivity to building materials, which is closely related to the use of building materials.

2.2. Mortar Spesification

Based on SNI 03-6882-2002, the proportion of mortar is specified in 4 types according to the strength of the mortar and the specifications for the proportion of materials consisting of cement, aggregate and water used. There are several types of mortar as follows:

- Type M mortar is a mortar that has a strength of 17.2 MPa according to Table 2.1, which is made using type N cement or lime cement by adding portland cement and quenched lime with the composition according to Table 2.1.
- Type N mortar is a mortar that has a strength of 5.2 MPa according to Table 2.1, which is made using type N mortar or lime cement by adding portland cement and quenched lime with the composition according to Table 2.1.
- Type O mortar is a mortar that has a strength of 2.4 MPa according to Table 2.1, which is made using type N mortar or lime cement by adding portland cement and quenched lime with the composition according to Table 2.1.

Table 2.1. Mortar Properties Specification Requirements

Mortar	Type	Average of Strength	Water Ratio	Air Measurement	Aggregates Ratio
		28 days Min (Mpa)	Min (%)	Max (%)	(Measurement)
Cement Setting	M	17.2	75	…….. b)	
	S	12.4	75	…….. b)	2.25 through 3.5 times

	N	5.2	75	…….. b)	of sigma cement characteristic volume
	O	2.4	75	…….. b)	

(source: SNI 03-6882)

Specifications for mortar properties must meet the requirements for materials and testing of mortar that has been prepared in the laboratory, where the material consists of a mixture of cement, aggregate and water binders that meet the requirements for mortar according to the test method issued by SNI 03-6882-2002 .

2.3. Cement

Cement is an industrial product from a mixture of raw materials: limestone/limestone as the main material, namely a natural material containing calcium oxide (CaO) compounds and clay/clay, namely a natural material containing compounds: silica oxide (SiO), aluminum oxide (AL2O3), iron oxide (Fe2O3) and magnesium oxide (MgO) or other substitute materials with the final result being a powdered solid (bulk), regardless of the manufacturing process, which hardens or petrifies when mixed with water. The cement factor greatly influences the characteristics of the mortar mixture. A high hydraulic cement content will provide many benefits, including making the mortar mixture stronger, denser, more water resistant, hardens faster and also provides better adhesion. The disadvantage is that the mixture hardens quickly, which can cause higher drying shrinkage. Mortar with a low hydraulic content will be weaker and easier to move. The chemical composition with characteristics contained in cement according to ASTM C 150 can be seen in table 2.2.

Table 2.2. Chemical Composition and Characteristics of Several Types of Cement

Cement	**C_3S**	**C_2S**	**C_3A**	**C_4AF**	**CSH_2**	**Fineness (m^2/kg)**	**Compressive strength (1 hr, Mpa)**	**Heat of hydration (7 hr, J/kg)**
Type I	50	25	12	8	5	350	7 (1000)	330
Type II	45	30	7	12	5	350	6 (900)	250
Type III	60	15	10	8	5	450	14 (2000)	500
Type IV	25	50	5	12	4	300	3 (450)	210
Type V	40	40	4	10	4	350	6 (900)	250

(source: ASTM C 150)

2.4. Agregate

In concrete structures, aggregates usually occupy approximately 70 to 75% of the volume of the hardened mass. The remainder consists of cement mortar that has hardened, water that has not yet reacted (that is, water that is not involved in the hydration process of the cement) and air voids. Unreacted water and air voids actually do not contribute to the strength of the concrete. In general, the denser the aggregates are arranged, the stronger the concrete produced, its resistance to weather and the economic value of the concrete. Aggregates must be strong, durable and clean. If there is dust and other particles, the dust and particles will reduce the bond between the cement paste and the aggregate. Aggregate strength has an important influence on the strength of concrete and the properties of aggregate greatly influence the durability of concrete.

Sand is a natural aggregate that comes from volcanic eruptions, rivers, soil and beaches, therefore sand can be classified into three types, namely excavated sand, sea sand and river sand. According to (SK SNI – S – 04 – 1989 – F: 28) the requirements for good fine aggregate are as follows:

- Fine aggregate must consist of sharp and hard grains with a hardness index < 2.2.
- Permanent properties when tested with a saturated, such as sodium sulfate, a maximum of 12% disintegration. Meanwhile, if magnesium sulfate is used, the fine part is a maximum of 10%.
- It must not contain more than 5% mud and if the sand contains more than 5% mud then the sand must be washed.
- The sand should not contain too much organic material, which must be proven by a color experiment from Abrans–Harder with a saturated 3% NaOH solution.
- The large composition of sand grains has a fineness modulus between 1.5 and 3.8 and consists of various grains.
- For concrete with a high level of durability, the reaction of sand to alkali must be negative.
- Sea sand may not be used as a fine aggregate for any grade of concrete unless directed by an approved building materials government agency.
- Fine aggregates used for plastering and applied species must meet masonry sand requirements.

Table 2.3. Sand Gradation Boundary Requirements

Sieve Hole (mm)	**Cumulative Breakthrough Weight (%)**							
	Zone 1		**Zone 2**		**Zone 3**		**Zone 4**	
	Bottom	**Upper**	**Bottom**	**Upper**	**Bottom**	**Upper**	**Bottom**	**Upper**
10	100	100	100	100	100	100	100	100
4.8	90	100	90	100	90	100	95	100
2.4	60	95	75	100	85	100	95	100
1.2	30	70	55	100	75	100	90	100
0.6	15	34	35	59	60	79	80	100
0.3	5	20	8	30	12	40	15	50
0.15	0	10	0	10	0	10	0	15

(source: SNI-03-2834-2000)

Information:
Zone 1 is coarse sand, Zone 2 is rather coarse sand, Zone 3 is fine sand and Zone 4 is rather fine sand.

3. Water

Water is needed in making mortar to trigger the chemical process of cement, wet the aggregate and make mortar work easier. Drinkable water can generally be used as a mortar mixture. Water containing dangerous compounds, contaminated with salt, oil, sugar or other chemicals, when used in mortar mixtures will reduce the quality of the mortar, and can even change the properties of the resulting mortar.

Table 2.4. Water Limits and Permits for Mortar Mixtures (SNI 03-6825-2002)

	Permissible limits
Ph	4,5 – 8,5
Solid material	2000 ppm
Dissolved material	2000 ppm
Organic Material	2000 ppm
Oils	2% berat semen
Sulfur (SO_3)	10000 ppm
Chlor (C1)	10000 ppm

2.6. Sugarcane Bagasse

Bagasse is a residue from the process of milling sugar cane plants (Saccharum officinarum) after the juice is extracted or removed in the sugar refining industry so that a large amount of fibrous waste product is obtained as a by-product known as bagasse. The chemical composition of bagasse ash consists of several compounds which can be seen in the following table.

Table 2.5. Chemical Composition of Sugarcane Bagasse Ash

Chemical compounds	**Percentage(%)**
SiO_2	70,63
Fe_2O_3	3,96
Al_2O_3	3,48
K_2O	1,75
TiO_2	1,55
P_2O_5	0,927
CaO	0,728
MgO	0,706
SO_3	0,235

CL	0,134
ZrO_2	0,0906
MnO	0,0627
Cr_2O_3	0,0424
Na_2O	0,0308
V_2O_5	0,0141
ZnO	0,0051
CuO	0,0028
NiO	0,0027

2.7. Mortar Mix Planning

All materials for test objects are tested for characteristics in accordance with applicable standards. According to SNI 03-6825-2002 for 3 pieces of mortar it is 250 gr : 687.5 gr : 121 ml. The cement water factor (w/c) is 0.485 for all types of Portland cement with a flow of 110 ± 5. Mortar mixtures are guided by Standard ASTM C109-93.

2.8. Mortar Compressive Strength

Compressive strength is a very important factor in testing the results of a mixture of mortar materials as a component for making building materials. Compressive strength is the amount of load that mortar can withstand per unit area. The compressive strength test used is the ASTM C109-93 standard.

In calculating continuously distributed forces, it is necessary to know the intensity of the force, namely the magnitude of the force per unit area. The resultant force will work through the center of gravity of the cross section. Compressive strength is calculated using the following formula:

$$Fc = \frac{P}{A} \quad (1)$$

Where: Fc is the compressive strength of the test object (kg/cm2)
P is the maximum compressive load (kg)
A is the area of compression (cm2)

2.9. Specific Gravity

Mortar specific gravity is the specific gravity per unit content. The formula used to calculate the specific gravity of mortar is:

$$\text{Specific Gravity} = \frac{W}{V} \quad (2)$$

Where: W is mortar weight (kg)
V is a volume (m3)

3. Research Methodology

Step I
Mixing where materials such as cement, sand and water needed for 3 pieces of mortar are weighed in the ratio according to SNI 03-6825-2002 is 250 gr : 687.5 : 121 ml and bagasse ash as much as 0%, 10%, 15% , and 20% of the sand weight.

Step II
Doughing where after all the ingredients are mixed, water is added to the middle of the dough and left for 60 seconds so that the mixture binds together, then the mixture is stirred until the mixture is completely homogeneous.

Step III
Printing where, after the mixing is complete, printing is carried out by inserting the mortar paste into a cube mold that has been smeared with Vaseline first in a manner such as inserting the paste at a height of 1/3 of the height of the mold, then the mixture is shaken at least 25 times to ensure the density of the mixture. Then, put 1/3 of the mortar paste back into the mold and then compact it again. Next, put the mortar paste back into the mold until it is full and then compact it again. Finally, the surface of the mold is leveled and then covered with a wet cloth for ± 24 hours.

Step IV
In this step, it is continued with testing the compressive strength of the mortar, such as removing the test object after it reaches the planned age from the soaking tub, then drying it with a cloth and leaving it for 24 hours. Next, the test object is placed on the pressing machine, then a compressive load is slowly applied to the test object by operating the pump lever so that the test object collapses and is destroyed. Finally, when the needle on the load scale no longer moves or increases, the scale indicated by the needle is recorded as the maximum load that can be carried by the test object and this test is carried out repeatedly for other samples of mortar compressive strength test objects.

4. Results and Discussion

The materials used in this research were fine aggregate (sand) and composite portland cement. This aggregate testing refers to SNI (Indonesian National Standards). This testing was carried out in the Structure and Materials Laboratory of the Civil Engineering Study Program, Faculty of Engineering, Palembang University and the Construction Materials Laboratory of the Public Works Department of Highways and Spatial Planning of South Sumatra Province. The results of the fine aggregate (sand) inspection carried out before making the test objects can be seen in the table.

4.1. Calculation of Fine Aggregate Sieve Analysis

Data from the calculation results of fine aggregate sieve analysis can be seen in table 4.1.

Table 4.1. Fine Aggregate Sieve Analysis Calculation

Sieve/Strainer Size		**Retained Aggregate**		**Aggregate Passed**
Inch	**MM**	**Gram**	**%**	**(%)**

1”	25,40	-	-	100,00
¾”	19,91	-	-	100,00
½”	12,70	-	-	100,00
3/8”	9,52	-	-	100,00
No. 04	4,76	2,40	0,48	99,52
No. 08	2,38	15,50	3,09	96,91
No. 16	1,19	124,00	24,70	75,30
No. 30	0,60	339,00	67,53	32,47
No. 50	0,30	453,00	90,24	9,76
No. 100	0,15	500,50	99,70	0,30
Total			285,74	
Fineness Number = $\frac{Total\% \text{ Re } rstrauned}{100} = \frac{285,74}{100} = 2,86$				

4.2. Calculation of Specific Gravity and Absorption of Fine Aggregate

Calculation data for specific gravity and absorption of fine aggregate can be seen in table 4.2. the following :

From the results of calculating the specific gravity and absorption of fine aggregate, it is obtained:

1. Specific Gravity (Bulk) = 2.50
2. Saturated Surface Dry Specific Gravity (SSD) = 2.52
3. Apparent Apparent Specific Gravity = 2.55
4. Absorption = 0.83%

Table 4.2. Calculation of Specific Gravity and Absorption of Fine Aggregate

No.	Analysis	Sample I	Sample II	Averrage	Unit
1.	Dry Object Weight	500,00	500,00	500,00	Gram
2.	Dry Test Object	496,00	495,80	495,90	Gram

	Weight – Oven (B2)				
3.	Pycnometer Weight in Water (25ºC) (B3)	732,40	740,10	736,25	Gram
4.	Pycnometer Weight + SSD Test Object + Water (25ºC) (B1)	1.033,50	1.041,80	1.037,65	Gram
*	Specific Gravity (Bulk) = B2 / (B3 + 500 – B1)	2,49	2,50	2,50	-
*	Dry Specific Gravity Saturated Surface = 500 / (B3 + 500 – B1)	2,51	2,52	2,52	-
*	Apparent Specific Gravity Apparent = B2 / (B3 + B2 – B1)	2,54	2,55	2,55	-
*	Absorption (Absorption) =	0,81	0,85	0,83	%

	(500 – B2) / B2				

4.1. Calculation of Fine Aggregate Mud and Clay Content

Calculation data for fine aggregate silt and clay content can be seen in table 4.3. below this :

Table 4.3. Calculation of Fine Aggregate Mud and Clay Content

No.	Analysis	Sample I	Sample II	Averrage	Unit
1.	Dry Weight (original) + Cup (W2)	500,00	500,00	500,00	Gram
2.	Weight of Dry Test Object (Final) + Cup (W4)	494,00	493,00	493,50	Gram
3.	Cup Weight (W1)	15,00	15,00	15,00	Gram
4.	Dry Object Weight (original) (W3 = W2 – W1)	485,00	485,00	485,00	Gram
5.	Dry Weight (final) (W5 = W4 – W1)	479,00	478,00	478,50	Gram
	Mud and Clay Content = $\frac{(W_3 - W_5)}{(W_3)} x100\%$	1,24	1,44	1,34	%

Table 4.4. Weight of Loose Content of Fine Aggregate (sand)

No	Information	I	II
1	A. Weight of place + test object (kg)	5,620	5,624
2	B. Pan weight (kg)	1,887	1,887
3	C. Test object weight (kg)	3,73	3,73

		3	7
4	D. Fill the container (litres)	2,722	2,722
5	E. Weight of test object (kg/liter)	1,371	1,373
6	F. Average weight of test object (kg/liter)	1,372	

Table 4.5. Solid Content Weight of fine aggregate (sand)

No	Information	I	II
1	A. Weight of place + test object (kg)	5,975	5,970
2	B. Pan weight (kg)	1,887	1,887
3	C. Test object weight (kg)	4,088	4,083
4	D. Fill the container (litres)	2,722	2,722
5	E. Weight of test object (kg/liter)	1,501	1,500
6	F. Average weight of the test object (kg/liter)	1,501	

Table 4.6. Fine Aggregate Water Content

Activity		Weight (gram)	
		I	II
	Aggregate Weight		
A	Cup WeightBerat	815	824,50
B	Cup+aggregate before	3000	3000
C	washing (dry)	3815	3824,50
	Weight of		
D	cup+aggregate before washing (in oven)	3616	3624,50

Sludge levels : $\frac{(C-A)-(D-A)}{(D-A)}$	7,11%	7,14%
Average of w/c = 7,13%		

Table. 4.7. Fine Aggregate Test Results

No.	Checking type	Test result
1	Weight of loose contents	1,372 kg/liter
2	Solid Content Weight	1,501 kg/liter
3	SSD specific gravity	2,53
4	Dry specific gravity	2,48
5	Absorption	1,85 %
6	Organic Impurities	No. 2
7	Granule Gradation	Zone 4
8	Fineness Modulus	2,53

4.4. Design Mortar Mixtures

Table 4.8. Mixed composition of Normal Mortar (MN) and Mortar mixed with bagasse ash waste (MA).

Analysis	MN %	MA-10%	MA-15%	MA-20%
Ash waste Sugarcane bagasse (grams)	0	68,75	103,13	137,5
Cement (gram)	250	250	250	250
Sand (grams)	687,5	618,75	584,37	550

Water (ml)	121	121	121	121

4.5. Mortar Compressive Strength Testing

Mortar compressive strength testing is carried out using a Compressor Machine.

Table 4.9. Mortar Compressive Strength Test Results Data at 28 days.

No	Mixed Variations (%)	Compression Area (A) (cm2)	Max Compressive Load Force (F) (kg)	Compressive Strength (fc') (kg/cm2)	Average Compressive Strength (kg/cm2)
1	0	25	28,3 35,7 31,9	1,13 1,43 1,28	1,28
2	10	25	39,6 37,2 40,9	1,58 1,49 1,64	1,57
3	15	25	22,7 19,9 24,9	0,91 0,80 1,00	0,90
4	20	25	26,7 27,1 33,0	1,07 1,08 1,32	1,16

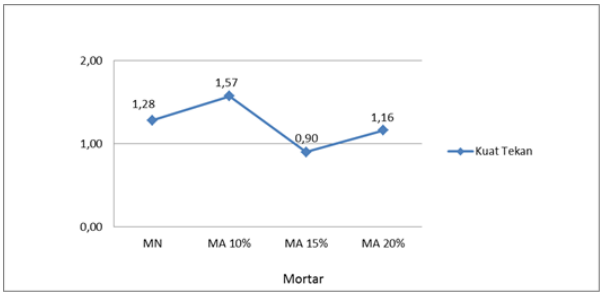


Figure 2. The effect of mixed variations on Compressive Strength of Mortar at 28 Days

From figure 2. It can be seen that the compressive strength of mortar without a mixture of bagasse ash or normal is 1.28 kg/cm, while the average compressive strength of mortar mixed with bagasse ash is 10%, 15% and 20% respectively. are 1.57 kg/cm2, 0.90 kg/cm2, and 1.16 kg/cm2.

5. Conclusions and recommendations

From the results of research and testing of mortar with variations in the mixture of bagasse ash as a substitute for fine aggregate, it can be concluded that the compressive strength value of Normal mortar

without bagasse ash waste is 1.28 kg/cm2. The compressive strength value of mortar with 10% sugarcane bagasse ash waste by weight of sand is 1.57 kg/cm2, which is the optimum mixture content in this mixture. The compressive strength value of mortar with 15% of bagasse ash waste from the weight of sand has a compressive strength of 0.90 kg/cm2. The compressive strength value of mortar with 20% bagasse ash waste of the weight of sand has a compressive strength of 1.61 kg/cm2. Mortar mixed with bagasse ash 10% of the weight of sand will increase from normal mortar. Meanwhile, mortar mixed with 15% or 20% bagasse ash tends to decrease compared to mortar mixed with 10% bagasse ash. It is hoped that further research can be carried out using a mixture of bagasse ash with varying soaking (treatment) times.

REFERENCES

Tjokrodimuljo, 2007:79, *Teknologi Bahan Konstruksi*, Buku Ajar. Jurusan Teknik Sipil, Universitas Atma Jaya. Yogyakarta.

Tjokrodimuljo, 2007:80, *Teknologi Bahan Konstruksi*, Buku Ajar. Jurusan Teknik Sipil, Universitas Atma Jaya. Yogyakarta.

SNI 03 – 2834-2002b "Tata Cara Pembuatan Campuran Beton Normal" Badan Standarisasi nasional (BSN) ICS 91.100.30

Tjokrodimuljo, 1996, *Teknologi Bahan Konstruksi*, Buku Ajar. Jurusan Teknik Sipil, Universitas Atma Jaya. Yogyakarta.

SNI 1969:2008 Cara Uji Berat Jenis dan Penyerapan Air Agregat Kasar, Badan Standarisasi Nasional

SNI 03-1970-2008 Cara Uji Berat Jenis dan Penyerapan Air Agregat Halus, Badan Standarisasi Nasional

SNI 03-1974-1990 Metode Pengujian Analisa Saringan Agregat Halus dan Kasar, Badan Standarisasi Nasional

SNI 03-1971-1990 Metode Pengujian Kadar Air Agregat, Badan Standarisasi Nasional

Biodata:

Ikahariya Pratiwi Matra is a lecturer of Civil Engineering Department, Palembang University. She is a Construction Management Engineer which concerned at Risk Management Analyst and Plan also General Environment, Health an Safety. She is a Accident Investigator, Basic First Aid, Basic Fire Fighter, Hazard Identificator, Assesment and Risk Controller licensed by Gadjah Mada Yogyakarta. She is also a Occupational Health and Safety Expert licensed by Mampower Ministry of The Republic Indonesia BNSP. She is a Founder of Bacotan Kai Podcast on Spotify and Apple Podcast. Her email is ikahariyapratiwi.m@gmail.com

ANALYSIS OF THE UTILIZATION OF SUGAR CANE ASH WASTE AS A CEMENT SUBSTITUTION IN MORTAR MIXTURE WITH NaCl AS A SUBSTITUTE FOR WATER

Wahyu Handoyono Hidayat[1], Asri Mulyadi[2], Asrullah[3], Rezial Nanda Saputra[4]

Palembang University[1,2,3,4]

Wahyuhandoyono@unpal.ac.id[1]

ABSTRACT

This research was carried out on a laboratory scale with stages adapted to the literature so that results could be obtained that could improve the quality of the mortar itself. The limitation of the problem in this research is the use of bagasse ash waste as a cement substitute for mortar mixtures with mixed variations of 0%, 6%, 9% and 12% of the weight of cement, NaCl as a substitute for water, characterization of tests on the mortar mixture which includes testing the compressive strength of the mortar. From the results of research and testing of mortar with various mixtures of bagasse ash as a substitute for fine aggregate and NaCl as a substitute for water, it can be concluded that the compressive strength of normal mortar without bagasse ash waste but using water from NaCl is 1.75 kg/cm^2., strong press mortar with waste bagasse ash 6% of the weight of cement and NaCl is 1.44 kg/cm^2, the compressive strength of mortar with waste bagasse ash 9% of the weight of cement and NaCl compressive strength is 1.39 kg/cm^2, compressive strength of mortar with bagasse ash waste 12% of the cement weight, the compressive strength is 1.55 kg/cm^2 which is the optimum mixture content in this mixture. Mortar mixed with bagasse ash and NaCl results in a lower compressive strength than normal mortar.

***Keywords**: Aggregate, Cement, Compressive strength, Mortar, NaCl, Sugarcane bagasse ash waste*

INTRODUCTION

a. Background

The concept of environmentally friendly technology has inspired researchers to do more to protect the environment. According to research by Sugianto (2017), waste as an alternative building material has become a popular way to overcome environmental problems in most developing countries because the waste bagasse ash is directly disposed of on land or land around the sugar cane processing site. Sugarcane bagasse ash is one of the wastes that has the potential to be used as a mixture in building materials.

Cement is an adhesive material that is smooth in shape. If water is added, a hydration reaction will occur and can bind solid materials into one solid mass. The largest percentage of cement content is CaO (calcium oxide) in the range of 60% -65%, SiO_2 (silica) in the range of 20% -24% and Al_2O_3 (aluminum

oxide) in the range of 4% -8% (Raya ayu Sati, 2019). Mortar is a mixture of adhesive (Portland cement), fine aggregate (sand), and water with a certain composition. Mortar as an adhesive for structural construction is used for crushed stone masonry on foundations.

Planning high quality mortar requires planning in the form of mortar mix design. The mortar mixture must be planned as economically as possible with the right composition of ingredients so that it is easy to work with when the mortar is still wet (not yet formed) and produces good quality when it has hardened (formed). The quality and strength of mortar is greatly influenced by the composition of the mortar mixture and curing, water content, the presence of additional materials used for certain purposes, and so on. Therefore, the author tries an alternative for using bagasse ash as a substitute for cement and NaCl as a substitute for water. which is used as a mortar mixture.

b. Research Objectives

1. To determine the optimum composition of bagasse ash and NaCl for forming mortar.
2. Can understand mortar mixtures, so that you can design mortar mixtures according to the planned quality.
3. Utilizing sugarcane bagasse ash waste to make mortar which is useful for reducing environmental pollution.

c. Benefits of Research

The use of bagasse ash and NaCL waste which is processed into raw materials for making mortar is expected to be useful in everyday life, apart from improving the community's economy, it can also reduce the impact of environmental pollution due to waste from bagasse ash. As well as providing information to the public about the effect of bagasse ash and limestone as a cement substitute on the quality of mortar.

d. Problem Formulation

Issue to be discussed in this research is that it is hoped that using bagasse ash as a cement substitute and NaCl as a substitute for AR in the mortar mixture can improve the quality of the mortar itself. This research was carried out on a laboratory scale with stages adapted to the literature so that results could be obtained that could improve the quality of the mortar itself.

LITERATURE REVIEW

a. Mortar

Mortar is a paste made from a mixture of cement, sand, and water that is useful for binding, filling, and covering irregular gaps between building blocks such as stone, brick, and concrete units. Has different percentages and ratios of cement, sand, and water. According to SNI 03-6825-2002 for 3 pieces of mortar is 250 gr: 687.5 gr: 121 ml. As a binding agent, mortar must have a standard concentration/viscosity. This mortar concentration will later be useful in determining the strength of the mortar used as a plaster or wall

plaster so that it is hoped that the mortar that can withstand the compressive force due to the load acting on it will not be destroyed (Concrete Technology, 2008).

Mortar can be used in the form of concrete cube paste (structural) or non-structural, for example in brick or molded stone wall masonry work, wall plastering work, wall ceramic masonry work, floor leveling work, and even floor ceramic masonry work. Mortar is classified according to its use, for example, for joints, walls, waterproof, fireproof, and so on. Joint mortar is used to join brick, stone, and concrete blocks. Wall mortar is used in various mixture ratios to meet work requirements. Work with wall mortar: base coating, smoothing, second coating, and finishing.

Mortar and concrete are made from cement and aggregate mixed with water. What you need to know about building materials is their density, porosity, and compressive strength. In relation to heat, the properties of the mortar also need to be known; for example, a wall made of concrete has a different conductivity compared to building materials, which is closely related to the use of building materials.

b. Mortar Specifications

Specifications for Proportions and Properties of Mortar

Based on SNI 03-6882-2002, the proportion of mortar is specified in 4 types according to the strength of the mortar and the specifications for the proportion of materials consisting of cement, aggregate and water used.

Table 1. Proportion Requirements

No	Mortar	Type	Mix in volume				Aggregate Ratio (measurement of moist and loose conditions
			Portland Cement	Couple Cement			
				M	**S**	**N**	
1	Couple Cement	**M**	1	---		1	2.25-3 times the volume of cementitious material
2		**M**	---	1		---	
3		**S**	½	---		1	
4		**S**	---	---	1	---	
5		**N**	---	---		1	
6		**O**	---	---		1	

Source: SNI 03-6882-2002

From the table above, the types of mortar are as follows:

1. Type M mortar is a mortar that has a strength of 17.2 MPa according to Table 2, which is made using type N masonry cement or lime cement by adding portland cement and quenched lime to the composition.

2. Type S mortar is a mortar that has a strength of 12.4 MPa according to Table 2, which is made using type S cement or lime cement by adding portland cement and quenched lime with the composition according.
3. Mortar Type N is a mortar that has a strength of 5.2 MPa according to Table 2, which is made using type N masonry cement or lime cement by adding portland cement and quenched lime to the composition.
4. Mortar Type O is a mortar that has a strength of 2.4 MPa according to Table 2, which is made using type N masonry cement or lime cement by adding portland cement and quenched lime to the composition.

Table 2. Characteristic Specification Requirements

Mortar	Type	Average strength 28day Min. (Mpa)	Water retention Min (%)	Rate Air Max (%)	Aggregate Ratio (Measurement of moist and loose conditions)
Cement Partner	M	17.2	75	…… b)	2.25-3.5 times the volume of cement
	S	12.4	75	…… b)	
	N	5.2	75	…… b)	
	O	2,4	75	…… b)	

Source: SNI 03-6882-2002

Information:

a. Only for mortars prepared in the laboratory.
b. When If there is structural reinforcement in the masonry cement mortar, the maximum air content must be 18%.

Specifications for mortar properties must meet the requirements for materials and testing of mortar that has been prepared in the laboratory, where the material consists of a mixture of cement, aggregate and water binders that meet the requirements for mortar according to the test method issued by SNI 03-6882-2002 .

Test Method

a. Mixture proportions of ingredients for test specimens

Mortar made in the laboratory which is used to determine the properties according to this specification must contain construction materials in the mixture composition specified in the project specifications (SNI 03-6882-2002).

b. Mortar Mixing

All cement and aggregate materials must be mixed with sufficient water for 3 – 5 minutes using a mechanical mixer to produce a mortar that is easy to work with. Mixing mortar by hand is permitted if there is permission from the party that determines the requirements by providing the procedures for the intended mixing method (SNI 03-6882-2002).

c. Carelessness Maintenance

Mortar that has hardened must be stirred again by hand to maintain its smoothness, and mortar that has been mixed for more than 2.5 hours must not be used again (SNI 03-6882-2002).

Mortar Compressive Strength

Compressive strength is a very important factor in testing the results of a mixture of mortar materials, both as components for making building materials. Compressive strength is the load that mortar can withstand per unit area. The mortar compressive strength test used is the ASTM C109-93 standard.

c. Mortar Forming Material

a. Cement
b. Portland Cement
c. Pozzolan
d. Aggregate
e. Water.

d. Sugarcane Bagasse Ash

Sugarcane bagasse ash is the result of chemical changes from burning pure sugarcane bagasse. Sugarcane bagasse is used as fuel to heat boilers in sugar production with temperatures reaching 5500-6000˚C. Every 4-8 hours, the ash is removed from the boiler, because if it is left without cleaning, a buildup will occur which will disrupt the process of burning the next bagasse. (Abdul Ghofur, 2010)

e. NaCl

NACL 0.9% is an infusion fluid containing NaCl 0.9%. This infusion is used to restore electrolyte balance in dehydration. Sodium ions are the main electrolyte in extracellular fluid which is needed in the distribution of fluids and other electrolytes. Chloride ions act as buffering agents in the lungs and tissues. This ion helps facilitate oxygen and carbon dioxide to bind to hemoglobin. Sodium ions and chloride ions are regulated by the kidneys which control homeostasis by absorption or excretion in the tubules.

f. Mortar Mix Planning

All materials for test objects are tested for characteristics in accordance with applicable standards. According to SNI 03-6825-2002for 3 pieces of mortar is 250 gr: 687.5 gr: 121 ml. The cement water factor (w/c) is 0.485 for all types of Portland cement with a flow of 110 ± 5. Mortar mixtures are guided by Standard ASTM C109-93

RESEARCH METHODS

a. Place and time of research

This research was carried out in the Structures and Materials Laboratory of the Civil Engineering Study Program, Faculty of Engineering, Palembang University and the Construction Materials Laboratory of the Public Works Department of Highways and Spatial Planning of South Sumatra Province with a research period of two months.

b. Types of Research and Data Sources

The research carried out was an experimental test, where the conditions were created and regulated by researchers by referring to SNI (Indonesian National Standards) regulations and related literature.

c.. Tools and Research Materials

1. Scales with an accuracy of 0.1 gram
2. 1000 ml measuring cup
   Measuring cup, used to measure the amount of water used.
3. Pycnometer.
4. Sharpened cone
5. Corner rod
6. Aluminum pan
7. Glass plate
8. Cup
9. Oven equipped with temperature control.
10. Density spoons
11. Scales
12. Cylindrical tube
13. Vernier calipers are used to measure all dimensions of the test object.
14. Paintbrush
15. Plastic bucket
16. Cube mold measuring (5 x 5 x 5) cm
17. Cement spoon
18. Universal Testing Machine (Tokyo Testing Machine Inc.) capacity 1000 kN

19. Sieve, Pass sieve No. 200 (fine aggregate composition according to standards)
20. Wet cloth.

d. Material

The materials used in this research are:

1. Seme brand Type I Portland cement Baturaja
2. Fine aggregate
3. PDAM water
4. Sugarcane bagasse ash.
5. NaCl

Before buying these materials, you should first estimate how much is needed. For sand: It is best to increase the amount of sand, so that the aggregate inspection does not happen again, considering that the characteristics of the aggregate will not be the same for each purchase. Cement should be purchased as the day of printing approaches, because storing cement for too long will reduce the quality, if improper storage can cause the cement to harden and clots occur.

e. Procedure for making mortar test materials

1. Mixing

   Materials such as cement, sand and water needed for 3 pieces of mortar are weighed in the ratio according to SNI 03-6825-2002, namely 250 gr : 687.5 : 121 ml and bagasse ash as much as 0%, 6%, 9%, and 12% of the sand weight.

2. Kneading

   After all the ingredients are mixed, water is added to the middle of the mixture and left for 60 seconds so that the mixture binds together, then the mixture is stirred until the mixture is completely homogeneous.

3. Printing

   After the kneading is complete, molding is carried out by inserting the mortar paste into a cube mold that has been smeared with Vaseline first by:

   - Insert the paste as high as 1/3 of the height of the mold, then the mixture is shaken at least 25 times to ensure the density of the mixture.
   - Put 1/3 of the mortar paste back into the mold then shake it again.
   - Put the mortar paste back into the mold until it is full then shake it again.

- The surface of the mold is leveled and then covered with a wet cloth for ± 24 hours.

f. Mix Planning and Mortar Quality Test Procedures

Mortar Mix Planning

Mortar mixtures are guided by Standard ASTM C109-93, namely:

- Cube mold 5 x 5 x 5 cm
- Samples can be made with material details are:

Table 3. 3 samples

	3 samples
Cement	250 grams
Sand	687.5 grams
Water	121 ml

Source: ASTM C109-93

Mortar Compressive Strength Testing Procedure

Mortar pressure strength testing is carried out to determine the crushing compressive strength of the test object. The test object used is a cube with side dimensions of (5 x 5 x 5) cm. Mortar pressure strength testing was carried out when the mortar was 28 days old. The amount of mortar tested consisted of 3 samples for each mixture.

Work procedures for testing compressive strength on mortar test specimens include:

1. Remove the test object after it reaches the planned age from the soaking tub, then dry it with a cloth and leave it for 24 hours.
2. The test object is placed on the pressing machine.
3. A compressive load is applied slowly to the test object by operating the pump lever so that the test object collapses and is destroyed.
4. When the needle on the load scale no longer moves or increases, the scale indicated by the needle is recorded as the maximum load that can be carried by the test object.
5. This procedure is repeated for other compressive strength test specimens.

Compressive strength can be obtained using the following formula:

$$fc^{I} = \frac{F}{A}$$

With :

FCI = Compressive strengthtest object (kg/cm2)

F =Maximum compressive load (kg)

A = Field areasurface (cm2)

RESULTS AND DISCUSSION

a. Fine Aggregate Inspection

Laboratory tests carried out for fine aggregate include loose bulk and solid bulk, sieve analysis, specific gravity and absorption of mud content and water content. The fine aggregate used is Musi river sand.

From the results of examinations carried out in the laboratory, the following data were obtained:

Examination of the Weight of Loose and Solid Contents of Fine Aggregate

Table 4. Weight of loose and dense fine aggregate content

Activity		I		II		III	
		Loose	Congested	Loose	Congested	Loose	Congested
A	Cylinder	1893,13	1893,13	1893,13	1893,13	1893,13	1893,13
B	Volume	855	855	855	855	855	855
C	Cylinder WeightWeight of Test Object	2924	3258	2920	3230	2914	3288,5
Volume weight: $\frac{C-B}{A}$		1,093	1,269	1,091	1,255	1,088	1,285
Average Volume Weight: - Loose weight = 1.091 gr/cm3 - Solid weight = 1.269 gr/cm3							

Source: Research results

Fine Aggregate Sieve Analysis Examination

Table 5. Fine Aggregate Sieve Analysis

Filter (mm)	Suspended weight (gr)	The amount of weight retained	Total percent (%)	
			Stuck	Get away
4.75	0	0	0	100
4	2	0.4	0.4	99.6
2	4.5	0.9	1.3	98.7
1	33	6.6	7.9	92.1
0.5	30	6	13.9	86.1
0.25	262.5	52.5	66.4	33.6
0.125	153.5	30.7	97.1	2.9
0.063	10	2	99.1	0.9

pan	4.5	0.9	100	0
Total	500	100	386.1	

Source: Research results

$$\text{Fineness Number} = \frac{386,1}{100} = 3,861$$

Examination of Specific Gravity and Absorption of Fine Aggregate

Table 6. Specific Gravity and Absorption of Fine Aggregate

Activity		Weight (grams)	
		I	II
A B CDE	Weight of cupWeight of measuring cup (1000 ml)Weight of measuring cup + sand + waterWeight of measuring cup + waterWeight of cup + sand after oven (Dry Kerontang)	869 303 1592,5 1302 1367	881 303 1594 1302 1367
Dry specific gravity: $\frac{E-A}{D+500-C}$		2,387	2,337
SSD specific gravity: $\frac{500}{D+500-C}$		2,450	2,404
Water absorption percentage: $\frac{500-(E-A)}{E-A}$		2,669	2,881
Average dry specific gravity = Average SSD specific gravity = Average absorption percentage =		2,362 2,427 2,775%	

Source: Research results

Fine Aggregate Sludge Content Inspection

Table 7. Fine Aggregate Sludge Content

Activity	Weight (grams)	
	I	II

A B C D	Aggregate Weight Cup Weight Weight of Cup+aggregate before washing (dry) Weight of Cup+aggregate before washing (in oven)	736 1000 1736 1729	987 1000 1987 1978
Sludge levels ; $\frac{(C-B)-(D-B)}{(D-B)}$		0.705%	0.908%
Average sludge content = 0.807%			

Source: Research results

Fine Aggregate Water Content Inspection

Table 8.Fine Aggregate Water Content

Activity		Weight (grams)	
		I	II
A B C D	Aggregate Weight Cup Weight Weight of Cup+aggregate before washing (dry) Weight of Cup+aggregate before washing (in the oven)	815 3000 3815 3616	824.50 3000 3824.50 3624.50
Sludge levels: $\frac{(C-A)-(D-A)}{(D-A)}$		7.11%	7.14%
Average water content = 7.13%			

Source: Research results

From the examination carried out in the laboratory, the following data were obtained:

1. Fine Aggregate

Table 9. Sand data

No	Description	Information
1	Weight of loose contents	1.091 gr/cm^3
2	Solid Content Weight	1.269 gr/cm^3
3	SSD specific gravity	2,427
4	Dry specific gravity	2,362
5	Absorption	2.775 %

6	Sludge levels	0.807 %
7	Water content	7.13 %
8	Granule Gradation	Zone 4
9	Fineness Modulus	3,861

Source: Research results

b. Portlant Cement (PC) Inspection

Cement Specific Gravity Check

Table 10. Cement Specific Gravity

Activity		Weight (grams)	
		I	II
A	Weight of cement	64	64
B	Reading on a bottle scale (V^1)	0	0
C	Reading on a bottle scale (V^2)	21.4	21.5
D	Weight of water content at 4° C	-	-
Cement Specific Gravity $\frac{Cement\ weight}{(V2 - V1)\ d}$		2.99	2.97
Average specific gravity of cement = 2,098 gr / cm^3			

Source: Research results

Cement Consistency Check

Table 11.Cement Consistency

Activity	Weight (g)
Weight of portlant cement	650
Water Weight	155
Consistency of portlant cement $\frac{Water\ weight}{Cement\ weight}$ x 100%	
Cement consistency	23.846 %

Source: Research Results

c. Water Inspection

The water used in this research is clean water , but in general the water used is: Water must be clean, must not contain mud,oil, acid, alkali, organic substances and other materials that can damage mortar.

d. Requirements for the Number of Research Test Objects

1. Normal Mortar (MN)

   According to SNI 03-6825-2002,The ratio of cement, sand, bagasse ash, NaCl needed for 3 pieces is:

   Cement : 250 gr

   Sand : 687.5 gr

   NaCl : 121 ml

2. *Mortar* using 6% sugarcane bagasse ash from the cement composition and NaCl as a substitute for water (MA6%NaCl).According to SNI 03-6825-2002 pThe ratio of cement, sand, bagasse ash, NaCl needed for 3 pieces is:

   Cement : 250 gr - 15 gr = 235 gr

   Sand : 687.5 gr

   NaCl : 121 ml
   Bagasse ash is 6% of the cement composition = 15 gr

3. *Mortar* by using sugarcane bagasse ash waste 9% of the cement composition and NaCl as a substitute for water (MA9%NaCl).According to SNI 03-6825-2002The ratio of cement, sand, bagasse ash, NaCl needed for 3 pieces is:

   Cement : 250 gr - 22.5 gr = 227.5 gr

   Sand : 687.5 gr

   NaCl : 121 ml
   Bagasse ash is 9% of the cement composition = 22.5 gr

4. *Mortar* using 12% sugarcane bagasse ash waste from the cement composition and NaCl as a substitute for water (MA12%NaCl).According to SNI 03-6825-2002The ratio of cement, sand, bagasse ash, NaCl needed for 3 pieces is:

   Cement : 250 gr - 30 gr = 220 gr

   Sand : 687.5 gr

   NaCl : 121 ml

   Bagasse ash is 12% of the cement composition = 30 gr

Table 12. Composition of a mixture of Normal Mortar (MN) and Mortar with sugarcane bagasse ash and NaCl waste.

Description	M N	(MA6%NaCl)	(MA9% NaCl)	(MA12% NaCl)
Cement (grams)	250	235	227.5	220
Sand (grams)	687.5	687.5	687.5	687.5
NaCl	121	121	121	121
Sugarcane bagasse ash waste	0	15	22.5	20

Source: Calculation Results

Information :

M N =*Mortar*Normal

(MA6%NaCl)=*Mortar*with 6% bagasse ash waste and NaCl

(MA9% NaCl) =*Mortar*with 9% bagasse ash waste and NaCl

(MA12% NaCl) =*Mortar*with 12% bagasse ash waste and NaCl

e. Mortar Compressive Strength Testing

Mortar compressive strength testing is carried out using a Compressor Machine. Data on compressive strength testing results for Normal Mortar, and Mortar with 6%, 9%, 12% sugarcane bagasse ash waste and NaCl, the results of the research can be shown in table 13.below:

Table 13. Mortar Compressive Strength Test Results Data at 28 Days

No	*Mortar*	Compression Area (A) (cm2)	Max Compressive Load Force (F) (kg)	Compressive Strength (fc') (kg/cm2)	Average Compressive Strength (kg/cm2)
1	M N	25	38.8 50.3 42.4	1.55 2.01 1.70	1.75
2	MA6%NaCl	25	40.4 32.9 34.8	1.62 1.32 1.39	1.44
3	MA9%NaCl	25	31.7 40.2 32.3	1.27 1.61 1.29	1.39
4	MA12%NaCl	25	36.5	1.46	1.55

			45.6 34.5	1.82 1.38	

Source: Test results

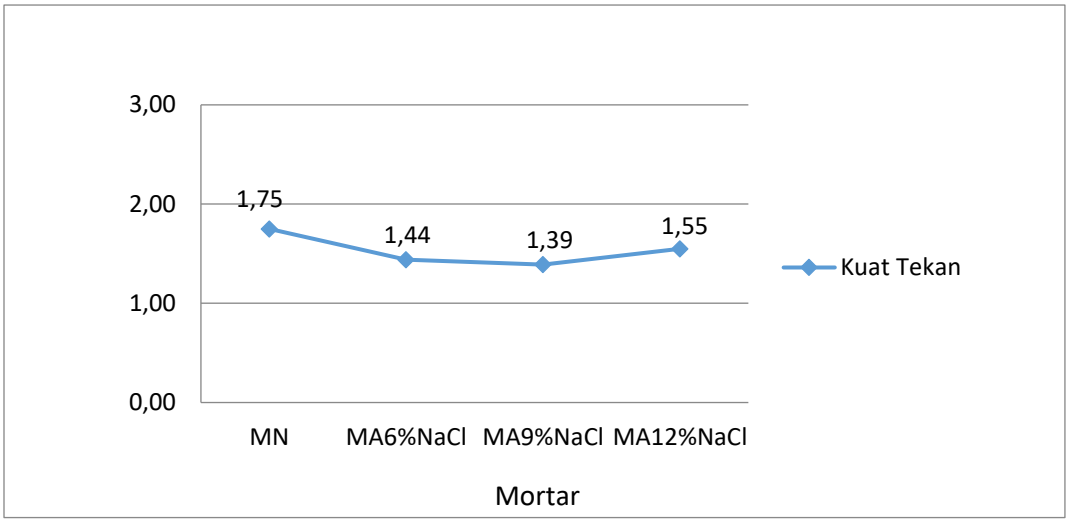


Figure 1. Mortar Compressive Strength Graph at 28 Days

From figure 1.. It can be seen that the compressive strength of Standard Mortar without waste bagasse ash and lime or normal lime is 1.75 kg/cm2, while the compressive strength of mortar with 6% bagasse ash waste and NaCl is 1.44 kg/cm2, and for mortar with 9% bagasse ash waste and NaCl has a compressive strength of 1.39 kg/cm2, then for mortar with 12% bagasse ash waste and NaCl a compressive strength of 1.55 kg/cm2.

CONCLUSIONS

Conclusions

From the results of research and testing of mortar with various mixtures of bagasse ash as a substitute for fine aggregate and NaCl as a substitute for water, it can be concluded that:

1. The compressive strength of normal mortar without bagasse ash waste but using NaCl water is 1.75 kg/cm2.
2. The compressive strength of mortar with bagasse ash waste 6% of the weight of cement and NaCl is 1.44 kg/cm2.
3. The compressive strength of mortar with sugarcane bagasse ash waste is 9% of the cement weight and the compressive strength of NaCl is 1.39 kg/cm2

4. The compressive strength of mortar with bagasse ash waste is 12% of the cement weight, the compressive strength is 2.12 kg/cm2 which is the optimum mixture content in this mixture
5. *Mortar*by mixing bagasse ash and limestone it will increase from normal mortar.
6.

Suggestion

It is hoped that further research can be carried out using a mixture of bagasse ash with varying soaking (treatment) times.

REFERENCES

Sugianto, et al. (2017),*Experimental Study of Adding a Mixture of Sugarcane Bagasse Ash and Bamboo Fiber to Concrete Bond Strength,*Journal, Sebelas Maret University Surakarta.

Annual Book of ASTM Standard, Volume 04.02, Concrete and Aggregates, 1997

Indonesian National Standard SNI 03-2847-2002 "Procedures for Calculating Concrete Structures for Buildings.

SNI–03-6825-2002, Testing Method for Compressive Strength of Cement Mortar*Portland For Civil Works*National Standardization Body ICS 27.180

SNI–03-6882-2002, Mortar Specifications for Pair Work National Standardization Agency ICS 27.180

Triaswati MN, Didik Harijanto., Boedi Wibowo., Wahyu Ismoyo.,*Use of Stone Ash to Reduce Natural Sand Aggregate in Concrete Mixes by Adding Type D Additives*.Journal of Infrastructure & Facilities Asset Management, (e)ISSN 2615-1847 (p)ISSN 2615-1839, Vol. 3, Special Issue 2, June 2019

Nugraha P., Antoni, Concrete Technology, Andi offset, Yogyakarta, 2007

Rara Ayu Sati, et al (2019). Effect of variations in the use of bagasse ash (AAT) and stone ash (AB) as partial replacement materials for cement on the compressive strength of mortar. (p)ISSN : 2086-9045, UNIB.

Biodata

Wahyu Handoyono Hidayat is a lecturer of Civil Engineering Department, Palembang University. He received his Master Degree under Sriwijaya University. His major interest infrastructure management and transportation. His email is wahyuhandoyono@unpal.ac.id

MARSHALL CHARACTERISTICS WITH THE USE OF CEMENT FILLER AND STONE ASH IN THE MIXTURE ASPHALT CONCRETE WEARING COURSE (AC-WC)

(Case Study: Ogan Ilir Regency Boundary Road-Lubuk Batang STA 26+485 to STA 27+405)

Asrullah[1)]
Civil Engineering Study Program, Faculty of Engineering, Palembang University
email : asrullahhan@gmail.com

Rita Anggrainy[2)]
Civil Engineering Study Program, Faculty of Engineering, Palembang University

email : rita.anggrainy@gmail.com

Ice Trisnawati[3)]
Civil Engineering Study Program, Faculty of Engineering, Palembang University

email : icetrisnawati8511@gmail.com

Pangki Suanto[4)]
Civil Engineering Study Program, Faculty of Engineering, Palembang University

email : pengkisuanto@gmail.com

Abstract

Indonesia is experiencing significant growth in traffic loads, but this is often not balanced by the development of adequate road infrastructure. This phenomenon occurs because the growth of traffic loads is faster than the development of road infrastructure. Excessive traffic loads can cause road damage. When a road has to carry a traffic load that exceeds its planned capacity, damage will occur gradually and impact the quality of the road infrastructure. Asphalt is a dark brown or not thick hydrocarbon compound formed from the elements asphaltenes, resins, and oils. Asphalt in the pavement layer functions as a binding material between the aggregates to form a compact mixture, thus providing the strength of each aggregate. There are various asphalt mixtures, such as hot asphalt mixtures using cement filler and stone ash on the surface layer of the Asphalt Concrete Wearing Course (AC-WC). Therefore, it is necessary to carry out research to determine the Marshall characteristics in the evaluation of hot asphalt mixtures using cement filler and stone ash on the Asphalt Concrete Wearing Course (AC-WC) surface layer, which is adjusted to the 2018 Bina Marga Revision 2 specifications. It was carried out on the district border roads as an object of research. Ogan Ilir – Lubuk Batang and in the PT Laboratory. Komba Mahaka Utama Martapura Ogan Komering Ulu Timur. Marshall test results on the AC-WC mixture using 2 different types of filler, namely cement filler and stone ash filler, and the test results on the research object showed differences in the resulting Marshall characteristics. Still, all results met the requirements of the 2018 Bina Marga general specifications Revision 2.

Keywords: marshall, asphalt content, filler, asphalt concrete wearing course

1. Introduction

Indonesia is experiencing significant growth in traffic loads, but this is often not balanced by the development of adequate road infrastructure. This phenomenon occurs because the growth of traffic loads is faster than the development of road infrastructure. Excessive traffic loads can cause road damage. When a road has to carry a traffic load that exceeds its planned capacity, damage will occur gradually and impact the quality of the road infrastructure. Flexible pavement is an important component in road infrastructure designed to withstand traffic loads and provide users with a safe and comfortable surface. Aggregate is one of the main components of flexible road pavement, and fine aggregate has an important role in flexible road pavement, which often experiences damage, namely the wear layer (AC-WC). AC-WC coating aims to provide smoothness, safety, and comfort for road users and protect the underlying layer from damage due to repeated traffic loads, including the formation of deformation in the form of subsidence, grooves, and grain release. Hot mix asphalt concrete is one type of flexible pavement construction layer. This type of pavement is an even mixture of aggregate and asphalt as a binding material at a certain temperature. To dry the aggregate and obtain a sufficient liquid level from the asphalt so that it is easy to mix it, the two materials must be heated first before mixing.

The characteristics of asphalt concrete are largely influenced by the materials used for the mixture, the gradation of the mixture, and good implementation in the field. In contrast, the strength of asphalt concrete is largely determined by the rocks in the mixing process (composition), which greatly determines the characteristics of the asphalt concrete. Certain materials, both asphalt and aggregate, are used to increase the ability of pavement [1]. Road pavement must be planned properly by applicable standards in Indonesia [2]. Asphalt concrete is one of Indonesia's most widely used types of flexible pavement. This layer comprises coarse aggregate, fine aggregate, and asphalt [3]. This research was done in the Laboratory and the field, as samples were taken on the District Border Road. Ogan Ilir-Lubuk Batang STA 26+485 to STA 27+405). The research aimed to determine the characteristics of Marshall using cement filler and stone ash in the AC-WC mixture. Stone ash is the result of grinding from crushed stone production. Rock ash contains a lot of silica, alumina, alkaline compounds, iron, and lime, although at low levels [4]. Asphalt is a dark brown or not thick hydrocarbon compound formed from the elements asphaltenes, resins, and oils. Asphalt in the pavement layer functions as a binding material between the aggregates to form a compact mixture, thus providing the strength of each aggregate. Apart from being a binding material, asphalt also fills the cavities of aggregate granules and the pores of the aggregate itself. The filler can use stone ash. Filler material must be dry and free from lumps and must be material that passes 75% of sieve number 200 and has non-plastic properties [5]. Marshall test results using AMP stone ash filler PT. Victory Multi Karya meets the specified requirements and can be used [6].

Research conducted by Sartan Nento et al. (2021) using an optimum asphalt content (KAO) of 5.5% from various zeolite stone ash fillers met the specifications of Bina Marga 2010 revision 3 [7]. Research conducted by Muhtar Salim et al. (2021), with the addition of stone ash filler from 1% -3%, the results showed that the stability value, asphalt cavity filled value, and Marshall Quotient value increased along with the stone ash filler content in the HSR-Base mixture [8]. The results of the Marshall test with optimum asphalt content in a mixture of Portland cement filler and stone ash have different values, fulfilling the Marshall property requirements. At the same time, VIM and VFA are the limits [9]. Marshall's test results on the AC-WC mixture using 3 different types of filler, namely cement filler, stone ash, and lime, meet the

requirements of the general specifications for Bina Marga 2018 Revision 2 [10]. Budi Winarnao et al. (2020) researched the Marshall method based on stability and flow calculations in the Marshall test using filler with 5 samples that showed results that met the Bina Marga requirements [11].

2. Research Methods

This research was carried out in the Asphalt Laboratory of PT. Komba Mahaka Utama Martapura Ogan Komering Ulu Timur and research objects in the field on the District Border Road. Ogan Ilir-Lubuk Batang STA 26+485-27+405. In this research, the Asphalt Concrete Wearing Course (AC-WC) mixture was used as a mixture; the fine aggregate was taken from AMP PT. Komba Mahaka Utama Ogan Komering Ulu Timur, while the coarse aggregate and stone ash used were natural stone, which was carried out by the crushed stone breaking process from the Asphalt crusher machine. Mixing Plan (AMP) PT. Komba Mahaka Utama. The Asphalt Concrete Wearing Course (AC-WC) mixture fillers are cement and stone ash. The testing stages in this research consist of aggregate testing (coarse, fine, and filler), asphalt testing, and testing of the mixture, namely the Marshall test. Tests were carried out in the laboratory for cement and stone ash fillers, while as a case study, tests were carried out using stone ash filler at several STA 26+485-27+405 sample points. The results of this test are Marshall characteristics, namely Void in the Mix (VIM), Void in the Mineral Aggregate (VMA), Void Filled with Asphalt (VFA), stability, flow, Marshall Quoetion (MQ), and Density. Case studies are taken from several points on the research object, and the results will be taken to The Laboratory for examination so that they can produce marshall data and density data in the field.

3. Results

3.1. Research Results in the Laboratory

The results of the Asphalt Concrete Wearing Course (AC-WC) mixture material examination in this study are presented in the following Table [11] :

Table 1 WC-AC Mixture Inspection Results

Material Type	Mark
Effective Specific Gravity of Fine Aggregate (sand)	2,503 gr/cc
Effective Specific Gravity of Coarse Aggregate Crushed Stone 19.00 mm (3/4”) Crushed Stone 9,50 mm (3/8”)	 2,644 gr/cc 2,613 gr/cc
Effective Specific Gravity of Stone Ash	2,534 gr/cc
Asphalt Specific Gravity	1,033 gr/cc^3
Asphalt Sheet Point	51,8 ^{o}C
Asphalt Flash Point	358 ^{o}C
Asphalt Ductility at temperature 25 ^{o}C	>140
Optimum Asphalt Content in Mixtures AC-WC	5,90 %

Source: *Laboratory Test Results*

Table 2 Composition of Marshall Briquette Mix with Cement Filler

Mix	Mix Percent	Weight (gram)	Cumulative (gram)
Crushed stone 19.00 mm	4,71% ×1200	56,52	56,52
Crushed stone 9,50 mm	45,17%×1200	542,04	598,56
Dust	37,63%×1200	451,56	1050,12
Sand	4,71%×1200	56,52	1106,64
Filler (cement)	1,88%×1200	22,56	1129,20
Optimum Asphalt Content	5,90%×1200	70,80	1200

Source: *Laboratory Test Results*

Table 3 Composition of Marshall Briquette Mixture with Stone Ash Filler

Mix	Mix Percent	Weight (gram)	Cumulative (gram)
Crushed stone 19.00 mm	4,80% ×1200	57,60	57,60
Crushed stone 9,50 mm	45,25%×1200	543,00	600,60
Dust	37,26%×1200	447,12	1047,72
Sand	4,80%×1200	57,60	1105,32
Filler (cement)	1,99%×1200	23,88	1129,20
Optimum Asphalt Content	5,90%×1200	70,80	1200

Source: *Laboratory Test Results*

Table 4 Marshall Test Results

Test Type	Test results			General Specifications 2018 Revision 2
	Cement Filler 1,88%	Stone Ash Filler 1,99%	Stone Ash Filler 1.99% Field Sample	
Optimum Asphalt Content (%)	5,90	5,90	5,90	-
Standard Bulk Density / Content Weight (gr/cc)	2,270	2,250	2,221	-
Percent void to mix (VIM) Standard (%)	4,50	4,80	4,85	3.0 – 5.0
Percent voids to aggregate (VMA) (%)	17,45	17,00	17,29	Min 14
Percent of voids filled with asphalt (VFA) (%)	74,00	71,00	71,94	Min 65
Marshall Stability (kg)	1080	1100	976,10	Min 800
Fatigue/Flow (mm)	3,00	3,60	3,87	2,0 – 4,0
MQ (kg/mm)	360	305	252,44	>250

Source: *Laboratory Test Results*

3.2. Trial Compaction Results

The AC-WC Compaction Trial was carried out at the STA 26+485 – 26+525 location; this compaction trial was carried out with two variations of passing (passing) Tandem Roller and Pneumatic Tire Roller (PTR) to obtain the field density as required. The passing variations (trajectories) are Section I STA 26+485-STA 26+505 R, Tandem, and PTR passing with 10 passes, while Section II STA 26+505-STA-26+525 R passing with 12 passes. The Tandem equipment weighs 8 tons, and the PTR is 12 tons. From the results of this trial, it was found that: Break Down with Tandem Roller 2 passes with a Temperature of 130^{o}C, Intermediate

with PTR 12 passes with a temperature of 115ºC. With loose compaction of 5.3 cm and an average density percentage of 98.47%, the density obtained and the compaction results meet the specified requirements, namely a minimum of 98% [12].



Figure 1 Compaction Test Sampling Process.



Figure 2 Sample Testing Process from Location.

4. Discussion

4.1. Analysis of Optimum Asphalt Content

The asphalt content required in a pavement mixture is the optimum asphalt content, namely an asphalt content that provides the highest stability to the pavement layer where other requirements are met, such as VIM value, Flow, and so on. The optimum asphalt content (KAO) is 5.90% of all fillers used because it meets the requirements of the Marshall test results and other aspects, which can provide an overview of the Trail Compaction test results at the research object.

4.2. Bulk Density Analysis

Density is the weight of the mixture measured per unit volume; density shows the density level of the mixture after it is compacted. Factors that influence density are the quality of the constituent materials, compaction energy, and asphalt content in the mixture. The results of research in the laboratory and the field are shown in the following Figure:

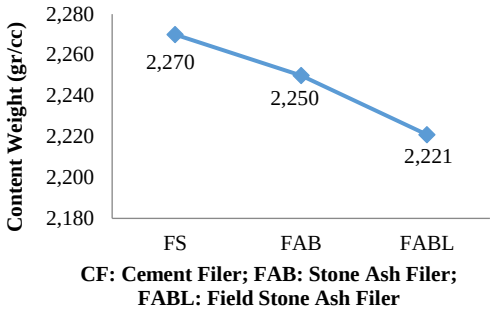


Figure 3 Comparison graph of bulk weight values with Cement Filler, Laboratory Stone Ash Filer, and Field Stone Ash Filer.

Figure 3 for the AC-WC cement filler mixture is the highest value, 2,270 gr/cc. In contrast, there was a decrease for the stone ash filler in laboratory conditions, namely 2,250 gr/cc, and for the stone ash filler from the field location there was a very significant decrease, namely 2,221 gr/cc. For bulk weight, Bina Marga has no special requirements regarding this density, but it greatly influences the volume requirements in the field. The higher the density value, the better the mixture quality will be. This can be explained by the high density of a hot asphalt mixture, the more impenetrable it is to water and air [13].

4.3. VIM Value Analysis

The Void In The Mix (VIM) value, also known as the percentage of voids contained in the total air in the asphalt mixture, influences the life of the pavement layer; the higher the VIM value indicates, the greater the voids in the mixture so that the mixture is vigorous [14]. Suppose the air cavity value in the mixture is small. In that case, it indicates that the mixture is too dense or dense and has high stiffness, which

h will result in the asphalt surface rising (bleeding) due to compaction by traffic loads and shifting of the asphalt surface (sliding) [15]. The results of the VIM value analysis can be seen in Figure 4 below:

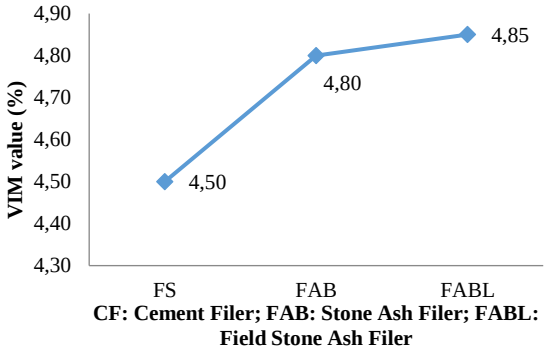


Figure 4 Comparison graph of VIM values with Cement Filler, Laboratory Stone Ash Filer and Field Stone Ash Filer.

The highest VIM value occurred in the stone ash filler from field samples at 4.85%, followed by the laboratory stone ash filler at 4.80%, and the smallest value was in the cement filler at 4.5%. This is because cavities are filled with asphalt evenly, and the compaction process in the field occurs perfectly, causing the asphalt mixture to become dense. If you look at the Bina Marga specifications, the requirements range from 3.0% - 5.0%, which is still in the category of meeting [15].

4.4. VMA Value Analysis

Voids in Mineral Aggregate (VMA) are air voids between aggregates in asphalt mixtures, including air voids and effective asphalt content. The number of pores between aggregate grains in an asphalt mixture is expressed as a percentage. A small amount of air space in the aggregate can limit the asphalt covering the aggregate so that the aggregate is released, making the layer not watertight. Oxidation occurs easily, so the pavement layer is easily damaged [14]. The results of the VMA value analysis can be seen in Figure 5 below:

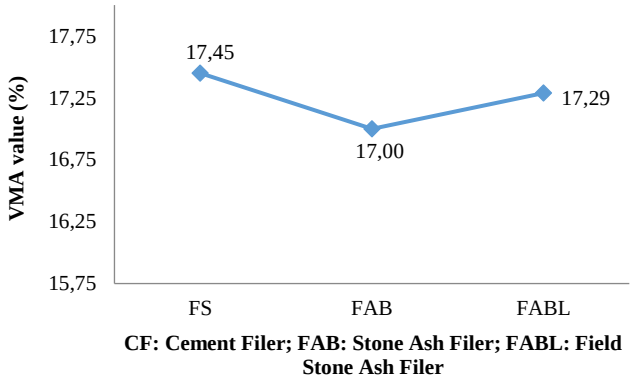


Figure 5 Comparison graph of VMA values with Cement Filler, Laboratory Stone Ash Filer, and Field Stone Ash Filer.

The VIM value of the three fillers used fluctuated, as in Figure 5. The highest VMA value occurred for the cement filler, namely 17.45%, and there was a decrease for the stone ash filler, 17.00%, and increased again for the Lapaangan stone ash filler, amounting to 17.29. %. This is because the cavity filled with asphalt occurs differently between the three fillers. Even though the VMA value fluctuates, in general, it meets the Bina Marga specifications, which require a minimum of 14% [15].

4.5. VFA Value Analysis

Void Filled with Asphalt (VFA) is the percentage of air voids filled with asphalt in the mixture after it has been compacted. The air cavity value filled with asphalt determines the stability, durability, and flexibility of the mixture, which is influenced by aggregate gradation, compaction temperature, asphalt content, asphalt type, and compaction energy [14]. The results of the VMA value analysis can be seen in Figure 6 below:



Figure 6 Comparison graph of VFA values with Cement Filler, Laboratory Stone Ash Filer, and Field Stone Ash Filer.

The VFA value of the three fillers used fluctuated, as in Figure 6. The highest VFA value occurred for the Cement filler, namely 74.00%, and there was a decrease for the stone ash filler, 71.00%, and an increase again for the Fieldstone ash filler, amounting to 71.94. %. This is also influenced by the percentage of voids filled with asphalt; there are also differences. The higher the VFA value, the higher the voids in the mixture filled with asphalt so that the mixture is more impermeable to water and air, but a VFA value that is too high will also cause the asphalt mixture to become blended, but in general it meets Bina Marga specifications which require a minimum of 65% [15].

4.6. Stability Value Analysis

The stability value is the ability of the layer to accept traffic loads without changes in grooves, ruts, waves, and bleeding on the pavement. Things that influence the Asphalt Concrete Wearing Course (AC WC) mixture are friction, interlocking properties, and material shape and are also influenced by aggregate surface texture, aggregate gradation, particle shape, mixture density, and asphalt viscosity [14]. The results of the Stability value analysis can be seen in Figure 7 below:

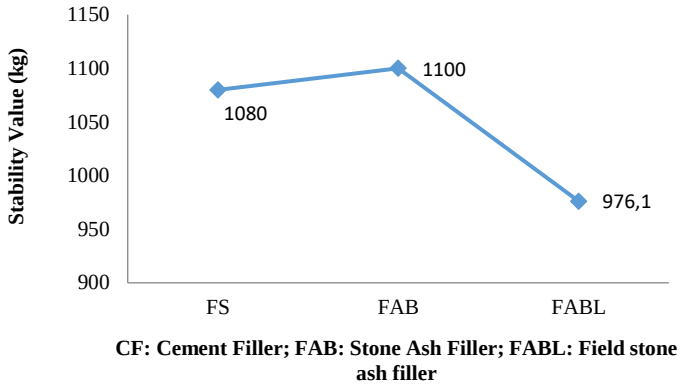


Figure 7 Comparison graph of VFA values with Cement Filler, Laboratory Stone Ash Filer and Field Stone Ash Filer.

The stability value of the three fillers used fluctuated, as in Figure 7. The stability value of the cement filler was 1080 kg, and there was an increase for the stone ash filler, namely 1100 kg, and decreased again for the Lapaangan stone ash filler of 976.10 kg. From the three analysis results with the three fillers used, the highest ability to accept loads is the stone ash filler in the laboratory, while the lowest capability is the fieldstone ash filler, but in general, this stability value meets Bina Marga's specifications, which require a minimum of 800 kg [15].

4.7. Meltdown Value Analysis (Flow)

The yield value (flow) states the amount of deformation or settlement of the compacted mixture, which is due to the large load acting on it, and shows the level of flexibility of a pavement. The melt value is influenced by asphalt factors, asphalt viscosity, gradation, aggregate surface texture, and compaction level [15]. The results of the Stability value analysis can be seen in Figure 8 below:

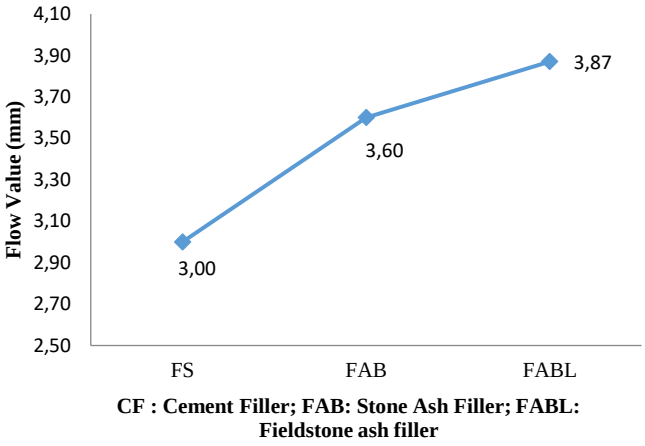


Figure 8 Comparison graph of VFA values with Cement Filler, Laboratory Stone Ash Filer, and Field Stone Ash Filer

The melt value (flow) of the three fillers increased, as in Figure 8. The stability value of the cement filler was 3.00 mm, and there was an increase for the stone ash filler, namely 3.60 mm, and another increase for the Lapaangan stone ash filler by 3.87 mm. The required melt (flow) value is 2.0 to 4.0 [15]. If the melting value is less than 2.0, the mixture will easily crack and flow due to its stiff nature.

4.8. MQ Value Analysis

Marshall Quotient (MQ) is influenced by the quotient between corrected stability and melting value. This quotient value is used as an approximation to the level of stiffness or flexibility of a mixture. The greater the Marshall Quotient quotient value, the stiffer the mixture. The smaller the Marshall Quotient quotient value, the more flexible the mixture. The results of the Stability value analysis can be seen in Figure 9 below:

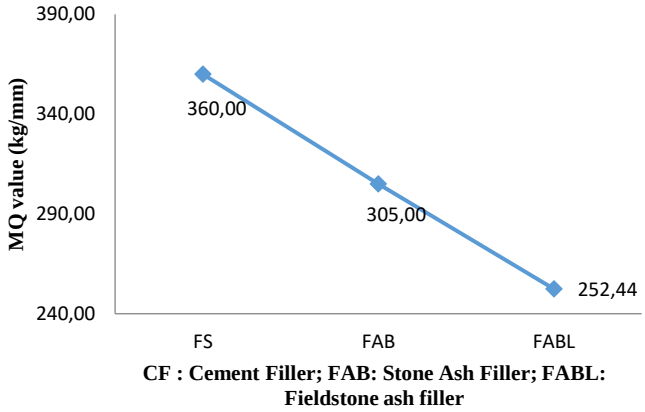


Figure 9 Comparison graph of VFA values with Cement Filler, Laboratory Stone Ash Filer, and Field Stone Ash Filer

The Marshall Quotient (MQ) value of the three fillers used decreased as in Figure 9; the Marshall Quotient (MQ) value for cement filler was 360 kg/mm and decreased for the stone ash filler, namely 305 kg/mm and decreased again for the filler. Lapaangan stone ash was 252.44 kg. The Marshall Quotient (MQ) value is directly proportional to the stability value but inversely proportional to the melting (flow) value. From the three analysis results with the three fillers used, the Marshall Quotient (MQ) value generally meets the Bina Marga specifications requiring greater than 250 kg/mm [15].

5. Conclusion and Recommendation

5.1. Conclusion

From the test results, it can be concluded as follows:

1. Cement filler: KAO is 5.90%, Fill weight is 2.270 gr/cc, VIM is 4.5%, VMA is 17.45%, VFA is 74%, Stability is 1080 kg, flow is 3.00 mm and Marshall Quotient (MQ) is 360 kg/mm.
2. Stone ash filler; KAO is 5.90%, Fill weight is 2,250 gr/cc, VIM is 4.8%, VMA is 17.00%, VFA is 71%, Stability is 1100 kg, flow is 3.60 mm and Marshall Quotient (MQ) is 305 kg/mm.
3. Field stone ash filler; KAO is 5.90%, Fill weight is 2.221 gr/cc, VIM is 4.85%, VMA is 17.29%, VFA is 71.94%, Stability is 976.10 kg, the flow rate is 3, 87 mm and Marshall Quotient (MQ) of 252.44 kg/mm.

5.2. **Recommendation**

Recommendation that can be conveyed in this research are as follows:

1. Further research can be carried out using various variations in the percentage of different filler levels and using other fillers.
2. In compaction testing in the field, increase the number of sample points to determine changes from various Marshall test results.

REFERENCES

Http://www.putra-ultimate.blogspot.com /2022/05/pengertian-aspal-beton-campuran-panas.html

Nahak, P. R., Cahyo, Y. S.P, dan Winarto, S.2019. *Studi Perencanaan Tebal PerkerasanKonstruksi Jalan Raya Pada Ruas Jalan Umasukaer Di Kabupaten Malaka*. JURMATEKS, Vol. 2, No. 1, E- ISSN: 2621-7686.

Rombot, P., Kaseke, O. H., dan Manopo, M. R. E. 2015. *Kajian Kinerja Campuran Beraspal Panas Jenis Lapis Aspal Beton sebagai Lapis Aus Bergradasi Kasar dan Halus*. Jurnal Sipil Statik,Vol.3, No.3 pp.190-197, ISSN:2337-6732

Asrullah, Cecep Irwansyah, Mupli 2020. *Pengaruh Penambahan Limbah Abu Batu Terhadap Kuat Tekan Beton fc'20 Mpa Dengan Menggunakan Gradasi Split Berbeda.* Jurnal Teknik Sipil UNPAL Vol. 10, No 2, Nop. 2020, ISSN. 2089-2942, E-ISSN 2686-6676 pp 77-82 DOI : https://doi.org/10.36546/tekniksipil.v10i2

Sukirman, S.,2008, Beton Aspal Campur Panas, Edisi ke-2 Penerbit Nova Bandung

Dinar Mardiana Hi, Abdullah 2022, *Marshall Characteristic of Asphalt Concrete (AC) Mixture With AMP Stone Ash Filler PT. Viktory Multi Karya,* Jurnal Ilmiah Ilmu-Ilmu Teknik SIPARSTIKA Volume 02 Nomor 01, 2022, p-ISSN : 2809-0969, e-ISSN : 2809-0977 pp 1-14, https://doi.org/10.55114/siparstika.v2i1.475

Sartan Nento, Rahman Abdul Djau et al, 2021, *Analisis Karakteristik Marshall Campuran AC-WC Menggunakan Filler Abu Batu Zeolit*, Gorontalo Journal of Infrastructure & Science Engineering Volume 4 No. 2, Oktober 2021, P-ISSN : 2615-6962, E-ISSN : 2614-4638, pp 67-65.

Muhtar Salim, Hadigunawan 2021, *Variasi Persentase Abu Batu Terhadap Karakteristik Marshall Dalam Campuran HRS-Base*, Jurnal GRADASI TEKNIK SIPIL Volume 5, No.2, 2021, ISSN : 2598-9758 (Print), ISSN : 2598-8581 (Online) ejurnal.poliban.ac.id, pp 96-102.

Yunita Pane, Suhelmi et al, 2021, *Analisa Semen Portland dan Abu Batu Sebagai Filler Dengan Marshall dan Durabilitas Aspal Hotmix (AC-WC),* Volume 1 No. 2 Juli 2021 p-ISSN : 2797-9709, e-ISSN : 2797-989X, pp 86-95.

Yasrudin 2020, *Karakteristik Campuran Asphaltic Concrete Wearing Course (AC-WC) Menggunakan Kombinasi Bahan Pengisi (Filler),* Volume 9 No. 2, 2020 ISSN : 2302-8394 (print) pp 63-68 http://jtb.ulm.ac.id/indek.php/JTB

Budi Winarno, Ki Catur Budi dkk, *Pengaruh Abu Batu Sebagai Filler Terhadap Kinerja Aspal Beton AC-WC Pada Test Marshall,* Jurnal CIVILLa Volume 5 No 2 September 2020, ISSN : 2503-2399 pp 468-475

Laboratorium Pengujian PT. KOMBA MAHAKA UTAMA, 2023. Laporan Design Mix Formula *Asphalt Concrete Wearing Course (AC-WC)*

Direktorat Jenderal Bina Marga. 2015. *Spesifikasi khusus Bina Marga*. Jakarta. Departeman Pekerjaan Umum Republik Indonesia

Asrullah et al, 2023 *Characteristics The Marshall Test Substitution Of Polypropylene Plastic Pellets As Filler In Mixture Asphalt Concrete Binder Course,* International Jurnal Islamic Education, Research and Multiclturalism (IJIERM), Vol. 5 No. 2 Mei 2023, Doi : https://doi.org/10.47006/ijierm.v5i2.234 pp 356-375

Kementerian Pekerjaan Umum. 2022. Spesifikasi Umum Tahun 2018 Revisi 2 Divisi 6. Jakarta. Kementerian Pekerjaan Umum Republik Indonesia.

Biodata

Asrullah is a lecturer in the Civil Engineering Study Program, Faculty of Engineering, Palembang University. He has special studies in the field of the environment. He has a Master's degree in Environmental Engineering from the Institut Teknologi Bandung, Bandung.
Email : asrullahhan@gmail.com

Rita Anggrainy is a Lecturer in the Civil Engineering Study Program at the Faculty of Engineering at Palembang University. She has special studies in Chemistry and a Master's degree in Chemical Engineering from Sriwijaya University, Palembang.
Email : rita.anggrainy@gmail.com

Ice Trisnawati is a Lecturer in the Civil Engineering Study Program at the Faculty of Engineering, Palembang University. She has special studies in Transportation and a Master's degree in Civil Engineering from Narotama University, Surabaya.
Email : icetrisnawati8511@gmail.com

Pengki Suanto is a Lecturer in the Civil Engineering Study Program, Faculty of Engineering, Pelembang University. He has special studies in the field of Structures with a research focus in the field of Structural Materials and Nanomaterial Engineering. He has a Master's in Civil Engineering from Sriwijaya University, Palembang.

Email : pengkisuanto@gmail.com

DESIGN AND FABRICATION OF UREA-BASED NITRIDING DEVICE FOR PURE TITANIUM GRADE 1

Aria Wira Yuda[1)]
Doctoral Program, Faculty of Engineering, Sriwijaya University, Bukit Besar, South Sumatera, Indonesia
ariawy1@gmail.com

Amir Arifin[2)]
Department of Mechanical Engineering, Sriwijaya University, Bukit Besar, South Sumatera, Indonesia
amir@unsri.ac.id

Irsyadi Yani[3)]
Department of Mechanical Engineering, Sriwijaya University, Bukit Besar, South Sumatera, Indonesia
irsyadiyani@unsri.ac.id

Barlin Oemar[4)]
Department of Mechanical Engineering, Sriwijaya University, Bukit Besar, South Sumatera, Indonesia
barlin@unsri.ac.id

Rakhman[5)]
PT Pusri Palembang, Palembang, South Sumatera, Indonesia
rakhman@pusri.co.id

Abstract

The industrial use of pure titanium has been extensive, but, its products have been plagued by inadequate wear and erosion resistance. The technique of pack nitriding was chosen to increase the hardness of pure titanium products. However, achieving high hardness often necessitated high temperature processing. The nitriding carried out using urea as an alternative source of nitrogen, which will diffuse with the metal surface and form titanium nitride. In this study, an attempt is made to design and fabrication a nitriding device in the workshop. The device is made using stainless steel pipe 4" Sch. 160, 400mm long, which is closed with 4" SO #900 blind flange. To measure pressure in the nitriding chamber, a Pressure Gauge is installed at the top of the top flange. Heat supply from Jemix brand heat treatment machine. The nitriding pipe is covered with a heating coil and temperature control of the heating machine. Urea in granular form is put into the nitriding chamber and then the specimen is also placed in it. Nitriding process was performed at temperature of 475°C. Thermocouple with measurement range and reliability of up to 1200^{o}C was utilised to gauge the temperature of the nitriding chamber and provide input to the temperature controller. The test findings indicate that the temperature control equipment performs effectively within a temperature stability range of between 1^{o}C to 2^{o}C. The Pure Titanium Gr. 1 plate after nitriding show a hardness improvement as compared to the non-treated plate. The test showed that Titanium surface hardness after nitridation for 2 hours, rose from 55.5 HRC to 70.5 HRC. It is anticipated that it can address industrial technical problems related to the premature degradation of Pure Titanium Gr. 1 plate.

Keywords: Titanium, Nitriding Device, Hardness, Urea Nitriding

1. INTRODUCTION

Titanium is sturdy and light material, with excellent mechanical qualities like high durability and resistance to corrosion. It is employed in medicine, petrochemical, and other industries [1-5]. Nevertheless, substandard wear properties frequently results in initial failure of titanium components [6], This study examines the devices to improve titanium mechanical properties, as well as the unavoidable wearing that occurs between the titanium and other metal. Thus, actions need to be done to improve the wear characteristics of titanium.

Significant efforts have been focused on improving the durability of titanium [9-13]. This way of adding TiN to the titanium plate's surface is often used to make them more resistant to wear [14,15]. Several techniques have been documented for the fabrication of TiN coatings, including vapor deposition [16,17], plasma nitriding [19], chemical deposition [18], as well as laser nitriding [20-21]. Because of its advantages, such as a brief nitriding duration and a robust metallurgical connection between the resulting nitriding layer and the underlying material [22,23], the technology of gas nitriding has garnered significant attention. In a nitrogen atmosphere, nitrogen moves into the surface area, where it cools and solidifies to form the TiNx phase.

The most popular way to get ready for surface laser nitriding is with a continuous wave or pulsed laser. When a continuous wave laser makes a nitride layer, it is generally thick (tens microns) and has a rough surface (>2 microns) with a substrate that is susceptible to deformation [24,25]. In comparison, the pulsed laser nitriding technology has demonstrated distinct advantages such as rapid treatment, minimal heat-affected zone, prevention of undesired substrate heating, extensive and sideways treatment, specific surface treatment, and adaptability to materials with intricate surface shapes [26]. Based on relevant reports [26,27], Thin nitride layers can be directly formed on titanium alloy surfaces by irradiating them with pulsed laser light in the presence of nitrogen. A study has shown that the use of pulsed laser nitriding resulted in a considerable reduces micro-motion wear and raises surface hardness at both high and normal temperatures [28,29]. An investigation has verified that the duration of pulsed laser nitriding directly affects the thickness of nitrided surface. Furthermore, we have seen substantial enhancements in the hardness, and wear properties of the nitrided surface [21]. Moreover, many empirical investigations have demonstrated that specific process variables [30-35], the application of nitriding technique can influence the mechanical properties of layers generated on metal surfaces.

In this research, a nitrogen source was used from urea fertilizer. Urea fertilizer is synthesized through chemical processes and has a relatively high concentration of nitrogen. Most urea fertilizers available in the market consist of the nutrient element nitrogen (N) at a level of 46%. Each 100 kilos of urea fertilizer contains 46 kilograms of nitrogen. In general, urea fertilizer has a fairly rough texture. Urea fertilizer is in the form of white crystal-like granules with chemical formula NH_2CONH_2.

Due to the nitrogen content in urea fertilizer, research on the nitriding process on steel surfaces was carried out using urea as a nitrogen source. At a temperature of 460-600^{o}C the nitrogen content in urea decomposes into N atoms which compound on the surface of the test sample.

This paper discusses the process of design, manufacture and testing of temperature control equipment that has been used in material hardening operations using nitriding at PT Pusri Palembang. To make this tool, local components are used which are easily available on the market. For the component assembly process, mechanical and electrical workshop facilities are used within PT Pusri Palembang, which is located in Palembang. Equipment testing and operation was carried out in the laboratories of PT Pusri Palembang and Sriwijaya University.

2. MATERIAL AND METHOD

2.1 Titanium Grade 1 Specimen

Pure Titanium Grade 1 is renowned for being among the most malleable and pliable grades, showcasing an exceptional ability to be welded into various forms. This pure titanium possesses exceptional qualities of being resistant to corrosion and being easily weldable, thus making it suitable for a wide variety of uses [36]. The compositions of Titanium plates that were treated in this study are provided in Table 1.

Table 4 Composition of Titanium Grade 1 (%.wt)

Name	Value		Name	Value
Ti	99.5		Fe	Max 0.2
H	Max. 0.015		N	Max. 0.03
O	Max. 0.18		C	Max. 0.1

2.2 Urea

With the highest Nitrogen content, urea stands as the predominant nitrogenous fertilizer in the market (as described in Table 2). This research used urea in granule form produced by PT. Pusri Palembang, South Sumatera, Indonesia as a fertilizer plant since 1959.

Table 2 Properties of Urea

Shape	Nitrogen content	Biuret	Moisture	Size	Specific Gravity
Granule	Min. 46.9 %. weight	Max. 1.0 %. weight	Max 0.5 %. weight	2-4 mm	0.74 gr/cc

2.3 Nitriding Device

The next preparation is to make a nitriding shell made of steel pipe with adjusted dimensions as a container for placing urea and test samples when undergoing the nitriding process in the heating furnace.

According to its use, the design of the temperature control equipment must comply with the operating requirements and design concept of the nitriding system. In general, the design and operation concept of nitriding for hardening industrial component materials can be described based on the sketch in Figure 1.

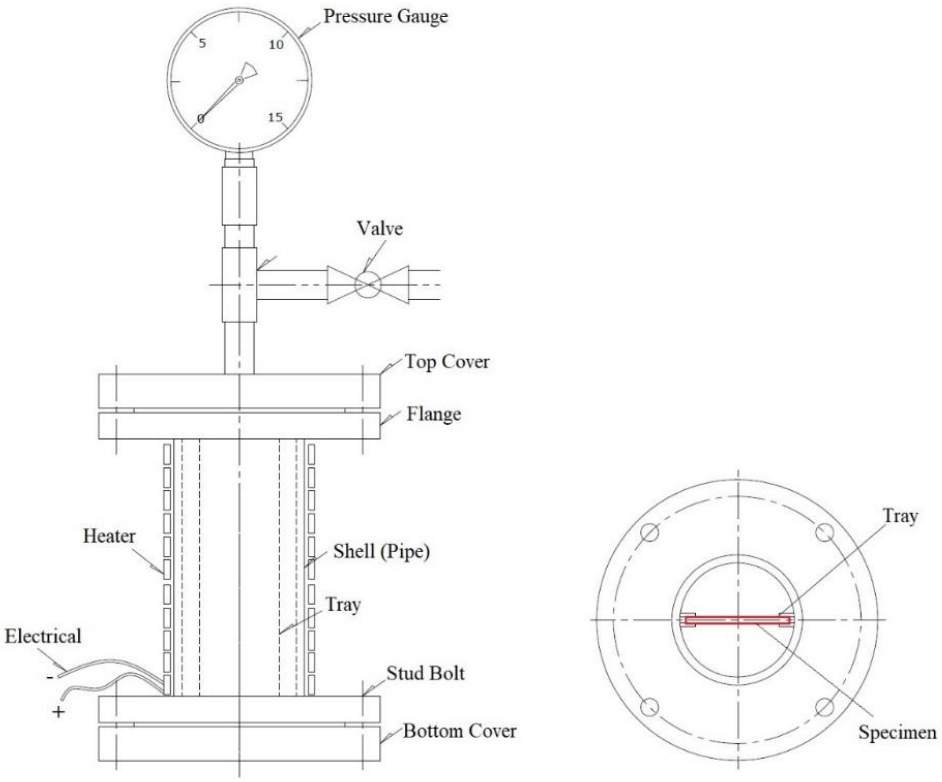
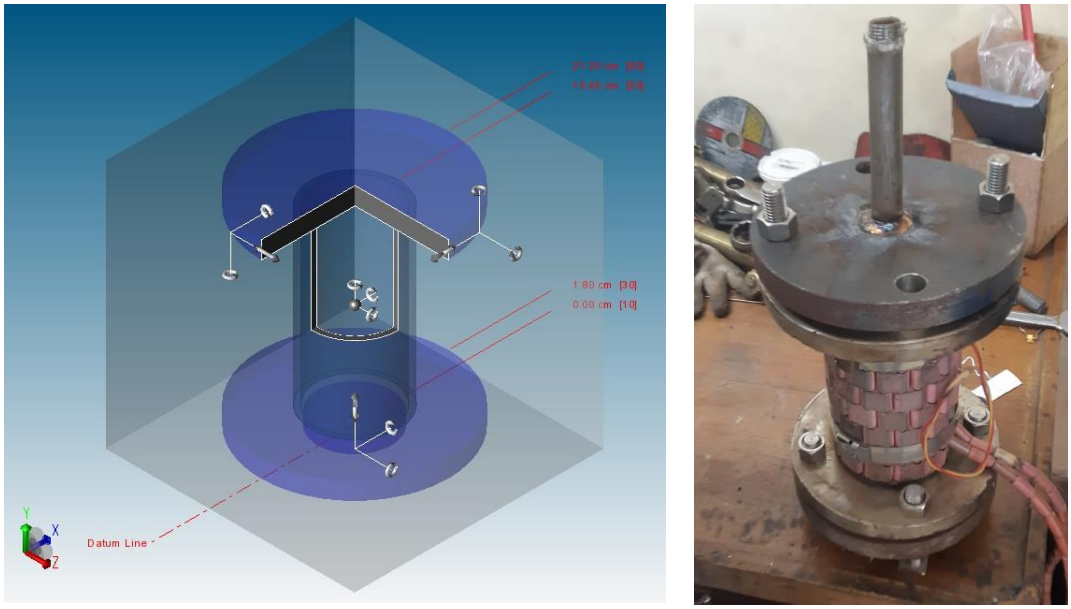


Figure 1: Scheme of nitriding equipment

This system functions to regulate the temperature in the nitriding chamber so that a constant operating temperature is obtained. The temperature of the nitriding equipment is designed to provide room and sample material temperatures of up to 700ºC. As a heating source, Jemix Heat Treatment machine is used. Part of the equipment consists of: a temperature measuring system, control instrumentation for temperature setting and a relay system. For sensors and temperature measurements, a thermocouple is used. The thermocouple measurement results are received by temperature control, then from this temperature control the signal is carried by the thermocouple and the temperature setting previously set is adjusted according to requirements. If the temperature has reached the desired degree according to the temperature setting, the temperature control will give a signal to stop the voltage given to the relay.

The device is made using stainless steel pipe 4" Sch. 160, 400mm long, which is closed with 4” SO #900 blind flange. Maximum Allowable Working Pressure (MAWP) for shell of nitriding device calculation perform in accordance with ASME Section VIII Division 1 using Software PV Elite 2020. From calculation, obtain MAWP of 45 kg/cm2 in temperature 700ºC.



(a) (b)

Figure 2: (a). Geometry Design; (b) Nitriding shell assembly

The design of temperature control equipment contains design concepts on a prototype scale which are prepared based on data and specifications of temperature control system components. Component determination and material selection are carried out by referring to temperature control equipment design data and reference studies. To reduce equipment manufacturing costs, components are designed to be made by assembling basic element materials available on the local market. To increase efficiency, the design of this equipment is designed with the following considerations:

1. Casing is made according to space requirements or size of temperature control components.
2. Ease of operation and maintenance which requires a compact design, and easy to dismantle and assemble.
3. A good control, measurement and regulation system ensures the safety of equipment and operators from electrical hazards.

The nitriding equipment manufacturing process involves preparing tools, selecting materials and fabricating work. Preparation of fabrication equipment is carried out by preparing machines, tooling and testing equipment. Selection of materials taking into account oil-free dirt, especially for making equipment casings, and in welding work. Carrying out fabrication by paying attention to size, dimensions in workmanship according to the dimensions contained in the drawing, carrying out work such as cutting, drilling and welding.

3. RESULTS AND DISCUSSION

The temperature control equipment that has been assembled is then used and connected to the nitriding equipment. A picture of the temperature control installation is shown in Figure 2. The operation and workings of the temperature control device are described as follows:

The electrical power supply is obtained from PT Pusri's electrical grid via a socket and the MCB (mini circuit breaker) is turned ON. The temperature setting on the temperature control is selected according

to the operating temperature and the heating system is operated with the heating switch in the ON position. During the ongoing nitriding operation, the temperature of the nitriding chamber is indicated by the display on the temperature control system according to the selected value. ON and OFF conditions indicate the accuracy of the tool. If the operation is complete, set the temperature control setting to room temperature and once room temperature is reached the switch for the heater can be turned off (OFF) and then the MCB is also turned off, then turn off the electric power supply.
The temperature control system consists of several components, namely:

- temperature controller of the Jemix Heat Treatment machine
- relay: Solid-State-Relay (SSR).
- thermocouple
- Heat sinks and cable terminals

Type K thermocouple is a temperature measuring instrument that has a measuring range of up to 1200^{o}C. From the data obtained it can be said that the heating system is stable at temperatures of 200^{o}C, 400^{o}C and 500^{o}C for 2 hours with different indications at temperature differences in the range of 1^{o}C to 2^{o}C from the specified temperature.

3.1 Hardness Test

The Handy Hardness Tester, SONOHARD SH-21A, which had measuring range of Rockwell hardness from 10.0～70.0 HRC. Measuring indenter is diamond indenter for Micro-Vickers (facing-to-surface angle of 136˚) was employed to determine the hardness level by tiny indentation (approx.0.1mm). The portable ultrasonic hardness tester, SONOHARD SH-21A, with direct reading of hardness values in HRC as shown in Figure 3. The applied load according to JIS B 7731. The hardness values that are mentioned are the average results obtained from taking 5 readings for each individual specimen.



(a) (b)

Figure 3: (a). Measuring indenter; (b) Digital display

Table 3 Samples are produced using process parameters.

Sample	Urea Mass (in grams)	Temperature (Celsius deg.)	Holding time (hours)	Heating Rate (^{o}C/hour)

1	100	475	2	300
2	150	475	2	300
3	200	475	2	300
4	250	475	2	300
5	300	475	2	300
6	350	475	2	300

The nitriding experiment was performed in nitriding pipe (Figure 2). Titanium plate was placed in stainless steel pipe on a sample tray of the same material. The pipe is covered by top cover and bottom cover and warm up using an electric induction component. At the top cover, a pressure gauge to monitor internal pressure and a valve to release the gas.

Data from nitriding research on the Titanium surface are listed in Figure 4.

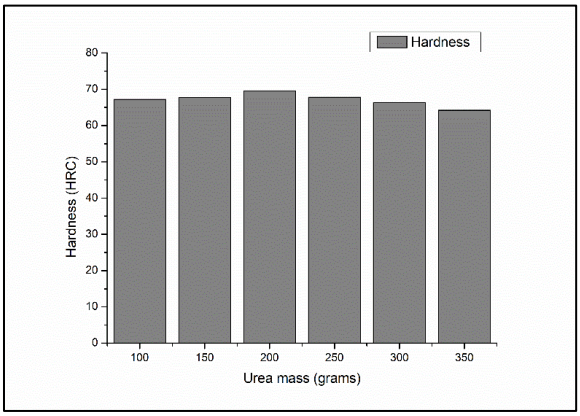


Figure 4: Hardness test measurement on the 6 samples

The results of measuring the level of surface hardness obtained using SONOHARD SH-21A in the form of the average value of the level of hardness from the 5 positions measured.

Among the several parameters used for nitriding in this study, it appears that urea mass plays an important role for the increase in surface hardness. This is because increasing gas pressure in the process will increase the opportunity for nitrogen atoms to diffuse into the titanium crystal lattice.

Because the nitriding process in this study was carried out at a temperature of 475°C, where this temperature is still very far below the transition temperature for the formation of beta titanium (n-Ti), namely 883°C, it can be said that it is impossible for the n-Ti phase to form at this research. The formation of the n-Ti phase in the nitriding process will increase the diffusion coefficient of nitrogen, so that the nitrogen concentration contained in the crystal will be greater as a result of the interstitial diffusion process. Several previous research results stated that TiN usually only forms at nitriding process temperatures above 800°C [25], because TiN will only form if the concentration of nitrogen contained in the crystal lattice is large enough.

4. CONCLUSION

We have demonstrated the possibility of nitriding of titanium in an urea chamber by heating from a heat treatment machine. The design and assembly of temperature control equipment for nitriding system

has been successfully carried out. From the results of the nitriding test as Titanium treatment using urea as a nitrogen source, it can be concluded as follows:

1. There is an improvement in hardness compared to untreated specimens (non-nitriding).
2. Nitriding can effectively enhance the hardness of Titanium (Ti) Gr. 1 under non-vacuum condition. In the case of the nitriding temperature 475°C for 2 h, Titanium (Ti) Gr. 1 nitrided at urea mass of 200 grams exhibits the most excellent hardness.
3. As urea mass rises from 100 to 350 grams, the hardness of nitrided titanium shows an upward trend, which results from the increase of nitrogen ion released.

The obtained results demonstrate the possibility of using the urea chamber sources for nitriding of Titanium Gr. 1.

5. ACKNOWLEDGMENTS

The authors appreciates the kind assistance and collaboration of PT. Pusri Palembang in South Sumatera, Indonesia, for allowing the use of the workshop.

REFERENCES

A. Gao, R. Hang, L Bai, B. Tang, P.K. Chu, Electrochemical surface engineering of titanium-based alloys for biomedical application, Electrochim. Acta 271 (2018) 699-718.

A.X.Y. Guo, L Cheng, S. Zhan, S. Zhang, W. Xiong, Z. Wang, G. Wang, S.C. Cao, Biomedical applications of the powder-based 3D printed titanium alloys: A review, J. Mater. Sci. Technol. 125 (2022) 252-264.

Z.b. Cai, Z.y. Li, M.g. Yin, M.h. Zhu, Z.r. Thou, A review of fretting study on nuclear power equipment, Tribal. Int. 144 (2020).

Z.Y. Huang, H.Q. Liu, H.M. Wang, D. Wagner, M.K. Than, Q.Y. Wang, Effect of stress ratio on VHCF behavior for a compressor blade titanium alloy, Int. J. Fatigue 93 (2016) 232-237.

S. Luo, D. Thu, L. Hua, D. Qian, S. Yan, Numerical analysis of die wear characteristics in hot forging of titanium alloy turbine blade, Int. J. Mech. Sci. 123 (2017) 260-270.

K.G. Budinski, Tribological properties of titanium alloys, Wear 151 (2) (1991) 203-217.

Y. Yu, J. Gong, X. Fang, L Zhou, W. He, L Zhou, Z. Cai, Comparison of surface integrity of GH4169 superalloy after high-energy, low-energy, and femtosecond laser shock peening, Vacuum 208 (2023), 111740.

Y. Yu, L Zhou, Z. Cai, S. Luo, X. Pan, J. Zhou, W. He, Research on the mechanism of DD6 single crystal superalloy wear resistance improvement by femtosecond laser modification, Appl. Surf. Sci. 577 (2022), 151691.

Z. Zhang, S. Pan, N. Yin, B. Shen, J. Song, Multiscale analysis of friction behavior at fretting interfaces, Friction 9 (1) (2021) 119-131.

Z. Zhang, N. Yin, S. Chen, C. Liu, Tribo-informatics: Concept, architecture, and case study, Friction 9 (2020) 642-655.

Y. Yu, L Zhou, M. Li, Z. Cai, S. Luo, W. He, X. Fang, Research on fretting regime transition of DD6 single-crystal superalloy via femtosecond laser-induced asperity and hardened layer, Appl. Surf. Sci. 610 (2023), 155392.

M. Lepicka, M. Gradzka-Dahlke, D. Pieniak, K. Pasierbiewicz, K. Kryfiska, A. Niewczas, Tribological performance of titanium nitride coatings: A comparative study on TiN-coated stainless steel and titanium alloy, Wear 422 (2019) 68-80.

L Zhang, M. Shao, Z. Wang, Z. Zhang, Y. He, J. Yan, J. Lu, J. Qiu, Y. Li, Comparison of tribological properties of nitrided Ti-N modified layer and deposited TiN coatings on TA2 pure titanium, Tribol. Int. 174 (2022), 107712.

Y.H. Wang, Z.B. Yang, S.Y. Hu, Y.H. Zhao, H. Ren, F. Gong, Z.W. Xie, Tailoring growth structure, wear and corrosion properties of TiN coatings via gradient bias and arc enhanced glow discharge, Surf. Coat. Technol. 450 (2022), 129015.

Y.H. Wang, F. Guo, H. Ren, S.Y. Hu, Y.J. Chen, Y.H. Zhao, F. Gong, Z.W. Xie, Enhancing wear resistance of TiN coating by gradient bias voltage and arc-enhanced glow discharge, Ceram. Int. 48 (6) (2022) 8746-8750.

R Sitek, J. Kaminski, J. Borysiuk, H. Matysiak, K. Kubiak, K. Kurzydlowski, Microstructure and properties of titanium aluminides on Ti-6A1-4V titanium alloy produced by chemical vapor deposition method, Intermetallics 36 (2013) 36-44.

K. Szymlciewicz, J. Morgiel, L. Maj, M. Pomorska, M. Tamowski, T. Wierzchon, TEM investigations of active screen plasma nitrided Ti-6A1-4V and Ti-6A1-7Nb alloys, Surf. Coat. Technol. 383 (2020), 125268.

C.L. Donaghy, R. McFadden, S. Kelaini, L Carson, A. Margariti, C.-W. Chan, Creating an antibacterial surface on beta TNZT alloys for hip implant applications by laser nitriding, Opt. Laser Technol. 121 (2020), 105793.

X. Zong, H. Wang, Z. Li, J. Li, X. Cheng, Y. Zhu, X. Tian, H. Tang, Laser nitridation on Ti-6.5A1-3.5Mo-1.57.r-0.3Si titanium alloy, Surf. Coat. Technol. 386 (2020), 125425.

X. Zong, H. Wang, J. Li, X.u. Cheng, Z. Li, H. Tang, Microstructure characterization and evolution mechanism of titanium during laser surface nitriding, Mater. Charact. 190 (2022) 112029.

A. Zhecheva, W. Sha, S. Malinov, A. Long, Enhancing the microstructure and properties of titanium alloys through nitriding and other surface engineering methods, Surf. Coat. Technol. 200 (7) (2005) 2192-2207.

A.M. Kamat, S.M. Copley, J.A. Todd, Effect of processing parameters on microstructure during laser-sustained plasma (LSP) nitriding of commercially-pure titanium, Acta Mater. 107 (2016) 72-82.

A.M. Kamat, S.M. Copley, J.A. Todd, A two-step laser-sustained plasma nitriding process for deep-case hardening of commercially pure titanium, Surf. Coat. Technol. 313 (2017) 82-95.

Y. Huang, Y. Zhu, Y. Zhao, L. Wu, L Zhang, Y. Zhang, J. Wu, F. Tan, Experimental investigation for pulsed laser nitriding of metals, Opt. Laser. Technol. 157 (2023), 108661.

D. Htiche, P. Schaaf, Laser nitriding: investigations on the model system TiN. A review, Heat Mass. Transfer. 47 (5) (2011) 519-540.

A.R. Kulkarni, M. Manikandan, A.K. Shukla, S. Subramaniam, V. Balaji, I. Palani, M. Jayapralcash, Influence of laser-nitriding on mechanical and elevated temperature fretting wear behavior of A356-alloy, Surf. Coat. Technol. 413 (2021), 127072.

A.R. Kulkami, A.K. Shukla, S.M. Prabu, S. Subramaniam, V. Balaji, I. Palani, M. Jayaprakash, Investigations on enhancing the surface mechanical and tribological properties of A356 Al alloy using pulsed laser-assisted nitriding, Appl. Surf. Sci. 540 (2021), 148361.

E. Carpene, P. Schaaf, Laser nitriding of iron and aluminum, Appl. Surf. Sci. 186 (1¬4) (2002) 100-104.

M. Han, K.-P. Lieb, E. Carpene, P. Schaaf, Laser-plume dynamics during excimer laser nitriding of iron, J. Appl. Phys. 93 (2003) 5742-5749.
E. Gyorgy, A. Perez del Pino, P. Serra, J.L. Morenza, Surface nitridation of titanium by pulsed Nd: YAG laser irradiation, Appl. Surf. Sci. 186 (1-4) (2002) 130-134.
P. Schaaf, Laser nitriding of metals, Prog. Mater. Sci. 47 (1) (2002) 1-161.
N. Ohtsu, K. Kodama, K. Kitagawa, K. Wagatsuma, Comparison of surface films formed on titanium by pulsed Nd: YAG laser irradiation at different powers and wavelengths in nitrogen atmosphere, Appl. Surf. Sci. 256 (2010) 4522-4526.

A.H. Farha, O.M. Ozkendir, U. Koroglu, Y. Ufuktepe, H.E. Elsayed-Ali, Nitridation of Nb surface by nanosecond and femtosecond laser pulses, J. Alloy Compd. 618 (2015) 685-693.
Welsch G, Boyer R, Collings EW. Materials properties handbook: titanium alloys. ASM international; 1994.

Biodata :

Aria Wira Yuda is a doctoral Program, Faculty of Engineering, Sriwijaya University, Bukit Besar, South Sumatera, Indonesia. His email is ariawy1@gmail.com

DESIGN AND DEVELOPMENT OF A HYBRID SYSTEM FOR PICOHYDRO POWER PLANT AND SOLAR POWER PLANT

Yosi Apriani
Electrical Engineering, Universitas Muhammadiyah Palembang, Indonesia
yosi_apriani@um-palembang.ac.id

Soni Andika Pratama
Electrical Engineering, Universitas Muhammadiyah Palembang, Indonesia
sonyandikapratama23@gmailcom

Marliyus Sunarhati
Electrical Engineering, Universitas Palembang, Indonesia
marlius@gmail.com

Zulkiffli Saleh
Electrical Engineering, Universitas Muhammadiyah Palembang Indonesia
zulkifflisaleh64@gmail.com

Ian Mochamad Sofian
Polteknik Pelayaran Banten, Indonesia
ianmsof@gmail.com

Abstract

The use of renewable energy sources has great potential for generating electricity. This potential can be realized through the use of hybrid power systems. The development of this hybrid power plant features two power sources: Picohydro and solar power generation. Solar Power Plants (PLTS) and Picohydro Power Plants (PLTPH) are the most suitable renewable energy developments for Indonesia due to its highly potential tropical climate. The aim of this research is to develop a control system for a hybrid solar and picohydro power plant by creating a relay switch control system to connect and disconnect one power source to another. After the design was implemented, it was found that the device was capable of backing up electricity. When the picohydro system dims or shuts down, the PLTS battery will back it up, and vice versa.

Keywords: picohydro – PLTS – energy – hybrid

1. INTRODUCTION

The limited number of power plants cannot advance the industrial or socio-economic conditions of a country. Then this infrastructure project is the most significant endeavor undertaken by the current government. On the other hand, the increase of electric power development for local areas, especially in rural areas is too expensive. The purpose of electricity development is to stabilize people's economy through equitable distribution of electricity development. (Wardana, 2016), (Wiranata, 2020)(Zulkiffli Saleh, Yosi Apriani, Feby Ardianto, 2019)

Renewables are clean, non-polluting, secure and unlimited supply alternatives. An example of this type of energy is solar energy. Over time, the use of electrical energy from traditional fuels such as petroleum and coal has become a problem because the supply of traditional fuels in nature is decreasing. To solve this, steps are being taken to switch to new and renewable energy sources such as solar which will always be available indefinitely. (Bandri, Premadi, & Andari, 2021) (Ramadhan, Diniardi, & Mukti, 2016)

Solar energy is an unlimited and inexhaustible energy source, and can be used as an alternative to generate electrical energy through the use of solar cells. As an alternative power plant, solar panels can be used by those who need electricity, especially when the supply of electricity from PLN (State Electricity Company) is limited. (Purwoto, 2018)

Water is also an unlimited source of energy and can be used as an alternative to generate electrical energy by using water flow and altitude Picohydro power plants (PLTPH) utilize the potential of water energy with a very low head and water flow adjusted to the flow of the river. PicoHydro uses simple turbines that can be installed easily and are environmentally friendly to aquatic creatures such as fish. PicoHydro systems are also easy to use and maintain. This generator's maximum output is about 1000 Watts. The Picohydro Power Plant (PLTPH), which is capable of generating electricity with a capacity of less than 5 kW and is included in the group of small power plants. The principle of operation of PLTPH is to convert water energy at a certain height and flow it into electrical energy through turbines and generators. A pico-scale hydropower plant operates by using the difference in elevation and water flow per second in a river stream. The water flow is used to run a turbine, which in turn runs a generator to produce electricity. (Uyun dkk, 2020), (Juni Yanda, Abubakar, & Studi Teknologi Rekayasa Pembangkit Energ Jurusan Teknik Elektro Politeknik Negeri Lhokseumawe, 2021)(Bosowa, Azis, Mustafa, Muhammad Ibnu Munsyir, & Lutfi, 2021)(Saepul Uyun & Novianto, 2020)

By combining both plants as alternative energy (hybrid) Hybrid power plants generate electricity by combining different types of power plants that rely on renewable energy. In general, these power generation systems include solar power plants (PLTS), micro-hydro power plants and picohydro power plants (PLTPH). Photovoltaic plants are capable of operating for 24 hours, but their performance is highly dependent on water flow, so the power output varies from time to time. (Heryanto Eryk, Nabiel Akbar, & Giffari, 2023)

This makes solar energy and hydro energy a promising energy alternative for Indonesia. Solar power plants (PLTS) and Picohydro power plants (PLTPH) are types of renewable energy development that are very suitable to be developed in Indonesia due to its tropical climate.

Optimal utilization of hybrid generation can be achieved by adopting a control system that will regulate when the generator is connected or disconnected to power the load. This research aims to develop a hybrid generation model that combines solar and picohydro energy. Both energy sources use different energy conversion concepts so it is interesting to investigate how they are combined and regulated in a control system.

2. LITERATURE REVIEW

The hybrid power plant generates electricity by combining different types of power plants that rely on renewable energy. In general, these power generation systems include solar power plants (PLTS), micro-hydro power plants and picohydro power plants (PLTPH). Picohydro power plants are capable of operating for 24 hours, but their performance is highly dependent on water flow, so the power output varies from time to time. The following formula is used to calculate the PWM controller load.

$$Rscc = \frac{Vin - Vout}{Iout} \quad (1)$$

$$Rtotal = 2 \cdot Rconductor + Rscc \quad (2)$$

$$Ploss = Iout^2 \cdot Rtotal \quad (3)$$

$$Efisiensi = \frac{Potput}{Pinput} \times 100\% \quad (4)$$

2.1 Automatic Transfer Switch (ATS)

The Automatic Transfer Switch (ATS) is a series of automatic inverter control switches with PLN. The operating principle of the ATS is to automatically turn on the inverter and connect to the load when PLN is not connected. When PLN power returns to the "on" position, the appliance transfers PLN power to the load, from the inverter to the PLN grid. The use of ATS panels varies according to energy consumption.



Figure 1. ATS (Atomatic Transfer Switch)

The higher the power consumption, the higher the specifications of the components, especially the small circuit hub (MCB) and the size of contactors and cables. Electrical energy generated by the ATS is the result of the output voltage and current of the battery or PLN current.

2.2 Solar Charge Cotroller (SCC)

SCC (Solar Charge Controller) is a regulator of the entry of sunlight energy absorbed by solar panels into the battery, to keep the charging from being excessive which makes the battery damaged, Solar charge controller is an important component in solar power generation systems Solar charge controller is

responsible for regulating the voltage and current flowing from solar panels to batteries and those used by loads. Its main purpose is to prevent the battery from being overcharged.



Figure 2. SCC (Solar Control Charge)

In its implementation, the Solar Charge Controller uses Pulse Width Modulation (PWM) technology to control the battery charging function and prevent over-charging of the battery. In the Solar Charge Controller (SCC), there is a display screen that displays the voltage flowing from the solar panel to the battery. In addition, this component also has the ability to provide notification if the battery condition charged by the solar panel has reached full capacity.

2.3 Baterai

Batteries, also known as accumulators (accumulators), process chemical energy into direct current (DC) electrical energy. The battery is a form of electrochemistry, subject to the effect of chemical reactants, so it is often called a secondary battery. There are several ways to calculate battery life.



Figure 3. baterai

To determine the time required to charge the battery (t), compare the battery capacity I with the average current produced by the DC generator (I). As the battery supplies current to the load, electrical energy previously stored in the form of chemical energy is released. When supplying power, it is also necessary to pay attention to the DOD (deep discharge) or the maximum and minimum acceptable limits.

3 METHOD

This power generation system is hybridized between picohydro power plants and solar panel power plants using batteries as a storage area for electrical energy that has been generated. The following is a picture of the wiring diagram of the hybrid generation system of picohydro power plants and solar panel power plants.

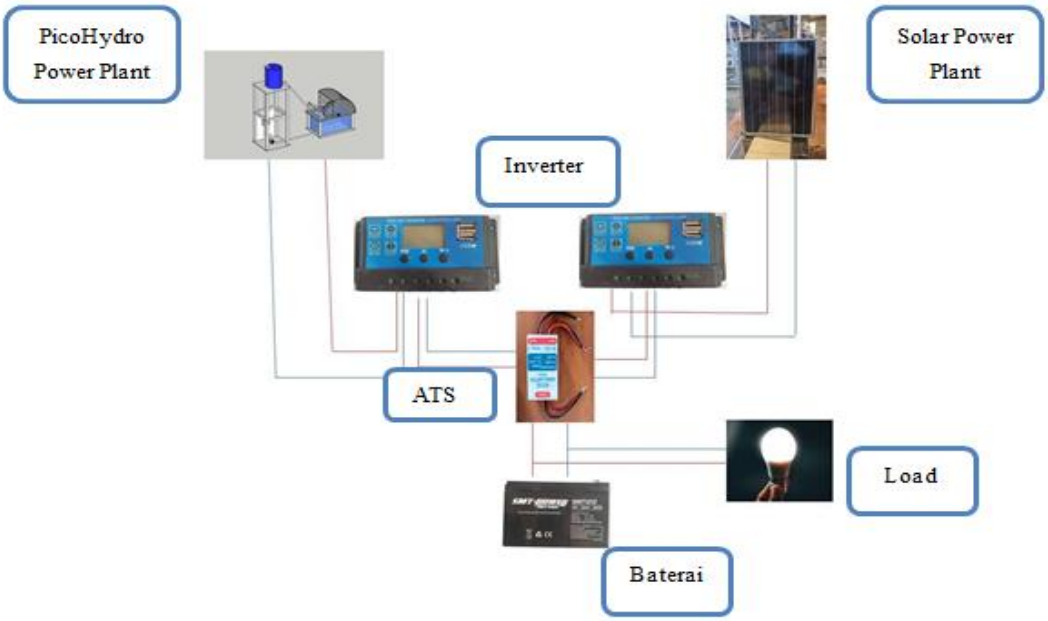


Figure 4. wirring diagram hybrid sistem

Electrical energy generated by solar panels will be stored in batteries or directly fed into the electricity distribution system. Picohydro power plants use water energy drawn from low-altitude streams or waterfalls. The system utilizes a small turbine to convert the kinetic energy of the water into mechanical energy. This mechanical energy is then converted into electrical energy through a generator.

The steps of the working principle of hybrid power generation between solar panel power plants and picohydro power plants are shown in the following flowchart.

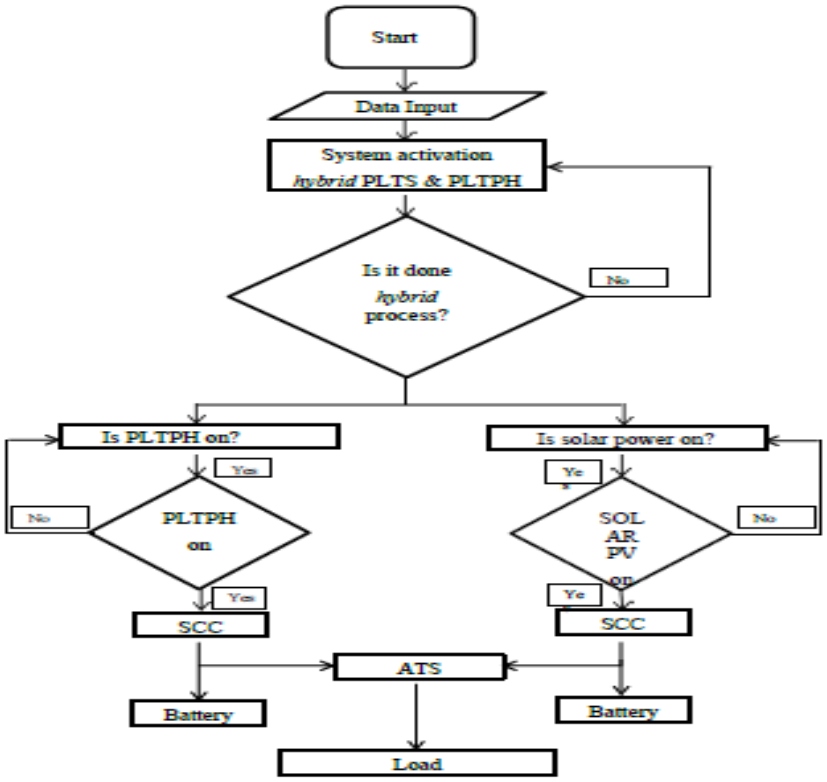


Figure 5. flowchart diagram of how the hybrid generation system works

A control system will monitor the energy availability of both resources. If there is sufficient sunlight, then priority will probably be given to solar power generation. However, if the weather is cloudy or at night, the system may switch to the picohydro power plant. In addition, there is also a possibility to use both resources simultaneously if the energy availability is sufficient to meet the electricity demand.

4 RESULTS

4.1 Solar power plant testing chart July 8, 2023

From the chart below, it can be seen that the battery capacity in this test increased by 5.9 volts with weather that tends to be hot, the highest average voltage is 13.28 volts at 11:00 - 11:30, the lowest voltage is 13.17 volts. constant current of 0.016 amperes at 11:00 - 14:30.

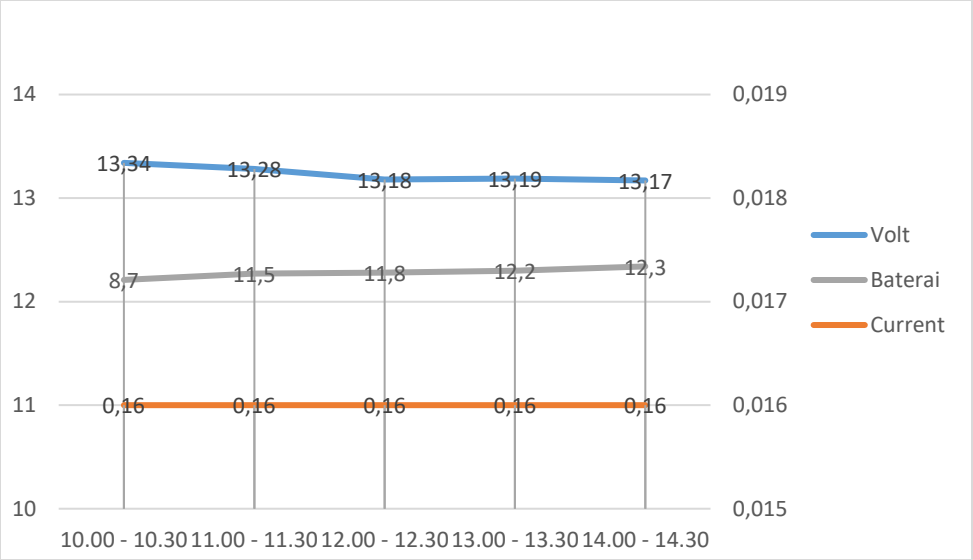


Figure 6. Solar power plant baterai charging 8-Juli-2023

4.2 Solar power plant testing chart July 10, 2023

From the chart below it can be seen that the highest average voltage in this test is between 13.24 volts at 10.00 - 11.30 and the lowest average in this test is 13.23 volts at 12.00 -13.30, the highest average current is 0.017 amperes from 11.00 - 11.30 and the battery capacity has increased to 0.47 from charging today less than before because on this day there was rain.

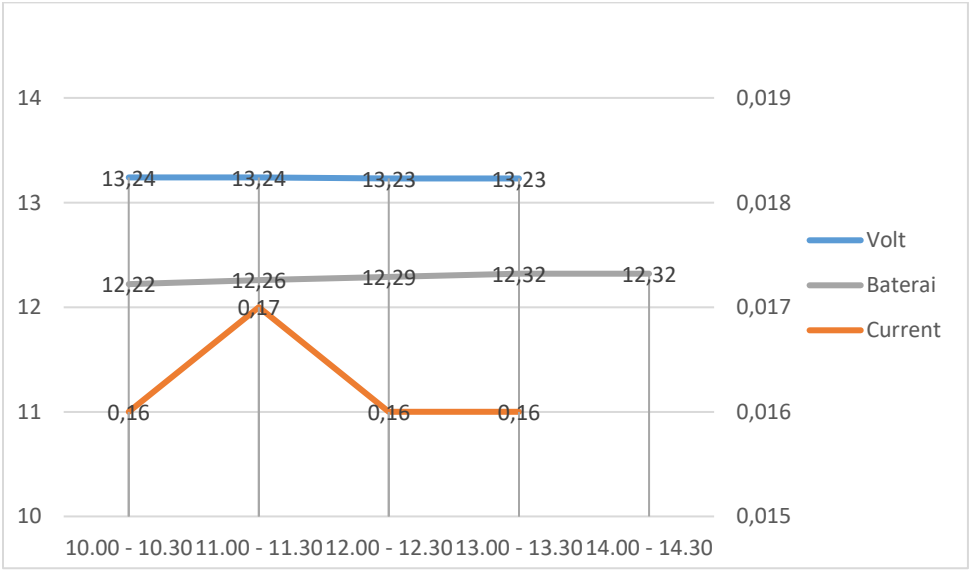


Figure 7. Solar power plat baterai charging 10-Juli-2023

4.3 Solar power plant testing chart July 12, 2023

From the graph below, it can be seen that the battery capacity generated by solar panels is 0.25 volts, the results of battery charging today are more than yesterday because the weather did not experience rain. The highest average voltage is 13.24 volts at 10:00 -11:30 and the lowest voltage is 13.23 volts at 12:00 - 12:30, the highest average current is 0.017 amperes at 12:00 to 14:30 and the lowest average current is 0.016 amperes at 10:00 to 11:30 weather tends to be hot.

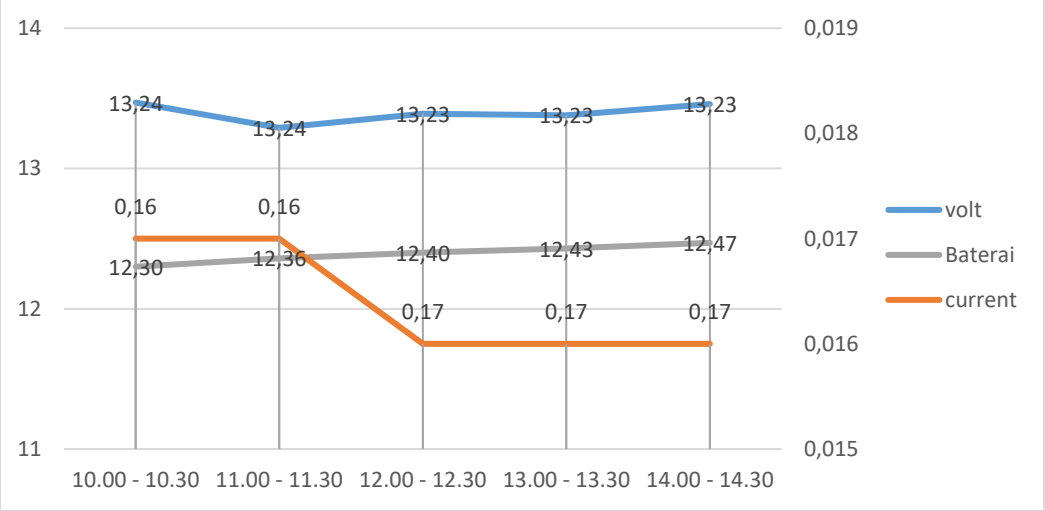


Figure 8. Solar power plant baterai charging 12-Juli-2023

4.4 Solar power plant testing chart July 14, 2023

From the chart below it can be seen that today's testing weather tends to be cloudy the voltage capacity increases by 0.56 volts the average current in today's test is still the same as the previous test stable between 0.016 amperes from 11:00 to 14:30 the highest current is between 0.017 amperes from 10:00 - 10:30 and the highest average voltage is 13.43 volts at 10:00 - 10:30 and the lowest voltage is 13.21 volts at 13:00 - 13:30.

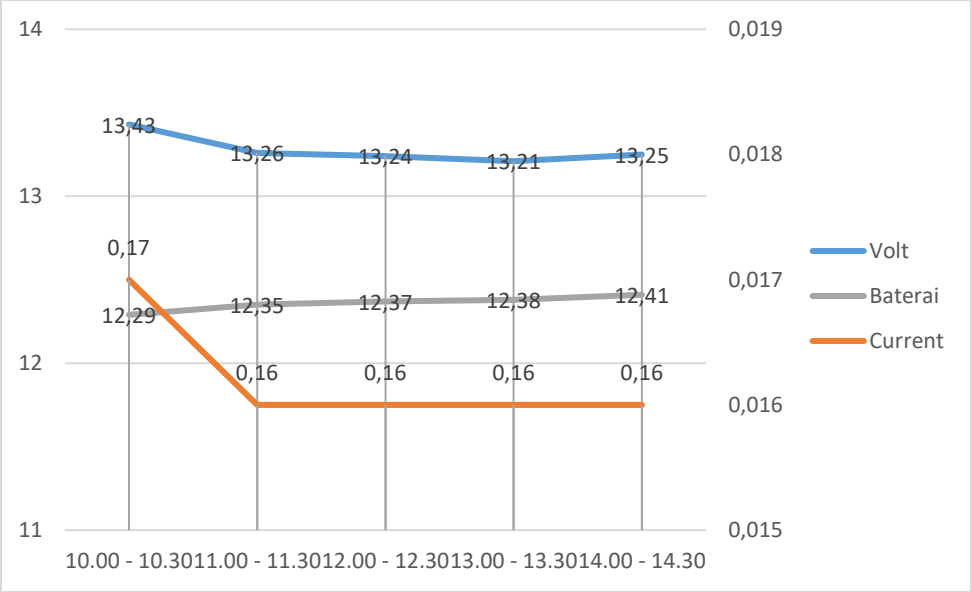


Figure 9. Solar power plant baterai charging 14-Juli-2023

4.5 Testing table of picohydro power plant in battery charge state.

From the table below, we can see how changes in turbine speed affect voltage, current, and battery condition. In general, increasing turbine speed tends to increase the voltage and current produced by the turbine. In addition, the final state of the battery tends to be slightly higher than its initial state, indicating that the turbine successfully charged the battery during the test.

Table 1. Testing table system of picohydro power plant in battery charge state

Testing	Turbine velocity (rpm)	(V)	(I)	battery starting condition	battery final state
1	428	12,98	0,54	12,04	12,06
	430	13,11	0,54	12,06	12,11
	425	12,89	0,54	12,11	12,15
2	425	12,90	0,54	12,15	12,19
	428	12,98	0,54	12,19	12,22
	422	12,87	0,54	12,22	12,25
3	430	13,09	0,54	12,25	12,27
	419	13,81	0,54	12,27	12,29
	423	12,85	0,54	12,29	12,31

Based on the table above, this is the data of the first test results of PLTPH in a state of battery charging, also obtained the highest rotation generated in the generator of 12.98 V, also obtained the highest

rotation generated by the turbine of 428 rpm, and the current when charging the battery is 0.535 A, the initial battery capacity of 12.04 until the first test is completed, the final battery capacity is 12.15 V.

Based on the table is also the data of the second test results of PLTPH in the battery charger state, obtained the highest voltage generated by the generator of 12.98 V, also obtained the highest rotation generated by the turbine 428 rpm and the current at the time of battery charge battery of 0.53 A, the initial battery capacity of 12.15 until the first test is completed, obtained the final battery capacity of 12.25 V.

According to the table is also the data of the third test results of battery charging, obtained the highest voltage generated by the generator of 13.09 V, also obtained the highest rotation generated by the turbine 428 rpm and the current at the time of battery charge battery of 0.53 A, the initial battery capacity of 12.25 until the first test is completed obtained the final battery capacity of 12.31 V.

From the above test, it can be seen that the battery only increases from the beginning to the end by 0.06 - 0.11, because the turbine rotation is not too long and there is a time lag for recharging the reservoir. It takes 21 hours for PLTPh to charge the battery from empty to full.

4.6 The Hybrid generation system testing in the battery charge state

from the table bellow we can see that turbine speed has a direct impact on the voltage and current produced. The higher the turbine speed, the higher the voltage and current produced. In addition, we can also see that the difference between the initial and final battery levels is not very large, indicating that the energy production from the turbine is fairly consistent and that the battery has a small power leakage rate or power demand balanced with the turbine production.

Based on formulas 1 - 3, the efficiency of the charge controller, for example, 1 data is taken from the table of measurement results and Vin is known to be 18V, Vout is 13.234V, Iout is 0.166A and R penghantar is 0.3 Ohm. The following are the results of the PWM type charge controller calculation.

$$Rscc = \frac{Vin - Vout}{Iout}$$

$$= \frac{18 - 13{,}234}{3{,}7}$$

$$= 1{,}28 \text{ Ohm}$$

Table 2. Testing Hybrid generation system in battery charge state

Turbine velocity (rpm)	volt (v)	Current (I)	battery starting condition	battery final state
425	12.9	0.54	11.85	11.93
422	12.9	0.54	11.93	12.02
418	12.8	0.54	12.02	12.04
422	12.8	0.54	12.04	12.05
415	12.6	0.53	12.05	12.05
425	12.9	0.54	12.05	12.12

415	12.6	0.54	12.12	12.13
410	12.4	0.53	12.13	12.13
421	12.8	0.53	12.13	12.16
412	12.4	0.52	12.16	12.16

After knowing Rscc of 1.28 Ohms, the next step is to find Rtotal as follows.

Rtotal = 2 . Rconduct + Rscc

= 2 . 0,3 + 1,28

= 1,88 Ohm

After knowing Rtotal of 1.88 Ohms, the next step is to find Ploss (lost power) as follows.

Ploss = $Iout^2$. Rtotal

=$3,7^2$. 1,88

= 25,7 W

After knowing Rscc, Rtotal and Ploss from the charge controller, the next step is to calculate the efficiency as follows.

$Efisiens$i = Potput/Pinput x 100%

= 13,234/18 x 100%

= 73%

After calculating the charger controller, the Rscc value of 1.28 Ohm and Rtotal of 1.88 are obtained. From the calculations that have been done the Ploss value is 25.7 W with an efficiency of 73%.

5 CONCLUSION

from the research results obtained that, the power generation system that has been designed is able to back up the electrical power when the picohydro power plant dims or dies then the battery on the solar panel power plant will back up it.

On battery charging tests that have been carried out, it can be seen that testing Solar Power Plants that are hybridized with Picohydro Power Plants produces more final battery charging capacity than single systems.

6 ACKNOWLEDGEMENTS

The team and authors would like to express their deepest gratitude for the assistance and support provided by Universitas Muhammadiyah Palembang (especially LPPM and the Rector of Universitas Muhammadiyah Palembang), which has contributed greatly to the successful completion of this research.

REFERENCES

Bandri, S., Premadi, A., & Andari, R. (2021). STUDI PERENCANAAN PEMBANGKIT LISTRIK TENAGA PICOHYDRO (PLTPh) RUMAH TANGGA. *Jurnal Sains Dan Teknologi*, *21*(1).

Bosowa, P., Azis, F., Mustafa, S., Muhammad Ibnu Munsyir, A., & Lutfi, S. (2021). Rancang Bangun Prototipe Pembangkit Listrik Tenaga Picohydro Menggunakan Turbin Impuls. *Journal Of Electrical Engineering (Joule)*, *2*(1).

Heryanto Eryk, I., Nabiel Akbar, D., & Giffari, A. (2023). Analysis of Dual Input Charge Controller on Hybrid Solar Photovoltaic and Picohydro Power Plant. *Prosiding Seminar Nasional Teknik Elektro*, *8*, 50–55.

Juni Yanda, A., Abubakar, S., & Studi Teknologi Rekayasa Pembangkit Energ Jurusan Teknik Elektro Politeknik Negeri Lhokseumawe, P. (2021). PERANCANGAN TURBIN CROSS-FLOW PADA PEMBANGKIT LISTRIK TENAGA PICO HYDRO (PLTPH) DI DESA WIH TENANG UKEN BENER MERIAH. *JURNAL TEKTRO*, *5*(1).

Purwoto, B. H. (2018). Efisiensi Penggunaan Panel Surya Sebagai Sumber Energi Alternatif. *Emitor: Jurnal Teknik Elektro*, *18*(01), 10–14. https://doi.org/10.23917/emitor.v18i01.6251

Ramadhan, A. I., Diniardi, E., & Mukti, S. H. (2016). Analisis Desain Sistem Pembangkit Listrik Tenaga Surya Kapasitas 50 WP. *Teknik*, *37*(2), 59. https://doi.org/10.14710/teknik.v37i2.9011

Saepul Uyun, A., & Novianto, B. (2020). *RANCANG BANGUN LOW HEAD TURBIN PIKO HIDRO*. *10*(1).

Uyun dkk, 2020. (2020). Rancang Bangun Low Head Turbin Piko Hidro. *Jurnal Sains & …*, *X*(1), 67–79.

Wardana, W. (2016). Perancangan Sistem Pensuplai Air Tambak Udang Dengan Sumber Tenaga Panel Surya. *Jurnal Teknik Mesin*, *4*(1), 32–34.

Wiranata, P. A. (2020). RANCANG BANGUN PROTOTYPE PEMBANGKIT LISTRIK TENAGA MIKRO HIDRO MENGGUNAKAN TURBIN CROSS-FLOW. *Jurnal SPEKTRUM*, *7*(4).

Zulkiffli Saleh, Yosi Apriani, Feby Ardianto, R. P. (2019). ANALISIS KARAKTERISTIK TURBIN CROSSFLOW KAPASITAS 5 KW. *JURNAL SURYA ENERGY*, *3*(2), 2001–2001.

Biodata

Yosi Apriani is a lecturer in the Department of Electrical Engineering at Muhammadiyah University of

Palembang. She received a Bachelor's degree in Electrical Engineering from Universitas Gadjah Mada in 2005 and a Master's degree in the Chemical Engineering from Universitas Sriwijaya in 2014. Currently, interested in research related to the field of renewable energy and LoRa-IoT. Email: yosi_apriani@um-palembang.ac.id

Soni Andika Pratama is a student of the electrical engineering program at the University of Palembang,with his research focus on renewable energy. Email : sonyandikapratama23@gmailcom

Marliyus Sunarhati is a lecturer in the Department of Electrical Engineering at University of Palembang. He is Master's degree in the Chemical Engineering from Universitas Sriwijaya, Email : marlius@gmail.com

Zulkiffli Saleh is a lecturer in the electrical engineering program at Muhammadiyah University of Palembang with a research focus on the field of new renewable energy, Zulkiffli Saleh is an alumnus of the Faculty of Engineering, Gadjah Mada University, Yogyakarta. Email : zulkifflisaleh64@gmail.com

Ian Mochamad Sofian is a lecturer in the Department of Engine, Banten Merchant Marine. He received a Bachelor's degree in Physics of Instrumentation from Universitas Lampung in 2008 and a Master's degree in the Geophysics from Universitas Sriwijaya in 2018. Currently, interested in researching machine learning and allied fields. Email: ian.msof@gmail.com

PARTNERSHIP MODELS INVOLVING INDEPENDENT SMALLHOLDERS IN INDONESIAN PALM OIL SUPPLY CHAIN: A BRIEF REVIEW

Syamsul Anwar
Agro-Industrial Engineering Department, Politeknik ATI Padang
syamsulanwar@poltekatipdg.ac.id

Demi Ramadian
Agro-Industrial Engineering Department, Politeknik ATI Padang
demiramadian@poltekatipdg.ac.id

Irna Ekawati
Agro-Industrial Engineering Department, Politeknik ATI Padang
irnaekawati@poltekatipdg.ac.id

Indah Kurnia Ramadhani
Agro-Industry Logistics Management Department, Politeknik ATI Padang
indahkramadhani@kemenperin.go.id

Abstract

The palm oil industry has become a major driver of the Indonesian economy. In this respect, independent smallholders play an important role as suppliers of fresh fruit bunches in the palm oil-processing industry. However, independent farmers are in a weak position in the palm oil supply chain, from both economic and global demand perspectives. This study aims to (1) identify the main problems faced by independent smallholders, (2) summarize the findings of previous research that examines aspects of partnerships for independent smallholders, and (3) provide directions for future research on the subject of partnerships involving independent smallholders in the Indonesian palm oil supply chain. This study applies a concise review to achieve its research objectives. The results of the literature review show that the types of problems faced by independent smallholders are quite diverse, among which the most reported are low plantation productivity, lack of capital, including the inputs needed to run plantations, and limited marketing access (oil palm processing industry). Generally, related studies can be grouped into three groups: assessment or evaluation of partnership models, selection of partnership models based on certain aspects, and development of partnership models. Future research directions include the implementation of the proposed partnership model, identification of key success factors of the partnership model, and deployment of quantitative methods to test various scenarios of partnership models for smallholders in the palm oil supply chain.

Keywords: Independent smallholders, palm oil supply chain, partnership, review

1. INTRODUCTION

Palm oil is one of Indonesia's most productive and profitable commodities. This can be seen in the development of industries (e.g., food industry, oleochemicals, pharmaceuticals, and energy sectors) that use raw materials derived from palm fruit (Nashr *et al.*,2021). Indonesia is currently the world's leading producer of palm oil (Raharja *et al*., 2020). Indonesian palm oil is exported overseas, reaching five continents, namely Africa, Australia, America, and Europe, with a major market share on the Asian continent. In 2021–2022, the price of palm oil has increased, causing a significant surge in export value to 29,75 billion US$ in 2022. The area of palm oil plantations in Indonesia has increased each year. It covered 15 338 556 hectares in 2022. Approximately, 55,91% of this area (8.566.738 ha) is managed by private estates, 40,51% (6.213.407 ha) by smallholders, and the remaining (3,58% or around 548.311 ha) is managed by government estates. The production of palm oil in 2022 is 46,82 million tons, which is an increase of 1,29% compared with production in 2021. Of the total production, private estates produced 28,21 million tonnes (60,26%), followed by smallholders with a total production of 16,31 million tonnes (34,84%); and the remaining 2,30 million tonnes (5%) was produced by government estates (Directorate of Food Crops, Horticulture, and Estate Crops Statistics, 2023). Here, smallholders can be divided into plasma smallholders, who collaborate with or receive support from palm oil companies, and independent smallholders, who manage oil palm plantations with their capital and business (Paonganan, 2023). Although the palm oil industry prioritizes the procurement of palm oil raw materials, mainly from its own plantations and plasma farmers, it still requires supplies from independent smallholders to meet consumer demand or optimize the capacity of its processing factories. Thus, independent smallholders play a vital role in the palm oil industry (Raharja *et al.*, 2020).

At present, global economic challenges require the palm oil industry to produce high-quality processed palm oil products that can compete on prices. Hence, companies should encourage increased efficiency and quality improvement not only in the processing process but also throughout the supply chain (Anwar, 2024). In addition, the palm oil industry and its supply sources (palm oil plantations) face demands to ensure sustainability from an environmental perspective. Related to these demands, independent smallholders are in the spotlight because fulfilling the above demands is the most difficult task. This is due to the weakness of independent smallholders, who have many limitations, including capital, managerial, and technical knowledge in managing their oil palm plantations (Euler *et al.*2016, Jelsma and Schoneveld (2016), Herdiansyah*et al.* 2020, Ichsan *et al.* 2021). In response to this problem, various studies have been conducted to encourage the development of partnerships or institutional systems that could overcome the problems or difficulties faced by independent smallholders. It is crucial to empower partnership smallholders to find the right and the most effective strategy (Raharja *et al.*, 2020).

Theoretically, this issue can be related to supply chain partnerships. The supply chain consists of all parties involved directly or indirectly to meet customer demands (Chopra and Meindl, 2016). It involves the roles of several actors not only as suppliers and processors but also as transporters, warehouses, and retailers. Meanwhile, various definitions of partnership can be found in Li *et al.* (2007), which is essentially collaboration or cooperation between two or more parties. Maheshwari *et al*.,(2006) define a supply chain partnership as a strategic coalition of two or more companies in a supply chain to facilitate joint efforts and collaboration in one or more activities that create value to obtain benefits. In the context of the palm oil supply chain, the partnership was aimed at empowering businesses for smallholders to conveniently provide

production inputs, obtain market guarantees, and apply technology to improve production (Munirudin *et al*., 2020). Based on this problem, this research aims to (1) identify the main problems faced by independent smallholders, (2) summarize the findings of research that discusses partnership models involving independent smallholders in the palm oil supply chain, and (3) provide directions for future research related to this topic.

The remainder of this paper is organized as follows. Section 2 presents the methods used in this study. Section 3 presents the results of the data analysis and discusses the research findings. Section 4 summarizes the results obtained to answer the research questions and objectives, including research limitations and suggestions for future research.

2. METHODS

This study applies a brief literature review and employs qualitative analysis following the stages presented in Figure 1 (presented on the following page). The stages begin by identifying the roles and positions of smallholders in Indonesia's palm oil supply chain. The identification task is performed on articles, documents, or reports released by reliable sources. Next, relevant questions that do not yet have clear answers are raised as they are formulated as research objectives. In this case, the achievement of research objectives requires data or information derived from the scientific literature or published articles relevant to the research topic. A literature search was carried out on Google Scholar by applying several keywords including 'independent smallholders, ' and 'palm oil smallholders farmers' with the addition of the keywords 'partnership' and also 'institutional' which are considered related to partnerships. To narrow the search process, keywords related to the Indonesian palm oil supply chain were also added. Thus, the above keywords were used to assist in obtaining relevant articles. In addition, the inclusion criteria were English or Indonesian articles published in international or national journals with a peer-review process during the publication process. Exclusion criteria included research articles taken from Indonesian case studies and those published before 2010. After collecting relevant articles, the main problems faced by independent smallholders were identified (to answer Research Objective I). A summary is then presented, including research objectives/focus, study location, methods or approaches used, and research findings or outcomes (to answer research objective II). The results obtained in the last two steps will be considered to provide recommendations or directions for future research discussing partnerships involving independent smallholders in the Indonesian palm oil supply chain.

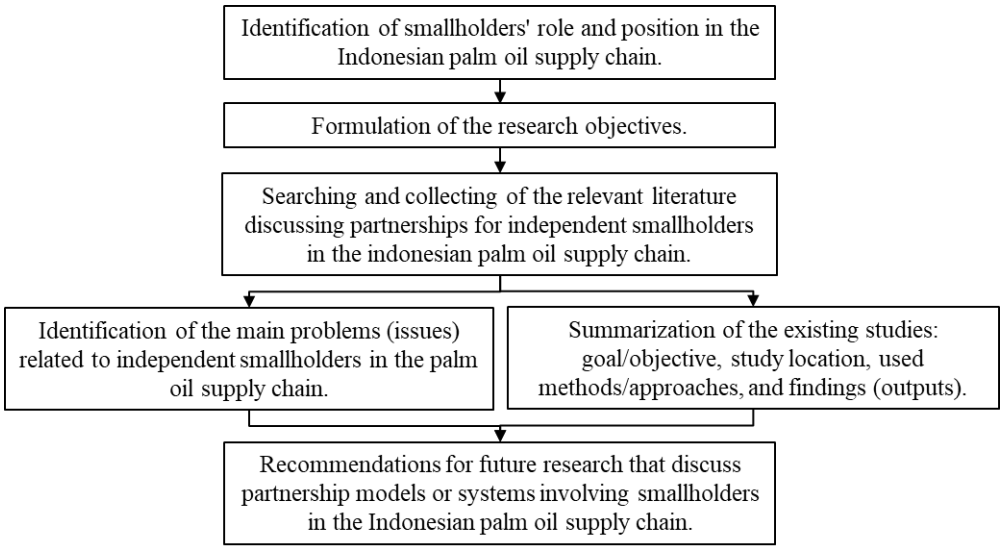


Figure 11: Research Stages

The results obtained from these three stages are presented in the following subsections.

3. RESULTS AND DISCUSSIONS

This section is divided into three parts, each of which explains the results obtained for each research objective.

3.1 Identification of the problems faced by independent smallholders in the palm oil supply chain.

There are 17 types of problems faced by independent smallholders as outlined in Table 1.

Table 1. The problems faced by the palm oil smallholders

Article (year)	Types of Problems (Issues)*															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
Yanita *et al.* (2023)	√								√	√					√		√
Heryani *et al.* (2023)					√												
Herdiansyah *et al.* (2022)	√	√															
Paonganan (2023)	√	√	√	√				√	√	√	√	√	√		√	√	
Afrianto *et al.* (2022)							√										
Nashr *et al.* (2021)	√																
Ichsan *et al.* (2021)				√	√	√		√									
Suparjan and Lathifah (2020)			√														
Raharja *et al.* (2020)	√	√		√	√	√			√	√	√	√	√	√	√		√
Suparjan *et al.* (2020)			√														
Papilo *et al.* (2020)	√			√				√		√				√	√		√
Munirudin *et al.* (2020)	√							√		√					√		√
Napitupulu *et al.* (2019)		√						√		√	√						
Chalil and Barus (2018)									√	√							
Sahara *et al.* (2017)	√	√								√							
Euler *et al.* (2016)								√			√						
Jelsma (2016)	√											√	√				
Suharno *et al.* (2015)	√								√	√					√		√

***** (1) Low productivity, (2) Low-quality production, (3) Low bargaining power, (4) Price discrimination, (5) Unable to access information (price), (6) Limited number of buyers (processors), (7) Conventional ways of information exchange or delivery, (8) Long supply chain (no direct access to industry, limited markets), (9) Lack of managerial skills (e.g., plantation management); (10) Capital limitations (finance, access to funding, input),

(11) Low price, (12) Land legality, (13) Poor regulation and support (by government or corporate), (14) Low income, (15) Lack of technical capability (knowledge), (16) Price fluctuation, and (17) Poor agricultural practices.

Then, the listed problems (obstacles) faced by independent smallholders could be sorted according to the number of literature reports as shown in Figure 2.

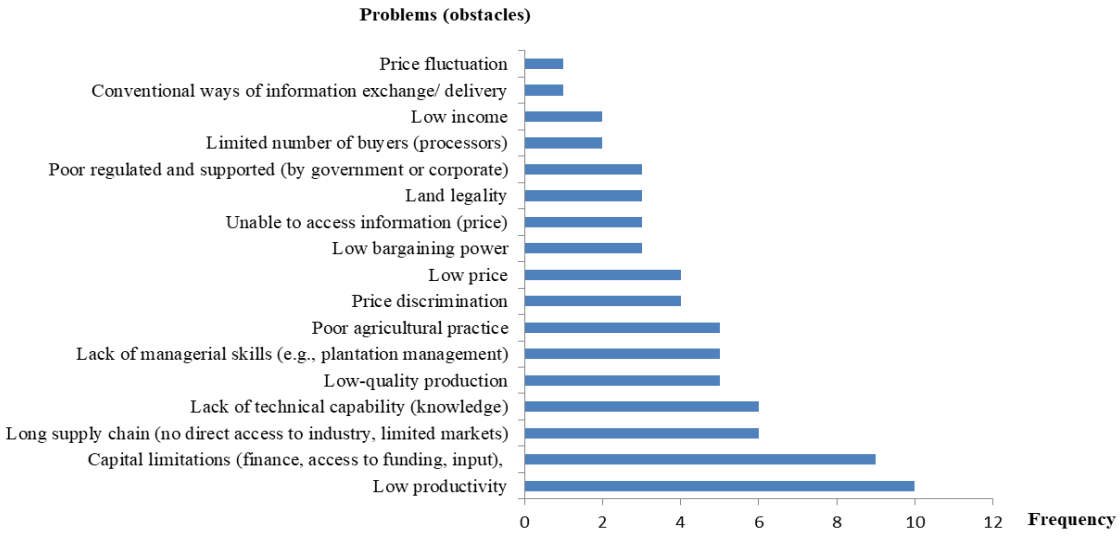


Figure 2: Types of the independent smallholders' problems

Figure 2 shows the three most problematic problems faced by independent smallholders: low productivity, lack of capital, and long supply chain stages. Several problems can be interrelated in cause-and-effect relationships. For example, poor quality of palm fruit can be caused by poor agricultural practices, which, if explored further, are caused by a lack of capital in managing plantations. Identifying the relationships between problems or challenges in the form of a causal hierarchy might be an opportunity for future research. Thus, the findings of these problems become guidelines for stakeholders or future studies in developing partnership systems or institutions that must focus on overcoming the problems of independent smallholders. The following sub-section summarizes previous studies that discuss partnership aspects, including institutional development, involving independent smallholders in the palm oil supply chain.

3.2 Summary of previous studies on partnership models for Indonesian palm oil independent smallholders.

From the literature search results, 14 relevant articles published from 2011 to 2023 are presented in Table 2 (on the following page). These reviewed studies have been conducted in the main palm oil-producing regions of Indonesia, including Sumatra Island (mostly in Riau, Jambi, and North Sumatra Provinces). Several studies have been carried out on Kalimantan Island, and one study has been carried out on Sulawesi Island. The majority of these reviewed studies employed qualitative analysis with data sourced from field surveys, including interviews. It was also identified that several studies applied descriptive analysis with statistical testing. In addition, several studies have applied a semi-quantitative approach using

multi-criteria decision-making (MCDM) techniques, with the main data coming from focus group discussions (FGD) with experts (stakeholders). However, through the literature search process that we carried out, quantitative approaches such as mathematical analysis, optimization, and simulation techniques have not yet been applied to studies that analyze partnership models that involve smallholders in the palm oil supply chain.

Our review also reveals three main focuses of existing studies. First, studies have focused on the assessment or evaluation of existing partnership systems. Some studies in this first group employed qualitative analysis, while several studies utilized statistical measures. Second, two studies focused on the selection of partnership models, namely, according to farmers' preferences and managerial aspects. Finally, the studies focused on the proposed partnership system, including the development of conceptual models, partnership strategies, and advanced information technology.

Table 2. Summary of studies that discuss independent smallholders in the palm oil supply chain.

Article (Year)/ Region	**Focus/ Perspective of Analysis**	**Methods/ Approaches**	**Type***		
			1	**2**	**3**
Yanita *et al.* (2023)/ Jambi	Evaluation of the existing partnership system.	Purposive sampling, simple random sampling, and qualitative descriptive	√	-	-
Rahayu *et al.* (2023)/ Riau	Evaluation of two partnerships in oil palm rejuvenation.	Purposive sampling, field survey, and multiple regression model	√	-	-
Syahza *et al.* (2023)/ Riau	Policy proposals to encourage sustainable management of palm oil plantations involving farmers.	Survey research, Participatory approach using Rapid rural appraisal (RAR)	-	-	√
Paonganan (2023)/ 14 Province (in Indonesia)	Challenges faced by small palm oil farmers.	Explorative research, surveys, and qualitative descriptive	√	-	-
Heryani *et al.* (2022)/ South Kalimantan	Development of an institutional model for a palm oil supply chain involving independent smallholders.	Analytical Network Process, Supply Chain Operation Reference (SCOR), Strategic Assumption Surfacing and Testing (SAST)	-	-	√
Afrianto *et al.* (2022)/ -	Developing a digital transformation model to support the operational and transactional activities of oil palm smallholders.	Blockchain technology-based model, As-Is To-Be Model	-	-	√
Witjaksono *et al.* (2021)/ Southeast Sulawesi	Assessment of the palm oil supply chain network involving smallholders.	Qualitative descriptive, food supply chain networking, observation, FGD, survey, and interviews	√	-	-
Raharja *et al.* (2021)/ Jambi	Development of an integrated institutional model to strengthen the position and role of small farmers in the palm oil supply chain.	Soft system methodology, Interpretative structural modelling (ISM), SAST, Business model canvas	-	-	√
Anwar *et al.* (2021)/ Riau	Institutional structuring strategies for smallholders in supporting sustainable economic development	Qualitative analysis: SWOT (strengths, weaknesses, opportunities, and threats), and analysis, Modern Political Economy analysis	-	-	√
Suparjan and Lathifah (2020)/	The choice of partnership model is based on farmer preferences in terms of	Analytic Network Process (ANP), random sampling	-	√	-

Central Kalimantan	profitability and social and plantation rejuvenation.				
Munirudin *et al.* (2020)/ East Kalimantan	Partnership mechanisms, factors influencing partnering farmers, and the impacts of partnerships for farmers and companies.	Simple random sampling. purposive sampling, and logit equation model.	√	-	-
Chalil and Barus (2020)/ North Sumatera, South Sumatera, Jambi, Riau	The impact of partnership models on inclusive palm oil plantations.	Surveys (to 390 small holders), Mann Whitney test, binomial logit model.	-	-	√
Suharno *et al.* (2015)/ Central Kalimantan	The choice of partnership model is based on management (cooperatives, companies, or individual farmers).	Survey, Focus Group Discussion (FGD), random sampling (farmers), qualitative analysis	-	√	-
Syahza (2011)/ Riau	The institutional arrangement model involves smallholders to encourage economic growth in rural areas.	Surveys, descriptive qualitative, Rapid Rural Appraisal (RRA)	-	-	√

*1: Assessment/ evaluation, 2: Model selection, 3: Model development

Based on the discussion in the previous two subsections, several directions for future research on partnerships involving smallholders in the palm oil supply chain are provided in the following subsection.

3.3 Directions for future studies on the partnership model for palm oil-independent smallholders.

As previously mentioned, there are many problems faced by smallholders that can hinder the palm oil agro-industry supply chain from achieving global demands or standards, especially in terms of product quality and sustainability. In addition, these problems are obstacles to the achievement of prosperity by smallholders, which is represented by the potential income that could be obtained. Existing studies have attempted to propose ways to overcome various problems faced by smallholders through partnership models or related ones, such as institutional strategies, but generally, these are conceptual models. Based on the literature searches conducted thus far, no studies have applied a partnership model or system for smallholders in the palm oil supply chain have been found. Thus, this may be an opportunity for future research, including incorporating approaches such as action research, as in Müller (2005). Moreover, no studies have examined the factors that determine the success of a partnership system for smallholders in the palm oil supply chain in Indonesia.

As previously mentioned, quantitative approaches (particularly mathematical analysis, optimization, and simulation techniques) have not yet been applied. In this regard, opportunities for applying optimization techniques or Operations Research in partnership analysis in supply chains were outlined more than two decades ago by Maloni *et al.* (1997). In addition, Chauhan *et al.* (2005) numerically tested the partnership system optimization model with revenue sharing has been numerically tested by Chauhan *et al.* (2005) on generic supply chains, which may be adapted for palm oil supply chains, especially on the upstream side. Ramanathan (2014) attempted a simulation technique to measure collaboration performance (i.e., close to partnership) in the supply chain. Ghadimi *et al.* (2022) then applied simulation techniques with an agent-based system to analyze partnership models in supply chains. One of the advantages of these techniques is that they can test various partnership model scenarios for smallholders in the palm oil supply chain. The study by Huo *et al.* (2022) could be used as a reference for developing analytical models to test partnership

systems in agricultural product supply chains. In addition, in facing Industry 4.0, the partnership model proposed by Sjaf *et al.* (2022) can also be referred to.

4. CONCLUSIONS

Even though independent smallholders play a strategic role in the palm oil supply chain, they face various problems that can indirectly hamper the power of the national palm oil industry. The results of the literature review revealed several problems faced by independent smallholders, among which the most reported were low productivity of oil palm land, lack of capital, including inputs needed to run oil palm plantations, and limited market access. Most of these problems are related to each other; therefore, solving one problem can solve another problem. Studies that discuss partnerships among oil palm growers can be divided into three groups based on the focus of the study: assessment/evaluation, selection, and model development. Quantitative approaches using mathematical analysis, optimization techniques, and simulations are potentially considered promising applications for future research. These techniques can be used to test various partnership scenarios for smallholders in palm oil supply chains. This brief review is limited to a discussion of partnership models for independent smallholders in the Indonesian palm oil supply chain context. The outcomes of the present research are expected to serve as a catalyst for the future exploration of this important issue. Practically, this study provides basic information to stakeholders, particularly the government, seeking various efforts to overcome the problems experienced by independent smallholders, so that the Indonesian palm oil supply chain has competitiveness and sustainability aspects in line with current global economic demands.

REFERENCES

Afrianto, I., Djatna, T., Arkeman, Y., and Hermadi, I. (2022). Transformation model of smallholder oil palm supply chain ecosystem using blockchain-smart contract. *International Journal of Advanced Computer Science and Applications*, 13(11).

Anwar, K., Tampubolon, D., and Handoko, T. (2021). Institutional strategy of palm oil independent smallholders: A case study in Indonesia. *The Journal of Asian Finance, Economics and Business*, 8(4), 529-538.

Anwar, S. (2024). Value stream mapping in crude palm oil industry: A brief review. *Engineering Headway*, 6, 349-355.

Directorate of Food Crops, Horticulture, and Estate Crops Statistics. (2023). *Indonesia Oil Palm Statistics 2022*. BPS-Statistics Indonesia. Vol. 16.

Chalil, D., and Barus, R. (2018). Partnership models for inclusive oil palm smallholdings. In *Consortium Studies on Smallholder Palm Oil (CSSPO) International Conference*, Kuching, Malaysia, July. 9 – 11, 2-18.

Chauhan, S. S., & Proth, J. M. (2005). Analysis of a supply chain partnership with revenue sharing. *International Journal of Production Economics*, 97(1), 44-51.

Chopra, S. and Meindl, P. (2016). *Supply Chain Management: Strategy, Planning, and Operation*. Sixth Edition. Pearson Education Limited. Essex, England.

Euler, M., Hoffmann, M. P., Fathoni, Z., and Schwarze, S. (2016). Exploring yield gaps in smallholder oil palm production systems in eastern Sumatra, Indonesia. *Agricultural Systems*, 146, 111-119.

Ghadimi, P., Toosi, F. G., & Heavey, C. (2018). A multi-agent systems approach for sustainable supplier selection and order allocation in a partnership supply chain. *European Journal of Operational Research*, 269(1), 286-301.

Herdiansyah, H., Negoro, H. A., Rusdayanti, N., and Shara, S. (2020). Palm oil plantation and cultivation: Prosperity and productivity of smallholders. *Open Agriculture*, 5(1), 617-630.

Heryani, H., Legowo, A. C., Yanti, N. R., Marimin, M., Raharja, S., Machfud, M., ... & Afrianto, I. (2022). Institutional Development in the Supply Chain System of Oil Palm Agroindustry in South Kalimantan. *International Journal of Technology* 13(3), 643-654.

Huo, Y., Wang, J., Guo, X., & Xu, Y. (2022). The collaboration mechanism of agricultural Product supply chain dominated by farmer cooperatives. *Sustainability*, 14(10), 5824.

Ichsan, M., Saputra, W., and Permatasari, A. (2021). Oil palm smallholders on the edge: Why business partnerships need to be redefined. *Information Brief SPOS Indonesia*, 1-12.

Jelsma, I., and Schoneveld, G. C. (2016). Towards more sustainable and productive independent oil palm smallholders in Indonesia. *Working Paper*. CIFOR.

Li, Q., Su, Y., and Pei, Y. (2007). A review and analysis of researches on supply chain partnership. In 2007 *IEEE International Conference on Automation and Logistics*, IEEE, 1846-1851.

Maheshwari, B., Kumar, V., and Kumar, U. (2006). Optimizing success in supply chain partnerships. *Journal of Enterprise Information Management*, 19(3), 277-291.

Maloni, M. J., & Benton, W. C. (1997). Supply chain partnerships: opportunities for operations research. *European Journal of Operational Research*, 101(3), 419-429.

Müller, M. (2005). Action research in supply chain management—An introduction. In *Research Methodologies in Supply Chain Management*. Physica-Verlag, Springer, Heildelberg, Germany. 349-364.

Munirudin, A. L., Krisnamurthi, B., and Winandi, R. (2020). Kajian pelaksanaan kemitraan perkebunan kelapa sawit di Kabupaten Kutai Timur (Studi Kasus di PT. NIKP). *Jurnal Pertanian Terpadu*, 8(2), 211-225.

Napitupulu, D., Ernawati, H. D., Yanita, M., and Fauzia, G. (2019). Comparative analysis between smallholder and partnership oil palm farming system in Jambi Province. In *IOP Conference Series: Earth and Environmental Science* (Vol. 336, No. 1, p. 012015). *IOP Publishing.*

Nashr, F., Putri, E. I. K., Dharmawan, A. H., and Fauzi, A. (2021). The Sustainability of Independent Palm Oil Smallholders in Multi-Tier Supply Chains in East Kalimantan Indonesia. *International Journal of Sustainable Development & Planning*, 16(4).

Papilo, P., Prasetiyo, D., Hartati, M., Permata, E.G., and Rinaldi, A. (2020). Analisis dan penentuan strategi perbaikan nilai tambah pada rantai pasok kelapa sawit (studi kasus Provinsi Riau). Jurnal Teknologi Industri Pertanian, 30(1), 13-21.

Paonganan, L. (2023). Tantangan ekonomi dan kelembagaan petani kecil swadaya sawit di Indonesia. *Jurnal Pertanian Agros*, 25(3), 1986-1997.

Raharja, S., Papilo, P., Massijaya, M. Y., Asrol, M., and Darmawan, M. A. (2020). Institutional strengthening model of oil palm independent smallholder in Riau and Jambi Provinces, Indonesia. *Heliyon*, 6(5).

Rahayu, D., & Waluyati, L. R. (2023). Decision making of oil palm farmers in choosing rejuvenation partners in Siak District. *Jurnal Manajemen & Agribisnis*, 20(1), 142-142.

Ramanathan, U. (2014). Performance of supply chain collaboration–A simulation study. *Expert Systems with Applications*, 41(1), 210-220.

Sahara, S., Haryadi, H., and Kusumowardhani, N. (2017). Smallholder finance in the palm oil sector: analyzing the gaps between existing credit schemes and smallholder realities. *CIFOR infobriefs*, 185, 1-4.

Samadi-Foroushani, M., Ranjbar, F., and Keyhanpour, M. J. (2022). Designing a sustainable entrepreneurship development model for Iran's agriculture: Application of Interpretive-Structural Model (ISM). *Journal of Systems Thinking in Practice*, 1(3), 109-125.

Sjaf, S., Arsyad, A. A., Mahardika, A. R., Gandi, R., Elson, L., Hakim, L., ... & Nugroho, D. A. (2022). Partnership 4.0: smallholder farmer partnership solutions. *Heliyon*, 8(12).

Suharno, S., AD, Y. A. Y., and Barbara, B. (2015). Analisis Kinerja Usahatani Perkebunan Kelapa Sawit Rakyat Melalui Pola Kemitraan di Provinsi Kalimantan Tengah. *Jurnal Agribisnis Indonesia (Journal of Indonesian Agribusiness)*, 3(2), 135-144.

Suparjan and Lathifah, A. N. Y. (2020). Analisis preferensi petani terhadap model kemitraan kelapa sawit dengan metode ANP (Analytic Network Process). *Jurnal Teknologi Industri Pertanian*, 30(3), 271-280.

Syahza, A. (2011). The institutional arrangements in the palm oil sector: Effort to spur economic growth in rural areas. *International Research Journal of Business Studies*, 4(3), 171-188.

Syahza, A., Meiwanda, G., and Tampubolon, D. (2023). Strengthening Riau province's oil palm policy based on strengthening local institutions in Riau Province Bengkalis. *KnE Social Sciences*, 447-462.

Witjaksono, J., Yaumidin, U., Djaenudin, D., Astana, S., Harianja, A., Fery, S., ... and Purba, R. (2023). The assessment of fresh fruit bunches supply chain of palm oil independent smallholder farmers in southeast Sulawesi. *Uncertain Supply Chain Management*, 11(3), 941-950.

Yanita, M., Saputra, A., and Fauzia, G. (2023). Studi pola kemitraan petani kelapa sawit swadaya pada Koperasi Perkasa Nalo Tantan Kabupaten Merangin. *Proceedings Series on Physical & Formal Sciences*, 5, 241-250.

Biodata

Syamsul Anwar is a lecturer at the Agro-Industrial Engineering Department, Politeknik ATI Padang. He obtained a Master's degree in Economic Science with specialization in Industrial Economics from Universitas Indonesia. He holds a doctoral degree in Agro-Industrial Engineering from IPB University. He has research interests in supply chain collaboration, supply chain coordination/contracting, supply chain design, and supply chain risk management in the agri-food industry sector. Email: syamsulanwar@poltekatipdg.ac.id

Demi Ramadian is a lecturer of Agro-Industrial Engineering Department, Politeknik ATI Padang. He holds a Master's degree in Industrial Engineering from Universitas Andalas. He has has research interests in supply chain management. Email: demiramadian@poltekatipdg.ac.id

Irna Ekawati is a lecturer of Agro-Industrial Engineering Department, Politeknik ATI Padang. She holds a Master's degree in Industrial Engineering and Management from Institut Teknologi Bandung. She has research interests in supply chain management. Email: irnaekawati@poltekatipdg.ac.id

Indah Kurnia Ramadhani is a lecturer of Agro-Industrial Logistics Management Department, Politeknik ATI Padang. She has a Master's degree in Industrial Engineering and Management from Institut Teknologi Bandung. She has research interests in supply chain management, scheduling, and maintenance. Email: indahkramadhani@kemenperin.go.id

ANALYSIS OF THE EFFECT OF COMPRESSIVE STRENGTH OF MORTAR USINGCANE WASTE ASH AND LIME

Asri Mulyadi[1)], Saloma[2)], Siti Aisyah Nurjannah,[3)]

Palembang University[1)], Sriwijaya University[2), 3)]

asrimulyadi@unpal.ac.id[1)], saloma@ft.unsri.ac.id[2)], sanurjannah@gmail.com[3)]

ABSTRACT

From the results of research and testing of mortar with a variety of bagasse ash mixtures as a substitute for fine aggregate and limestone, it can be concluded that the compressive strength of normal mortar without bagasse ash waste but using limestone water is 1.90 kg/cm2, the compressive strength of mortar with Bagasse ash waste is 6% of the weight of cement and limestone is 2.29 kg/cm2 which is the optimum mixture content in this mixture. The compressive strength of mortar with sugarcane bagasse ash waste is 9% of the weight of cement and limestone has a compressive strength of 2.08 kg /cm2, the compressive strength of mortar with bagasse ash waste is 12% of the cement weight, the compressive strength is 2.12 kg/cm2, mortar mixed with bagasse ash and limestone will increase compared to normal mortar.

Keywords*: Aggregate, Cement, Compressive strength, Limestone, Compressive strength, Mortar, Sugarcane bagasse ash*

INTRODUCTION

a. Background

Bagasse is waste produced from the process of milling sugar cane after the juice is extracted. In the sugar cane milling process, there are 5 grinding processes from the sugar cane stalks until they become bagasse. After the final grinding it produces dry bagasse. The abundant bagasse has been used as fuel for steam boilers (a machine that produces steam in a certain amount every hour at a certain pressure and temperature) where the energy produced is used as a steam power plant[1].

Cement is an adhesive material that is smooth in shape. If water is added, a hydration reaction will occur and can bind solid materials into one solid mass. The largest percentage of cement content is CaO (calcium oxide) in the range of 60%-65%, SiO2 (silica) in the range of 20%-24% and Al2O3 (aluminum oxide) in the range of 4%-8%[2].

Mortar is a mixture of adhesive (Portland cement), fine aggregate (sand) and water with a certain composition. Mortar as an adhesive for structural construction is used for crushed stone masonry on foundations. Mortar for nonstructural construction is used in masonry for wall filling. The compressive strength of mortar is influenced by several factors, namely density, age of mortar, type of cement, and aggregate properties[3].

Planning high quality mortar requires planning in the form of mortar mix design. The mortar mixture must be planned as economically as possible with the right composition of ingredients, so that it is easy to work with when the mortar is still wet (not yet formed) and produces good quality when it has hardened

(formed). The quality and strength of mortar is greatly influenced by the composition of the mortar mixture and its treatment (curing), water content, the presence of additional materials used for certain purposes and so on[4]. Therefore the author tried an alternative to use sugarcane bagasse ash waste and limestone which was used as a mortarmixture.

b. Research Objectives

1. Utilizing sugarcane bagasse ash waste to make mortar which is useful for reducing environmental pollution.
2. Knowing the optimum composition of bagasse ash and limestone for forming mortar.
3. Can understand mortar mixtures, so that they can design mortar mixtures according to the planned qualfoaity.

c. Benefits of research

The use of bagasse ash and limestone waste which is processed into raw materials for making mortar, is expected to be useful in everyday life, apart from improving the community's economy, it can also reduce the impact of environmental pollution due to waste from bagasse ash. As well as providing information to the public about the effect of bagasse ash and limestone as a cement substitute on the quality of mortar.

d. Formulation of the problem

The problem that will be discussed in this research is that it is hoped that using bagasse ash as a substitute for cement and limestone as an adhesive in the mortar mixture can improve the quality of the mortar itself. This research was carried out on a laboratory scale with stages adapted to the literature so that results could be obtained that could improve the quality of the mortar itself.

1. Utilization of bagasse ash waste as a cement substitute for mortar mixtures with mixed variations of 0%, 6%, 9% and 12% by weight of cement and limestone.
2. Characterization tests on the mortar mixture which includes testing the compressive strength of themortar.

LITERATURE REVIEW

a. Mortar

Mortar is a paste made from a mixture of cement, sand and water which is useful for binding, filling and covering irregular gaps between building blocks such as stone, brick and concrete units. Has different percentages, ratios of cement, sand and waterAccording to SNI 03-6825-2002for 3 pieces of mortar is 250 gr: 687.5 gr: 121 ml. As a binding agent, mortar must have a standard concentration/viscosity. This mortar concentration will later be useful in determining the strength of the mortar used as a plaster or wall plaster so that it is hoped that the mortar which can withstand the compressive force due to the load acting on it will not be destroyed (Concrete Technology, 2008)

Mortar can be used in the form of concrete cube paste (structural) or non-structural, for example in brick or molded stone wall masonry work, wall plastering work, wall ceramic masonry work, floor leveling work and even floor ceramic masonry work.

Mortar is classified according to its use, for example for joints, walls, waterproof, fireproof and so on. Joint mortar is used to join brick, stone and concrete blocks. Wall mortar used in various mixture ratios to meet work requirements. Work with wall mortar: base coating, smoothing, second coating and finishing.

Mortar and concrete are made from cement and aggregate mixed with water. What you need toknow about building materials is their density, porosity and compressive strength. In relation to heat, the properties of the mortar also need to be known, for example a wall made of concrete has a different conductivity compared to building materials, which is closely related to the use of building materials[5].

b. Mortar Specifications

Specifications for Proportions and Properties of Mortar

Based on SNI 03-6882-2002, the proportion of mortar is specified in 4 types according to the strength of the mortar and the specifications for the proportion of materials consisting of cement, aggregate and water used.

Table 1 Proportion Requirements

No	Mortar	Type	Mix in volume				Aggregate Ratio (measurement of moist and loose conditions
			Portland Cement	Couple Cement			
				M	S	N	
1	--- 1 ½ Coupl-e-- --- Cemen-t— --- --- --- ---	**M** 1	---			1	2.25-3 times the volume of cementitious material
2 **M**			---				
3 **S**			1				
4 **S**		1	---				
5 N			1				
6 0			1				

Source: SNI 03-6882-2002

The types of mortar are as follows:

a. Type M mortar is a mortar thatmehas a strength of 17.2 MPa according to Table 2.2, which is made using type N masonry cement or lime cement by adding portland cement and quenched lime with the composition according to Table 2.1.
b. Type S mortar is a mortar that has a strength of 12.5 MPa according to Table 2.2, which is made using type S cement or lime cement by adding portland cement and quenched lime with the composition according to Table 2.1.
c. Mortar Type N is a mortar that has a strength of 5.2 MPa according to Table 2.2, which is made using type N masonry cement or lime cement by adding portland cement and quenched lime with the composition according to Table 2.1.
d. Mortar Type O is a mortar that has a strength of 2.4 MPa according to Table 2.2, which is made using type N masonry cement or lime cement by adding portland cement and quenched lime with the composition according to Table 2.1.

Table 2 Characteristic Specification Requirements

Mortar	Type	Average strength 28day Min. (Mpa)	Water retention	Rate Air Max (%)	Aggregate Ratio (Measurement of moist
Cement Partner	M	17.2	75	…… b)	2.25-3.5 times the volume of cement
	S	12.4	75	…… b)	
	N	5.2	75	…… b)	
	O	2,4	75	…… b)	

Source: SNI 03-6882-2002

Information:

a. Only for mortars prepared in the laboratory.
b. When If there is structural reinforcement in the masonry cement mortar, the maximum aircontent must be 18%.

Specifications for mortar properties must meet the requirements for materials and testing of mortar that has been prepared in the laboratory, where the material consists of a mixture of cement, aggregate and water binders that meet the requirements for mortar according to the test method issued by SNI 03-6882-2002 .

Test Method

a. Mixture proportions of ingredients for test specimens

Mortar made in the laboratory which is used to determine the properties according to this specification must contain construction materials in the mixture composition specified in the project specifications (SNI 03-6882-2002).

b. Mortar Mixing

All cement and aggregate materials must be mixed with sufficient water for 3 – 5 minutes using a mechanical mixer to produce a mortar that is easy to work with. Mixing mortar by hand is permitted if there is permission from the party that determines the requirements by providing the procedures for the intended mixing method (SNI 03-6882-2002).

c. Carelessness Maintenance

Mortar that has hardened must be stirred again by hand to maintain its smoothness, and mortar that has been mixed for more than 2.5 hours must not be used again (SNI 03-6882-2002).

Mortar Compressive Strength

Compressive strength is a very important factor in testing the results of a mixture of mortar materials, both as components for making building materials. Compressive strength is the load that mortar can withstand per unit area. The mortar compressive strength test used is the ASTM C109-93 standard.

c. Mortar Forming Material

a. Cement
b. Portland Cement
c. Pozzolan
d. Aggregate
e. Water.

d. Sugarcane Bagasse Ash

Sugarcane bagasse ash is the result of chemical changes from burning pure sugarcane bagasse. Sugarcane bagasse is used as fuel to heat boilers in sugar production with temperatures reaching 5500-6000˚C. Every 4-8 hours, the ash is removed from the boiler, because if it is left without cleaning, a buildup will occur which will disrupt the process of burning the next bagasse[6].

e. Limestone

Limestoneissedimentary rockwhich is composed ofmineralcalciteAndaragonite, which are two different variants of calcium carbonate (CaCO3). The main source of calcite ismarine organisms. These organisms form shells rich in lime, which then build up on the sea floor and are deposited on the floorOceanas oozepelagic.

f. Mortar Mix Planning

All materials for test objects are tested for characteristics in accordance with applicable standards. According to SNI 03-6825-2002for 3 pieces of mortar is 250 gr: 687.5 gr: 121 ml. The cement water factor (w/c) is 0.485 for all types of Portland cement with a flow of 110 ± 5. Mortar mixtures areguided by Standard ASTM C109-93.

RESEARCH METHODOLOGY

a. Place and time of research

PeThis research was carried out in the Structures and Materials Laboratory of the Civil Engineering Study Program, Faculty of Engineering, Palembang University and the Construction Materials Laboratory of the Public Works Department of Highways and Spatial Planning of South Sumatra Province with a research period of two months.

b. Types of Research and Data Sources

PeThe research carried out was an experimental test, where the conditions were created and regulated by researchers by referring to SNI (Indonesian National Standards) regulations and related literature.

c. Research Tools and Materials

a. Scales with an accuracy of 0.1 gram
b. 1000 ml measuring cup
Measuring cup, used to measure the amount of water used.
c. Pycnometer.

d. Sharpened cone
e. Corner rod
f. Aluminum pan
g. Glass plate
h. Cup
i. Oven equipped with temperature control.
j. Density spoons
k. Scales
l. Cylindrical tube
m. Vernier calipers are used to measure all dimensions of the test object.
n. Paintbrush
o. Plastic bucket
p. Cube mold measuring (5 x 5 x 5) cm
q. Cement spoon
r. Universal Testing Machine (Tokyo Testing Machine Inc.) capacity 1000 kN
s. Sieve, Pass sieve No. 200 (fine aggregate composition according to standards)
t. Wet cloth.

d. Material

The materials used in this research are:

a. Seme brand Type I Portland cementn Baturaja
b. Fine aggregate
c. PDAM water
d. Sugarcane bagasse ash.
e. Limestone

Before buying these materials, you should first estimate how much is needed. For sand: It is best to increase the amount of sand, so that the aggregate inspection does not happen again, considering that the characteristics of the aggregate will not be the same for each purchase. Cement should be purchased as the day of printing approaches, because storing cement for too long will reduce the quality, if improper storage can cause the cement to harden and clots occur.

e. Procedure for Making Mortar Test Materials

a. Mixing
Materials such as cement, sand and water needed for 3 pieces of mortar are weighed in the ratio according to SNI 03-6825-2002, namely 250 gr : 687.5 : 121 ml and bagasse ash as much as 0%, 10%, 15%, and 20% of the sand weight.

b. Kneading
After all the ingredients are mixed, water is added to the middle of the mixture and left for 60seconds so that the mixture binds together, then the mixture is stirred until the mixture is completely homogeneous.

c. Printing
After the kneading is complete, molding is carried out by inserting the mortar paste into a cube mold that has been smeared with Vaseline first by:

- Insert the paste as high as 1/3 of the height of the mold, then the mixture is shaken at least 25times to ensure the density of the mixture.

- Put 1/3 of the mortar paste back into the mold then shake it again.
- Put the mortar paste back into the mold until it is full then shake it again.
- The surface of the mold is leveled and then covered with a wet cloth for ± 24 hours.

f. Mix Planning and Mortar Quality Test Procedures

Mortar Mix Planning

Mortar mixtures are guided by Standard ASTM C109-93, namely:

- Cube mold 5 x 5 x 5 cm
- Samples can be made with material details are:

Table 3. Three samples

	3 samples
Cement	250 grams
Sand	687.5 grams
Water	121 ml

Source: ASTM C109-93

Mortar Compressive Strength Testing Procedure

Mortar pressure strength testing is carried out to determine the crushing compressive strength of the test object. The test object used is a cube with side dimensions of (5 x 5 x 5) cm. Mortar pressure strength testing was carried out when the mortar was 28 days old. The amount of mortar tested consisted of 3 samples for each mixture.

Work procedures for testing compressive strength on mortar test specimens include:

a. Remove the test object after it reaches the planned age from the soaking tub, then dry it with a cloth and leave it for 24 hours.
b. The test object is placed on the pressing machine.
c. A compressive load is applied slowly to the test object by operating the pump lever so that the testobject collapses and is destroyed.
d. When the needle on the load scale no longer moves or increases, the scale indicated by the needleis recorded as the maximum load that can be carried by the test object.
e. This procedure is repeated for other compressive strength test specimens.

Compressive strength can be obtained using the following formula:

$$fc^{l} = \frac{F}{A}$$

With :

FCI = Compressive strengthtest object
(kg/cm2)F =Maximum compressive load (kg)

A = Field areasurface (cm2)

RESULTS AND DISCUSSION

a. Fine Aggregate Inspection

The fine aggregate (sand) used was Musi river sand. This test was carried out at the Civil Materials & Structure Test Laboratory, Faculty of Engineering, Palembang University and the Construction Materials Laboratory of the Public Works Department of Highways and Spatial Planning, South Sumatra Province. Tests carried out for fine aggregate include loose and solid density, sieve analysis, specific gravity and absorption, mud content and water content. From the results of the examination that has been carried out, the following data were obtained:

Table 4. Loose weight Content Fine Aggregate (sand)

No	Information	I	II
1	Weight of place + test object (kg)	5,620	5,624
2	Place weight (kg)	1,887	1,887
3	Test object weight (kg)	3,733	3,737
4	Fill the container (litres)	2,722	2,722
5	Weight of test object (kg/liter)	1,371	1,373
6	Average weight of test object (kg/liter)	1,372	

Source: Test Results

Table 5**.** Solid weight Content fine aggregate (sand)

No	Information	I	II
1	Weight of place + test object (kg)	5,975	5,970
2	Place weight (kg)	1,887	1,887
3	Test object weight (kg)	4,088	4,083
4	Fill the container (litres)	2,722	2,722
5	Weight of test object (kg/liter)	1,501	1,500
6	Average weight of the test object (kg/liter)	1,501	

Source: Test Results

Table 6. Fine Aggregate Water Content

Activity		Weight (grams)	
		I	II
A	Aggregate Weight	815	824.50
B	Cup Weight	3000	3000
C	Weight of Cup+aggregate before washing (dry)	3815	3824.50
D	Weight of Cup+aggregate before washing (in the oven)	3616	3624.50
Sludge levels : $\frac{(C - A) - (D - A)}{(D - A)}$		7.11%	7.14%
Average water content = 7.13%			

Table 7. Hasil Fine Aggregate Testing

No.	Checking type	Test result
1	Weight of loose contents	1.372 kg/liter
2	Solid Content Weight	1,501 kg/liter
3	SSD specific gravity	2.53
4	Dry specific gravity	2.48
5	Absorption	1.85 %
6	Organic Impurities	No. 2
7	Granule Gradation	Zone 4
8	Fineness Modulus	2.53

Source: Test Results

b. Mortar Mix Design

The mortar mixture composition for the 3 test objects was made according to SNI 03-6825-2002 standards. The ratio of dry ingredients used is 1 part by weight of cement, 2.75 parts by weight of sand and the cement water factor is 0.484 for all types of portland cement.

a. Normal Mortar (MN)

The ratio of cement, sand, water and bagasse ash waste required

is:Cement : 250 gr

Sand : 687.5 gr

Water : 121 ml

b. *Mortar*by using 6% bagasse ash waste and limestone (MA6%K)

The ratio of cement, sand, water and bagasse ash waste required

is:Cement : 250 gr – 15 gr = 235 gr

Sand : 687.5 gr

Water : 121 ml

Sugarcane bagasse ash waste 6% of cement weight = 15 gr

c. *Mortar*by using 9% bagasse ash waste and limestone (MA9%K)

The ratio of cement, sand, water and bagasse ash waste needed for 3 pieces

is:Cement : 250 gr – 22.5 gr = 227.5 gr

Sand : 687.5 gr

Water : 121 ml

Sugarcane bagasse ash waste 9% of cement weight = 22.5 gr

d. *Mortar*by using 12% bagasse ash waste and limestone (MA12%K)

The ratio of cement, sand, water and bagasse ash waste needed for 3 pieces

is:Cement : 250 gr – 30 gr = 220 gr

Sand : 687.5 gr

Water : 121 ml

Sugarcane bagasse ash waste 12% of cement weight = 30 gr

Table 8. Composition of a mixture of Normal Mortar (MN) and Mortar with bagasse ash waste andlimestone (MA K).

Description	M N	(MA6%K)	(MA9%K)	(MA12%K)
Cement (grams)	250	235	227.5	220
Sand (grams)	687.5	687.5	687.5	687.5
Water (ml) + limestone	121	121	121	121
Sugarcane bagasse ash waste	0	15	22.5	20

Source: Calculation Results

Information :

M N =*Mortar*Normal

(MA6%K) =*Mortar*with 6% bagasse ash waste and limestone
(MA9%K) =*Mortar*with 9% bagasse ash waste and limestone
(MA12%K) =*Mortar*with 12% bagasse ash waste and limestone

c. Mortar Compressive Strength Testing

Mortar compressive strength testing is carried out using a Compressor Machine. Data on compressive strength testing results for Normal Mortar, and Mortar with 6%, 9%, 12% bagasse ash waste and limestone, the results of the research can be shown in table 4.6 below:

Table 9. Mortar Compressive Strength Test Results Data at 28 Days

No	*Mortar*	Compression Area (A) (cm2)	Max Compressive Load Force (F) (kg)	Compressive Strength (fc') (kg/cm2)	Average Compressive Strength (kg/cm2)
1	M N	25	49.9 46.5 46.2	2.00 1.86 1.85	1.90
2	MA6%KG	25	60.0 58.1 53.7	2.40 2.32 2.15	2.29
3	MA9%KG	25	47.6 53.7 55.1	1.90 2.15 2.20	2.08

4	MA12%KG	25	41.0 59.3 59.1	1.64 2.37 2.36	2.12

Source: Test results

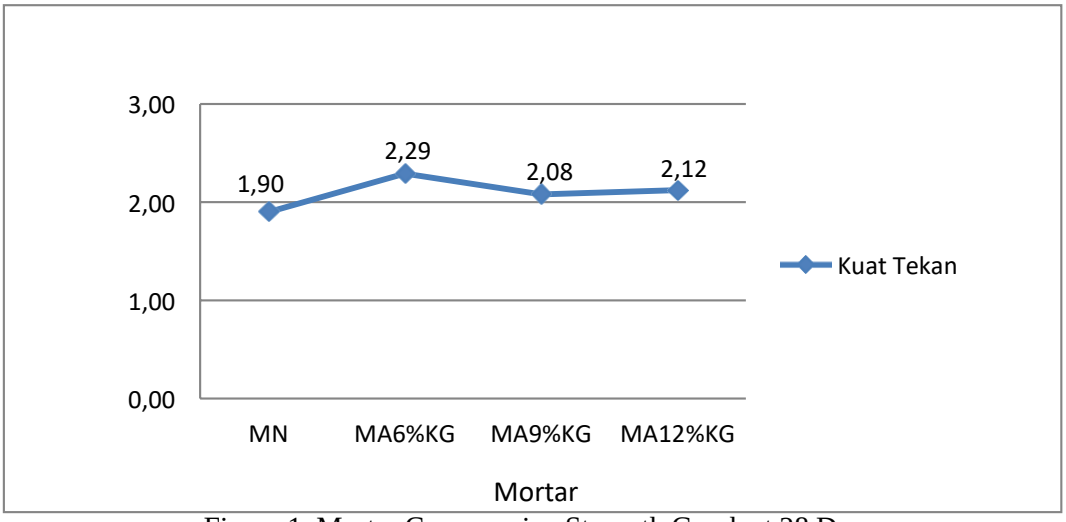


Figure 1. Mortar Compressive Strength Graph at 28 Days

From figure 1. It can be seen that the compressive strength of standard mortar without bagasse ash and lime or normal waste is 1.90 kg/cm2, while the compressive strength of mortar with 6% bagasse ash waste and limestone is 2.29 kg/cm2, and for mortar with 9% bagasse ash waste and lime lime the compressive strength is 2.08 kg/cm2, then for mortar with 12% bagasse ash waste and lime lime the compressive strength is 2.12 kg/cm2.

CONCLUSIONS AND RECOMMENDATIONS

a. Conclusion

From the results of research and testing of mortar with various mixtures of bagasse ash as a substitute for fine aggregate and limestone, it can be concluded that:

a. The compressive strength of normal mortar without bagasse ash waste but using lime water is 1.90 kg/cm2.

b. The compressive strength of mortar with bagasse ash waste 6% of the weight of cement andlimestone is 2.29 kg/cm2 which is the optimum mixture content in this mixture.

c. The compressive strength of mortar with bagasse ash waste 9% of the weight of cement andlimestone has a compressive strength of 2.08 kg/cm2

d. The compressive strength of mortar using bagasse ash waste is 12% of the cement weight, thecompressive strength is 2.12 kg/cm2

e. *Mortar*by mixing bagasse ash and limestone it will increase from normal mortar.

b. Suggestion

It is hoped that further research can be carried out using a mixture of bagasse ash with varying soaking (treatment) times.

REFERENCES

D. D. Pranowo, E. Suryani, and C. P. Rahmadhani, "Pengaruh Penggunaan Abu Ampas Tebu sebagai Pengganti Sebagian Semen Ditinjau Terhadap Kuat Tekan Mortar," *J. Penelit. Inov.*, vol. 2, no. 3, pp. 477–484, 2023, doi: 10.54082/jupin.106.

F. Batool, A. Masood, and M. Ali, "Characterization of Sugarcane Bagasse Ash as Pozzolan and Influence on Concrete Properties," *Arab. J. Sci. Eng.*, vol. 45, no. 5, pp. 3891–3900, 2020, doi: 10.1007/s13369-019-04301-y.

G. L. Asri Mulyadi, "Pemanfaatan Limbah Abu Tempurung Kelapa Sawit Untuk Campuran Mortar," vol. 9, no. 2, pp. 88–93, 2019.

Saloma, Hanafiah, and K. Ilma Pratiwi, "Effect NaOH Concentration on Bagasse Ash Based Geopolymerization," *MATEC Web Conf.*, vol. 78, 2016, doi: 10.1051/matecconf/20167801025.

Saloma, A. Nasution, I. Imran, and M. Abdullah, "Improvement of concrete durability by nanomaterials," *Procedia Eng.*, vol. 125, pp. 608–612, 2015, doi: 10.1016/j.proeng.2015.11.078.

A. Mulyadi, "Pengaruh Penambahan Abu Ampas Tebu Terhadap Kuat Tekan Mortar," *Academia.Edu*, vol. 2, no. 3, pp. 1–12, 2012, [Online]. Available: https://www.academia.edu/download/49333206/Naskah.pdf.

Biodata

Asri Mulyadi is a lecturer of Civil Engineering, Faculty of Engineering, University of Palembang, South Sumatera. Email: asrimulyadi@unpal.ac.id

THE EFFFECTIVENESS OF OMETV APPLICATION ON SPEAKING SKILL FOR EIGHT GRADE STUDENTS OF MTS FAJAR SIDDIQ PALEMBANG

M.Fahmi Fadli
Palembang University
fahmifadli15@gmail.com

Hartini Agustiawati
Palembang University
hartiniagustiawati@gmail.com

Melisa Novianty
Palembang University
melisanovianty25@gmail.com

Abstract

The purpose of the research is to know whether the use of Ome TV Application Technique gives a significant effect towards students' speaking skill at the Eighth-grade student' of MTs Fajar Siddiq. The research approach used is quantitative approach, while the method used is quasi experimental with pre-test and post-test design. The population of this research consists of 83 students and the sample of this research is 55 students. The instrument used is oral test, while the data are collected by giving the per-test and post-test. The data is analyzed using statistical of program SPSS 22. Based on the result of data analysis, the finding shows that there is significant effect of using Ome TV application Technique towards students' speaking skill. It can be seen from the result of t-test obtained sig. value $0.000 \leq \alpha = 0.05$. It can be concluded that there is significant effect of using Ome TV application technique towards students speaking skill. All of the students are active to speak and they can speak English better.

Keywords: Ome TV Application; Speaking Skill; The Effect;

INTRODUCTION

English is one of the foreign languages that is more popular than any other languages in the world. Every day, millions of people use English in the workplace and in social life. English is the most often language used to communicate with other people. In Indonesia, English is taught as foreign language from elementary until university level and as one of compulsory subjects. Each level has different learning techniques, for example, elementary and junior high schools have different learning techniques, especially in learning English at junior high school it must be fun and enjoyable.

In the context of teaching English, there are four language skills that the students should master: listening, speaking, reading and writing. students should master four language skill because fourth skill is components of English and it is importance for students, and speaking is one of the four basic competences that should be mastered by students, the learning of speaking cannot be separated from language so that speaking should make the students master this aspect. Speaking is one of important skill of English learning. It involves communicative performance, and other important elements, such as pronunciation, intonation, grammar, vocabulary, etc. They should be taught in any language learning to make the learners able to use the target language to communicate. Speaking is the skill that the learners will be judged upon most in real-life situation. It is an important part of everyday interaction and most often the first impression of a person is based on his or her ability to speak fluently and comprehensible. Thus, the teachers have a responsibility to prepare the learners as much as possible to be able to speak English in the real-life situation.

According Aydoğan, H., & Akbarov, A. A. (2014; 674) sate:
speaking is one of basic English skill that have to mastered by students, beside one of basic English skill, speaking also can used to communicate with the native speaker or nonnative speaker, and student have to practice speaking performance in the class with the teacher and the other students.

As a teacher needs professionalism because the process in learning and teaching are more interesting, if the teacher can make all of the student more active and the class would be more alive. Appropriate teaching technique helps student to mastery of this skill. In this modern era lot of application that make student easier improving of speaking skill. the example in this research, it used Ome Tv application technique. The advantages of Ome TV application technique are conversation with the native or nonnative speaker directly by video call and the application is used easier. Leif k-Books of Brattleboro states Ome TV is a video call application that allows anyone make video calls with other users from all of the word randomly.

Based on the problems, the research question for this research can be formulated as follow:
1. The students have difficulties in speaking English. 2. The students have less score in speaking English.
3. The students have less motivation in speaking English. 4. The students are not confident to speak English in front of the class. 5. The teaching learning that used by the teacher is boring in the teaching.
Ome TV Application. In this modern era, communication is more develop, which is the communication development is appropriate with the technological development. One of technology that can be used to improve student speaking skill it is Ome TV application.

According Yonan, Y. (2021). Ome TV is a Video call application that allows someone to make video calls with fellow users from all over the world at random. This application is already familiar. In 2010, a similar application with relatively the same features went viral, namely Omegle. Because the developer of the Ome TV application is the same as the previous application, so the way of use and appearance of the interface is almost the same.

According Ulya, H. (2021) that Ome TV is an android-based social networking application on smartphones that is used to communicate with foreigners without registering. The service randomly pairs users in a single chat session where they chat anonymously using “you” and “unknown” handles.
According the other opinion that Ometv or Omegle is an android-based social networking application on smartphones that is used to communicate with foreigners without registering. The service randomly pairs users in a single chat session where they chat anonymously using “you” and “unknown” handles. This application was created by Leif K-Brooks from the state of Vermont, a state of the United States.
Based on the opinion above, Ome Tv and Omegle have same feature and same created, these both of application in social media to communicate with the other people by using smartphone or computer, previously this application could only communicate message but it has been through an update this application adds video feature and the user can communicate randomly, and the user will get new many friends.

a. The Implementation of Ome TV Application Technique

According Ulya, H. (2021) state to implement the Ome TV application there are several ways, as way to use Ome TV application as follows:

1) How to operate on smartphone
    a. Download VPN and Ome TV application in play store or App store.
    b. Activate VPN and open Ome TV to find interlocutors.
    c. Log in with Facebook or sign in by VK.
    d. Fill in the country and gander.
    e. Tap stare and
    f. Find the interlocutors.
2) How to uses Ome TV on PC
    a. Open the application with website https://ome.tv/.

b. Log in with facebook or sign in by VK
c. Tap star and
d. Fill in the country column for the countru of origin and gender.
e. Find the interlocutors.

Based on the steps of implementation above can be conclude that Ome TV application can be implementation on smartphone and PC easily.

b. The Feature of Ome TV

Ulya, H. (2021) state that on of feature in Ome TV is selecting county, changing status male to female, the advantages and disadvantages, the feature of them as follow:

1) Selecting a Country

Users can change the country, in Ometv not only Indonesia is using it but there are many other countries that use this application for the purpose of finding friends randomly



Picture 1. Selecting a Country

Based on the selecting a country, it means user of Ome TV application there are lot of country and the user can choose a country based on her or his origin.

2) Changing Status to Male or Female

Here users can also change their original status from female to male, because in Ome TV many people are often deceived by their status, for example, men are women. But the reason is that the user is just for fun or entertaining, so it must be excessively careful when using it.



Picture 2. Changing Status to Male or Female

Based on the changing status male or female of Ome TV application technique above can be concluded before uses the application the user has to know about the feature of Ome TV application, for the interlocutors knows his or her identity.

c. The Advantages and Disadvantages of Ome TV Application.

1) The Advantages

a. The users can practice skills with native speakers of a language, especially in practice English speaking skill. with this application support the users will find the other people in all of country in the word according the country that chosen.

b. Simple operational at this application.

c. The user can implement whenever and wherever they are

Furthermore, there is no research who research about Ome TV application, this research is the first the researcher who research about Ome TV application technique that gives the effect towards students' speaking skill. Even though, the researcher would be proving that Ome TV application gives the effect towards students' speaking skill because to improving speaking skill, a teacher should use the new technique and new way for the students is not bored and enjoying the learning. one of the new techniques is Ome Tv application. By the feature of Ome TV application, It can increasing the student speaking skill as well.

SPEAKING SKILL

According Nunan (in Rizqiningsih, S., and Hadi, M. S. 2019: 129) state:
Speaking is the productive oral skill and it consists of producing systematic verbal utterance to convey meaning. It is the process of sharing knowledge, emotions, needs, opinion or ideas that take place between the speaker and the listener.

Additionally, based on opinion of Tarigan (in Fitriani, D. A., and Apriliaswati, R. 2015:3) state: Speaking is a communication tool used in daily life, during the child's life speaking skills will develop through listening and become a language, "Speaking is a language skill that is developed in child life, which is produced by listening skill, and at that period speaking skill is learned. It is clear that language is a way of communication which cannot be separated from daily life. Fisher and Frey (2011: 16) explain that speaking is the uniquely human act or process of sharing and exchanging information, ideas, and emotions using oral language. The goal of speaking is to achieve an interactive communication between the speaker and the listener. Teaching speaking is the activity where the teachers lead their students to improve their ability in expressing emotions, ideas or feeling orally. Based on the statements above, there is a relating between speaking and language, both of them is a thing that could not be separated, speaking is productive oral skill which develop appropriate the age. speaking is a sound that come out as oral that contain a meaning, for sharing the knowledge, for getting or sharing the information, and for business too.
Richard & Renandya (in Gumelar, R. E. 2018:14) Here are the components of speaking skills:

1. Pronunciation

"Pronunciation also known as phonology includes the role of individual sounds and sound segments, that is, features at the segmental level, as well as supra segmental features such as stress, rhythm, and intonation"

2. Grammar

"Grammar is the part of what forms (or structures) are possible in a language. Traditionally, grammar has been concerned almost exclusively with analysis at the level of the sentence. Thus grammar is a description of the rules that govern how a language's sentences are formed"

3. Vocabulary/Diction

"Vocabulary is a core component of language proficiency and provides much of the basis for how well learners speak, listen, read, and write"

4. Fluency

"Pausing is equally important; to draw breath speakers need to pause their utterance, even proficient speakers need to stop from time to time to allow an utterance formulation, they need to catch up with its conceptualization. In contrary, frequent pausing is a sign of struggling speaker. If the speakers produce words with many pauses no matter how accurate the words areso the speakers will not be judged as fluent speaker"

Based on the explanation above the component of speaking there are grammar, vocabulary, pronunciation, fluency, and comprehension. grammar study about written and oral, vocabulary study about mastery many vocabularies to easer speaking well. pronunciation study about how to spell the words, fluency study about fast speed of speaking, comprehension study about understands the topic of speaking. The researcher used all types of speaking above for testing of students' speaking skill by instrument test.

Brown" (in Gumelar, R. E. 2018:14) categorized basic type of speaking into five types. They are imitative, intensive, responsive, interactive and extensive,

1. Imitative

This is a basic type of speaking that imitates a word or phrase or possibly a sentence. Imitative is a phonetic level of oral production. Here, the lexical and grammatical of language might be included in the criterion performance. In imitative speaking, the learners will copy or reproduce the features of an original. In simple repetition task, the learners repeat the stimulus, whether it is a pair of words, a sentence, or perhaps a question to test for intonation production.

2. Intensive

Intensive speaking is the next step after imitative. To practice some phonological or grammatical aspects of language, so it should be designed by including any speaking performance. Intensive speaking can be self-initiated or it can even from part of some pair work activity, where learners are "going over" certain forms of language. The learners are prompted to produce short stretches of oral language designed to demonstrate competence in a narrow band of grammatical, phrasal, lexical, or phonological relationship. The assessment tasks of intensive speaking are direct response task, reading aloud, sentence and dialogue completion; limited picture-cued task including simple sequences; and translation up to the simple sentence level.

3. Responsive

A good deal of student speech in the classroom is responsive, short replies to teacher or students initiate question or comment. These replies are usually sufficient and do not extend into dialogues, such speech can be meaningful and authentic. For the assessment tasks, the teacher will give the learner such as interaction and test comprehension but at the somewhat limited level of very short conversations, standard greetings and small talk, simple requests and comments.

4. Interactive

Interactive speaking is more complex than responsive. Both of them have interaction, but for interactive speaking the interaction itself is long. The interaction could be taken into two forms exactly transactional and interpersonal. The transactional language has the purpose of exchanging specific information, and the interpersonal has the purpose of maintaining social relationships. The examples of interactive speaking are interview, role play, discussion and conversation, and games.

5. Extensive

This is the last of basic type of speaking that involve complex, relatively lengthy stretches of discourse. In extensive speaking the learner is prompted how to be a good speaker. The learners could do the monologue in extensive speaking such as speeches, oral presentation, retelling a story, and picture-cued storytelling.

Based on the basic types above communicative activities support the students in learning by used imitative, Intensive, Responsive, Interactive and Extensive. In this research the researcher used interactive basic type of speaking to test students' speaking skill because this basic type suitable with the treatment that will be used by researcher.

METHODOLOGY

This research used quantitative research method. The data was collected, calculated, and constructed in the form of numbers, which has been examined statistically in this study. Quantitative research is a sort of research that yields results that can be produced or obtained via the use of statistical techniques or other methods of quantification or measurement (Sujarweni) in (DJ, 2019). By understanding the experts above, the researcher draws the conclusion that quantitative research is research that the results are obtain from statistical data figures and will be use as a calculation tool.

This research used pre-experimental research, which the research design was One-grouppretest-posttest. This research design provides tests on subjects before being given treatment and after being given treatment. One-group pretest- posttest is research activities that provide an initial test (pretest) before being given treatment, after being given treatment thein giving a final test (posttest) (Arikunto, 2010). In this study, researcher was only used the experimental group without used the control group.

Population of study

Fraenkel and Wallen (1991) state that "the population is the group of interest of the researcher,the group to which the researcher would like to generalize the result of the study". The population of this study was the eighth grade students of MTs Fajar Siddiq.At this school,there were 3 classes of the eighth grade students. The distribution of the population of this study is shown in the table 3.1. The population of this study was the eighth grade students of MTs Fajar Siddiq.At this school,there were 3 classes of the eighth grade students. The distribution of the population of this study is shown in the table 3.1

NO	**Class**	**Number of student**
1	8.1	27
2	8.2	28
3	8.3	28
	Total	**83**

RESULT AND DISCUSSION

This section describes the result of speaking test on pre test and post test. Students speaking was score based on scoring classification on all components. The frequency score and the percentage of students speaking on all components can be seen in the table.

Table 4.1

The frequency and percentage of the students speaking score in pretest and posttest of experimental group

Classification	Score	F (Frequency)		Percentage (%)	
		Pretest	Posttest	Pretest	Posttest
Excelent	90-100	-	2	-	7,1
Very Good	80-89	2	11	7,1	39,3
Good	70-79	14	13	50,0	46,4
Fairy Good	60-69	10	1	35,7	3,6

Fair	50-59	1	-	3,6	-
Poor	<50	-	-	-	-
Total		27	27	100	100

In the term of organization, the score and rate percentage illustrated in the table above that out 27 students, 2 (7,1%) students gained very good classification, 14 (50%) students were in good classification, 10 (35,7%) were in fairy good classification, 1 student in fair classification, and none of the excellent and poor classification. And then, the result of posttest showed that 2 (7,1%) students gained
excellent, students that gained very good classification are 11 (39,3%), 13 (46,4%) students gained good classifiation, 1 (3,6%) were in fairy good classification, and none of the fair and poor classification.

Hypothesis Testing
The hypothesis were tested by using inferential statistics. In this case,the researcher used t-test for paired sample test. It was intended to know the significance diffrence between the result of the students mean score in the pretest and post test in the experimental class.

T test results table

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest Control - Posttest Control	,643	,621	,117	,402	,884	5,473	27	,000
Pair 2	Pretest Eksperimen - Posttest Eksperimen	,889	,320	,062	,762	1,016	14,422	26	,000

Source: Attached SPSS output

From the table it is clear that the significance value for control and experiment is 0.000. because a sig value of 0.000 < 0.05 can be interpreted as the difference between the pretest and posttest.
It can be seen that the Sig value (0,00) < (0,05) it can be concluded that there is a significant different between the students taught after using Ometv application.

CONCLUSION

From the result of the data analysis, it can be concluded that there is significant effect of using Ome TV application technique towards students' speaking skill. Based on the result above, it can be concluded that teaching speaking by using Ome TV application technique gives significances effect towards students' speaking skill. It means, it has answered the hypothesis that the null hypothesis is rejected and the alternative hypothesis is accepted.

REFERENCES

Arikunto. (2018). Prosedur Penelitian Suatu Pendekatan Praktik (14th ed.). Jakarta: PT Asdi Mahasatya.

Bajcsy, R. (2002). Technology and Learning. In Visions 2002: Transforming Education and Training Through Advanced Technologies. Washington DC: U.S. Department of Commerce.

Batko, A., & Rosenheim, E. (2004). When Bad Grammar Happens to Good People: How to Avoid Common Errors in English. New Jersey: Career Press. Retrieved from https://books.google.co.id/books?id=k9pEDwAAQBAJ

Brown, G., & Yule, G. (1983). Teaching the Spoken Language. Cambridge: Cambridge University Press.

Brown, K., & Hood, S. (2001). Writing Matters: Writing Skills And Strategies For Students Of English. Cambridge: Cambridge university press.

Cameron, L. (2003). Metaphor in Educational Discourse. New Jersey: Bloomsbury Publishing.

Cohen, D., Plaza, M., Perez-Diaz, F., Lanthier, O., Chauvin, D., Hambourg, N., … Rivière, J. P. (2006). Individual Cognitive Training Of Reading Disability Improves Word Identification And Sentence Comprehension In Adults With Mild Mental Retardation. Research in Developmental Disabilities, 27(5), 501–516. https://doi.org/10.1016/j.ridd.2004.07.008

Dudeney, G., & Hockly, N. (2012). ICT In ELT: How Did We Get Here And Where Are We Going? ELT Journal, 66(4), 533–542. https://doi.org/ 10.1093/elt/ccs050

Fraser, H. (2011). Speaking and listening in the multicultural University: A reflective case study. Journal of Academic Language & Learning, 5(1), 110–128.

Gilbert, J. B. (2008). Teaching Pronunciation: Using The Prosody Pyramid. Cambridge: Cambridge University Press.

Harmer, J. (2001). The Practice of English Language Teaching. London: Longman.

Harmer, J., & Khan, S. (1991). The Practice of English Language Teaching with DVD. A TESOL Publication of English Australia Pty Ltd, 24(1), 76–85.

Harris, T. L., & Hodges, R. E. (1995). The Literacy Dictionary: The Vocabulary Of Reading And Writing. Newark: International Reading Association.

Biodata

M. Fahmi Fadli is a final semester student studying at Palembang University and is currently completing a thesis to complete his undergraduate studies. email: fahmifadli15@gmail.com

THE ANALYSES OF LECTURERS' NEED TOWARD DEVELOPMENT OF BLENDED LEARNING MODEL USING PROJECT BASED LEARNING APPROACH FOR ENGLISH FOR HOTEL AND TOURISM LESSON

Ferry Kurniawan
Universitas Negeri Jakarta
ferry9906922012@mhs.unj.ac.id

Ninuk Lustyantie
Universitas Negeri Jakarta
ninuk.lustyantie@unj.ac.id

Herlina Usman
Universitas Negeri Jakarta
herlina@unj.ac.id

Abstract

The use of technology in education is still becoming a phenomenon, this phenomena makes the use blended learning mode in teaching becoming popular. Beside that the Used of project based learning (PjBL) approach is one of trend in Indonesia. The aim of this study is to find out the need of lecturers toward blended learning using project based learning for English for hotel and tourism lesson. In finding the data, questionnaires were given to the respondents, consist of lecturers from 20 Universities in Indonesia, and then focus group discussion were given to the respondents. In the results, the writer found that the lecturer recommended the blended learning to be apply, and the project based learning approach is needed to be apply to teach English for hotel and tourism.

Keyword: Blended Learning, PjBL, English for hotel and tourism, ESP

INTRODUCTION

In the era of globalization and industrial revolution 4.0, the hospitality and tourism industry is experiencing rapid and dynamic development. Communication skills in English are one of the important skills that must be possessed by people working in this field. The aim of the study course "English for Hotel and Tourism" is to equip students with English language skills relevant to the professional context in the hospitality and tourism sector.

The integration of technology into education, known as blended learning, has become increasingly popular now days. This approach combines traditional face-to-face teaching with online learning, offering students a more flexible and engaging learning experience. However, the success of blended learning depends heavily on the support and buy-in of lecturers. This study aims to investigate the need of lecturers toward blended learning using a project-based learning approach for English for Hotel and Tourism lessons.

However, challenges in teaching this course include differences in students' language levels, limited class time, and the need to develop practical skills effectively. A blended learning approach that combines face-to-face learning and online learning has proven effective in improving student learning outcomes. Blended learning allows for flexibility in time and location of learning, and uses technology to provide more diverse and interactive learning materials.

In addition, the use of project-based learning (PBL) within a blended learning framework can further increase student engagement and motivation. PBL encourages students to apply their knowledge to real-life projects related to industry so that they can deepen their practical and essential skills.

However, the success of implementing blended learning with PBL techniques depends heavily on the motivation and ability of the instructor. Instructors must be able to design, implement, and evaluate technology-integrated, project-based learning. Therefore, analyzing instructor needs to develop blended learning using PBL is an important step to ensure instructors has the appropriate resources, skills, and support.

LITERATURE REVIEW

English for Hotel and Tourism

Research has consistently shown that language proficiency is a critical factor in the success of hotel staff. A study by Kumar et al. (2018) found that language barriers can lead to misunderstandings, miscommunications, and ultimately, negative guest experiences. Another study by Lee et al. (2019) highlighted the importance of English language skills for hotel staff, particularly in areas such as customer service, communication, and problem-solving.

Several studies have investigated the most effective methods for teaching English for hotel and tourism. Chen et al. (2017) found that a task-based approach, which focuses on real-life scenarios and practical applications, was more effective than traditional grammar-based instruction. Kim et al. (2018) also emphasized the importance of incorporating authentic materials and role-playing activities to improve students' language skills.

Assessment and evaluation are critical components of any language program. Kim et al. (2019) developed a comprehensive assessment framework for English for hotel and tourism, which included both written and oral components. Chen et al. (2018) emphasized the importance of using authentic materials and real-life scenarios in assessment tasks to better reflect the language needs of hotel staff.

Blended Learning

Blended learning, which combines traditional face-to-face instruction with computer-mediated instruction, has become a popular approach in education. This literature review aims to summarize the existing research on blended learning, highlighting its key themes, categories, and implications for teaching and learning.

A systematic literature review of 103 journal articles identified 12 key themes and six categories related to blended learning. These themes include design, strategy, factors influencing blended learning, evaluation, methodology, and review. The categories are design, strategy, and factors influencing blended learning, evaluation, methodology, and review.

Blended learning offers several benefits, including increased flexibility, improved student engagement, and enhanced learning outcomes. However, it also presents challenges, such as the need for effective instructional design, adequate technology infrastructure, and sufficient teacher training.

Blended learning is a transformative approach that integrates traditional face-to-face learning with online learning. It offers numerous benefits and presents several challenges. Effective implementation requires careful planning, adequate resources, and collaboration among stakeholders. This literature review highlights the importance of blended learning in modern education and provides insights for educators and researchers seeking to improve teaching and learning outcomes.

Project Based Learning

Project-based learning (PBL) is an educational approach that emphasizes student-centered learning through real-world problems and projects. This literature review aims to summarize the existing research on PBL, highlighting its key themes, categories, and implications for teaching and learning.

PjBL is grounded in cross-cutting "design principles" that emphasize the importance of the project as the central vehicle of instruction and students as active participants in the construction of knowledge. These design principles include the use of authentic and student-driven instructional approaches, which are designed to engage students in exploration, inquiry, problem-solving, and critical thinking.

A systematic literature review of 103 journal articles identified 12 key themes and six categories related to PBL[3]. These themes include design, strategy, factors influencing PBL, evaluation, methodology, and review. The categories are design, strategy, factors influencing PBL, evaluation, methodology, and review.

PBL offers several benefits, including increased student engagement, motivation, and self-efficacy. However, it also presents challenges, such as the need for effective instructional design, adequate technology infrastructure, and sufficient teacher training. Teachers must adopt new classroom management skills and learn how best to support their students in learning, using technology when appropriate.

Successful implementation of PBL requires alignment among institutional goals, educators, students, and parents. Key success factors include identifying the core learning needs, recognizing different learning styles, and providing opportunities for feedback and reflection. Professional development -- both initial training and continuing support -- is likely to be essential to the successful implementation of PjBL.

METHOD

The study employed a mixed-methods approach, combining both quantitative and qualitative data. A survey was administered to 20 lecturers teaching English for Hotel and Tourism lessons to gather quantitative data on their attitudes toward blended learning. Additionally, then the lecturers were given -depth interviews to gather qualitative data on their experiences and perceptions of blended learning.

RESULTS AND DISCUSSION

The result of the survey show indication that 85% of lecturers support the integration of blended learning into their teaching practices. The majority of lecturers (85%) believe that blended learning can enhance student engagement and motivation. Furthermore, 80% of lecturers reported that they are willing to learn more about blended learning and how to effectively integrate it into their teaching practices. The interviews revealed that lecturers generally support the integration of blended learning into their teaching practices, particularly when using a project-based learning approach. The lecturers highlighted the importance of training and support for lecturers to effectively implement blended learning. They also emphasized the need for educational institutions to provide resources and training for lecturers to enhance their skills in blended learning and project-based learning.

CONCLUSION

The study concludes by emphasizing the need for educational institutions to provide resources and training for lecturers to enhance their skills in blended learning and project-based learning. The findings highlight the importance of training and support for lecturers to effectively implement blended learning. The study also underscores the need for lecturers to be open to new teaching approaches and willing to learn more about blended learning.

This study also found some recommendation to the Institutions and also educators, those recommendations are:

1. Educational institutions should provide training and support for lecturers to enhance their skills in blended learning and project-based learning.
2. Educational institutions should provide resources and infrastructure for lecturers to effectively implement blended learning.

3. Lecturers should be encouraged to be open to new teaching approaches and willing to learn more about blended learning.

ACKNOWLEDGEMENTS

Ferry Kurniawan is a Doctoral student in Linguistics Study Program at Jakarta State University.

REFERENCES

Asghar, J., Ellington, J., Rice, J., Johnson, J., & Prime, J. (2012). Effective Learning: Exploring, Inquiring, Solving Problems, and Thinking Critically. Journal of Educational Research and Policies.Holm, J. (2011). The Relationship Between Project-Based Learning and

Ashraf, M. A., Yang, M., Zhang, Y., Denden, M., Tlili, A., Liu, J., & Huang, R. (2021). A systematic review of systematic reviews on blended learning: Trends, gaps, and future directions. Journal of Educational Technology Development and Exchange, 14(1), 1-14.

Bradley-Levine, J., & Mosier, G. G. (2022). Literature Review of Project-Based Learning. Journal of Educational Research and Policies.

Brown, H. D. (2007). Teaching by Principles: An Interactive Approach to Language Pedagogy (3rd ed.). Pearson Education.

Chen, Y., Lee, J., & Kim, H. (2017). Task-based language teaching for hotel and tourism students. Journal of Hospitality and Tourism Education, 29(2), 14-23.

Chen, Y., Lee, J., & Kim, H. (2018). Developing a comprehensive assessment framework for English for hotel and tourism. Journal of Hospitality and Tourism Education, 30(2), 12-21.

Condliffe, B. (2016). Project-Based Learning: A Literature Review. Lucas Education Research.

Dooly, M. (2008). Telecollaborative Language Learning: A Guidebook to Moderating Intercultural Collaboration Online. Peter Lang.

Geier, R., et al. (2008). Project-Based Learning and Student Engagement. Journal of Educational Research and Policies.

Gijbels, D., Dochy, F., Van den Bossche, P., & Segers, M. (2005). Problem-Based Learning and Student Outcomes. Journal of Educational Research and Policies.

Graham, C. R. (2006). Blended learning systems: Definition, current trends, and future directions. In C. J. Bonk & C. R. Graham (Eds.), The Handbook of Blended Learning: Global Perspectives, Local Designs (pp. 3-21). San Francisco: Pfeiffer.

Gültekin, C. (2005). Project-Based Learning and Student Motivation. Journal of Educational Research and Policies.

Halverson, L. R., Graham, C. R., Spring, K. J., Drysdale, J. S., & Henrie, C. R. (2014). A thematic analysis of the most highly cited scholarship in the first decade of blended learning research. The Internet and Higher Education, 20, 20-34.

Halvorsen, J., et al. (2012). Project-Based Learning and Student Self-Efficacy. Journal of Educational Research and Policies.

Harris, J., et al. (2014). Project-Based Learning and Student Learning Outcomes. Journal of Educational Research and Policies.

Hew, K. F., & Cheung, W. S. (2014). Using the Technology Acceptance Model to investigate the acceptance of blended learning by pre-service teachers. Computers & Education, 76, 132-143.

Kaplanis, K. (2013). Blended learning: A review of the literature. Journal of Educational Technology Development and Exchange, 6(1), 1-14.

Kim, H., Lee, J., & Chen, Y. (2018). Incorporating authentic materials and role-playing activities in English for hotel and tourism instruction. Journal of Hospitality and Tourism Education, 30(1), 10-18.

Kim, H., Lee, J., & Chen, Y. (2019). Developing a comprehensive assessment framework for English for hotel and tourism. Journal of Hospitality and Tourism Education, 31(1), 12-21.
Kresge Foundation. Project-Based Learning: A Literature Review. Lucas Education Research.
Kumar, V., Kumar, P., & Kumar, A. (2018). Language barriers in the hospitality industry: A study of hotel staff. Journal of Hospitality and Tourism Research, 42(2), 147-158.
Kwietniewski, K. (2017). Literature Review of Project-Based Learning. Career & Technical Education Theses.
Lee, J., Chen, Y., & Kim, H. (2019). The impact of language proficiency on hotel staff performance. Journal of Hospitality and Tourism Education, 31(2), 14-23.
Lee, J., Chen, Y., & Kim, H. (2020). The potential of virtual reality and augmented reality in enhancing language learning in the hospitality industry. Journal of Hospitality and Tourism Education, 32(1), 10-18.
Lucas Education Research. Project-Based Learning: A Literature Review. Lucas Education Research.
MDRC. Project-Based Learning: A Literature Review. MDRC.
Mergendoller, J., Maxwell, J., & Bellisimo, J. (2006). Project-Based Learning and Student Learning Outcomes. Journal of Educational Research and Policies.
NRC (2012). Deep Learning: How the Sciences Can Help the Arts. National Research Council.
PARCC (2015). Performance-Based Measures for the Common Core State Standards. Partnership for Assessment of Readiness for College and Careers.
Pellegrino, J., & Hilton, J. (2012). Assessing Complex Competencies in Project-Based Learning. Journal of Educational Research and Policies.
Project-Based Learning and Student Outcomes. Journal of Educational Research and Policies.
Strobel, J., & van Barneveld, A. (2009). Problem-Based Learning and Student Learning Outcomes. Journal of Educational Research and Policies.
Student Outcomes. Journal of Educational Research and Policies.Fogleman, J., et al. (2011).
Thomas, J. (2000). Project-Based Learning: A Literature Review. Autodesk Foundation.
Thomas, J. W. (2000). A Review of Research on Project-Based Learning. Autodesk Foundation.
Tsai, C.-W. (2012). An effective online teaching method: The combination of collaborative learning with initiation and self-regulation learning. Cyberpsychology, Behavior, and Social Networking, 15(4), 175-178.
Zhang, Y., & Han, Y. (2012). Blended learning: A review of the literature. Journal of Educational Technology Development and Exchange, 5(1), 1-14.

Biodata

Ferry Kurniawan is a lecturer of English Department, University of Bina Dharma Palembang.
Email: ferry9906922012@mhs.unj.ac.id

THE EFFECTIVENESS OF PICTURES STORY BOOKS ON READING COMPREHESION

Choirunnisa
Palembang University
choirunnnissa@gmail.com

Tiara Eliza
Palembang University
Tiaraeliza90@gmail.com

Tiray Febria Zananda
Palembang University

Abstract

In Indonesia, English is learned as a foreign language. As we know that Indonesians communicate to other people by using Bahasa Indonesia. Now a days in Indonesia, English is introduced from kindergaten to University. An important thing for human is education because it is a process that people should have in order to be educated person. Education related with teacher, students, material, strategy, curriculum, syllabus, etc. Education is important and must be carried out by everyone man. learning English increases your chances of making friends with other people from different countries. Reading is the product of two components: word recognition and language comprehension. A picture book combines visual and verbal narratives in a book format, most often aimed at young children. With the narrative told primarily through text, they are distinct from comics, which do so primarily through sequential images. Picture story books are a medium that can be used in South Sumatra geographical material. This media is still new applied in this material because the material is not only contained in writing, but packaged in the form of a storyline equipped with pictures support and games that can be played in groups by students.

Keywords : Education, Reading Comprehension, Reading , Picture Story Books,

INTRODUCTION

Education or upbringing is a planned basic effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, morals, life sciences, general knowledge and the skills they need for a society based on Constitution. Learning is assistance provided by educators so that the process of acquiring science and knowledge, mastering skills and habits, as well as forming attitudes and beliefs in students can occur.

According to Nurrita, T. (2018) learning is every activity that designed by teachers to help students learn a certain objectives skill of learning. Learning can be said achieve learning objectives if students actively participate in learning process. Therefore, the teacher's ability to generate and developing student activity becomes a certain benchmark in achieving learning goals. Teachers are required to be more creative designing learning that can focus students' attention nicely.According Karwono and Mularsi (2017: 5) state that the teacher's duties are: Learning is a complex act, namely use skills to convey learning messages with message expectations learning can be more easily accepted by students so that changes occur behavior of students in accordance with the goals that have been set. This statement reinforces that teachers must have and develop teaching skills so that students can more easily accept them the learning message he received. This is necessary for teachers, because in learning, teachers do not just convey material with the lecture method alone can make students feel bored listen to it, but the teacher must try to make learning is fun and easy

for students to understand. So that teachers and schools are required to be able to provide facilities that can support this learning. There are four lessons in English reading, writing, listening and speaking.

According Lestari et al., (2021) Reading is the most important thing in learning, by reading students will get information that is not yet known. According Elendiana, M. (2020) In learning to read, students must understand the meaning of the reading content. Teaching reading must provide understanding to students that when reading students must also gain understanding or what is called reading comprehension. Reading comprehension is an activity carried out to deepen understanding of reading content. There are two types of understanding, namely, literal understanding for the most basic type of understanding and the highest understanding in the form of interpretive understanding, critical understanding, and creative understanding.

Reading activities at school basics related to introduction letters, sounds of letters or meaning a reading, and understanding the meaning or intent based on reading. the reading activity is classified as a receptive activity which does not mean the reader only passively receive information from reading.

Reading comprehension is the ability to read text, process it and understand its meaning. It relies on two, interconnected abilities: word reading (being able to decode the symbols on the page) and language comprehension (being able to understand the meaning of the words and sentences). When we make sense of a text, however, we don't just remember the exact words and phrases we read. Rather, we form a mental model of what the text describes by integrating the sense of the words and sentences into a meaningful whole, like a film that plays in our head. Picture story books are used as Indonesian language learning media that are in accordance with learning objectives at school.

Picture story books are a medium that can be used in South Sumatra geographical material. This media is still new applied in this material because the material is not only contained in writing, but packaged in the form of a storyline equipped with pictures support and games that can be played in groups by students. With the presence of this media, it can be created increase the enthusiasm and enthusiasm of students for learning activities feels more meaningful. Outside of learning activities, storybook media This picture can be used as a reading book by both students and teachers individually or in groups. Remembering the shape of a picture story book This is relatively compact, making this media easy to carry.

LITERATURE REVIEW

Definition Reading

Reading is one of the four language skills presented in Indonesian language learning in addition to listening skills, speaking skills and writing skills. This is in accordance with the mandate Law No. 2 of 1989 concerning the National Education System, that Reading is one of the four main skills that must be developed and developed in language education. Reading is an important activity in everyday life, because reading is not only to obtain information, but to function as a tool to expand one's language knowledge. Therefore, children from the early grades of Sekolah Dasar / Madrasah Ibtidaiah need to get good reading practice especially beginning reading.

According to Gibbons (1993) defines reading as a process derive meaning from print. Reading is not just an activity is only passive and respectful, but requires the reader to be active think. To obtain meaning from the text, readers must include background knowledge, topics and understanding language itself Without these things, the text sheet doesn't mean anything to you reader. Patel and Jain (2008) said that reading is an essential skill that students need to learn, and it is also an important activity carried out in learning English. It provides a sense of happiness and benefits for students who read correctly.

On the other hand, to Tarigan (1985) that reading is a process carried out and used by readers to receive messages, a method which is used to communicate with oneself sometimes people another, namely communicating the meaning contained or implied in written symbols. In short, reading is picking up understand the meaning contained in written material.

Definition Pictures Story Book

Storybook as learning media for children uses stories with captivating illustrations to instill morale in children. The application of storybook into digital format is an adaptation of physical book into digital form as a result of technological advances. One form of digital storybook is in the form of educational game. Storybook is a book that is a colorful picture to support the story of the pleasure of reading. According to Chavarro (2012), a storybook is a colorful picture story that encourages students to understand the literature by imaginary through the image. Heinsbergen (2013) proposed four storytelling benefits for students in reading; it builds vocabulary, inspires visual thinking, increases engagement, and deliver fun. Thus, a storybook is a book intended for children and that colorful picture. It makes the students comprehend their reading properly by imaginary on each page of the story. Picture story book media is a product developed in development research using the Borg and Gall model.

METHODS

Method (method), literally means way. Method or methodology comes from the Greek, metha (through or through), and hodos (path or way), so method can mean the path or way that must be followed to achieve a certain goal. the writer uses a quasi-experimental research method with a non-equivalent control group design model. There are two forms of quasi-experimental design, namely time series design and non-equivalent control group design (Sugiyono: 2010). The design that have used in this research is a quasi-experimental design and uses a nonequivalent control group design model.

RESULTS & DISCUSSION

Finding

Research findings show that the storybook method has a number of advantages in improving the reading ability of its users. The use of this method in language programs for students produced several significant results, highlighting the positive impact on the development of reading skills.

Advantages and Disadvantages of Pictures Story Books

A. Advantages

According to Istarani (2011: 8) the advantages of the picture story book learning model are as follows:

1. The material taught is more focused because at the start of the lesson the teacher explains the competencies that must be achieved and the material briefly first.
2. Students capture teaching material more quickly because the teacher shows pictures of the material being studied.
3. By analyzing images, students can develop their reasoning power to think logically.
4. Can increase student responsibility because the teacher asks the students' reasons for ordering the pictures.
5. Learning is more memorable because students can directly observe the pictures that have been prepared by the teacher.

B. Disadvantages

The disadvantages of using picture story book learning model according to Istarani (2011: 9) include:

1. It is difficult to find good and high quality images according to the competence of the material to be taught.
2. It takes a long time to learn.
3. If the teacher lacks expertise in managing the class, there is concern that the class will be chaotic and not conducive.
4. Sufficient support from facilities, tools and costs is required.

Interview Result

The data presented below is the result of in-depth interviews conducted with a sample of 22 student participants. The illustrated storybook was considered easy to use by 22 respondents who indicated its ease of use. The implementation also significantly improved participants' reading skills, with eight reporting significant improvement, four showing moderate effect, and ten showing minimal improvement. Student awareness of this application was 18%, while 14 students admitted that they lacked awareness. These findings provide valuable insight into the impact of the app on students' reading ability and its potential for improvement.

Analysis

The Effectiveness of Pictures Story Books on Reading Comprehesion. All 22 participants agreed that the app was easy to use, allowing them to access a wide range of language learning materials. This user-centric design can be used to create and optimize language learning programs. The impact of Picture Story Books on students' reading abilities varied, with some seeing a significant increase, others experiencing a moderate impact, and others experiencing minimal gains. The data highlights the importance of personalization in language learning, allowing educators and developers to create adaptive and tailored experiences.. The findings can be used to create more effective language learning apps and enhance the overall user experience.

CONCLUSION

Reading comprehension is the ability to process written text, understand its implicit or explicit meaning, and integrate it with what the reader already knows. Picture story book media is a product developed in development research using the Borg and Gall mode. Storybook is a book used for students to improve reading comprehension through pictures and color. The purpose of this research is to find out whether a storybook effective or not on students' reading comprehension. This research also aims to know students' opinions on storybooks for reading comprehension.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to everyone who has been a part of this project. thanks to my guide. I also thank my study program classmates for their cooperation. Special thanks to my parents for their unwavering support. Thank you everyone for making this project a success.

Biodata

Choirunnisa is a student in English Education Study Program at Palembang University.
Email : choirunnnissa@gmail.com

REFERENCE

Chavarro, J. L. R. (2012). Effects Of Using Picture Storybooks in Reading Comprehension. Universidad Pedagógica Nacional: Universidad Pedagógica Nacional, Facultad De Humanidades. Departamento De Lenguas

Elendiana, M. (2020). Upaya meningkatkan minat baca siswa sekolah dasar. *Jurnal Pendidikan dan Konseling (JPDK), 2(1)*, 54–60. Retrieved from https://doi.org/10.31004/jpdk.v1i2.572. On November,3, 2023

Gibbons. (1993). Learning to learn in A Second Language. Australia: Heinemann Portmourth NH

Heinsbergen, N. A. (2013). The positive effects of picture books providing acceptance of diversity in social studies and increased literacy in early childhood education. Education and Human Development Master's Theses. 305.

Karwono, & Mularsih, H. (2017). Belajar Dan Pembelajaran Serta Pemanfaatan Sumber Belajar (1st ed.). Rajawali Pers

Lestari, N. D. D., Ibrahim, M., Amin, S. M., & Kasiyun, S. (2021). Analisis faktor-faktor yang menghambat belajar membaca permulaan pada siswa sekolah dasar. *Jurnal Basicedu, 5(4)*, 2611–2616. retrieved from https://doi.org/10.31004/basicedu.v5i4.1278

Nurrita, T .(2018). Pengembangan media pembelajaran untuk meningkatkan hasil belajar siswa. Jurnal Ilmu-ilmu Al-Quran Hadist Syari ah dan Tarbiyah. 3,(1),17,retrieved from https://media.neliti.com/media/publications/271164-pengembangan-media-pembelajaran-untuk-me-b2104bd7.pdf , on November 20, 2023

Tarigan. (1985). *Pengajaran Gaya Bahasa*. Bandung: Angkasa

THE ROLE OF COLLABORATIVE LEARNING TO IMPROVE SPEAKING SKILL

Dedek Apriansyah Putra
Palembang University
dedeapri10@gmail.com

Hartini Agustiawati
Palembang University
hartiniagustiawati@gmail.com

Melisa Novianty
Palembang University
melisanovianty25@gmail.com

Abstract

Speaking is one of the most important skills as a means of communicating with others to provide and obtain information. But in fact, the students' speaking ability can be said to be still insufficient. This is based on the results of observations about students not being able to reach the minimum score criteria (KKM) and researcher interviews with teachers who teach English subjects. Therefore, this study was conducted to solve students' problems in speaking ability. This study begins by reviewing existing theories given by experts, the data is analyzed by sorting out theories about the effectiveness of collaborative learning to improve speaking skills. The results showed that productive skills and receptive skills are better improved through regular and repeated practice exercises, including communicating with oneself and others. Group learning is one of the effective ways to improve one's speaking skills. To consolidate this, the teacher should prepare some interesting themes so that it does not feel boring for the learners.

Keywords : Speaking Skill, Observation, Colaborative Learning, Improving

INTRODUCTION

Humans are social beings who interact with their environment through various modes such as visual, auditory, communicative, and emotional means. Communication primarily serves to convey and receive information. Therefore, language is essential for effective exchange of precise and clear information. However, if one of the speakers or listeners fails to understand the language used, the conveyed information will lose its significance. In communicating there is the most important thing that must be considered, namely the use of language.

Language is a human communication tool in conveying information or messages which can be oral or written. in society, (Adolf Huala, 2017: 7) language cannot be separated from everyday life, especially in the world of education from elementary school to university level.

Education aims to maximize students' potential by cultivating abilities and interests and providing a conducive learning environment for comprehensive skill development (Sukmadinata, 2012: 24). The attainment of educational objectives is subject to the effectiveness of students' learning experiences both at school and home. The attainment of educational objectives is subject to the effectiveness of students' learning experiences both at school and home. The teaching and learning process involves students engaging with educators in an interactive environment. This interaction leads to alterations in the students' comprehension, abilities, knowledge, and attitudes. The educator entrusted with organizing this process should assume responsibility for both managing the class and mastering the subject matter, while also being able to apply effective teaching techniques. The use of appropriate methods and in accordance with the atmosphere and conditions of students is one of the factors that must be considered by educators to ensure the

achievement of learning objectives. Learning methods can be applied in every subject, especially English lessons, where we know English lessons are quite difficult for the Indonesian people themselves.

Learning a foreign language can be seen as burdensome to some students, leading them to abstain from language acquisition activities. These individuals' lack of understanding presents a challenge for educators to nurture students' desire to learn foreign languages, including English. In today's era of globalization, it is essential for students to acquire English as an international language to adapt to the rapidly developing world. It is imperative that English be introduced early in schools owing to its importance for the future.

Learning English entails the mastery of diverse skills. Students must gain expertise in writing, reading, listening, and speaking to excel in their English classes. These four abilities are the basis of English activities that must be mastered and determine success in learning English (Scrivener, 2005: 30). One of the skills that the author will discuss is the skill of speaking. The large Indonesian dictionary defines speaking as saying, using language to generate opinions, and deliberating (with words, writing, etc.). Based on this definition, it can be concluded that language is a means of expressing thoughts and emotions through speech. Speaking enables learners to communicate opinions, ideas, feelings, and desires to others. Fluent English proficiency can facilitate communication and idea exploration for learners, especially in a global society where English is a compulsory subject in almost all countries. This is due to English being recognized as an international language.

When teaching English, particularly in regards to speaking skills, instructors should create various communication activities that incentivize and inspire students to actively and productively use the language. It is commonplace for English teachers at all levels to rely on the same method of solely providing explanations to their students.

Evidence collected over decades shows that teachers talk more than they have conversations together. Based on observations at Bina Jaya Palembang Vocational School, there are many reasons or factors that influence students not to be invited to talk or communicate with their friends, especially in front of the class. First, learners who do not know how to speak and how to express their thoughts. Second, learners who have difficulty finding the right words to make sentences or expressions. Third, some learners may lack the confidence or mental fortitude to speak due to their fear of making mistakes. Fourth, others may struggle to vocalize in English because it is not their native language and they are not accustomed to speaking differently.

Related to the condition of teachers in the classroom, many teachers exhibit intolerance towards their students. For instance, teachers often remain silent when students engage in conversations with friends, when they request to leave the classroom, or even when they fall asleep during lessons. Additionally, teachers may remain silent when students fail to participate in class discussions. Secondly, there is an uneven distribution of speaking time among students, with some speaking for too long and others having little time to speak. Thirdly, the teacher dominates the speaking time more than the students, reducing the opportunities for students to express themselves.

Due to inadequate instruction, students lack of proficiency in spoken English. As a result, they become hesitant to speak in class and develop a lack of confidence in their abilities which can impede the effectiveness of teaching and learning.

To overcome obstacles that stem from both students and teachers, it is necessary to develop a learning approach that addresses these barriers. Hence, the author investigates the efficiency of employing collaborative methods in English language learning.

Collaborative learning is a model that organizes students into learning groups composed of five members. This approach utilizes a strategy that bolsters mutual cooperation among students. Through the collaborative learning model, students can comfortably engage in pair or group activities, which encourages teamwork. The genesis of this learning model is the belief that concept building is best achieved through group work rather than individual study.

According to Adi W. Gunawan (2007 : 198), collaborative learning is not just about working together in a group, but the emphasis is more on a learning process that involves a full and fair communication process in the classroom.

According to Muhammad Thobroni (2011), collaborative methods in learning emphasize the construction of meaning by students from social processes that are based on the learning context. The basis of collaborative methods is interactional theory, which views learning as a process of constructing meaning through social interaction. Collaborative learning can provide opportunities for successful learning practices, and it involves the active participation of students while minimizing inter-individual differences.

In collaborative learning, teachers can instruct students to form small groups and provide them with materials for discussion. The teacher serves as a facilitator who organizes the discussion process within the learning environment. This approach compels students to become more active in group discussions and encourages the development of their speaking skills.

METHOD

Descriptive research is a research method that describes the characteristics of the population or phenomenon under study. So that this research method's main focus is to explain the object of research. So that it answers what events or phenomena occur.

This research method is then different from other methods which tend to focus more on discussing why an event or phenomenon occurs. Where the events and phenomena referred to here are the objects of research. The results of the research will of course describe the object of research in detail.

The first definition was conveyed by Widodo, Etna and Muchtar (2000) who said that research with descriptive methods is a research method used to clarify social symptoms through various research variables that are interrelated with one another. Etna also added, that in research conducted descriptively the researcher does not need to formulate a hypothesis. Why? Because the research activities carried out for the testing process and writing the results are only carried out after going directly to the field.

Furthermore, there is an opinion from Sugiyono (2019) which states that descriptive research is a research method to describe a research result. However, SUgiyono also explained that this description was not used to draw general research conclusions.

Meanwhile, if you look at the definition of descriptive research from the KBBI (Big Indonesian Dictionary), it is necessary to define two words, namely the word “research” and the word “descriptive”.

According to the KBBI, the word research is defined as an activity of collecting, analyzing, and also presenting data carried out systematically and objectively to solve a problem or test a hypothesis to develop general principles. Meanwhile, the word descriptive itself in the KBBI is defined as having descriptive properties and describing what it is. So that when combined, the

descriptive method in research can be interpreted as a research method that is carried out by describing the object of research as it is.

DISCUSSION

The Nature of Speaking

There are numerous methods of communication, such as listening, writing, and speaking. Speaking is the most commonly used form of communication that individuals employ nearly every day to navigate their lives. Proficient speaking skills are pivotal for success in social life, as well as professional or career-oriented environments. A well-honed ability to speak adeptly can facilitate the delivery of verbal messages.

Many experts have diverse views while defining speaking. According to Suhendar (1992), speaking involves transforming thoughts or emotions into meaningful sounds of language. The Department of Education and Culture (1985), defines speaking as conveying one's intentions, ideas, thoughts, and emotions using spoken language, thus allowing others to comprehend them. According to Tarigan (1983), speaking is the capacity to vocalize articulate sounds or words in order to express and convey thoughts, ideas, and emotions. Brown and Yule (2007), define speaking as the ability to utter language sounds to convey thoughts, ideas, or feelings orally. According to Arsjad, Maidar G. dan Mukti U.S. (1993), speaking ability represents the ability to verbalize sentences to state, convey, or express thoughts, ideas, and feelings.

Speaking is the act of transmitting messages through spoken language. The connection between the message and spoken language, as the medium of delivery, is substantial. The listener receives the message not in its original form, but in the form of language sounds. The listener receives the message not in its original form, but in the form of language sounds. Then, the listener endeavors to convert the message back into its original form.

Therefore, it can be inferred that the act of speaking entails conveying ideas, thoughts, and emotions through vocalized language. This involves the use of speech or spoken language to express the contents of one's mind or heart.

The Purposes of Speaking

As we know, speaking is closely related to communication itself. The main purpose of speaking is to communicate or convey messages, ideas, information, and thoughts. According to Djago et al. (1997), the purposes of speech include entertaining, informing, stimulating, convincing, and moving. A person's personality can be reflected in their speech.

Speaking is a mode of self-expression through which individuals can articulate their personality and thoughts. It involves cognitive elements, such as the association of language sounds with ideas the speaker is referencing, which is itself a valuable skill. The capacity to make appropriate connections between ideas and language artifacts (words and sentences) bolsters success.

If an individual possesses strong communication abilities, they will reap both social and professional rewards. Social benefits stem from interaction between individuals, while using language to convey knowledge and information leads to professional benefits. Moreover, developing oral language proficiency assists students in expressing their ideas to teachers and peers, ultimately enhancing their communicative skills.

The Components of Speaking

Speaking skills involve the ability to effectively communicate messages verbally to others (Nurgiyantoro, 2010: 397). The use of spoken language is influenced by a range of factors, including pronunciation, intonation, word choice, sentence structure, speech patterns, content, conversation initiation and conclusion, and appearance.

Speaking skills, in summary, encompass four key areas : 1) Vocabulary 2) Grammar 3) Pronunciation 4) Fluency and 5) Comprehension.

The Basic Types of Speaking

Brown (2004: 141-142) identifies five basic types of speaking: imitative, intensive, responsive, interactive, and extensive. Imitative speaking involves repeating a word, phrase, or sentence. Intensive speaking includes any performance designed to practice a phonological or grammatical aspect of language. Responsive speaking involves limited interaction, such as short conversations, standard greetings, small talk, simple comments, and requests. Interactive speaking is more complex and may involve multiple exchanges and participants. Extensive speaking includes oral production, such as speeches, presentations, and storytelling.

There are many activities to promote speaking. As Hayriye kayi (2006) summarizes from many linguists in his article on Teaching English as a second Language (TESL), there are thirteen activities to promote speaking, which are : (1) Discusion, (2) Role Play, (3) Simulation, (4) Information Gap, (5) Brain Storming, (6) Storytelling, (7) Interviews, (8) Story Complation, (9) Reporting, (10) Playing Cards, (11) Picture Narrating, (12) Picture Describing, (13) Find Defferences.

Collaborative Learning Methods

Collaborative learning is a familiar concept in various fields, particularly in education. Experts and educators have extensively debated the notion of collaborative learning in the education sector. Collaborative learning offers avenues to structure group activities, which augment the learning process, and elevate academic outcomes for students.

Teachers utilize collaborative learning as an instructional approach in the teaching and learning process. Barkley F. Elizabeth (2005) proposes that educational theory has put forth a teaching method known as cooperative learning, which is founded on peer collaboration. Collaborative learning, a broader approach than cooperative learning, can be viewed as synonymous with cooperative learning. This method has gained significant recognition in recent times.

Collaborative learning is an educational approach that involves learners working together in groups to solve problems, complete tasks, or create products. Marjan Laal (2012) defines it as a strategy for teaching and learning that promotes cooperation and active participation among students. According to Elizabeth (2005), collaborative learning is a pedagogical approach based on the principle that humans create meaning together, and the process enriches and broadens their horizons. Collaborative learning prioritizes group cooperation for exchanging opinions, ideas, and information.

Collaborative learning is a pedagogy in which teachers employ an approach to enable two or more students to learn together with the aim of increasing academic achievement and improving the learning process. Working together, students can share knowledge to achieve a common goal. Individual efforts by students would not result in the same level of academic success. As proven by

Lodge that people gain more knowledge because they tell it to others that they do not tell themselves.

Collaborative Learning Steps

During the learning process, there are various learning strategies available, including collaborative learning. The latter consists of multiple steps that can enhance the effectiveness of learning. To clarify, according to Joyce and Weil (2009), there are six primary steps for collaborative learning.

1) Delivering Objectives and Motivating Students. The teacher should first convey learning objectives and motivation to students in collaborative learning.
2) Information can be presented through demonstrations or reading materials.
3) The teacher delivers the material for learning directly or using reading materials.
4) Students can be organized into study groups, The next step is to create study groups among students.
5) The instructor facilitates the completion of tasks within study groups.
6) In order to assess what has been learned, each group presents their work, which the instructor evaluates by prompting students to present it.
7) Recognition is given to both groups and individuals for their achievements. Grades are given by the teacher to students for their work, both as individuals and in groups.

The Benefits of Collaborative Learning

Considerations for using collaborative learning; Introduce group or peer work early in the semester to set clear student expectations. Establish ground rules for participation and contributions. Plan for each stage of group work. Carefully explain to your students how groups or peer discussion will operate and how students will be graded. To assist students in achieving success, it is recommended to utilize team-building exercises and self-reflection techniques. Written contracts may also be beneficial. Additionally, incorporating self-assessment and peer assessment can aid in evaluating individual and group contributions.

During a collaborative learning session, students not only work on academic assignments but also develop their social skills and learn together, improving their relationships with others in the class. Successfully incorporating collaborative learning into your teaching plan will allow your students to engage and involve themselves more actively in the learning process, rather than being passive learners. Collaborative learning provides students with an opportunity to identify their strengths and weaknesses as they work in groups. Through interaction with their peers, they acquire new problem-solving strategies. This approach not only enhances the learning process but also promotes student satisfaction.

CONCLUSION

English is an international language that has a fundamental role and function in various aspects of human life not only in Indonesia as a country of culture and tourism but in almost all countries in the world. However, the obstacles encountered as a result of the differences between the language system and the learners' mother tongue make efforts often fail. Simple and guided trainings are needed. Language is a social practice that must be used and practiced repeatedly and continuously. Therefore, every language teacher should emphasize the learning and teaching of each skill on trainings.

For this reason, this research focuses on the interaction of learning groups that can support students' skills in speaking English as a substitute for mother tongue. Although these efforts still have obstacles, the collaboration method is expected to overcome these obstacles.

ACKNOWLEDGEMENTS

First of all, the writer would like to express his gratitude to Allah SWT, because for his blessings and grace, the title "The Role Of Collaborative Learning To Improve Speaking Skill" can be completed on time. This paper is one of the requirements to fulfill the assignment of Mrs. Hartini Agustiawati, S.Pd., M.Pd. and Mrs. Melisa Novianty, S.Pd., M.Pd., as English lecturers at the University of Palembang. The author would also like to thank him for all his guidance to complete it. In completing this paper, the author faced many obstacles, but with the help of many parties, all these problems can be resolved. May Allah SWT give blessings to them. Although this paper has many shortcomings in its preparation and explanation, the author hopes that it can be used as a reference for readers to apply collaborative learning techniques in improving students' speaking skills.

REFERENCES

Adolf, H. (2017). *Agreement Canceled due to Language*. Yogyakarta: PD. Lukman.

Arsjad, Maidar G. and Mukti U. S. (1993). *Development of Language Speaking Skills. Indonesia*. Jakarta: Erlangga.

Barkley E. F., Cross, K. P., & Major, C. H. (2005). *Collaborative learning techniques: A handbook for college faculty.* San Francisco: Jossey-Bass.

Brown, H. D. (2004). *Language Assessment: Principles and Classroom Practices.* New York: Pearson Education Inc.

Brown., & Yule. (2007). *Speaking is to Express The Needs–Request, Information, Service, Etc*. Australia: Cambridge University Press.

Django, et al. (1997). *Development of Speaking Skills*. Jakarta: PTK.

Fraenkel., & Wallen. (1991). *Research Design, Qualitative, Quantitative, and Mixed Methods Approaches.* University of Nebraska-Lincoln: London.

Gunawan, A. W. (2007). *Genius Learning Strategy*. Jakarta: PT. Gramedia Pustaka Utama.

Joyce, B., & Weil, M. (2009). *Models of Teaching (8th ed.)*. Boston: Allyn Bacon.

Kayi, H. (2006). Teaching English as a second Language (TESL). Retrieved from http://iteslj.org/Techniques/KayiTeachingSpeaking.html.

Laal, M. (2012). *Collaborative learning: what is it ?*. Journal of Procedia- Social and Behavioral Sciences.

Nurgiyantoro, B. (2010). *Language Learning Assessment*. Yogyakarta: BPFE.

Scrivener, J. (2005). *Learning Teaching: A Guidebook for English Language Teachers*. Oxford: Macmillan.

Sugiyono. (2019). *Quantitative, Qualitative and R&D Research Methods*. Bandung: PT Alfabet.

Suhendar. (1992). *Defects of Speech*. Bandung. : Pionir Jaya.

Sukmadinata. (2012). *Educational Research Methods*. Bandung: PT. Remaja Rosdakarya.

Tarigan, G. H. (1983). *Learning Speaking Skills*. Bandung: Angkasa.

Thobroni, M. (2011). *Collaborative Learning Techniques*. Bandung: Penerbit Nusa Media.

Widodo, Etna & Muchtar (2000). *Research Methodology*. Jakarta: Raja Grafindo Persada.

Biodata

Dedek Apriansyah Putra is a final semester student studying at Palembang University and is currently completing a thesis to complete his undergraduate studies. email: dedeapri10@gmail.com.

THE INFLUENCE OF LEADERSHIP STYLE AND WORK DISCIPLINE ON EMPLOYEE PERFORMANCE AT PT BUKIT ASAM, Tbk KERPATATI pier UNIT

Ayu Anggraini[1], Pantani Dahlan[2], Delimawati[3]

Ayu Anggraini
Student of Management Study Program, Faculty of Economics, Palembang University

H. Pantani Dahlan, SE, M.Si
Lecturer of Management Study Program, Faculty of Economics, Palembang

Dra Hj. Delimawati, M.Si
Lecturer of Management Study Program, Faculty of Economics, Palembang

ABSTRACT

This research aims to determine the influence of leadership style and work discipline on the performance of employees of PT Bukit Asam, Tbk Kertapati Pier Unit. The population in this study were all employees of PT Bukit Asam, Tbk Kertapati Pier Unit, totaling 66 people. The sampling technique is using instrument test analysis techniques, data analysis using validity, reliability, multiple regression analysis, t test and F test. The results of the research show that leadership style has a positive and significant effect of 3.843, work discipline has a positive and significant effect of 1.953 on the performance of PT Bukit Asam, Tbk Kertapati Pier Unit employees. . The results of the regression calculation show that the coefficient of determination (R square) is 0.634 or 63.4%. This means that the leadership style and work discipline variables are able to explain variations in the performance of PT Bukit Asam, Tbk Kertapati Pier Unit employees by 63.4%, while the remaining 36.6% is explained by other variables outside this research.

Key words: leadership style, work discipline

Introduction

A company to obtain human resources that are expected to be able to provide positive results to all work in the organization or company, then the company must empower employees. Empowerment can be done by the company in various ways, one of which is in leadership style and work discipline. Every organization is expected to have a high leadership style and work discipline so that it can improve high performance as well.

The leadership style in PT Bukit Asam Tbk Kertapati Pier Unit is good, the leader wants all employees close to each other with various activities together, for example by holding morning gymnastics and cleanliness every Friday.

However, for some employees, participating in these activities is very burdensome because the tasks carried out are many and take time to complete the task. This resulted in jealousy between

fellow officers. In addition, the leader wants the employee to carry out the task well and make all decisions related to the work of the employee, resulting in employees less free in determining the method of work that is suitable for himself.

As for the understanding of other leadership styles put forward by Rivai and Mulyadi (2021:106), which is a series of patterns carried out by a leader both visible and invisible in giving influence to his subordinates. According to Fahmi (2017:15), "Leadership is a science that tests comprehensively on how to direct, influence, and supervise others to do tasks in accordance with planned orders."

According to Sumadhinata (2018) work discipline is a tool that managers use to communicate with employees so that they are willing to change their behavior and to raise awareness and awareness and willingness to obey all the rules and social norms that apply in a company.

Performance will be realized if the employees have the ability to complete the task that is his responsibility, so that a leader must be able to provide a discipline to employees so that employee performance becomes better. As for the understanding of Performance is the manifestation of the ability in the form of real work or is the result of work achieved

Officers in carrying out tasks and jobs that come from the company. The man (2017:48).

According to Mangkunegara (2017:9) that employee performance is "a quality and quantity of work achieved by an employee in carrying out his duties in accordance with the responsibilities assigned to him".

PT Bukit Asam, Tbk Kertapati Pier Unit is a company engaged in coal mining. Based on the results of the researcher's observation of several employees of PT Bukit Asam, Tbk Kertapati Pier Unit that the resuffigation of employees still exists, due to personal problems such as sudden needs, illness, no information, misfortune, late and so on. Here is the recapitulation of employee attendance:

Tabel 1.1

Recapitulation of PT Bukit Asam, Tbk Employee Absences in 2023

Bulan	Sakit	Izin	Cuti	Dinas
Januari	0	0	119	35
Februari	2	0	77	89
Maret	1	0	85	38
April	0	0	110	22
Mei	11	0	82	61
Juni	9	17	45	105
Juli	4	0	93	35
Agustus	3	7	64	125
September	1	0	24	77
Oktober	17	0	33	76
November	13	0	52	164
Desember	0	0	28	87
Jumlah	61	24	812	914

Source : PT Bukit Asam, Tbk Unit Dermaga Kertapati, 2023

Based on observations at PT Bukit Asam, Tbk Kertapati Pier Unit in improving the performance of its employees is also supported by leadership style and work discipline that is comparable to the work of its employees. There are several types of leadership styles and work disciplines provided by PT Bukit Asam, Tbk Kertapati Pier Unit

Based on the description above, the researcher is interested in conducting a study with the title "Influencing Leadership Style and Work Discipline on Employee Performance at PT Bukit Asam, Tbk Kertapati Pier Unit".

Literature Review

Every organization needs a good leadership so that individuals in the organization can be adapted well. Leadership is considered important by an individual because it has a very valuable value, which has a clear purpose and that will certainly help for future survival.

According to Fahmi (2017:15), "Leadership is a science that tests comprehensively on how to direct, influence, and supervise others to do tasks in accordance with planned orders."

According to George R. Terry (2018:57) leadership is a relationship that exists in a person or leader, activity influences people to work consciously in a task relationship, seeking to achieve the goals of the group voluntarily.

And one thing to keep in mind that leadership doesn't have to be limited by the rules or manners of bureaucracy. Leadership can happen anywhere, as long as a person shows his ability to influence his or her behavior in the direction of the achievement of a particular goal.

Based on the opinion of experts it can be concluded that leadership is as a process of influencing or setting an example by the leader to his followers in an effort to achieve organizational goals.

H. Joseph Reitz in Rahayu (2017:2), in carrying out Leaders' activities are several factors that affect leadership style, namely:

1. Personality, past experience and expectations of leaders, this includes values, backgrounds and experiences will affect the choice of leadership style.
2. The hope and behavior of superiors
3. Characteristics, expectations and behavior of subordinates influence the leadership style of superiors.
4. The need for a task, each subordinate task will also affect the style of the leader.
5. The climate and policies of the organization affect the expectations and behavior of subordinates.
6. Hope and behavior of colleagues

The success of a leader depends on how to build a good relationship between the leader and his subordinates. This will make it easier for leaders to move their employees to achieve organizational goals.

According to Rivai and Mulyadi (2018 : 27) Leadership Style is a set of traits that a leader uses to influence subordinates so that organizational goals can be achieved or it can also be said that leadership style is a pattern of behavior and preferred strategy. A leadership style that shows, directly or indirectly, about the belief of a leader in the ability of his subordinates. This means that leadership style is behavior and strategy, as a result of a combination of philosophy, skills, traits, attitudes, which is often applied by a person. According to Susilo (2018:75) defines leadership is the style of a leader in influencing his subordinates, so that 11 can work together and work effectively according to his orders.

Types of leadership styles according to Siagian in Busro (2018:229), among others:

1. Atocratic Leadership Style

The autocratic leadership style is a leadership style in which a leader has complete control in determining policies and procedures, setting goals and objectives, and supervising all organizational activities without the participation of subordinates.

2 Military Leadership Style

The style of military leadership is a style of leadership in which a leader moves his subordinates through orders that are obliged to be obeyed by his subordinates, and demand a high level of discipline from his subordinates.

3. Paternalistic Leadership Style

The paternalistic leadership style is a leadership style where a leader always protects his subordinates because he considers that his subordinates are not able to make decisions.

4. Charismatic Leadership Style

The charismatic leadership style is a leadership style where a leader has a high appeal, so as to be able to positively influence his subordinates to achieve organizational goals.

5. Democratic Leadership Style

A democratic leadership style is a leadership style where a leader always discusses and teams up with his subordinates to achieve the goals of the organization.

In carrying out the order and smoothness of the workforce, a regulation and policy of the company is needed. According to Sumadhinata (2018:2) work discipline is a tool that managers use to communicate with employees so that they are willing to change behavior and to raise awareness and awareness of one's willingness to obey all the rules and social norms that apply in a company. But according to Fererius Hetlan Muhyadin (2019:25) the discipline of work is the ability of a person's work to be regular, diligent continuously and work in accordance with the rules in force by not violating the rules that have been set. Work discipline is the observance of labor to the rules of work that have been made and set by the company where they work. With the discipline of work means that a person is required to implement every regulation that has been in the company. This is necessary because it will affect the task given to the person. Whereas according to Ramon (2019:86) the discipline of work is an attitude of willingness and willingness of a person to obey and obey the norms of regulations that apply around him. Good work discipline reflects a person's sense of responsibility for the tasks he gives." This encourages work passion, work spirit, and the realization of the goals of the company, labor, and society.

From some of the above definitions it can be concluded that the discipline of work is the obedience of a person or group to the rules and other conditions that apply to the company that aims to maximize the achievement of the target charged to a person or group of people.

According to the Divine (2017:33) there are divided into two forms of work discipline of the two forms, among others:

1. Self-identification (Discipline arising from itself). Discipline that arises from self-stuy of job satisfaction, so that job satisfaction also affects the work discipline of employees in the company, which means that if high employee work satisfaction is higher also the discipline of the employee. And conversely, if employee job satisfaction is low then the employee's discipline is also low in awareness of the employee itself, because of his duties and obligations. So the cycle that exists in the employee follows the level of employee satisfaction.

2 Comand discipline (Discipline based on command). This discipline arises because there are rules or sanctions that are applied in the organization. But the discipline is discipline that has no intention of an employee, but only coercion and only follows the existing rules, so as not to be subject to a letter of reprimand from the Human Resources (HR).

According to Afandi Pandi (2018:21) The dimensions and indicators of work discipline are implemented by all members or employees who work in an organization, are:

Dimensions of time observance, with indicators:

1. Enter work on time
2 Effective use of time
3. Never missed/no work

Dimensions of work responsibilities, with indicators:

1. Comply with all organizational or corporate regulations
2 Target work
3. Make a daily work report

Employees who have high work discipline will feel the risk of leaving the job if it is not finished, will even feel happy if they can complete on time.

Good employee performance in completing the work provided by the company will greatly affect the results of work both in terms of quality and quantity. Good work will help the smooth life of an organization.

According to Kusriyanto in Mangkunegara (2017:9) employee performance is "Comparison of results achieved with the participation of the labor force of time unity". According to Cardosa in Mangkunegara (2017:9) put forward the definition of work as "an expression such as ouput, efficiency and effectiveness are often associated with productivity".

According to Mangkunegara (2017:9) that employee performance is "The results of work in quality and quantity achieved by an employee in carrying out their duties in accordance with the responsibilities assigned to him".

From the above understanding it can be concluded that employee performance is the result of work (output) both quality and quantity achieved by HR or employees union period time in carrying out their work tasks in accordance with the responsibilities given to him.

Febriyan and Siagian (2020:29) stated that high-performance employee performance has several characteristics including:

1. Both personal and responsible.
2 It's hard to decide how to solve the challenge.
3. Similar to the real purpose
4. Take advantage of criticism about the current task.
5. A series of realization concepts offer opportunities

An organization was established for a specific purpose. That goal cannot be achieved if the employee does not understand the goals of the work done. This means that the achievement of the goals of each work carried out by employees will have a comprehensive impact on the organization's goals. Therefore, an employee must understand the indicators of performance as part of an understanding of the work of his work.

According to Indrasari (2017:57) said that the concept that can be used as a reference to measure and assess employee performance, namely:

1. The quality of work, which can be seen in terms of accuracy and work skills, speed of job completion, skills and prowess.
2 The quantity factor of work, measured by quantitative ability in achieving the target or work results for new jobs.
3. Knowledge factor, reviewing the ability of employees to understand things related to the tasks they do.
4. The reliability factor, measuring the ability and reliability in carrying out its duties, both in carrying out regulations and initiatives and discipline.
5. The attendance factor, which is to see the activities of employees in routine activities in the office.
6 The factor of cooperation, seeing how hotel employees work with others in completing a job.

Research Method

The author conducts research activities at PT Bukit Asam, Tbk Kertapati Pier Unit located at Jalan KH Ahmad Dahlan No. 80, Talang Ant Village, Bukit Kecil Subdistrict, Palembang City. South Sumatra. Research activities were conducted on 01 – 30 November 2023.

In order for research to be directed and not deviate from problems, the authors limit the problem to the influence of leadership style and work discipline on employee performance in PT Bukit Asam, Tbk Kertapati Pier Unit.

According to Kamaruddin, (2017: 64) the population is all individuals/units that are the target of research. The population must have limits and characteristics according to the purpose of the research. If a person is going to examine all the elements that are in the research area, then the research is population research. Based on the description above, the number of population taken from this study is 66 permanent employees of PT Bukit Asam, Tbk Kertapati Pier Unit

Sample according to Sugiyono (2017:137) is part of the number and characteristics possessed by the population. In this study the authors made the entire research population a sample because this study used saturated sampling methods. Saturated sampling according to Sugiyono (2019:133) is a sample that when added in number, will not add representation so that it will not affect the value of the information that has been obtained.

Results

Validity Test

This validity test is done to measure whether the data that has been obtained after the study is valid data or not, using the measuring instrument used (kuesioner). Validity test on the data

analysis process has the purpose that the validity of the research instrument can be known. So that the instrument can be used to measure what should be measured. While instruments are called reliable when research instruments can be used to measure similar objects and produce similar data. Validity test is done by comparing the value of the r count with the r value of the table. It is known that the number of samples in this study is 66, then r tables are 0.2387. Validity test results can be seen in the table below:

Tabel 4.5

Validity Test

Item	R count	R table	Results
X1	0.389	0.2387	Valid
X2	0.317	0.2387	Valid
X3	0.368	0.2387	Valid
X4	0.788	0.2387	Valid
X5	0.478	0.2387	Valid
X6	0.648	0.2387	Valid
X7	0.640	0.2387	Valid
X8	0.721	0.2387	Valid
X9	0.769	0.2387	Valid
X10	0.418	0.2387	Valid
X11	0.634	0.2387	Valid
X12	0.813	0.2387	Valid
X13	0.570	0.2387	Valid
X14	0.393	0.2387	Valid
X15	0.312	0.2387	Valid
X16	0.588	0.2387	Valid
X17	0.384	0.2387	Valid
X18	0.581	0.2387	Valid
X19	0.335	0.2387	Valid
X20	0.441	0.2387	Valid
Y1	0.831	0.2387	Valid
Y2	0.320	0.2387	Valid
Y3	0.308	0.2387	Valid
Y4	0.410	0.2387	Valid
Y5	0.593	0.2387	Valid
Y6	0.804	0.2387	Valid
Y7	0.432	0.2387	Valid
Y8	0.327	0.2387	Valid
Y9	0.347	0.2387	Valid
Y10	0.540	0.2387	Valid

Source: Data processing

Based on the table above, it can be concluded that each item on the research questionnaisary is valid. This is expressed by the calculation value of each item above the r value of the table for 66 samples which is 0.2387. This study is valid.

Reliability Test

In research, reliability is the extent to which the measurement of a test remains consistent after repeated results in the subject and under the same conditions. Research is considered reliable when it provides consistent results for the same measurement.

The total variable confidence index is what we are pursuing with the reliability test of this instrument. After checking the validity and obtained valid statement items, the reliability checks

were further carried out using the formula Cronbach Alpha to ensure the consistency of these items. The reliability of questionnais question items can be determined if the Cronbach's Alpha score is greater than 0.60.

Tabel 4.6

Reliability Test

Variable	Cronbach Alpha	Minimum Stabdard	Results
Gaya Kepemimpinan	0,701	0,600	Reliable
Disiplin Kerja	0,674	0,600	Reliable
Kinerja	0,716	0,600	reliable

Source: Data Processing

From the outout table above, it can be seen that all three variables have a cronbach alpha value greater than 0.60. Then it can be concluded that the question item on the questionnais can be said to be consistent or reliable.

Multiple Linear Regression
Multiple linear regression is a regression model that involves more than one independent variable. Multiple linear regression analysis is done to determine the direction and how much the influence of independent variables on dependent variables (Ghozali, 2018)
In this study there are 2 variables X and 1 variable Y. The equation of multiple linear regression is mathematically expressed by:

Y = a + b1 X1 + b2 X2 + ... + bn Xn
Explanation:
Y = non-free variable (value of variables to be predicted)
A = constant
b1,b2, bn = regression coefficient value
X1,X2,, Xn = free variable

In this study, SPSS was used to perform the calculations needed for regression analysis. As shown in the table below, the attached analysis produces the following findings.

Tabel 4.7

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	14,548	2,552		5,701	,000
	X1	,428	,111	,547	3,843	,000
	X2	,215	,110	,278	1,953	,002

a. Dependent Variable: Y

Sumber: data primer diolah

The equation of regression from the results of statistical calculations is obtained as follows:
Y = a + b1X1 + b2X2
Purchase Decision = 14,548 + 0.428 + 0.215
1. The constant value (a) of 14,548 means that the Leadership Style and Work Discipline is assumed to be zero then Employee Performance is worth 14,548.

2 The value of the regression coefficient of the Leadership Style variable is 0.428. This means that each improvement in the Leadership Style of 1 unit will improve Employee Performance by 0.428 assuming another variable remains.

3. The value of the work discipline regression coefficient of 0.215 means that each increase in the Work Discipline of 1 unit will increase the purchase decision by 0.215 assuming another variable is fixed.

4. Standard probability error. The standard error effect on Y but is not included in the equation.

T test

The t test is used to test the significance of the relationship between the X and Y variables, whether the X1 and X2 variables really affect the Y variable separately or partially: The following will be explained the partial test of each variable.

In the Leadership Style Variable is known to count 3,843 > t table 1.668 and sig 0.0000 < 0.005 Meaning that the Leadership Style Variable has a significant effect on Employee Performance.

While in the Working Discipline Variable is known to count 1.953 > t table 1.668 and sig 0.002 < 0.005. This means that the Work Disciplinary Variable has a significant effect on Employee Performance.

F Test

The F test basically shows whether all independent or free variables have a shared influence on dependent or bound variables. To prove this, the test F is carried out, the results of the regression test simultaneously or the F test can be seen in the table below:

Tabel 4.8 F test

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	216,219	2	108,110	54,570	,000[b]
	Residual	124,811	63	1,981		
	Total	341,030	65			
a. Dependent Variable: Y						
b. Predictors: (Constant), X2, X1						

Source: data processing

In the table above the results of the hypothesis test show that the value of F counts 54,570 > F table 3,986 with sig 0.000 < 0.05 means that the ident for the jointly influential variables significantly affect the dependent variable.

Coefficient of Determination

The purpose of the determination coefficient analysis is to find out the extent to which independent variables explain the dependent variable. The results of the calculation of the determination coefficient can be seen from the table below:

Tabel 4.9

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,796[a]	,634	,622	1,408

a. Predictors: (Constant), X2, X1

Source: data processing

Based on the SPSS analysis, the independent variable that is the leadership style and work discipline can explain the dependent variable that is Employee Performance by 63.4% variant of the response rate, while the remaining 36.6% is caused by factors outside the regression model.

Discussion

Based on the calculation of data with SPSS above, the results that independent variables consisting of Leadership Style and Work Discipline have a Significant effect on Dependent Variables, namely Employee Performance.

Partially this can be seen in the results of the Test of each independent variable, both of which have a greater value than t table, and have a significance value below 0.005. In the Leadership Style Variable is known to count 3,843 > t table 1.668 and sig 0.0000 < 0.005 Meaning that the Leadership Style Variable has a significant effect on Employee Performance. While in the Working Discipline Variable is known to count 1.953 > t table 1.668 and sig 0.002 < 0.005. This means that the Work Disciplinic Variable has a significant effect on Employee Performance.

While stimult can be seen from the greater F Test of F of the table. Where the value of F counts 54,570 > F table 3.986 with sig 0.000 < 0.05 which means that the indpenden variable together has a significant effect on the dependent variable.

Meanwhile, the independent variable that is leadership style and work discipline can explain the dependent variable that is Employee Performance of 63.4% variant response level, while the remaining 36.6% is caused by factors outside the regression model.

Conclusion

Based on the results of the analysis of the data obtained the following conclusions:

1. After the calculation through the T Test, it was obtained that partially variables of leadership style and work discipline affect employee performance. This is characterized by the T value of the calculation of both variables greater than the value of the table t. The value of the value of the leadership style variable is 3,843, while the count for the discipline of work is 1.953. Both are greater than the table t value of 1,668. Appeal to the received H0.

2 Both variables are Leadership Style and Work Discipline affect the stimulation of Employee Performance, because based on the F test, the value of F is 54,570 or greater than the value of F table which is 3.986. Appeal to the received H0.

3. Leadership and Work Discipline Style has a significant effect on Employee Performance, this is seen from the coefficient of determination of R2 as much as 0.634 that means, the Leadership and Work Discipline Style variable can explain the Employee Performance Variable of 63.4%, while the remaining 36.6% is explained by other variables. Appeal to the received H0.

References

Alam, I. K. 2020. *Pengaruh Motivasi, Disiplin, Dan Lingkungan Kerja Terhadap Kinerja Karyawan Pada Rumah Sakit Medika Darmaga Bogor.* Penelitian Dosen. Fakultas Ekonomi dan Bisnis Universitas Persada Indonesia Y.A.I Jakarta.

Aziz, N. L. 2019. *Peminatan Kesehatan Lingkungan Program Studi S1 Kesehatan Masyarakat STIKES Bhakti Husada Mulia* Madiun 2019.

Busro, Muhammad. 2018. *Teori-Teori Manajemen Sumber Daya Manusia*. Jakarta: Prenadameidia Group

Eri Susan, 2019:1. (2019). *Manajemen Sumber Daya Manusia*. Jurnal Manajemen Pendidikan, 2, 952–962

Fadil, Syariful. 2021. *Pengaruh Gaya Kepemimpinan Otokratik, Demokratik, Dan Laissez – Faire Terhadap Kinerja Karyawan PT. Diva Cash Dan Kredit Palembang*. (Skripsi, Fakultas Ekonomi, Universitas Palembang: Palembang)

Fahmi, Irham., 2017. *Manajemen Kepemimpinan Teori & Aplikasi.* Alfabeta. Bandung

Febriyan dan Siagian, 2020. (2022). *Kerja Terhadap Kinerja Karyawan.* Jurnal Manajemen Dan Bisnis, 2(2), 115–121.

Ghozali, Imam. 2018. *Aplikasi Analisis Multivariate Dengan Program IBM. SPSS (edisi kesembilan).* Semarang: Universitas Diponegoro.

G.R. Terry dalam R.Supomo dan Eti Nurhayati. 2018. *Manajemen Sumber Daya Manusia.* Jakarta: Penerbit Kencana.

Hasmin dkk. 2021. *Manajemen Sumber Daya Manusia.* https://thesiscommons.org/yvpue/download?format=pdf Diakses 08 November 2023

Hariyanto, B., Bojonegoro, P., Susanto, H., & Sulistyowati, A. (2021). *Pengaruh Kompetensi Sumber Daya Manusia Dan Sarana Prasarana Terhadap Kualitas Pelayanan Skck Melalui Kinerja Petugas Skck. In Jurnal Manajemen dan Administrasi Publik* (Vol. 4, Issue 2).

Indrasari, Meithiana. 2017. *Kepuasan Kerja dan Kinerja Karyawan.* Yogyakarta: Indomedia Pustaka.

Indah D. Rahayu. 2017. *Pengaruh Gaya Kepemimpinan dan Program Keselamatan dan Kesehatan Kerja Terhadap Motivasi Kerja (Studi pada Karyawan Tetap Maintenance Department PT.Badak LNG Bontang).* Jurnal Administrasi Bisnis(JAB)|Vol. 43No.1,1-9. Di unduh pada tanggal 19/03/2020.

Ilahi, D. 2017. *Pengaruh Kepuasan Kerja Terhadap Disiplin Kerja Dan Komitmen Organisasional (Studi Pada Karyawan PT. PLN (Persero) Distribusi Jawa Timur Area Malang).* Jurnal Administrasi Bisnis S1 Universitas Brawijaya, 44(1), 31–39

Juandito. 2021. *Pengaruh Komitmen Organisasi Dan Disiplin Kerja Terhadap Kinerja Karyawan PT. Cermat Pratama Sejahtera Palembang*. (Skripsi, Fakultas Ekonomi, Universitas Palembang: Palembang)

Jufrizen dkk. 2021. *Pengaruh Motivasi Kerja dan Kepuasan Kerja Terhadap Kinerja Dengan Disiplin Kerja Sebagai Variabel Intervening*. Seminar Nasional Teknologi Edukasi dan Humaniora 2021, ke-1. https://jurnal.ceredindonesia.or.id/index.php/sintesa/article/view/419 Diakses 07 November 2023

Khoirinisa, K. S. 2019. *Analysis Of Factors That Influence Work Discipline.* Skripsi. Program Sarjana Fakultas Ekonomi Universitas Darma Persada Jakarta.

Kristiawan, M., Suryanti, I., SD, S. P., Muntazir, M., Ribuwati, Areli, A. J., Agustina, M. et. al. (2018). *Inovasi Pendidikan*. Jawa Timur: Wade Group National Publishing.

Mangkunegara, Anwar Prabu A.A. 2017. *Evaluasi Kinerja.* Bandung: PT Refika Aditama.

Muhyadin, F. H. 2019. Pengaruh Disiplin Kerja, Komitmen Organisasional Dan Motivasi Kerja Terhadap Kinerja Karyawan. Skripsi. Fakultas Ekonomi Universitas Sanata Dharma Yogyakarta.

Nawawi, Hadari. (2018). *Manajemen Sumber Daya Manusia Untuk Bisnis Yang Kompetitif.* Yogyakarta : Gadjah Mada University Press.

Putri Kartika, Anggi dkk. 2020. *Disiplin Kerja Staf Unit Sekretaris Perusahaan di Perusahaan Umum Jaminan Kredit Indonesia.* Jurnal Mahasiswa Bina Insani, http://ejournal-binainsani.ac.id/index.php/JMBI/article/view/1272/1096 . Diakses 08 November 2023

Puspita, Rindiani Dwi. 2022. *Pengaruh Disiplin Kerja Terhadap Kinerja Karyawan Pada PT Telkom Indonesia Cabang Palembang.* (Skripsi, Fakultas Ekonomi, Universitas Palembang: Palembang)

Pandipa Abd. Khalid Hs. 2018. *Pentingnya Disiplin Kerja Terhadap Peningkatan Efektivitas Kerja Pegawai Pada Dinas Pemberdayaan Perempuan Dan Perlindungan Anak Kabupaten Poso*. Jurnal Ilmiah Administratie, 10. https://ojs.unsimar.ac.id/index.php/administratie/article/view/230/214. Diakses 08 November 2023

Priansa, D. J. (2017). *Manajemen Kinerja Kepegawaian.* Bandung : CV PUSTAKA SETIA.

Rani, Vera Maya. 2021. *Pengaruh Disiplin Kerja Dan Lingkungan Kerja Terhadap Kinerja Karyawan PT Tri Prima Palembang.* (Skripsi, Fakultas Ekonomi, Universitas Palembang: Palembang)

Rahayu, I., Musadieq, M., & Prasetya, A. (2017). Pengaruh Gaya Kepemimpinan Dan Program Keselamatan Dan Kesehatan Kerja Terhadap Motivasi Kerja (Studi pada Karyawan Tetap Maintenance Department PT Badak LNG Bontang). *Jurnal Administrasi Bisnis S1 Universitas Brawijaya*, *43*(1), 1–9 Rizki, A. dan Suprajang, S. E. 2017. *Analisis Kedisiplinan Kerja Dan Lingkungan Kerja Terhadap Kinerja Pada Karyawan PT Griya Asri Mandiri Blitar.* Jurnal Penelitian Manajemen Terapan (Penataran), 2, 49–56.

Rivai, dkk V. (2017). *Kepemimpinan dan Perilaku Organisasi*. Rajawali Pers: Jakarta.

Rivai, Veithzal dan Deddy Mulyadi. *2021*. *Kepemimpinan dan Perilaku Organisasi Edisi Ketiga.* Jakarta : PT. Rajagrafindo Persada.

Rivai, Veithzal dan Deddy Mulyadi. 2018. *Kepemimpinan dan Perilaku Organisasi Edisi Ketiga.* Jakarta : PT. Rajagrafindo Persada.

Ramon, Z. 2019. *Lingkungan Kerja, Disiplin Dan Stres Kerja Pada Pt Escotama Handal Batam.* Hilos Tensados, 1, 1–476.

Saputra, M Rizky. 2022. *Pengaruh Gaya Kepemimpinan Dan Motivasi Terhadap Kepuasan Kerja Karyawan Pada Homeindustri My Bakery Palembang.* (Skripsi, Fakultas Ekonomi, Universitas Palembang: Palembang)

Sulistyowati, A. (2021). Pengaruh Kompetensi Sumber Daya Manusia Dan Sarana Prasarana Terhadap Kualitas

Sugiyono. 2017. *Metode Penelitian Kuantitatif, Kualitatif dan R & D.* Bandung: Alfabeta.

Sugiyono. (2019). *Metodelogi Penelitian Kuantitatif dan Kualitatif Dan R&D.* Bandung: Alfabeta.

Susilo, Donny. 2018. *Transformational Leadership. A Style of Motivating Empleyee. Managemen Sumber Daya manusia*. Jakarta : Kencan Prenada Media

Sumadhinata, Y. E. 2018. *Pengaruh Disiplin Kerja Dan Motivasi Terhadap Kinerja Karyawan Non Edukatif Di Salah Satu Universitas Swasta Di Bandung*. Seminar Nasional dan Call for Paper Sstainable Competitive Advantage (SCA) 8.

Wibowo.2017. *Manajemen Kinerja*. Jakarta : Rajawali press

Widodo, Suparno Eko. 2015. *Manajemen Pengembangan Sumber Daya Manusia*. Yogyakarta: Pustaka Pelajar.

THE INFLUENCE OF THE PHYSICAL AND NON-PHYSICAL WORK ENVIRONMENT ON THE PERFORMANCE OF PDAM TIRTA OGAN EMPLOYEES, OGAN ILIR REGENCY

Yenny Fariska[1], Zubaidah[2], Nenny Octarinie[3]

Yenny Fariska
Student of Management Study Program, Faculty of Economics, Palembang University

Hj Zubaidah SE, M.Si
Lecturer of Management Study Program, Faculty of Economics, Palembang

Nenny Octarinie SE, MM
Lecturer of Management Study Program, Faculty of Economics, Palembang

ABSTRACT

The work environment is one of the factors that affect the satisfaction of employee work.If in the environment around the workplace gives an uncomfortable impression, employees feel lazy to work.The work environment is everything that surrounds the place of work employees and can affect the way and work that is being done. This research aims to assess the influence of the physical work environment and non-physical work environment on employee performance. This research was carried out in PDAM Tirta Ogan Ogan Ilir Regency. The population in this study is all employees of PDAM Tirta Ogan Ogan Regency with the number of samples of this study number 95 people. The study used SPSS 26 as a calculation tool.

Keywords : Physical Work Environment, Non-physic Work Environment, Performance

Introduction

Human resources (HR) or Human Resources (HR) are vital assets and have a strong role as the main driving factor in the implementation of all activities or activities of the organization. Thus, these resources must be managed properly. HR management is carried out through Human Resource Management (MSDM) or Human Resources Management (HRM). Thus, human resource management is one of the main breaths of an organization's management.

Performance is the result of work that can be achieved by a person or group of people in an organization, in order to achieve the goals of the organization in accordance with the legal, not unlawful and in accordance with morals or ethics. Many factors determine the performance of employees, some of the factors that need to be observed are the work environment.

The work environment has an important role in the achievement of employee performance This is because of the existence of a pleasant work environment makes employees will work more passionate and eager to achieve a better performance. (Sulistiawati Paita et al., 2015)

This work environment itself consists of a physical work environment and a non-physical work environment that is inherent with employees so that it cannot be separated from efforts to improve employee performance. A good work environment, comfortable, and meets the standards

of eligibility needs will affect employees in performing their duties. A conducive non-physical work environment is a mandatory requirement to continue to build the quality of employee thinking that can eventually foster their performance continuously.

An employee who has a high performance and good can support the achievement of the goals and goals that have been set by the company. According to (Sutrisno, 2014) Employee performance is the result of employee work seen in the aspects of quality, quantity, time of work and cooperation to achieve the goals set by the organization. A person's willingness and skills are not effective enough to do something without a clear understanding of what to do and how to do it. Performance is also a true behavior that is displayed by everyone as an achievement of work produced by employees in accordance with their role in the company to achieve the desired goals.

The work environment is one of the factors that affect the satisfaction of employee work.If in the environment around the workplace gives an uncomfortable impression, employees feel lazy to work.The work environment is everything that surrounds the place of work employees and can affect the way and work that is being done. As revealed by (Sunyoto, 2015) that the work environment is everything that is around the workers and that can affect themselves in carrying out the tasks charged.

Employee performance is the result of employee work seen in the aspects of quality, quantity, work time and cooperation to achieve the goals set by the organization (Sutrisno, 2014), thus performance is the quality and quantity of output of employee work. Employee performance is a fixed variable that is often paired with a variety of free variables that affect it such as motivation, compensation, and the work environment.

Employee performance problems need to be considered because if employee performance is bad it can result in the company not being able to achieve the desired goals, here there are several aspects in improving employee performance, among others, creating a good environment, because the work environment can affect the formation of the behavior of a person in doing his work and work environment can be said with a situation around the company both in the physical and non-physical environment. The work environment and performance are two things that cannot be separated because they have a relationship with each other and both must be balanced because if both are balanced this can create good work and by creating a good environment, it allows employees to be able to work well and vice versa if the work environment is bad it will make employee performance decrease.

Based on the results of the previous research Kartika Yuliantari, Ines Inassti, 2020 with the title of the Influence of the Work Environment on Employee Performance on LLDIKTI Region III Jakarta. In the results of data processing or research output obtained the conclusion that there is a very strong and positive relationship between the work environment with performance, and there is a significant influence between the work environment with performance (Yuliantari & Inscription, 2020).

PDAM Tirta Ogan is a company that manages and supplies clean water needs for Ogan Ilir district services, one of which is Indlaya sub-district. Indralaya is one of the sub-districts located in Ogan Ilir district with 20 villages / villages / villages and an area of 101.22 /Sq.Km. PDAM Tirta Ogan in serving the distribution of clean water is divided into several processing areas, one of which is the service unit of the Indralaya sub-district. PDAM Tirta Ogan Indralaya operates in Tanjung Seteko village. And serve all water supplies in several villages in the district of Indralaya. PDAM Tirta Ogan as a Regional Owned Enterprise that prioritizes meeting community satisfaction through public services that provide quality clean water and affordable prices by the community.

In general, employees expect their work environment to be bright, safe, calm, clean, and not noisy. They also expect the work environment to be free from distractions and threats that hinder their work. The physical work environment can include the location of the workplace, the condition of the building, and work facilities. However, the non-physical/psychological work environment requires discipline and collaboration.

The Physical Work Environment in PDAM Tirta Ogan Ilir is considered not good, this can be explained as follows:

The employee workspace section there are those who do not have an air conditioner so that it

causes employees to be uncomfortable, working in the existing room.

1. Toilet facilities owned by PDAM are ugly and dirty
2. For the Wifi section in the office is slow so that it interferes with the comfort of work, let alone those related to customer data that has been paid or in arrears
3. PDAM Tirta Ogan does not have a special meeting room but if there is a meeting, usually using the middle room is used as a sudden meeting room with a table and chairs that exist.

The Non-physical work environment in PDAM Tirta Ogan Ilir which is considered less good is as follows:

1. Facing PDAM customers who like to get angry when there are complaints
2. Superior instructions to subordinates are unclear
3. The boss rarely gives breafing to the subordinates

With the explanation above, it can be known that there are still some facilities that are not good in the work environment so that it causes less comfortable in work and makes the results of employee performance decrease and less good than the facilities in the scope of work are still less conducive. This makes employees lose their spirit in work, quickly feel tired and can affect the employee's performance.

Meanwhile, in the non-physical work environment there are some colleagues who are fun and some are also less pleasant. For the less pleasant because of less smooth communication so as to make the relationship and performance of employees become less good.

A good physical and non-physical work environment in a company will create good work and can also create a harmonious relationship in work, a good environment will make employees who work with a sense of comfort and if the relationship between employees and relationships between employees and relationships between employees with good or harmonious superiors make employees work with pleasure without pressure and will cause an employee commitment to the company so that it is expected to have an impact on employee performance that is increasing and making employees.

With the background above, it becomes the basis of the author's consideration to research conducting research with the title "Influencing Physical and Non-physical Work Environment on the Performance of PDAM Tirta Ogan Ilir Employees."

Literature Review

The work environment is everything that surrounds the employee's workplace and can affect the way and the work being done. As revealed by (Sunyoto, 2013) that the work environment is everything that is around the workers and that can affect itself in carrying out the tasks charged.

Meanwhile, according to (Afandi, 2018) the work environment is everything that exists around employees and can influence in carrying out the tasks that are carried out to him for example with the presence of air conditioners (AC), adequate lighting so on. In other words, a concrete example of a good working environment conditioning is to ensure fresh air using AC devices, installing lights that are bright enough, and so on.

According to (Sedarmayanti, 2017) the work environment is the whole tool of tooling and materials that are faced, the surrounding environment in which a person works, the method of work, and the arrangement of his work both as an individual and as a group. That is, all equipment used to do the work and the methods used such as boards also include the environment.

According to (Presetyo, 2021) the work environment is the whole tool of tooling and materials faced by a person working method as well as its work arrangement both as a person and as a group. It can be concluded that the work environment is everything that is around the worker both physical form such as the office tools used, the facilities provided, the work atmosphere includes lighting, air climate, to the work atmosphere caused by the method of work applied, and so on that affect the workers in carrying out the tasks given. According to (Sedarmayanti, 2017) divides the type of work environment into two main types, namely the physical and non-physical work environment that will be explained as follows:

Physical Work Environment

According to (Sedarmayanti, 2017) The physical work environment is all physical conditions that exist around the workplace that can affect employees both directly and indirectly.

1. Work environment that is directly related to employees such as work centers, chairs, desks and so on

2. Intermediary environments or general environments can also be called work environments that affect human conditions such as temperature, humidity, air circulation, lighting, mechanical vibration noise, bad smell, color and others.

Non Physical Work Environment

According to (Sedarmayanti, 2017) The non-physical work environment is all circumstances of events related to the working relationship, both the relationship with the superiors and with the relationship of fellow co-workers, or with subordinates. This non-physical work environment is also a group of work environments that are not neglimiliated. The company should reflect conditions that support cooperation between the level of superiors, subordinates and those with the same status in the company. The conditions that should be created are familial atmosphere, good communication and self-control. Conditions of non-physical work environment include:

1 Social environmental factors, for example social factors that are very influential on employee performance are family backgrounds, namely between family status, family number, level of welfare and others;

2 The factor of social status, the higher the position of a person the higher the authority and discretion in making decisions;

3 Factors in the company's work relationship, namely the working relationship between employees and employees and superiors;

4 Information system factors, which can ensure the speed and smooth running of communication between members through technical delivery of information and communication that can run more practically and quickly.

According to Siagian (2014) Indicators of Physical and Non-phasical Work Environment as follows:

1. Physical Work Environment
2. Lighting in the workplace
3. Conditions of air circulation in the workplace
4. Work Equipment
5. Toilety hygiene
6. Job support office facilities
7. Employee-specific parking access
8. Office transportation facilities facilities
9. House of worship (mushola) availableLingkungan Kerja Non Fisik

The non-physical work environment is the creation of a harmonious work relationship between employees and superiors. Siagian (2014:61) suggests that the dimensions of the non-physical work environment consist of several indicators, namely:

1 The relationship of colleagues at the level of the relationship with the co-worker is a relationship with colleagues who are harmonious and without mutual intrigue between fellow colleagues. One of the factors that can influence employees to stay in one organization is the existence of a harmonious relationship and family.

2 The relationship of superiors with superiors with subordinates or employees must be maintained properly and must respect each other between superiors and subordinates, with mutual respect will cause respect between each individual.

3 Cooperation between employees must be well maintained, because it will affect the work they do. If the cooperation between employees can be well established then employees can complete their work effectively and efficiently.

Performance

According to (Afandi, 2018) Performance is the result of work that can be achieved by a

person or group of people in a company in accordance with the authority and responsibilities of each in an effort to achieve organizational goals illegally, not unlawfully and not contrary to morals and ethics.

According to (Wibowo, 2016) Performance is the implementation of the plan that has been drawn up. Implementation of performance is carried out by human resources who have the ability, competence, motivation, and interests. How the organization values and treats its human resources will affect its attitudes and behaviors in carrying out performance.

Whereas according to Sutrisno (Pribadi, 2022), states that performance is the result of work that can be achieved by a person or group of people in an organization, in accordance with the authority and responsibilities of each in order to achieve the goals of the organization in accordance with the legal, not contrary to the law and in accordance with morals and ethics.

The dimensions and indicators of employee performance according to (Mangkunegara, 2018) are as follows:

Quality of Work

It is the result of hard work from employees in accordance with the goals set by the previous company. If the results achieved by the employee are high then the performance of the employee is considered good by the company or in accordance with the standards that have been set. This means that it is a level that indicates the work process or the results achieved by a work near the existence of perfection.

Quantity of Work

It is the result of hard work from employees who can achieve the maximum scale that has been determined by the company. The quantity of work indicates the amount of work that an individual or group produces as a requirement that becomes the standard of work. Each job has different requirements so that the employee should meet these requirements both knowledge, skills, and abilities.

Responsibility

Showing how much employees are in accepting and carrying out their work, account for the work and facilities and infrastructure used and their work behavior every day.

Collaboration

With the presence of employees who have a high sense of self-esteem for their work, employees try to achieve the best results in the work. Therefore, with a high sense of self-esteem towards his work, it is expected that employees can improve performance in work. The ability to work together which is a level of state of the employee can create a comfortable atmosphere in work, confidence, communication that is a partner's conduct so as to create an increase in performance.

Initiative

Initiative from within the company members to do the work and overcome problems in the work without waiting for orders from superiors or showing responsibilities in the work that has become the obligation of employees.

According to (Hamali, 2018) in some of the objectives of employee performance assessment are as follows:

Payroll administration.
Performance feedback.
Identify the strengths and weaknesses of the individual.
Documenting employee decisions.
Appeal to individual performance.
Identify poor performance.
Assist in identifying goals.
Set a promotional decision.
Employee dismissal
Evaluate the achievement of goals.

Performance evaluation is the process of assessment or measurement to find out how high or low the employee is. According to (Mangkunegara, 2015) the

evaluation of the performance should be based on several important notes as follows:

The focus is to build the power to solve every problem that arises in the implementation of performance evaluation. So it is not merely solving the problem itself, but the leadership and employees are able to solve the problem well at any time, every new problem. So what matters is its ability.

Always based on an opinion meeting, for example from the results of discussions between employees with direct supervisors, a constructive discussion to find the best way to improve high quality.

A natural management process, do not feel and cause the impression of forced, but put consciously into corporateplanning, done periodically, directed and programmed, not activities that are only a year or activities carried out if the manager just remembers it.

Research Method

As for the author took a research object at PDAM Tirta Ogan located on the road Tasik Tanjung Seteko Village Indralaya District Ogan Ilir South Sumatra.

This research is a research frame that describes the boundaries of research, narrows the problem, and limits the research area. The research will be conducted during the period of December 2023 s/d May 2024 in the Tirta Ogan PDAM which will start from the preparation of the proposal, collect library literature data, ask respondents to fill out the questionnairoer and test the results of the questionnailer to the SPSS application. With this the author limits the research by researching the Influence of the Work Environment consists of the physical work environment and the non-fine work environment of the Performance of PDAM Tirta Ogan Ilir.

According to (Sugiyono., 2018) The population is the whole object or subject that is in a region and meets certain requirements related to research. The population used in this study is the employees of PDAM Tirta Ogan Ilir. The population is 95. According to (Sugiyono., 2018) the sample is part of the number and characteristics of a particular population owned by the population. Samples are part of the population that is expected to represent the population in research. The sampling technique used is saturated samples or census, this is because all populations will be used as a sample of research because they amount to less than 100 respondents. So for the sample in this study is 95 people.

Validity Test

Validity and reliability tests are carried out before the research is carried out in order to obtain valid and consistent question items. This validity test is done to measure whether the data that has been obtained after the research is valid data or not, using the measuring instrument used (questioner). Validity test on the data analysis process has the purpose that the validity of the research instrument can be known. So that the instrument can be used to measure things that should be measured.Whereas the instrument is called a relic if the research instrument can be used to measure similar objects and produce similar data.

The questionnaire was distributed to 95 respondents where all of them were employees of PDAM Tirta Ogan, Ogan Ilir Regency, where all respondents filled out all statements that had been disseminated. There are 21 statement items in the questionnaire that are divided into 3 variables. The result of validity testing is when the value of the r count is greater than the r table. That way, the data can be said to be valid. But on the contrary, if the calculation is smaller, then it is said that the data can be said to be invalid. The results of the calculation of the value of r calculation in this study can be seen from the table below:

Tabel 4.5

Validity Test

Item	r count	R table	information
x1	.550	> 0.1996	Valid

x2	.432	> 0.1996	Valid
x3	.363	> 0.1996	Valid
x4	.502	> 0.1996	Valid
x5	.416	> 0.1996	Valid
x6	.589	> 0.1996	Valid
x7	.450	> 0.1996	Valid
x8	.287	> 0.1996	Valid
x9	.558	> 0.1996	Valid
X10	.243	> 0.1996	Valid
x11	.736	> 0.1996	Valid
Item	r count	R table	information
y1	.740	> 0.1996	Valid
y2	.492	> 0.1996	Valid
y3	.572	> 0.1996	Valid
y4	.531	> 0.1996	Valid
y5	.528	> 0.1996	Valid
y6	.857	> 0.1996	Valid
y7	.314	> 0.1996	Valid
y8	.432	> 0.1996	Valid
y9	.359	> 0.1996	Valid
Y10	.672	> 0.1996	Valid

Source: data processing 2024

Based on the results above, the calculation is obtained that all questionnaisary items are declared valid, because the value of the calculation is greater than the r table that is 0.199.

Reliability Test

In research, reliability is the extent to which the measurement of a test remains consistent after repeated results in the subject and under the same conditions. Research is considered reliable when it provides consistent results for the same measurement. realibility is an index that shows the extent to which a measuring instrument can be trusted or reliable. If a measuring device is used twice – to measure the same symptoms and the measurement results obtained are relatively consistent, then the measuring instrument is reliable.

The total variable confidence index is what we pursued with this instrument reliability test. After checking the validity and obtained valid statement items, the reliability checks were further carried out using the formula Cronbach Alpha to ensure the consistency of these items. The reliability of questionnaisance item can be determined if the Cronbach's Alpha score is greater than 0.60.

Tabel 4.6 Reliability Test

Variable	Cronbach's Alpha	Standard	Information
Lingkungan fisik	0,663	0,6	Reliabel
Lingkungan non fisik	0,734	0,6	Reliabel
kinerja karyawan	0,703	0,6	Reliabel

Source: data processing 2024

From the output table above, it can be concluded that all the variables are reliable. This is because the value of the Cronbahc’s Alpha each variable has a value above 0.6. As said earlier

if the value of cronbach's alpha above 0.6, then the variable in the questionnaised questionnaisary is said to be reliable.

Multiple Linear Regression

Multiple linear regression is a regression model that involves more than one independent variable. Multiple linear regression analysis is done to determine the direction and how much the influence of independent variables on independent variables (Ghozali, 2018)

Multiple regression is a statistical technique that simultaneously develops a mathematical relationship between two or more independent variables and dependent variables. This test aims to test whether on the regression model there is a correlation between independent variables.

In this study there are 2 variables X and 1 variable Y.

The equation of multiple linear regression is mathematically indicated by the following equation:

Y = a + b1 X1 + b2 X2 + ... + bn Xn

Explanation:

Y = variable dependent

a = constant

b1,b2, bn = regression coefficient value

X1,X2,, Xn = independent variable

This study used SPSS to perform the calculations needed for multiple regression analysis. As seen in the table below, the attached analysis results in the following findings

Tabel 4.7
Multiple Linear Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5,428	3,452		1,572	,119
	X1	1,056	,144	,637	7,349	,000
	X2	.827	.217	.153	2.270	.030

a. Dependent Variable: Y

Source: Data Processing 2024

Multiple linear regression is a regression model that involves more than one independent variable. Multiple linear regression analysis is done to determine the direction and how much the influence of independent variables on independent variables (Ghozali, 2018)
Multiple regression is a statistical technique that simultaneously develops a mathematical relationship between two or more independent variables and dependent variables. This test aims to test whether on the regression model there is a correlation between independent variables.
In this study there are 2 variables X and 1 variable Y.
The equation of multiple linear regression is mathematically indicated by the following equation:
Y = a + b1 X1 + b2 X2 + ... + bn Xn
Explanation:

Y = variable dependent
a = constant
b1,b2, bn = regression coefficient value
X1,X2,, Xn = independent variable
This study used SPSS to perform the calculations needed for multiple regression analysis. As seen in the table below, the attached analysis results in the following findings.

T test

The T test is used to see the significance of the relationship between the X and Y variables, whether the X1 and X2 variables actually affect the Y variable separately or partially. The following will be explained the testing of each variable in a special basis.

In the Variable of the Physical Work Environment it is known to count 7,349 > t table 1,985 and sig 0.00 < 0.05. This means that the Variable of Physical Work Environment has a significant effect on Employee Performance.

While in Variables Non-physical Work Environment is known to count

2,270 > t table 1.985 and sig 0.030 < 0.05. This means that the variable of the Physical Work Environment has a significant effect on the performance of employees.

Thus, through the results of the t test it can be concluded that in part both independent variables, namely the physical environment (x1) and the non-physical environment (x2) have a significant effect on the variables (emplary performance).

F test

The F test basically shows whether all independent or independent variables have a joint influence on the dependent or dependent variable. To prove this, an F test is carried out, the results of the simultaneous regression test or F test can be seen in the table below:

Tabel 4.8

Test F

Model	Sum of Squares		Df	Mean Square	F	Sig.
1	Regression	493,713	2	246,857	54,479	,000[b]
	Residual	416,876	92	4,531		
	Total	910,589	94			

a. Dependent Variable: Y
b. Predictors: (Constant), X2, X1
c. Source: Data Processing 2024

Based on the calculation of the table above the results of hypothesis testing shows that the value of F counts 54,479 > F table 3.941 with sig 0.000 < 0.05 means that the inddependent variable together has a significant effect on the dependent variable. Or in other words, the Physical Work Environment and the Non-physical Work Environment jointly have a significant effect on Employee Performance.

Determination Coefficient

The purpose of the determination coefficient analysis is to find out the extent to which the independent variable describes the independent variable. The results of the determination coefficient calculation can be seen from the table below:

Tabel 4.9
Determination Coefficient

Model	R	R Square	djusted R Square	. Error of the Estimate
1	,736[a]	,542	,532	2,129

a. Predictors: (Constant), X2, X1

Source: Data processing 2024

Based on the analysis of the above data, the independent variable that is the Physical Work Environment and the Non-physical Work Environment can explain the dependent variable that is Employee Performance by 54.2% variant of the response rate, while the remaining 45.8% is caused by factors outside the regression model.

Discussion

After calculating the data with the SPSS above, it can be concluded that the independent variable consisting of the Physical Work Environment and the Non-physical Work Environment has a Significant effect on the Dependent Variable, namely Employee Performance. As we know the work environment is the whole tool and materials that are faced, the surrounding environment in which a person works, his working methods, as well as the arrangement of his work either as an individual or as a group (Sedarmayanti, 2017). While the work environment itself is divided into physical and non-physical.

According to Ghozali (2018) The hypothesis test is a test of the extent to which the independent variable partially affects the dependent variable.Partially this can be seen in the results of the Test of each independent variable, where both have a higher t calculation value greater than the t table, and have a significance value below 0.05. In Variables of Physical Work Environment it is known to count 7,349 > t table 1,985 and sig 0.00 < 0.05 Meaning that the Variables of Physical Work Environment have a significant effect on Employee Performance. While in the Non-Fiss Working Environment Variables are known to count 2,270 > t tables 1,985 and sig 0.030 < 0.05. This means that the Variable of Non-physical Work Environment has a significant effect on Employee Performance. This result is in line with the research conducted by Prawira et al (2023), where the results of the t calculation test are greater than the t table, which means there is a significant influence between the variables of the work environment on employee performance.

While stimuli can be seen from the greater F Test of the F table. Where the value of F counts 54.479 > F table 3.941 with sig 0.00 < 0.05 which means that the indpenden variable together has a significant effect on dependent variables.In the study Yuliantari (2020) also concluded that the results of data processing or research output were obtained concluded that there is a very strong and positive relationship between the work environment with performance, and there is a significant influence between the work environment and performance.

Meanwhile, the independent variable that is the physical work environment and the non-physical work environment can explain the dependent variable that is Employee Performance by 54.2% variant of the response rate, while the remaining 45.8% is caused by factors outside the regression model. In the study conducted by Ahmad et al (2022), the work environment had a positive effect on the performance of employees in the Education and Culture Office of Bulukumba Regency with a percentage of 0.536 or 53.6%. Then there were 46.4% that were not affected by the work environment but were caused by other factors.

Thus based on the hypothesis presented earlier means that Ha is acceptable.That is there is a partial influence between the physical environment and the non-physical environment on the performance of employees of PDAM Tirta Ogan Ilir and There is a simultaneous influence between the physical environment and the non-physical environment on the performance of PDAM Tirta Ogan Ilir employees.

Conclusion

Based on the results of the analysis of the data obtained the following conclusions:

1. After the calculation through the T Test, it was found that partially variables of the physical

work environment and non-physical work environment affect employee performance. This is characterized by the t value of the two variables greater than the value of the table t. The value of the variable count of the physical work environment is 7,349, while the calculation for the non-physical work environment is 2.270. Both are greater than the table t value of 1.985 with a significance level <0.0005.

2. Both variables are the physical work environment and non-physical work environment stimulate against Employee Performance, because based on the F test, the value of F is 54,479 or greater than the value of F table, namely 3.941.

3. The physical work environment and non-physical work environment have a significant effect on Employee Performance, this is seen from the coefficient of R2 as much as 0.542 that means, the variables of the physical work environment and non-physical work environment can explain the Employee Performance Variable of 54.2%, while the remaining 45.8% is explained by other variable

References

Afandi, P. (2018). *Manajemen Sumber Daya Manusia (Teori, Konsep dan Indikator)*. Zanafa Publishing.

Ghozali. (2016). *Aplikasi Analisis Multivariete Dengan Program IBM SPSS 23* (semarang). Badan Penerbit Universitas Diponegoro.

Hamali. (2018). *Pemahaman Sumber Daya Manusia*. Buku seru.

Hasibuan, M. S. P. (2017). Manajemen Sumber Daya Manusia. *Edisi Revisi Jakarta: Bumi Aksara*.

Hasibuan, H. M. (2019). *Manajemen Sumberdaya Manusia.* Jakarta: Bumi Aksara.

Karina, V., Gadzali, S. S., & Budiarti, I. (2020). Pengaruh Lingkungan Kerja Terhadap Kinerja Karyawan Pada Pt. Hade Dinamis Sejahtera. *The World of Business Administration Journal*, *September*, 117–123.https://doi.org/10.37950/wbaj.v2i1.916

Laksono, B. R., & Wilasittha, A. A. (2021). Pengaruh Lingkungan Kerja, Komunikasi, Dan Motivasi Terhadap Kinerja Karyawan Di Pt. Samaco. *Behavioral Accounting Journal*, *4*(1), 249–258.https://doi.org/10.33005/baj.v4i1.117

Mangkunegara. (2015). *Manajemen Sumber Daya Manusia Perusahaan*. Remaja Rosdakarya.

Mangkunegara, A. . A. P. (2018). *Manajemen Sumber Daya Manusia Perusahaan,*. PT. Remaja Rosda Karya,.

Prasetyo, E. B. (2021). Pengaruh Kompensasi, Motivasi, dan Lingkungan Kerja terhadap Kinerja Karyawan Perim Perikanan Indonesia Cabang Brondong Lamongan. universitas 17 agustus 1945 surabaya.

Pribadi, H. N. (2022). PENGARUH LINGKUNGAN KERJA, KONFLIK KERJADAN STRES KERJA TERHADAP KINERJA KARYAWAN PADA CV. KAROSERI BUS PUTRA PELANGI KOTA TEGAL. Universitas Pancasakti Tegal.

Sedarmayanti. (2017). *Manajemen Sumber Daya Manusia*. Refika Aditama.

Sugiyono. (2018). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. PT Alfabet.

Sulistiawati Paita, Tewal, B., & Sendow, G. M. (2015). Pengaruh kompensasi dan lingkungan kerja terhadap kinerja pegawai melalui motivasi kerja pada Balai Pendidikan dan Pelatihan Keagamaan Manado. *Jurnal EMBA*, *3*(3), 683– 694.

Sunyoto, D. (2013). *Manajemen Sumber Daya Manusia.* Center for Academic Publishing Service.

Sunyoto, D. (2015). *Manajemen dan Pengembangan Sumber Daya Manusia*. Center for Academic Publishing Service.

Sutrisno, E. (2014). *Manajemen Sumber Daya Manusia*. Kencana Prenada Media Group.

Wibowo. (2016). *Manajemen Kinerja,* (5th ed.). PT.Rajagrafindo Persada.

Yuliantari, K., & Prasasti, I. (2020). Pengaruh Lingkungan Kerja Terhadap Kinerja Karyawan Pada LLDIKTI Wilayah III Jakarta. *Widya Cipta: Jurnal Sekretari Dan*

ANALYSIS OF FINANCES IN THE COMPANY PT, INDOFOOD SUKSES MAKMUR TBK

Muhammad Irsyad Rajabani
Student of Management Study Program, Faculty of Economics, Palembang University

Hamdan, SE, MM.
Lecturer of Management Study Program, Faculty of Economics, Palembang

Rusma Rizal, SE, M.Si
Lecturer of Management Study Program, Faculty of Economics, Palembang

ABSTRACT

This research aims to determine the analysis of liquidity ratios, profitability ratios, solveability ratios, and PT activity ratios. Indofood Sukses Makmur Tbk for five years (2018-2022), the analysis technique used is descriptive analysis with ratio analysis method. In this study, that the value of the liquidity ratio CR is 136 times, QR 95%, CR 63%. The value of the profit profitability ratio of GPM 30%, NPM 6%, ROA 4%, ROE 13%, ROCE 28%, ROI 4%. DAR solvet ratio value 0.44%, DER 15%, TIE 41 times, LTDER 0.63 times. The TAT activity ratio value is 0.64, WCTO 13.2, FAT 1.8, ITO 7.1, RUP 19, ARTR 14.

Keywords: Analysis of liquidity ratios, profitability, solveability, & activity.

Introduction

Analysis of financial statements is closely related to the field of accounting. Financial statements compiled by a company can be used as a means of internal managerial decision making as well as for external parties of the company. The company's financial statements can be analyzed using several financial ratios, with the analysis of financial statements can be known the state and development of the company that has been achieved by the company in the past or at the time that is running both private business entities and state-owned enterprises. The financial statements that have been analyzed can be used as auxiliary funds for the company's managerial decision making. The performance of a company can be measured from several aspects such as financial aspects and non-financial aspects. Reviewed from the financial aspect, the company's performance can be measured through the analysis of the company's financial statements that will provide important information for the company's financial position, while from the non-financial aspect, the company's performance can be assessed from the quality of employee work, the level of employee discipline, the accuracy of the giving of employment authority to employees and the welfare of the employees and the level of productivity.

The development of the industrial world is increasingly fast driving the company to improve its performance in order to survive and grow. In order to meet the competition of the company is required to make improvements to each part. Improvements are made by first measuring the existing system, analyzing and to decide whether the system needs to be fixed or not. Financial performance assessment is part of the management system by comparing the plans made and the results achieved, analyzing the irregularities that occur and making improvements. The company

must also know how it is, namely by analyzing financial statements. Good condition of the company will be the strength of the company to be able to survive and develop in the business of achieving the company's goals (Yusa, 2016).

Finance is something that must be considered by the company in developing its business. One of the main goals of starting a business is to get as much profit as possible. But the success of a company in raising finances and maintaining its business depends on financial management. Companies must demonstrate a healthy and efficient financial performance to benefit. Therefore, financial performance becomes important for companies participating in business competition to maintain their business (Miskiyah et al., 2022)

To ensure that the company's goals can be achieved and know the extent of the effectiveness of the company's operations in achieving the goals, periodically the measurement of the company's performance is taken. Here is a table that describes the financial position of PT. Indofood Sukses Makmur Tbk, for five years:

Table 1 PT Financial Report. Indofood Sukses Makmur, Tbk period 2018-2022 (In Millions of Rupiah)

Period	Asset Total	Total Equity	Sales	Net Profit
2018	96.537.796	49.916.800	73.394.728	4.961.851
2019	96.198.559	54.202.488	76.592.955	5.902.729
2020	163.136.516	79.138.044	81.731.469	8.752.066
2021	179.356.193	86.632.111	99.345.618	11.203.585
2022	180.433.300	93.623.038	110.830.272	9.192.569

Source: www.idx.co.id (2023)

Based on the report of the condition of the financial data in the table that has been described, it can be shown that the total assets of PT. Indofood Sukses Sukses Makmur Tbk tends to increase and increase the number of assets in terms of equity is able to increase sales, but net income has not increased and there was a drastic decline in 2022, where total assets, total equity and sales increased. Based on this information, there is an inequality between assets that increase each year, but the profit generated does not grow significantly every year. Meanwhile, assets and profits must be directly proportional where if the asset increases then the profit also increases. This can be sharped from the financial performance of PT. Indofood Success Makmur is not ideal so that the company is not able to control costs.

Analysis of financial statements is one way to study or study the relationship to determine the financial position and the results of business in a company. There are several techniques in analyzing a financial statement, one of which is the financial ratio analysis technique. Financial statement analysis is one of the techniques of analysis where the relationship between the posts in the financial statements (alter of the balance or income statement) can be known.

Based on this background, the author is interested in conducting research with the title: "Analysis of Financial Performance in the Company PT. Indofood Sukses Makmur Tbk".

LITERATURE REVIEW

Financial Ratio Analysis

According to Kasmir (2014:104) financial ratio analysis is an activity to compare the numbers in the financial statements. Comparison can be done between one component with a component in one financial statement or between the components that exist between financial statements.Furthermore, the numbers compared can be in the form of numbers in one bookkeeping period or several periods.

While the definition of financial ratio analysis according to Fahmi (2012:107) is as an indicator tool to find out the financial condition of the company. Short-term investors are generally more attriked in short-term financial conditions as well as the company's ability to pay adequate dividends. This information is obtained from the results of financial ratio analysis as needed.

Financial ratio as a financial performance measuring tool has a certain function, goals and meaning. From the results of this ratio can be used as a basis for decision making. According to Harahap (2010:301) some of the ratios that are often used are:

1. Liquidity Ratio Describes the ability of the company to complete its short-term liabilities.
2 Solvency Ratio Describes the ability of the company to pay its long-term liabilities or its obligations if the company is liquidated
3. Rentability/Profitability Ratio Describes the ability of the company to earn profit through all existing capabilities and resources
4. Activity Ratio Describes the activities carried out by the company in carrying out its operations both in sales, purchases and other activities.

The financial ratio that is often used in measuring the company's financial performance is as follows:

Liquidity Ratio

According to Fredweston in Kasmir (2013), the liquidity ratio is a ratio that describes the company's ability to meet short-term liabilities (debts). This means that if the company is billed, the company will be able to meet the debt, especially the debt that has matured.

Whereas according to Harahap (2010), the liquidity ratio describes the ability of the company to settle its short-term liabilities.

It can be concluded that liquidity is a ratio that describes how the ability of a company to pay liabilities (debt) in a timely manner.Kasmir (2013) said that the liquidity ratio commonly used by the company is as follows:

a. (Current Ratio)

Current ratio is a ratio to measure the company's ability to pay short-term liabilities or debts that are immediately due at the time of being billed as a whole. In measuring important liquidity is not the small difference in current assets with current debt but must be seen in its relationship or comparison that reflects the ability to return debt. The average industry standard for the current ratio is 200% or 2 times (Kasmir, 2015). Current Ratio formula used:

$$\textbf{\textit{Current Ratio}} = \frac{\text{Aktiva Lancar}}{\text{Hutang Lancar}} \times 100\%$$

a. (Quick Ratio)

Quick Ratio demonstrates the company's ability to pay off current debts (Short Terterms) that must be immediately complies with the current assets available in the company without taking into account the value of inventory (Inventory). The average industry standard for quick ratio is 1.5 times or 150% (Kasmir, 2015). The quick ratio used is:

$$\textbf{\textit{Quick Ratio}} = \frac{\text{Aktiva lancar} - \text{Persediaan}}{\text{Hutang Lancar}} \times 100\%$$

b. (*Cash Ratio*)

Cash ratio is a ratio to measure how much cash is available to pay for debt. A high cash ratio shows the company's ability to pay its short-term debt by using available cash funds. In contrast, a low cash ratio shows that the company is experiencing a lack of cash to pay its short-term debt so it is necessary to sell other current assets to cover the cash shortage. The average industry standard for cash ratio is 50% (Kasmir, 2015). The cash ratio used is:

$$\textbf{\textit{Cash Ratio}} = \frac{\text{Kas+Setara Kas}}{\text{Kewajiban Lancar}} \times 100\%$$

Profitability Ratio

According to Munawir (2010), profitability ratio is a measure that shows the company's ability to generate profit in a certain period.According to Harahap (2010:304), the ratio of profitability or also called profitability describes the ability of the company to get profit through all existing capabilities and sources such as sales activities, cash, capital, number of employees, number of branches and so on.While Sartono (2010) states the ability of the company to earn profits in relation to sales, total assets and own capital.

Kasmir (2013) mentions several types of Profitability ratios including:

(*Gross Profit Margin*)

Gross profit margin is a gross profit margin that indicates a profit relative to the company by way of net sales minus the cost of goods sold. The average industry standard for gross profit margin is 30%. The formula used to calculate gross profit margin is:***Gross Profit Margin*** = $\frac{LabaKotor}{Penjualan} \times 100\%$

a. *(Net Profit Margin*)

Net profit margin is the ratio used to show the company's net income on sales. This ratio is a measure of profit by comparing profit after interest and taxes compared to sales. The average industry standard for net profit margin is 10%. The formula used is

Net Profit Margin = $\frac{LabaSetelah\ Bunga\ Dan\ Pajak}{Penjualan} \times 100\%$

b. (*Return On Assets Ratio)*

Return On Assets Ratio is the rate of asset return ratio used to assess the percentage of profits or profits earned by the company related to the resources or total assets. The industry standard average for Return On Assets Ratio is 5%. The formula used, namely:

Return On Assets Ratio= $\frac{LabaBersih}{TotalAset} \times 100\ \%$

c. **(*Return On Equity Ratio*)**

Return on equity Ratio or capital profitability itself is a ratio to measure net income after tax with its own capital. This ratio shows the efficiency of the use of one's own capital. The higher this ratio, the better. That is, the position of the owner of the company is getting stronger, and vice versa. The average industry standard for return on equity ratio is 15%. The formula used, namely:

Return On Equity= $\frac{LabaSetelahBungaDanPajak}{Ekuitas} \times 100\%$

d. (*Return on Capital Employed*)

Return on equity Ratio or capital profitability itself is a ratio to measure net income after tax with its own capital. This ratio shows the efficiency of the use of one's own capital. The higher this ratio, the better. That is, the position of the owner of the company is getting stronger, and vice versa. The average industry standard for return on equity ratio is 15%. The formula used, namely:

Return on capital employed = $\frac{\text{EBIT}}{\text{Modal Kerja}} \times 100\%$

e. *Return on Investment* (ROI)

This ratio shows the results (return) of the amount of assets used in the company. This ratio is a measure of the effectiveness of management in managing its investments. The average industry standard for return on investment is 30%. The formula used to calculate return on investment is:

ROI = $\frac{LabaSetelahBungaDanPajak}{TotalAktiva} \times 100\%$

Profitability Ratio

A solveability ratio is a primary measuring tool used to measure a company's ability to meet its long-term debt obligations.The repayment of debt calculated in the solveability ratio is to use capital guarantees or assets such as wealth owned in a long-term or short-term term. Types of Solvability Ratio:

a. (*Debt to Asset Ratio*)

Debt to asset ratio is a debt ratio used to measure how much the company's assets are financed by debt or how much the company's debt affects the management of assets. The average industry standard for debt ratio is 6 – 7 times. The debt ratio used is:

DAR = $\frac{TotalHutang}{TotalAktiva} \times\ 100\ \%$

b. (Debt to Equity Ratio)

Debt to equity ratio is a ratio used to assess debt with equity. This ratio is sought by comparing the entire debt, including current debt with the entire equity. This ratio is useful to find out the amount of funds provided by the borrower (creditors) with the owner of the company. In other words, this ratio is used to find out every rupiah of capital itself that is used for debt guarantees. The average

industry standard for debt to equity ratio is 80%. The formula of debt-to- equity ratios used are:**DER =**$\frac{TotalHutang}{Ekuitas}$×100%

c. Times Interest-Earned Ratio

Time interest-earned ratio is a ratio to find the number of interest. This ratio is also defined as the ability of the company to pay interest costs. The industry standard average for times interest earned is 10 times. The formula used is::

Times interest-earned rati= $\frac{EBIT}{Biayabunga}$×100%

d. Long-Term Debt to Equity

Long-term debt to equity is the ratio between long-term debt and own capital. The goal is to measure how much part of each rupiah of capital itself is used as a long-term debt guarantee by comparing long-term debt with own capital provided by the company. The average industry standard for long-term debt to equity ratio is 10%. The formula used is:

Long-Term Debt to Equity=$\frac{HutangJangkaPanjang}{ModalSendiri}$ × 100 %

Activity Ratio

Activity ratio is the ratio used to measure the efficiency / effectiveness of the company in using the assets it has. According to Rangkuti (2013: 92), "The activity ratio aims to measure how far the company's activities in using their funds effectively and efficiently".In the analysis of the activity of the ratio used is:

(*Total Assets Turnover*)

According to Kasmir (2012:185) the total turnover of assets or total asset turnover is the ratio used to measure the turnover of all assets owned by the company and measure the amount of sales obtained from each rupiah asset.

Perputaran Total Asset = $\frac{Penjualan}{Totalaktiva}$

(*Working Capital Turnover*)

According to Kasmir (2012:182) The turnover of working capital is as follows: "The ratio that measures or assesss the effectiveness of the company's working capital over a certain period."

Perputaran modal kerja = $\frac{Penjualan}{ModalKerja}$

(*Fixed Assets Turnover*)

According to Kasmir (2012:184) fixed asset turnover is the ratio used to measure how many times the funds invested in the asset remain in a rotating period.

Perputaran aktiva tetap = $\frac{Penjualan}{totalaktivatetap}$

(*Inventory turnover ratio*)

Inventory turnover ratio, measuring activity or liquidity from the company's inventory. The formula: ***Inventory Turn Over***= $\frac{HargaPokokPenjualan}{Persediaan}$

a. Ages of Account Receiveables

According to Kasmir (2012: 180). This ratio measures the efficiency of managing the company's receivables, and shows how much time it takes to pay off receivables or convert receivables into cash.

Rata-rata umur piutang = $\frac{piutang}{penjualanperhari}$

b. *Account Receivable Turnover*)

The Receivables Turnover Ratio provides insight into the quality of the company (trade receivables) and the company success in collecting such trade receivables (Kasmir 2012:180)**Rata-rata umur piutang** = $\frac{Penjualankredit}{Piutangrata-rata}$

Research Method

This research is focused on PT Indofood Sukses Makmur, Tbk Palembang, located on Jalan Jl. HBR Motik No.Km. 8, New Work, Kec. Alang-Alang Lebar, Palembang City, South Sumatra 30961, for 5 years (2018-2022). . In this study the source of the data obtained from the data in the form of financial statements of the company is analyzed using financial ratios and then drawn conclusions about the financial performance of the company PT. Indofood Sukses Makmur Tbk period 2018-2022

The type of research used in this study is quantitative with a descriptive approach, this research was carried out at PT. Indofood Sukses Makmur Tbk as a research data provider.

According to (Ferdinand, 2014) says: "Population is a combination of all elements in the form of events, things or people who have similar characteristics that are the center of attention of a researcher because it is seen as a research universe. "In this study, the population used in this study is PT Indofood Sukses Makmur Tbk, from the existing population will be taken a certain amount as a sample.

According to (Sugiyono, 2017) says that: "Sample is part of the number and characteristics possessed by the population." The sampling technique used is to use the purposive sampling method, which is a sampling technique based on consideration or certain criteria. Criteria for determining the sample:

1. PT Indofood Sukses Makmur Tbk in the period 2018-2022
2 Required financial data is obtained, obtained, financial reported during the research period in 2018-2022
3. Data on the variables to be studied are available in the audit financial statements.

DISCUSSION

Based on the results of the calculation of data analysis of PT. Indofood Sukses Makmur Tbk for five years (2018-2022) following the discussion:

1.3.1. Rasio Likuiditas

Tabel 4.20 Hasil analisis rasio likuiditas PT. Indofood Sukses Makmur Tbk selama 5 tahun (2018-2022)

Rasio Keuangan	Tahun					Rata-Rata	Standar Industri
	2018	2019	2020	2021	2022		
CR	1,06%	1,26%	1,37%	1,34%	1,78%	136%	200%
QR	0,69%	0,88%	0,97%	1,02%	1,22%	95%	150%
CR	41%	55%	61%	75%	87%	63%	50%

Sumber : Data diolah, 2023

1.3.1.1. Rasio Lancar *(Current Ratio)*

From the results of the calculation of the Current Ratio of PT. Indofood Sukses Makmur Tbk for five consecutive years experienced an ina row, namely in 2018 is 106% (Rp. 1.06), then in 2019 it rose to 126% (Rp. 1.26), and in 2020 to 137% (Rp. 1.37), and in 2021 to 134% (Rp. 1.34), and in 2022 to 178% (Rp. 1.78). The average current ratio of the year is 136% (Rp. 1.36). If the average industry is 200% or 2 times (Kasmir 2015), it can be concluded that the current ratio of PT. Indofood Sukses Makmur Tbk is below the industry average. Because the company only has a current asset of 1.36 times the total debt is smooth, so Rp. 1 current debt can only be guaranteed by Rp. 1.36 current assets. With this can be concluded the company's financial performance for five years seen from the current ratio is categorized in a state of "not good"

1.3.1.2. Quick Ratio (Quick Ratio)

From the calculation results can be known the number of quick ratio of PT. Indofood Sukses Makmur Tbk for five years also increased in 2018 is 69% (Rp. 0.69), then in 2019 it rose to 88% (Rp. 0.88), then in 2020 it rose to 97% (Rp. 0.97), then in 2021 it rose to 102% (Rp. 1.02), and in 2022 it rose to 122% (Rp. 1.22). The average quick ratio for five years is 95% (Rs. 0.95). If the

industry average is 150% or 1.5 times (Kasmir, 2015), then the company's quick ratio is below the industry standard, or the company only has a current asset of 95 times the total current debt, so that every Rp. 1 of the current debt can only be guaranteed by Rp. 95 total current assets. It can be concluded that the company's quick ratio for five years is in a state of "not good".

1.3.1.3. Cash Ratio (Cash Ratio)

From the calculation results it can be known that the company's cash ratio for five years has increased in 2018, which is 43% (Rp. 0.43), then in 2019 it rose to 55% (Rp. 0.55), then in 2020 it rose back to 61% (Rp. 0.61), then in 2021 it rose back to 75% (Rp. 0.75), and for 2022 it rose to 87% (Rp. 0.87). The average cash ratio over five years is 63%. If the average industry is 50% (Kasmir, 2015), then it can be said that the company's cash ratio is above the industry average, because the company has cash or cash equivalents of 0.63 times the total debt is current, so that Rp. 1 current debt can only be guaranteed by Rp. 0.63 cash or cash equivalents. With that, it can be concluded that the company's cash ratio for five years can be categorized in a state of "good".

Profitability Ratio

Table Results of profitability ratio analysis of PT. Indofood Sukses Makmur Tbk for 5 years (2018-2022)

Financial Ratio	Periode					Average	Industrial Standard
	2018	2019	2020	2021	2022		
GPM	0,27%	0,29%	0,32%	0,32%	0,30%	30%	30%
NPM	0,05%	0,06%	0,07%	0,07%	0,05%	6%	5%
ROA	0,04%	0,05%	0,03%	0,04%	0,03%	4%	5%
ROE	0,12%	0,12%	0,15%	0,15%	0,11%	13%	15%
ROCE	1,1%	2,1%	2,7%	3,6%	4,9%	28%	30%
ROI	0,04%	0,05%	0,03%	0,04%	0,03%	4%	5%

Source: Data Processing 2024

Gross Profit Margin (Gross Profit Margin)

From the calculation of gross profit margin PT. Indofood Sukses Makmur Tbk for five years increased except in 2022, in 2018 was 27% (Rp. 0.27), then in 2019 it rose to 29% (Rp. 0.29), then in 2020 it again rose to 32% (Rp. 0.32), then in 2021 there was a stable of 32% (Rp. 0.32), and then in 2022 it decreased to 30% (Rp. 0.30). The average gross profit margin over five years is 30% (Rp. 0.30), if the average gross profit margin industry is 30%. Then it can be concluded that gross profit margin PT. Indofood Sukses Makmur Tbk for five years is in the average industry, so the company has a competitive advantage in managing production costs. It can be concluded that the company's financial performance for five years is seen from gross profit margin is categorized in a "good" state.

Net Profit Margin (Net Profit Margin)

From the results of the calculation above, it can be known net profit margin PT. Indofood Sukses Makmur Tbk for five years experienced up and down, in 2018 was 5% (Rp. 0.05), while in 2019 it increased by 6% (Rp. 0.06), in 2020-2021 there was an increase in re-mentioned 7% (Rp. 0.07), for 2022 there was a decrease to 5% (Rp. 0.05). The average net profit margin over five years is 6% (Rp. 0.06), if the average net profit margin industry is 5%, then it can be said that net profit margin companies are above the average industry standard or only 6% per year. Thus it can be concluded that the net profit margin of PT. Indofood Sukses Makmur Tbk for five years is in a state of "good".

Return on Assets (Return On Assets)

From the calculation results above, it can be known that the return on assets of PT. Indofood Sukses Makmur Tbk for five years experienced up and down, in 2018 was 4% (Rp. 0.04), then increased in 2019 to 5% (Rp. 0.05), in 2020 it decreased to 3% (Rp. 0.03), in 2021 the increase occurred to 4% (Rp. 0.04), and in 2022 it decreased to 3% (Rp. 0.03). Average return on assets of PT. Indofood Sukses Makmur Tbk for five years is 4% (Rp. 0.04), if the average industry standard is 5%. Then it can be seen that the return on assets of the company is still below the standard average. With this,

it can be concluded that the company's financial performance is seen from the return on the company's assets over the five years in a state of "less good".

Revenge of Equity (Return On Equity)

From the results of the calculation above, it can be known that the return on equity of PT. Indofood Sukses Makmur Tbk for five years experienced ups and downs, in 2018-2019 was 12 percent (Rp. 0.12), in 2020-2021 increased to 15% (Rp. 0.15), and in 2022 it decreased to 11% (Rp. 0.11). The average return on equity over five years is 13% (Rp. 0.13). If the average industry is 15%. Then it can be said that the return on equity of PT. Indofood Sukses Makmur Tbk for five years is still below the average industry standard or only 13%. Thus it can be concluded that, the company's financial performance is in a state of "less good" judging by the ratio of return on equity.

Return on capital employed (Return on capital employed)

From the results of the calculation above, it can be known that the Return on capital is employed PT. Indofood Sukses Makmur Tbk for five years has increased, in 2018 it was 11% (Rp. 0.11), in 2019 it increased to 21% (Rp. 0.21), in 2020 the increase was back to 27% (Rp. 0.27), in 2021 it increased to 36% (Rp. 0.36), and in 2022 it experienced re-increase to 49% (Rp. 0.49). The average Return on capital of employed for five years is 28% (Rp. 0.28), if the average industry is 30%, then it can be said that the Return on capital employed PT. Indofod Sukses Makmur Tbk for five years is still below the average industry standard or only by 28%. Thus it can be concluded that, the financial performance of the company is in a state of "less good" seen from the results of the return of capital used.

Return on investment (Return on investment)

From the results of the calculation above, it can be known that Return On Investment PT. Indofood Sukses Makmur Tbk for five years has experienced ups and downs every year, in 2018 it was 4% (Rp. 0.04), in 2019 it increased to 5% (Rp. 0.05), in 2020 it decreased to 3% (Rp. 0.03), in 2021 it experienced a re-recrease to 4% (Rp. 0.04), and in 2022 it decreased back to 3% (Rp. 0.03). The average return on investment for five years is 4% (Rp. 0.04), if the average industry is 5%. It can be said that Return On Investment PT. Indofood Sukses Makmur Tbk for five years is still below the average industry standard or only 4% (Rp. 0.04). Thus it can be concluded that, the financial performance of PT. Indofood Sukses Makmur Tbk is in a state of "less good" seen the results of the return on investment.

Solvability Ratio

Table 4.22 Results of analysis of PT's Solvency ratio. Indofood Sukses Makmur Tbk for 5 years (2018-2022)

Financial Ratio	Periode					Average	Industrial Standard
	2018	2019	2020	2021	2022		
DAR	0,4%	0,4%	0,5%	0,5%	0,4%	0,44%	35%
DER	1,3%	1,1%	1,9%	1,9%	1.6%	15%	90%
TIE	5,4	5,8	6,8	6,1	17,4	41	10 ×
LTDER	0,22	0,23	0,91	0,92	0,91	0,63	10 ×

Source: Data Processing 2023

Debt to asset ratio (DAR)

From the calculation results above, it can be known that Debt to asset ratio PT. Indofood Sukses Makmur Tbk for five years experienced a rise in the value of Debt to asset ratio. In 2018-2019 which is 0.4% (Rp. 0.04), in 2020-2021 increased to 0.5% (Rp. 0.05), and in 2022 it decreased back to 0.4% (Rp. 0.04). From these figures it can be seen that the Debt to asset ratio of the company has increased for five years. Average Debt to asset ratio of PT. Indofood Sukses Makmur Tbk for five years is 0.44% (Rp. 0.44). If the average Debt to asset ratio industry is 35% (Kasmir, 2015), then it can be concluded that the Debt to asset ratio of the company is above the industry average, which is 44% for five years. This does not mean the company's performance is good, because the size of the Debt to asset ratio is the higher the value, the more likely the company is unable to pay

off its debts or liabilities, so that the results can be concluded that the company's performance for five years is in a state of "slow."

Debt To Equity Ratio (DER)

From the calculation results above, it can be known that Debt To Equity Ratio PT. Indofood Sukses Makmur Tbk for five years experienced a downward decline in the value of Debt To Equity Ratio, in 2018 which is 1.3 (01), in 2019 decreased to 1.1% (Rp. 0.11), in 2020-2021 it stabilized to 1.9% (Rp. 0.19), and in 2022 it decreased to 1.6% (Rp. 0.16). Average Debt To Equity Ratio PT. Indofood Sukses Makmur Tbk for five years amounted to 15%. If the average industry standard Debt To Equity Ratio is 90% (Kasmir, 2015), then Debt To Equity Ratio the company is below the industry average. As is the case if Debt To Equity Ratio is low means that the level of debt owned by the company is also low so "good" for the company, conversely if Debt To Equity Ratio is high means that the greater the total debt to the total equity.

Times Interest-earned ratio

From the results of the calculation above, it can be known that the Times interest-earned ratio of PT. Indofood Sukses Makmur Tbk for five years has gone up and down every year the value of the Times interest-earned ratio, in 2018 which is 5.8 times, then in 2019 decreased to 5.6 times, in 2020 it increased to 6.8 times, in 2021 it decreased to 5.9 times, and in 2022 experienced a re-pulsion to 17.4 times. The Times interest-earned ratio of PT. Indofood Sukses Makmur Tbk for five years is 51 times, if the average timer interest-earned ratio is 10 times (Kasmir, 2015). Then the Times Interest-earned ratio of PT. Indofood Sukses Makmur Tbk for five years is above the average industry standard that interest costs can be covered by 51 times from profit before interest and taxes. It can be concluded that the Times interest-earned ratio of the company is in a "good" state.

Long-Term debt to equity

From the results of the calculation above, it can be known that Long-Term debt to equity PT. Indofood Sukses Makmur Tbk for five years has increased, in 2018 it was 0.22 times, in 2019 it increased to 0.23 times, in 2020 there was an increase back to 0.91 times, in 2021 the increase was increased to 0.92 times, and for 2022 it dropped to 0.91 times. Average Long-Term debt to equity. Indofood Sukses Makmur Tbk for five years is 0.63 or 6.3 times, if the average Long-Term debt to equity industry is 10 times (Kasmir, 2015), then the company's Long-Term debt to equity for five years is below the average industry standard or the company has a long-term debt of 0.63 times from its own capital. It can be concluded that Long-Term debt to equity PT. Indofood Sukses Makmur Tbk in a state of "good".

Activity Ratio

Table Results of PT's liquidity ratio analysis. Indofood Sukses Makmur Tbk for 5 years (2018-2022)

Financial Ratio	Periode					Average	Industrial Standard
	2018	2019	2020	2021	2022		
TAT	0,76	0,79	0,50	0,55	0,61	0,64	2
WCTO	35,4	11,4	7,8	7,2	4,5	13,2	6
FAT	1,7%	1,7%	1,7%	2,0%	2,2%	1,8	3
ITO	6,3	7,9	7,3	7,8	6,4	7,1	20
RUP	20	21	19	18	17	19	15
ARTR	27	17	8	10	10	14	7,2

Source: Data processing 2023

Total Asset Turnover (Total Asset Turn Over)

From the results of the calculation above, it can be known that the results of the Total Turnover of Assets PT. Indofood Sukses Makmur Tbk for five years, in 2018 was 0.76 times, in 2019 it rose to 0.79 times, in 2020 it fell to 0.50 times, in 2021 it rose again to 0.55 times, and in 2022 it rose to 0.61 times. The average total turnover of assets over five years is 0.64 times, and if the average

asset's total turnover industry is 2 times (Hery, 2015). Then it can be said that the total turnover of PT's assets. Indofood Sukses Makmur Tbk for five years is still below the industry average, it can be concluded that the company's financial performance seen from the total turnover of assets is in a state of " less good".

Working capital turnover (Working Capital Turn Over)

From the results of the calculation above, it can be known that the turnover of working capital in 2018 was 35.4 times, in 2019 it decreased to 11.4 times, in 2020 decreased back to 7.8 times, in 2021 it fell again to 7.2 times, and in 2022 it fell to 4.5 times. The average working capital turnover for five years is 13.2 times, while the average company's industry is 6 times (Kasmir, 2015). Then it can be concluded the turnover of working capital PT. Indofood Sukses Makmur Tbk for five years in a state of "good" because it is above the company's average industry,

Fixed Asset Turnover (Fixed Asset Turnover)

From the results of the calculation above, it can be known that the turnover of fixed assets in 2018-2020 experienced a stability of 1.7 times, in 2021 it increased to 2.0 times, and in 2022 experienced an increase back to 2.2 times. The average fixed asset turnover for five years is 1.8 times, if the company's industry average is 3 times (Hery, 2015), then the fixed asset turnover of PT. Indofood Sukses Makmur Tbk for 5 years is still below the company's industry average. So it can be concluded that the company's performance is seen from the asset turnover ratio remains in a state of "not good".

Inventory Turnover (Inventory turn over),

From the results of the calculation above, it can be known that the ratio of inventory turnover in 2018 was 6.3 times, in 2019 it increased to 7.9 times, in 2020 the decline was decreased to 7.3 times, in 2021 it increased to 7.8 times, and in 2022 decreased to 6.4 times. The average inventory turnover ratio for five years is 7.1 times, the average industry of the company is 20 times (Cashme, 2015). Then it can be concluded that the ratio of the turnover of PT. Indofood Sukses Makmur Tbk for five years is in a state of "not good".

Average age of receivables

From the results of the calculation above, it can be known that the average age of receivables in 2018 is 20 times, in 2019 there was an increase to 21 times, in 2020 there was a decrease to 19 times, in 2021 there was a decrease back to 18 times, and in 2022 there was a decrease to 17 times. The average age of receivables for five years is 19 times, the average company's industry is 15 times (Kasmir, 2015). Then it can be concluded that the average age of receivables PT. Indofood Sukses Makmur Tbk for five years is in a state of "good".

Receivables turnover (Account receivable turnover)

From the results of the calculation above, it can be known that the turnover of receivables in 2018 is 27 times, in 2019 it decreased to 17 times, in 2020 decreased back to 8 times, in 2021-2022 increased the increase to 10 times. The average turnover of receivables for five years is 14 times, the average industry standard is 15 times (Cashme, 2015). Then it can be concluded that the turnover of the company's receivables is in a state of "not good

CONCLUSION

Based on the results of the analysis of data and the discussion that has been outlined in Chapter IV, it can be some conclusions as follows:

1.1.1. Liquidity Ratio

1.1.1.1. Current Ratio shows a value of 1.36% or 136 times which means the value of the Current Ratio of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.1.2. Quick Ratio shows a value of 95% which means the value of Quick Ratio PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.1.3. Cash Ratio shows a value of 63% which means the value of the cash ratio of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be good, because it reaches the company's average industry.

1.1.2. Profitability Ratio

1.1.2.1. Gross Profit Margin (Gross Profit Margin) shows a value of 30% which means the gross profit margin value of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be good, because it reaches the company's average industry.

1.1.2.2. Net Profit Margin (Net Profit Margin) shows a value of 6% which means the net profit margin value of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be good, because it reaches the company's average industry.

1.1.2.3. Return on Assets (Return On Assets) shows a value of 4% which means the value of return on assets of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.2.4. The results of the Return On Equity (Return On Equity) showed a value of 13% which means the return on equity value of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.2.5. The return on capital Employed (Return On Capital Employed) shows a value of 28% which means the value of return on capital employed PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.2.6. The return on investment (Return on investment) shows a value of 4% which means the value of return on investment of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.3. Solvency Ratio

1.1.3.1. The debt to asset ratio (DAR) shows a value of 0.44% which means the value of debt to asset ratio of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be good, because it reaches the company's average industry.

1.1.3.2. Debt To Equity Ratio (DER) shows a value of 15% which means the value of debt to equity ratio of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.3.3. Times interest-earned ratio shows a value of 41% which means the value of times interest-earned ratio of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be good, because it reaches the company's average industry.

1.1.3.4. Long-Term debt to equity shows a value of 0.63% which means the value of long-term debt to equity PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.4. Activity Ratio

1.1.4.1. Total Asset Turnover (Total Asset Turn Over) shows a value of 0.64% which means the total value of PT turnover asset. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.4.2. Working capital turnover (Working Capital Turn Over) shows a value of 13.2% which means the value of working capital turnover of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be good, because it reaches the company's average industry.

1.1.4.3. The turnover of fixed assets shows a value of 1.8% which means the value of the fixed asset turnover of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.4.4. The Inventory turnover ratio (Inventory turn over) shows a value of 7.1% which means the inventory turnover value of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

1.1.4.5. The average age of receivables shows a value of 19 times which means the average value of the age of receivables of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be good, because it reaches the company's average industry.

1.1.4.6. The turnover (Account receivable turnover) shows a value of 14 times which means the value of the account receivable turnover of PT. Indofood Sukses Makmur Tbk in 2018-2022 is said to be less good, because it does not reach the average industry of the company.

REFERENCES

Agus Sartono. 2010. Manajemen Keuangan Teori dan Aplikasi. Edisi 4. Yogjakarta: BPFE
Fahmi, Irham. 2012. Analisis laporan Keuangan. Alfabeta. Bandung.

Ferdinand, Augusty. 2014. Metode Penelitian Manajemen. BP Universitas Diponegoro. Semarang.

Halim, I. (2021). Analisis laporan keuangan.

Harahap, Sofyan Syafri 2010 .Analisa Kritis atas Laporan Keuangan. Cet 11.Jakarta : PT RajaGrafindo Persada.

Kasmir.(2012), Analisis Laporan Keuangan. Jakarta : PT. Raja Grafindo Persada.

Kasmir. (2013). "Analisis Laporan Keuangan". Edisi 1. Cetakan ke-6. Jakarta: Rajawali Pers.

Kasmir,(2014). Analisis Laporan Keuangan, cetakan ke-7. Jakarta: PT Raja Grafindo Persada.

Kasmir (2015) Analisis Laporan Keuangan. Edisi Satu. Jakarta: PT RajaGrafind Persada.

Kurniasi, E. (n.d.). Analisis Rasio Profitabilitas Dan Rasio Likuiditas Dalam Mengukur Kinerja Keuangan Pt Gudang Garam Tbk Periode 2014-2018 Di Bursa Efek Indonesia. www.idx.co.id

Kasiram, Moh. (2008), Metodologi Penelitian. Malang: UIN-Malang Pers, Hlm.149

Munawir, S. 2010. Analisis Laporan Keuangan. Edisi 4. Yogyakarta : Liberty.

Prayitno, Ryanti Hadi. 2010. Peranan Analisa laporan Keuangan Dalam Mengukur Kinerja Keuangan Perusahaan: Studi kasus pada PT X. jurnal manajemen Vol 2 No 1. UNNUR. Bandung.

Rangkuti, Freddy. 2013. Teknik Membedah Kasus Bisnis Analisis SWOT Cara Perhitungan Bobot, Rating, dan OCAI. Penerbit PT. Gramedia Pustaka Utama. Jakarta.

Sofyan Syafri Harahap, 2008, Analisis Kritis atas Laporan Keuangan. Jakarta : PT. Raja Grafindo Persada.

Sugiyono. (2018). Metode Penelitian Kuantitatif. Bandung: Alfabeta

Sugiyono (2019). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung : Alphabet.

Sugiyono, (2017). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung: CV. Alfabeta.

Yessy Arsita. 2021. ANALISIS RASIO KEUANGAN UNTUK MENGUKUR KINERJA KEUANGAN PT SENTUL CITY, TBK, Jakarta Indonesia

Yusa, F. F., & Ruzikna, R. (2016). *Analisis Rasio Likuiditas Dan Rasio Profitabilitas Dalam Rangka Meningkatkan Kinerja Keuangan* ***(1)***

Zakiyatul Miskiyah, Arif Zunaidi, Sodiq Almustofa, & Mahrus Suhardi. (2022). Kebijakan Fiskal dalam Perspektif Ekonomi Makro Islam. Istithmar : Jurnal Studi Ekonomi Syariah, 6(1), 69–83. https://doi.org/10.30762/istithmar.v6i1.33

THE INFLUENCE OF E-COMMERCE (CASE STUDY ON THE SHOPEE APPLICATION) ON INTEREST IN BUYING ADULT MEN'S CLOTHING AMONG MANAGEMENT PROGRAM STUDENTS, FACULTY OF ECONOMICS PALEMBANG UNIVERSITY

M.Lisdan Pondarta
Student of Management Study Program, Faculty of Economics, Palembang University

Nenny Octarinie SE, MM
Lecturer of Management Study Program, Faculty of Economics, Palembang

Rusma Rizal SE, M.Si
Lecturer of Management Study Program, Faculty of Economics, Palembang

Abstract:

Digital marketing is present as a new innovation in the world of marketing. Digital marketing is the process of marketing a product or service via digital means or the internet. Nowadays, people can choose to make purchases online or conventionally. Marketing via the internet allows customers to choose the product or service they want without having to waste time going to the place where they need the product or service. The aim of this research is to examine the influence of e-commerce on interest in purchasing adult clothing among students at the economics faculty at Palembang University. The sample in this research was male students from the Management Studies program, Faculty of Economics, Palembang University. The research method is presented quantitatively, based on questionnaires distributed to respondents. Next, the data was processed using the SPSS 26 program. The final aim of this research is to find out whether all the indicators in the e-commerce variable have an effect on the purchase interest variable.

Keywords: e-commerce, purchase interest, digital marketing

INTRODUCTION

In the era of globalization, the development of technology is increasingly rapid, and everyone can now use technology in everyday life. Along with that, mobile phones (mobile phones) have evolved into smartphones (smartphones), and the field of communication is also growing, such as the ability to access the internet through smartphones. With this development, the internet can be a potential market for business people.

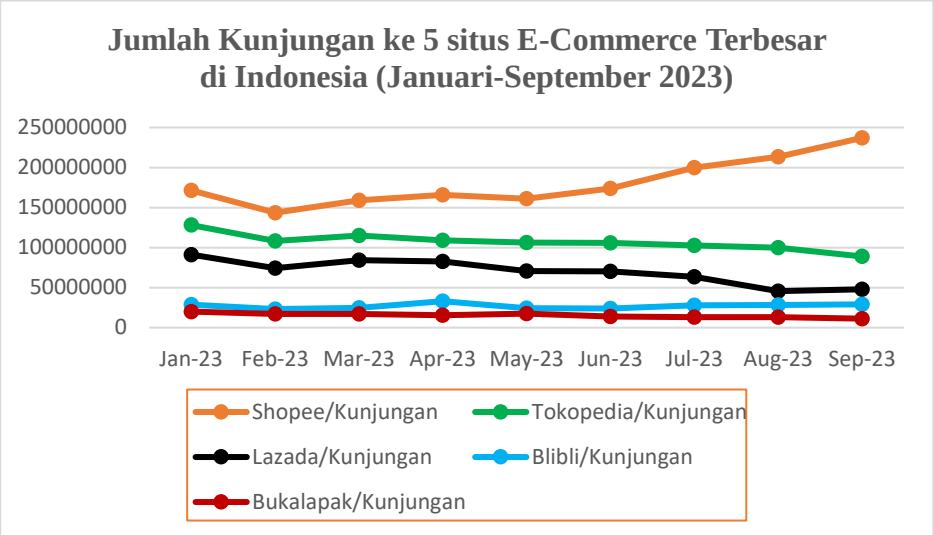
On this occasion, business people use the internet as a business consultant who offers freedom and flexibility to run his business anytime, anywhere without knowing the limitations of location and time. Technology is growing every day, especially in the current era of the Industrial 4.0 revolution, the use of technology and the internet is increasingly easier and accelerates in supporting activities. Indonesia is also a developing country and its society is very open to new technology (Hermawan, 2018).

Indonesia is one of the countries with the most internet users in the world. As of January 2022, the country had 204.7 million internet users, according to a report (We Are Social, 2022). This figure is slightly increased 1.03% compared to the previous year. In January 2021, the number of internet users in Indonesia reached 202.6 million. The trend in the number of internet users in Indonesia has continued to increase over the past five years. Compared to 2018, the number of internet users in

the country is currently growing 54.25%. While internet penetration in Indonesia is estimated at 73.7 million at the beginning of 2022. The total population of Indonesia as of January 2022 was recorded at 277.7 million people (Annur, 2022).
Digital marketing is a new innovation in the world of marketing. Digital marketing is the process of marketing a product or service through digital or internet. In Indonesia, digital marketing has been very developed. By using a computer system that is interconnected through a telecommunications network, sales transactions can be done automatically and in a short time. By making sales and marketing electronically, sellers can minimize the costs that must be incurred for operational purposes.

E-Commerce is a sales system that developed after the invention of the Internet. Such marketing or sales systems can reach the whole world at the same time without having to set up branch offices in all countries. In addition, it can also be done 24 hours without stopping. By simply through a computer unit connected to the Internet, the company can market its products. (Arifin, 2003: 101). The community consumption style that was originally from a conventional store to an online store has been shifted by the pattern of community behavior (Subayo, Tukidi, & WV, 2019). But there are also people who see products in the store directly, but make purchases online. This happens because conventional stores are considered more real because they have a location and physical wake that can be visited by the public directly so that customers can assess the product they want to buy whether it is in accordance with their expectations.
Marketing through the internet makes customers able to choose the product or service they want without having to waste time to go to the place where they need the product or service. Marketing through digital marketing requires products or services first, then to display products or seller services requires a website or application related to the process of buying and selling and uploading the choice of products or services available.
With a variety of choices of products and services provided to make its own appeal on a website, as well as applications related to buying and selling for consumers. Consumers can more freely choose products or services with a variety of choices and varying prices. There are many sites and applications that are provided today. Competing with each other to become a platform that provides convenience for sellers to sell products and services and buyers to find the desired products and services. Some examples of sites and applications to buy and sell products and services such as Tokopedia, Ebay.com, blibli.com, Lazada.co.id, Amazon.com, Zalora and Shopee.
As for the interest in buying consumers in online stores today has been favored by all circles. Both men and women, old and young. Everything is now switching online. Because there is no need to take the time to go directly to the store that sells the desired goods and also the availability of many variations of products and services and also the diverse prices that we can adjust to the budget we have.
One of the E-Commerce sites that offer goods and services in Indonesia is one of the Shopee applications. Shopee is a business-based electronic website that has its headquarters in Singapore, which is part of Sea Limited (formerly Garena), founded by Forrest Li in 2009. In 2015, Shopee was first launched in Singapore. And it has since been extended to Malaysia, Thailand, Taiwan, Indonesia, Vietnam, and the Philippines. Chris Feng was the leader of Shopee at the time, who was also a former Rocket Internet employee who had led Bukalapak and Lazada.
According to Similarweb data, Shopee is currently an E-Commerce site category marketplace with the most visitors in Indonesia. In September 2023 the Shopee site received 237 million visits, sperting about 38% compared to the early position of the year (ytd). The growth of Shopee visitors is far beyond its main competitors, namely Tokopedia, Lazada, Blibli, and Bukalapak. In September 2023 the Tokopedia website recorded 88.9 million visits, slumping 31% compared to the beginning of the year (ytd). In the same period the acquisition of Lazada site plummeted 48% (ytd) to 47.7 million visits, the Blibli site grew 1% (ytd) to 28.9 million visits, and the Bukalapak site slumped 44% (ytd) to 11.2 million visits. As a result, of the 5 sites, the largest category of marketplaces in Indonesia, whose visitors grow significantly only Shopee, followed by Blibli visitors who rise thinly. While the number of visitors to Tokopedia, Lazada, and Bukalapak in January-September

2023 tends to drop sharply, as seen on the chart (Hidayat, 2023).Gambar 1 Grafik Pengunjung E-Commerce Di Indonesia



Source : https://databoks.katadata.co.id

In April 2020, Shopee Indonesia began promoting fast food sales on the Shopee platform. It is now the third vendor to compete with Gofood and GrabFood. Called Shopeefood, the program recruits more than 500 food vendors in the Jakarta area. Shopee also provides a means for everyone who wants to sell, anyone and wherever they can open their own online store to get buyers from all people in Indonesia. Individual users and companies can buy and sell products, both new and used, such as bicycles, baby supplies, gadgets, gadgets, computers, home appliances, fashion, electronics and others.

This research was conducted to find out if several factors resulted in a positive influence on the interest in the purchase of goods in E-Commerce in the community in the Palembang University. Some factors include payment methods, ease of use of applications, reviews / feedback, website design, availability of goods, product details, social media activities, time efficiency, goods prices, and advertising. Therefore, the author chose the study with the title “The Influence of E-Commerce (Shopee Application) on the Interest in Buying Adult Men’s Clothing on Students of the Management Study Program of the Faculty of Economics of Palembang University”.

LITERATURE REVIEW

2.1.2 Digital Marketing

Digital marketing is a process of planning and implementing concepts, ideas, prices, promotions, and distribution. In simple terms, it can be interpreted as the development and maintenance of a mutually beneficial relationship between consumers and producers. Digital marketing uses the development of the digital world to do advertising that is not touted directly but has a very influential effect (Heidrick and Struggles, 2009).

According to Ridwan Sanjaya and Josua Tarigan (2009) digital marketing is a marketing activity including branding that uses various media. For example, blogs, websites, e-mails, adwords, and various social media networks.

Based on the understanding of experts, researchers conclude that digital marketing is a marketing activity where the planning and implementation of concepts, ideas, prices, promotions and distributions that use various media. For example, blogs, websites, e-mails, adwords, and various social media networks that have a very influential effect on a company to introduce and in the process of buying and selling products.

2.1.4 E-Commerce

E-Commerce or called Electronic commerce is a business tool that uses computer networks. E-commerce has been known since 20 years ago, namely since the end of the 70's and the beginning of the 80's. The first generation of E-Commerce is carried out only between companies in the form of buying and selling transactions facilitated by Electronic Data Intechange (EDI) in buying and selling transactions through electronics, many legal aspects that come into direct or indirect contact.

According to Laudon & Laudon (1998), E-Commerce is a process of buying and selling products electronically by consumers and from companies to companies with computers as an intermediary for business transactions. E-Commerce are business activities that concern consumers, manufacturing, service providers, and intermediary merchants using computer networks, namely the internet.

According to Bajaj & Nag (2000), E-Commerce helps conduct traditional commerce through new ways of transferring and processing information, as information is at the core of all commercial activities. E-Commerce refers to the exchange of business information using electronic data exchange, electronic mail, electronic bulletin board, electronic fund transfer, and other network-based technologies. Information is electronically transferred from the computer to the computer by automated means.

The city & Whinnston (1997) review the definition of E-Commerce from four perspectives, namely:

a. A perspective of communication, E-Commerce is a process of delivering goods, services, information, or payments over a computer network or other electronic equipment.

b. Business process perspective, E-Commerce is an application of technology that leads to automation of business transactions and workflow.

c. Service perspective, E-Commerce is a tool that meets the desires of companies, management, and consumers to reduce service costs when improving the quality of goods and improving the speed of delivery services.

d. Online perspective, E-Commerce provides the ability to buy and sell products or information through the internet and other online means.

There are many reasons why people shop online, for example, consumers can buy things at any time without going to the store; they can produce the same at a lower price by comparing various websites at the same time; they sometimes want to avoid pressure when interacting face-to-face with salespeople; they can avoid traffic jams in the store, etc. These factors can be summarized into four categories, convenience, information, available products and services, cost and time efficiency (Katawetawaraks & Wang, 2011).

E-Commerce includes a variety of forms of information exchange processes between organizations and stakeholders based on electronic media connected to the internet (Agus & Pratama, 2015). E-Commerce transactions like this are not something new in Indonesia, even growing very rapidly to date

Ease of Use

Ease of use can be referred to as a level or circumstance where there is no effort needed to use a particular system (free) or the user feels the technology is easy to understand. (Andrianto, 2016).
Ease of use becomes the level where an individual believes that an application can be easily understood. From this explanation it can be concluded that the ease of use of the application is able to reduce business, both energy and time a person in learning an application. The perception of ease of use is defined as the extent to which a person believes that using a technology will make us free from effort (Jogianto, 2007).
A person will use an information system if they think the hat is easy to do. But if it feels difficult, users will not be interested in using it. This view of ease of use will have an impact on behavior, which the higher a person's view of the ease of using the system, the higher the level of usefulness of information technology. In ease of use there are six indicators, including:

a. Easy to learn, to make it easier for users to adapt and understand an application, the application must be easy to learn.
b. Controllable, the application must be easily controlled in order to be used according to the needs of the user.
c. Clear and Understandable, the application must be clear to be easy to understand, in terms of content to the terms used.
d. Flexible, the application must be flexible to be suitable for use whenever the user wants to use it.
e. Easy to become skillful, the application must be easy to understand, so that users can master the use of the application easily.
f. Easy to use, the application must be easy to use so that users do not have difficulty in using it. Ease of use of technology helps consumers in making purchasing decisions. From this definition it can be concluded that comfort is a measure of trust. If the technology or website is easy to use and there are no transactions that can affect consumer interest in transacting online.

Payment Method

With the development of technology today, business interaction also undergoes a very rapid change following all developments that exist. Transactions are usually done face-to-face and have now been replaced by an online system.

In this case, for example, Shopee. Payment can be made by transfer via ATM or mobile banking, payment in cash through Indomaret or Alfamart, payment through shopee pay which must top up the balance of shopee pay first, up to the way COD (Cash on Delivery), which is cash payment is made directly when the goods come. The payment method in Shopee can also be trusted by users because if they have made payments but goods are not received, consumers can complain directly to Shopee customer service so that money can be returned.
But if the goods come in no match, the user can apply for a return of the item, then the goods are exchanged or the money is returned. So in this case the payment method in the online store in Shopee greatly facilitates consumers because there is a lot of choice of payment methods depending on that consumers want.

Feedback

Reviews that include images determine the quality of the actual goods, such as color problems, specifications inconsistency, problems with use and problems on high quality, to good experience (Saripa, 2019). Product rating is a review of a tuth, image, or video given by the customer about a product (Nurul, Soewarno, & Isalita, 2019). From this definition, it can be concluded that product reviews are writings that are consciously written by consumers in columns provided by E-Commerce where the actual quality of goods can be assessed. Color problem, unsuitable specifications, usage issues, or superior quality and experience.

There are several sellers in the online store providing information on their products such as color, size, or material not in accordance with the products they sell so that consumers are hesitant to do online shopping. The quality of the sales relationship and the performance of the company can be affected by customer trust or orientation (Herman, Udayana, & Farida, 2020), so that a good company must be able to convince customers to make a purchase. Before a consumer buys a product, the seller must be able to generate consumer confidence in a product they sell in order to attract attention and make consumers confident about the product and decide to buy it.

The current community purchase decision also relies on an online store that provides a product assessment report or review from someone who has purchased the product as a consideration in online shopping. The Shopee application also provides a payment guarantee if the product has not reached the hands of consumers or is not sent. Shopee provides a 24-hour live chat feature, and ensures consumer personal data information is not leaked. This raises consumer confidence in the products sold in Shopee. The quality of information and security in Shopee is able to generate the trust of users so that there is a decision to buy Shopee products.

Purchase Intention

The purchase intention relates to the consumer's plan to buy a particular product and how many units of the product are needed over a period of time (Mellarianda & Lisan, 2010). Interest in buying a product arises because of the basis of confidence in the product accompanied by the ability to buy Simamora products, 2011). The buying interest is what happens after someone is inspired by what he sees and then wants to buy to then have it (Karimi, 2013). Product advertising, lifestyle, and celebrity endorser can jointly influence positively and significantly to consumer buying interest, and advertising messages cannot positively affect consumer buying interest (Lapera, 2013).

Interest in buying consumers becomes one part of the component in the attitude of consumers in consuming a product. A consumer who wants to make ends meet will realize depending on the interest that arises in making a purchase, which will bring motivation in the person's mind into a strong activity to do, which ultimately they have to obey the mind. As Setiawati shows, a person who has a high motivation for a particular object will be motivated to act to master a product. Conversely, if the motivation is low, then he will try to avoid the object in question (Setiawati, 2015).

RESEARCH METHOD

This research is intended for consumers or users of Shopee E-Commerce platform as a means of shopping online, especially for Students of Management Study Program of the Faculty of Economics of Palembang University who are male. The research will be carried out in December 2023-February 2024.

In conducting research so as not to deviate from the formulation of existing problems, the authors emphasized the discussion on the influence of the ease of use of applications, payment methods and reviews / feedback in E-Commerce on the interest in buying men's clothing in the Student of Management Study Program of the Faculty of Economics of Palembang University.

This type of research is quantitative research by looking for associative relationships that are cadical. Sugiyono (2008: 36) states that associative research is research that is in question the relationship between two or more variables. A cadre relationship is a cavy-cause relationship.

According to Sugiyono (2015) the population is a generalization area consisting of objects / subjects that have certain qualities and characteristics set by researchers to be studied and then drawn conclusions.

The population in this study is a Student of Management Study Program of the Faculty of Economics of Palembang University of Men who are consumers or users of the E-Commerce Shopee platform. The population is determined based on the number of students. Based on the understanding of the population in this study, the Student of the Management Study Program of the Faculty of Economics of the University of Palembang with the gender of 112 people from a total of 4 generations. With the criteria of respondents is a male student of the management program of the faculty of economics of the University of Palembang. The number of samples to be used is 112 people, according to the total number of male students of the Faculty of Economics Management Study Program of Palembang University.

RESULTS
Respondent Characteristic

Gender
Respondents from this study are students of the economics faculty of the management program of Palembang University who are recorded as active students of the male sex. Here are the characteristics of the respondent's data that the author got.
Table 4.1 Gender

	Frequency	Percent
Male	112	100,0
Total	112	100,0

Sourde: Data processing 2024

According to the data above, 112 male respondents were obtained from students of the faculty of economics of the management program of Palembang University.
Ages

Tabel 4.2 Ages

		Frequency	Percent
Valid	18 - 25 tahun	84	75,0
	26 - 35 tahun	28	25,0
	Total	112	100,0

Sourde: Data processing 2024

Based on Table 4.2 above it can be known that the age of male students of the faculty of economics of the management program of Palembang University is taken as a sample, which is aged 18-25 years as much as 84 people or 75%, while respondents aged 26-35 years as many as 28 people or 25%. This shows that most of the students of Palembang University who are sampled are students aged 18-25 years.
Entry Years
Table Entry Years

		Frequency	Percent
Valid	2020 - 2021	32	28,57
	2021-2022	21	18,75
	2022 - 2023	28	25,00
	2023 -2024	31	27,68

	Total	112	100,0

Sourde: Data processing 2024

According to the table data above, the total number of respondents is 112 spread from 4 active student classes of the Faculty of Economics Management Study Program of Palembang University.

4.1.4 Quality Data Test

a. Validity Test

Test of validity (Test of validity) is done to find out whether the measuring instrument that has been stacked has validity or not. The result will be shown by an index to the extent to which the measuring instrument really measures what it wants to measure.

From the results of the analysis in can be the score of the item with the total score. This value is then compared to the r value of the table. R table is searched at 5% significance with 2-sided test and n = 12, then it can r table amounting to 0.1857. if the r value of the analysis results is less than r table, it can be concluded that the items are not significantly correlated with the total score (asc stated invalid) and must be issued or corrected. Here is the summary table of validity test results

Tabel 4 3 Validity Test

Items	R count	R table	information
x1.1	0.957	> 0.1857	valid
x1.2	0.945	> 0.1857	valid
x1.3	0.885	> 0.1857	valid
x1.4	0.898	> 0.1857	valid
x2.1	0.965	> 0.1857	valid
x2.2	0.830	> 0.1857	valid
x2.3	0.853	> 0.1857	valid
x2.4	0.858	> 0.1857	valid
x3.1	0.943	> 0.1857	valid
x3.2	0.902	> 0.1857	valid
x3.3	0.926	> 0.1857	valid
x3.4	0.927	> 0.1857	valid
y1	0.953	> 0.1857	valid
y2	0.854	> 0.1857	valid
y3	0.944	> 0.1857	valid
y4	0.932	> 0.1857	valid
y5	0.860	> 0.1857	valid
y6	0.758	> 0.1857	valid

Sourde: Data processing 2024

Based on the data above all the valid data so that the data can be continued for the next test.

b. Reliability Test

According to Sugiyono (2021), the reliability test is a tool for measuring the level of reliability, accuracy, rigor, and consistency of indicators in the questionnais. The reliability test is also used to test whether the questionnaisary questioning item or instrument is an indicator of a variable or construct.

Sugiyono stated that the research instrument can be said to be reliable if the value of Cronbach Alpha is 0.6 or more.

Tabel 4 4 Reliabilitas Variabel

Sourde: Data processing 2024

Based on the calculation results above the value of the croonbach alpha of these 4 variables is greater than 0.6 so it can be stated that the data is reliable.

4.1.5 Hypothesist

a. Determination Test (R^2)

The coefficient of determination (R2) is used to measure how far the model is capable of explaining the variation of dependent variables. The greater the Adjusted R2 value or the closer the value of 1 the more independent the variable can explain the dependent variable or the greater the effect on the dependent variable (Ghozali, 2020).

Table 4 5 Determination Test (R2)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.923[a]	0,852	0,847	2,029

Source: Data processing 2024

Based on the output table of the summary model above, it is known that the value of R is 0.923 which means the effect tends to be strong because it is close to the value of 1. coefficient of

Variabel	Cronbach's Alpha	Standard	Information
X1	0,941	0,6	Reliable
X2	0,898	0,6	Reliable
X3	0,941	0,6	Reliable
Y	0,944	0,6	Reliable

determination or R square is 0.852. The magnitude of the determination coefficient (R square) is 0.852 or equals 85.2%. The figure means that the variable Ease of Application (X1), Payment Method (X2), Review/Feedback (X3) simultaneously affects the Buying Rate (Y) variable of 85.2%. While the remaining (100%-85.2% = 14.8%) is influenced by other variables outside of this regression equation or unresearched variables.

Multiple Linear Regression

The regression testing in the study was conducted with the help of IBM SPSS Statistic 26 software.

Tabel 4 6 **Multiple Linear Regression results**

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0,498	1,167		-0,426	0,671
	Kemudahan	-0,009	0,078	-0,006	-0,115	0,909
	pembayaran	0,459	0,094	0,272	4,893	0,000
	ulasan	1,027	0,093	0,707	11,039	0,000

b. Sourde: Data processing 2024

c. The table above informs the model of the regression equation obtained with the constant coefficient and the coefficient of the variable in the Unstandardized Coefficients column B. Based on this table obtained the model of the regression equation: Y = -0,498 – 0.009X1 + 0.459X2 + 1,027X3 + e

d. 1) The constant value (a) has a negative value of -0.498. Negative signs mean that it indicates an undirected influence between the independent variable and the dependent variable. This indicates that if all the independent variables that include Ease of Application Use (X1), Payment Method (X2), and Review/Feedback (X3) are worth 0 percent or do not change, then the value of Buy Interest is -0.498.

e. 2) The value of the regression coefficient for the Ease of Application Use (X1) is -0.009. The value shows a negative influence (opposasing direction) between the variable Ease of Application Use and Buy Interest. This means that if the Ease of Application Usage variables increase by 1%, then instead the tax aggressiveness variable will decrease by 0.009. Assuming that the other variables remain constant.

f. 3) The regression coefficient value for the Payment Method (X2) variable has a positive value of 0.459. This indicates that if the Payment Method has increased by 1%, then the tax aggressiveness will rise by 0.459 assuming other independent variables are considered constant. Positive signs mean showing a direct influence between independent variables and dependent variables.

g. 4) The regression coefficient value for the Review/Feedback variable (X3) has a positive value of 1.027. This indicates that if the capital intensity has increased by 1%, then tax aggressiveness will rise by 1,027 assuming other independent variables are considered constant. Positive signs mean showing a direct influence between independent variables and dependent variables.

h. T test

According to Ghozali (2018), the regression model used in this study is a simple linear regression analysis. Multiple linear analysis is done with the aim to determine the direction of the influence of free variables on bound variables, whether the effect is positive or negative.

The partial hypothesis testing aims to determine the influence and significance of each independent variable on dependent variables. This test is done with a test-t at a 95% confidence level with the following conditions:

H0: When p-value > 0.05, then H0 is accepted and Ha is rejected.

Ha: If p-value < 0.05, then H0 is rejected and Ha is accepted.

The results of the test-t calculation in this study can be seen in the following table based on the testing of variable (X) influence of Ease of Application Use, Payment Methods, Reviews / Feedback on Variables (Y) Interest in Buying Students of the Faculty of Economics Prodi Management University of Palembang.

Tabel 4 7 T test

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0,498	1,167		-0,426	0,671
	kemudahan	-0,009	0,078	-0,006	-0,115	0,909
	pembayaran	0,459	0,094	0,272	4,893	0,000
	ulasan	1,027	0,093	0,707	11,039	0,000

Sourde: Data processing 2024

1) Ease of Use

The output of the data is processed with SPSS that partially Ease of Application Use does not have a positive and insignificant effect on Buy Interest with a significance level of 0.909 > 0.05 as mentioned in the table above.
In the table above the variable Ease of Use Application does not have a positive effect and is not significant to the Interest of Buying obtained t count -0.115 < t table 1,98137 so that it is rejected Ha and Ho accepted that the Interest of Buying Students of the Faculty of Economics Prodi Management of Palembang University Thus the hypothesis does not succeed in confirming theoretical empirically.

Payment Method

Output data is processed with SPSS that partially Ease of Application Use has a positive and significant effect on Buy Interest with a level of significance of 0.00 < 0.05 as mentioned in the table above.
In the table above the variable Payment Method has a positive and significant effect on the Interest of Buying is obtained to count 4.893 > t table 1,98137 so that Ho is rejected and Ha accepted that there is a significant influence on the Interest of the Student Purchase of the Faculty of Economics Prodi Management of the University of Palembang Thus the hypothesis successfully confirms theoretically empirically.

Feedback

Output data is processed with SPSS that partially Ease of Application Use has a positive and significant effect on Buy Interest with a level of significance of 0.00 < 0.05 as mentioned in the table above.
In the table above the Varieties Review / Feedback has a positive and significant effect on the Interest of Buying is obtained t count 11,039 > t table 1,98137 so that Ho is rejected and Ha accepted that there is a significant influence of Payment Method on the Interest of Buying students of the Faculty of Economics Study Program Management University of Palembang Thus the hypothesis successfully confirms theoretical empirically.

F test

The F-statistical test is used to indicate whether the independent variables that have been incorporated into the model have a joint influence on dependent variables (Ghozali, 2020). The decision-making criteria on the simultaneous significance test (ji-F) are as follows (Ghozali, 2020):
1) If Calculate < Ftable and Sig. < 0.05 it can be concluded that there is no significant influence between independent variables with dependent variables.
2) If Count > Ftable and Sig. < 0.05 it can be concluded that there is a significant influence between the independent variable and the dependent variable.
The F test basically shows whether all independent variables have a shared influence on dependent variables. Here are the results of the F test:

Tabel 4.8 F test

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2552,715	3	850,905	206,616	.000[b]
	Residual	444,776	108	4,118		
	Total	2997,491	111			

Sourde: Data processing 2024

Output data is processed with SPSS that simultaneously the Ease of Application Use, Payment Methods, Reviews / Feedback has a positive and significant effect on Buy Interest with a level of significance of 0.00 < 0.05 as mentioned in the table above.

From the test result F in table 4.8 obtained F count (206,616) > f table (3.08) and probability of 0.000. Because sig 0.000 < 0.05, it can be concluded that the variable Payment Method, Ease of Application Use, Consumer Reviews, jointly affects the Interest of Buying.

4.2 Discussion

The output of the data is processed with SPSS that partially Ease of Application Use does not have a positive and insignificant effect on Buy Interest with a significance level of 0.909 > 0.05 as mentioned in the table above.

In the table above the variable Ease of Use Application does not have a positive effect and is not significant to the Interest of Buying obtained t count -0.115 < t table 1,98137 so that it is rejected Ha and Ho accepted that the Interest of Buying Students of the Faculty of Economics Prodi Management of Palembang University Thus thehypothesis does not succeed in confirming theoretical empirically.

The results of this study prove that the ease of use of the application does not have a positive effect on buying interest. The easier the use of the application will not have a significant effect on buying interest.

Ease is something that everyone wants in achieving their goals in the hope that it can be done easily and smoothly. This is one of the factors that one considers when choosing to shop online rather than shopping conventionally as is done in general (Idris, 2016).

When you first want to shop online, prospective buyers usually have difficulty due to the ignorance factor shopping online. Difficulty shoppers usually advise not to shop online. Online purchases are basically intended for consumers to easily reach sellers, so that online buying and selling applications provide various conveniences for online purchases.

But in my research, it shows that the ease of use of the application does not have a positive effect and is not significant to the Interest in Buying.

The results of this study are inversely proportional to the research conducted by (Sheli Dwitasari, 2019) which states that the ease of using applications has a significant effect on buying interest which means that the easier the use of applications carried out by consumers, it does not have a significant effect on the interest of Students of the Faculty of Economics of Management Program of Palembang University to make purchases on E-Commerce Shopee.

Variable Payment Methods positively and significantly affect the Interest of Buying and Purchase obtained to count 4.893 > t table 1,98137 so that Ho is rejected and Ha is accepted that there is a significant influence on the Interest of Buying and Purchase of Students of the Faculty of Economics Management Prodi Management of the University of Palembang Thus the hypothesis successfully confirms theoretical empirically.

The results of this study prove that the payment method has a positive effect on the buying interest in Shopee's E-Commerce. The more varied and the easier the payment method will increase the purchase interest in Shopee's E-Commerce.

E-commerce is a transaction of buying and selling through the internet and is inseparable from transactions that involve payment processes. Online payment is a payment method that is processed through the internet facility. This method is designed to meet our needs and make trading more convenient and easy wherever we are. For direct purchase and sales transactions, generally only accept two payment methods, namely in cash and the use of a debit or credit card (Shafa P M, 2020).

The results of this study are in accordance with the research (Vega Destaranie, 2022) which states that payment methods have a positive and significant effect on buying interest, meaning that the more variety of payment methods offered by an E-Commerce will attract consumers to shop at E-Commerce.

Reviews / Feedback has a positive and significant effect on the Interest of Buying and Purchase obtained by 11,039 > t table 1,98137 so that Ho was rejected and Ha was accepted that there was a significant influence on the purchase interest of students of the Faculty of Economics of Management Study Program of Palembang University Thus the hypothesis succeeded in confirming the theory empirically.

The results of this study prove that reviews / Feedback from consumers have a positive effect on buying interest in Shopee E-Commerce. The more and more and it is clear that consumer reviews will increase the buying interest in Shopee's E-Commerce.

Shopping online for now is the right choice because it can save more time. But shopping online certainly has the disadvantage that it can not see and touch the products sold directly. Therefore, photos or images have a very important role in overcoming the inability of consumers to touch and see the product directly (Fauzi & Lina, 2021). Product photos can provide closeness, especially between sellers and consumers and prospective consumers, because visual images are a good alternative to convey online shopping information and affect the choice of consumers and prospective consumers.

Reviews are considered capable of influencing the buying interest of prospective consumers because in the review there is clearly the product information that is considered real because it is given directly by consumers to the seller and the online store. Reviews can also be in the form of ratings implemented by giving stars to a product in a store. The higher the star of the review given, the better the product sold. So that with the review on the product and store can affect the buying interest of prospective consumers online.

The results of this study are in accordance with the research from (Cin Ring Rahmatulloh, 2021) as well as research by (Lina., 2021) stating that consumer reviews have a positive and significant effect on online buying interest means that positive and honest reviews can increase consumer interest to make purchases online.

CONSLUSION

Based on the results of the data analysis, the following conclusions in this study:

1. Ease of Application Use does not positively and insignificantly affect Buy Interest obtained t count -0.115 < t table 1,98137. The results of this study prove that the variables of ease of use of the application do not have a positive effect on the online purchase interest of students of the Faculty of Economics Management Study Program of Palembang University in E-Commerce Shopee. The easier it is to use the E-Commerce application does not increase the buying interest of students of the Faculty of Economics Prodi Management of the University of Palembang on E-Commerce Shopee.

2 The Payment Method has a positive and significant effect on Buy Interest obtained t count 4.8933 > t table 1,98137. The results of this study prove that the variables of payment methods have a positive effect on the buying interest of students of the Faculty of Economics of Management of the University of Palembang on E-Commerce Shopee. The easier and more reliable the payment method made, will increase the buying interest of students of the Faculty of Economics Prodi Management of Palembang University on E-Commerce Shopee.

3. Reviews/Feedback positively and significantly affect the Interest of Buying is obtained to count 11,039 > t table 1,98137. The results of this study prove that consumer review variables have a positive effect on the buying interest of Students of the Faculty of Economics Prodi Management of Palembang University on Shopee E-Commerce. Incsurd to be clear and convincing reviews from consumers will increase the buying interest of students of the Faculty of Economics Management Program of Palembang University on E-Commerce Shopee.

4. From the test result F in table 4.8 obtained F count (206,616) > f table (3.08) and probability of 0.000. Because sig 0.00 < 0.05. The results of this study prove that the ease of use of the application does not affect the buying interest of students of the Faculty of Economics of Management Program of Palembang University in E-Commerce Shopee, while payment methods, reviews / Feedback have a positive effect on the buying interest of students of the Faculty of Economics Prodi Management of Palembang University on E-Commerce Shopee.

REFERENCES

Adi Hidayat, (2023 25 Oktober). *Pengunjung Shopee Makin Banyak, Bagaimana E-Commerce Lain?*. Diakses pada 30 Januari 2023. Dari https://databoks.katadata.co.id/datapublish/2023/10/11/pengunjung-shopee-makin-banyak-bagaimana-e-commerce-lain

Agus, & Pratama, I. P. (2015). *E-Commerce, E-Bussiness dan Mobile Commerce* . Bandung: Informatika.

Andrianto, R. (2016). Pengaruh Kepercayaan, Persepsi Manfaat dan Persepsi Kemudahan Penggunaan Terhadap Minat Beli di Toko Online (Studi Empiris yang Dilakukan Pada OLX.co.id di Yogyakarta). *Skripsi*.

Anisa, N., & Sitohang, H. T. (2021). *Perilaku Konsumen Strategi dan Teori*. IOCS

Annur, C. M. (2022, Maret 23). *Ada 204,7 Juta Pengguna Internet di Indonesia*

Aplikasi Shopee. *Jurnal Manajemen Universitas Satya Negara Indonesia*,

Arif Zunaidi, H. S., Zunaidi, A., & Zunaidi, A. (2021). Peran Marketing Public.

Arifin, Anwar. 2003. Ilmu komunikasi : suatu pengantar ringkas. Jakarta. PT. Rajagrafindo persada.
Armstrong, Kotler 2015, "Marketing an Introducing Prentice Hall twelfth edition" , England : Pearson Education, Inc.

Asosiasi Penyelenggara Jasa Internet Indonesia. (2022). *Laporan Survei Internet APJII 2011-2022 Q1*. Jakarta: Asosisasi Penyelenggara Jasa Internet Indonesia.

Awal 2022. Retrieved from Databoks: https://databoks.katadata.co.id/datapublish/2022/03/23/ada-2047-jutapengguna-
Bajaj, Kamlesh K dan Debjani Nag, 2000, *E-commerce The Cutting Edge Of Business*. Singapore: Mc Graw-Hill Book Co.

Bendoly, E., Blocher, J. D., Bretthauer, K. M., Krishnan, S., & Venkataramanan, M. A. (2005). Online/In-Store Integration and Customer Retention. *Journal of Service Research*, 7(4). https://doi.org/10.1177/1094670504273964

Chaffey D, C. F. (2009). *Internet Marketing: Strateg,Implementation, and Practice*. United States: PrenticeHall.

Ghozali, Imam. (2020). *Aplikasi Analisis Multivariate dengan Program IBM SPSS 21*. Semarang: Badan Penerbit UNDIP.

Grant, A. E. & Meadows, J. H. (2008). *Communication Technology Update and Fundamental*. (ed. 06). Boston: Focal Press.

Heidrick and Struggles. 2009. *The Adoption Of Digital Marketing in Financial. Services Under Crisis.*

Herman, L. E., Udayana, I. B., & Farida, N. (2020). Young Generation and Environmental Friendly Awarness: Does it the Impact of Green Advertising? *Bussiness: Theory & Practice*. doi: https://doi.org/10.3846/btp.2021.12417

Hermawan, D. J. (2018). Faktor-Faktor Yang Mempengaruhi Minat Beli Online (Studi Pada Mahasiswa Pengguna Platform Shopee). *Ecobuss*, 100-110.

Hidayat, Taufik, 2008, Panduan Membuat Toko Online dengan OSCommerce, Mediakita, Jakarta.https://doi.org/10.30762/itr.v5i2.3375 internet-di-indonesia-awal-2022 *ISTITHMAR : Jurnal Pengembangan Ekonomi Islam*, *5*(2), 16–43.

Jagdish, N. S., & Sharma, A. (2005). International E-Marketing: Opportunities and issues.International Marketing Review, 22(6), 611- 622.

Jogianto, H. (2007). Analisis dan Desain Sistem Informasi: Pendekatan Terstruktur Teori dan Praktek Aplikasi Bisnis. Yogyakarta: Penerbit Andi.

Kalakota, R. and Whinston, A. B, (1997). *Electronic commerce : a manager's guide*, Addison-Wesley: Reading, Mass. ; Harlow, England.

Katawetawaraks, C., & Wang, C. L. 2011. "Online shopper behavior: Influences of online shopping decision". Asian Journal of Business Research.
Kenneth J. Laudon, Jane P. Laudon. (1998). *Sistem Informasi Manajemen: The Digital Firm, International Edotion*. New Jersey: Pentise Hall International Inc.

Kleindl, B.A. & Burrow, J.L. (2005). *E-Commerce Marketing*. United States of America: South Wester.

Kotler dan Keller. (2012), Manajemen Pemasaran, Edisi 12. Jakarta : Erlangga.

Kotler, A. (2008). *Prinsip-Prinsip Pemasaran*. Erlangga.

Kualitas Informasi terhadap Keputusan Pembelian Secara Online di

Lapera, E. (2013). Pengaruh Iklan Produk, Gaya Hidup, Celebrity Endorser, dan Pesan Iklan terhadap Minat Beli Konsumen. *Skripsi*.

McLeod, R. dan Schell, G.P. 2007, *Management Information System* (edisi ke10), Pearson Prentice Hall, New Jersey.

Meldarianda, & Lisan. (2010). Pengaruh Store Atmosphere Terhadap Niat Beli pada Resort Cafe Atmosphere Bandung. *Jurnal Bisnis dan Ekonomi*, 11- 20.

Meyliana. (2011). "Analisis Strategi E-Marketing dan Implementasinya Pada Rental Company". *Jurnal Binus*, Volume 2, Nomor 1.

Norhermaya, Y. A. (2016). Pengaruh Kepuasan Pelanggan Terhadap Kepercayaan dan Loyalitas Pelanggan Untuk Meningkatkan Minat Beli Ulang (Studi Kasus Online Store Lazada.co.id). *Skripsi*.

Nugroho, A. (2002). *Perilaku Konsumen*. Studi Press.

Nurul, M., Soewarno, N., & Isnalita, I. (2019). Pengaruh Jumlah Pengunjung, Ulasan Produk, Reputasi Toko Dan Status Gold Badge pada Penjualan Dalam Tokopedia. *E-Journal Akuntansi*, 1855-1865. *Pemasaran*. Erlangga.

Peter, & Olson. (2010). *Customer Behavior Perilaku Konsumen dan Strategi* Publisher.
Relations Dalam Merawat Dan Mempertahankan Loyalitas Donatur Infaq.

Sanjaya, Ridwan dan Tarigan Josua. 2009. *Creative Digital Marketing*. Jakarta : PT Elex Media Komputindo.

Setiawati, M. (2015). Pengaruh Media Sosial Terhadap Minat Beli Konsumen Studi Kasus Mahasiswa Manajemen Universitas Pasir Pengaraian. *Skripsi*.

Simamora, B. (2011). Reset Pemasaran: Filsafah, Teori, dan Aplikasi. Jakarta: Gramedia Pustaka Utama.

Situmorang, F. L., 2019. Analisis Penerapan K3 Dengan Pendekatan Fault Tree Analysis Dalam Meningkatkan Produktivitas Di PT. XYZ. Studi Teknik Industri. Universitas Mercu Buana Jakarta.

Subayo, Tukidi, & WV, I. (2019). Pengaruh Kepercayaan, Kemudahan dan

Sugiyono (2015). *Metode Penelitian Kombinasi (Mix Methods)*. Bandung: Alfabeta.

Sugiyono, 2012. *"Memahami Penelitian Kualitatif"*. Bandung : ALFABETA

Sugiyono. 2008. *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung : ALFABETA

Suyanto, M., 2003. *Multimedia Alat untuk Meningkatkan Keunggulan Bersaing*. Yogyakarta: Andi Offset.

Ustadiyanto. (2002). *Framework E-Commerce*. Yogyakarta: Andi Publisher

THE INFLUENCE OF PRODUCT QUALITY AND DISTRIBUTION CHANNELS ON INTEREST IN BUYING VEGETABLE PRODUCTS AT PT. ETERNAL RED PINE PALEMBANG

Ardah Apsyah
Student of Management Study Program, Faculty of Economics, Palembang University

Hj Zubaidah SE, M.Si
Lecturer of Management Study Program, Faculty of Economics, Palembang

Sukaria Darmawan
Lecturer of Management Study Program, Faculty of Economics, Palembang

ABSTRACT

This research was carried out at PT. Palembang Eternal Red Pine. The research model used is by methods of observation, interview, questionnaires and literature studies conducted systematically based on research objectives. The method of analysis used is by the method of multiple linear regression analysis, using hypothesis tests i.e. F test and test t and determination coefficient test. From the results of the study showed that product quality variables and distribution channels had a significant effect on the purchasing interest of vegetable products in PT. Perpetual red pine. From the results of multiple regression obtained the equation as follows Y= 3,358 + 0.656X1 + 0.264X2 + e which means that the product quality variable and distribution channel has a positive effect on the buying interest of vegetable products at PT.Pinus perpetual red. The results of the determination coefficient (R Square) test of 0.806 or 80.6% mean that the product quality variable and the distribution channel are able to explain the variation of buying interest by 80.6%, while the remaining 19.4% is explained by other variables outside of this study.

Keywords: Product quality, distribution channel and buy interest

INTRODUCTION

In this era of globalization technological advances have led to economic growth in the country of Indonesia to experience a fairly rapid increase. Along with the economic growth in Indonesia that is advanced and continues to grow rapidly, especially in big cities, making business developments more intense both domestic and global markets. Although consumers remain, but purchasing power is still limited, as a result consumers become more and more thorough in making purchases and determining a product that suits their wishes. With this situation encourages the company to be more able to attract consumers by offering the products they spend with more quality and have attractive product packaging.

Consumer decision making is a problem-solving process that is directed at the target. The essence of consumer decision making is the process of integrating that combines knowledge to

evaluate two or more alternative behaviors. The decision to buy can lead to how the process in making the decision is made. Many factors are considered by consumers before deciding to buy a product. So the company must be observant and see what factors must be considered to attract consumers. A very important factor that can influence consumer purchasing decisions through buying interest is the quality of products and distribution channels.

According to Kotler and Keller (2019), product quality is a product or service that has met or exceeded customer expectations that gives rise to a decision to buy. Consumers expect a suitability between the price and quality of the products received. Quality is Everything that can be offered to the market for attention, purchase, use, or consumption that can satisfy desires or needs (Kotler and Armstrong, 2020).

While according to Tjiptono (2018), quality is a combination of properties and characteristics that determine the extent to which output can meet the preconditions of customer needs or assess how far the nature and characteristics meet their needs. The next factor that is considered by consumers in making purchasing decisions is buying interest.

Factors that influence buying interest are related to feelings and emotions, if a person feels happy and satisfied in buying goods or services then it will strengthen the interest in buying, dissatisfaction usually eliminates interest. Many companies underestimate the product quality factor, resulting in the company going out of business before it is able to control the market. Vegetable products from PT. The Eternal Red Pine Palembang should ideally be able to pay attention to these factors in order to be able to compete and defend against competition that over time is getting tighter.

Pt. Palembang perpetual red pine is a distribution company that is a subsidiary of PT. Kaldu Sari Nabati Indonesia, this company is a company engaged in distribution therefore this company does not produce goods. Pt. The most famous eternal red pine is a product from PT. KSNI is a category of snacks such as Nabati wafer products, the product has succeeded in becoming a mainstay product of PT. Red Perpetual Penus Because of the existence of the Brand and the product that has been inherent in the Indonesian Society.

Pt. The century-red pine of the Palembang branch cooperates with all Modern Retail Markets in Palembang and the General trade Traditional Market To market its products to get to the hands of consumers, the modern Retail Market in collaboration with PT. Palembang perpetual red pine, almost 500 stores, among others for the MTI category, some of which are: JM Group, Kharisma Group, RiemarGroup, PD.Manis Group, Beautiful Pearl Group, for the modern Retail Category based on the nationally based in Palembang in collaboration with PT. Perpetual Red Pinus Palembang To Market Its Products, among others, PT. Indomarco Prismatama (indomaret and indogrosir), PT. 5Source Alfaria Trijaya (Alfamart), Lion Superindo, As Well As Wholesale Lotte.and there are many more.

So we often when visiting the supermarket unconsciously in everyday life find products from PT. Perpetual Red Pinus Eternal Palembang that we indirectly consume in due to PT. The Eternal Red Pine Palembang successfully distributed its plant wafer products to various markets both Modern Market and Traditional Market with the achievement of turnover of more than 1.3 M per month. The following is the sales data of vegetable wafer products at PT. The Eternal Red Pine in recent years:

Tabel 1.4
Data on Sales Volume of Vegetable Wafers for the last 3 years at PT. Palembang Eternal Red Pine

No	Period	Target (Avg)	Achievement (rata-rata)	Percentage (%)
1	2021	21.998.590.309	22.024.286.101	1,001%
2	2022	22.613.411.658	25.663.831.429	1,134%
3	2023	24.583.786.956	23.587.191.840	0,95%

Sumber: PT. Pinus Merah Abadi Palembang

From the data can be seen sales data over the past 3 years, in 2022 Nabati wafer products controlled sales figures of about 1.134%.
It is important to always read the product label to ensure that the wafer meets your dietary preferences or certain health needs. Some brands and manufacturers may have different formulations, and label information may provide a further overview of the composition and nutritional value of the specific plant-based wafer products.
Based on the background that the author described above, then in this study can be drawn the title "The Effect of Product Quality and Distribution Channels on the Interest in Buying Vegetation Products at PT. Palembang's Everlasting Red Pine".

Literature Review

According to Ernawati (2019) the quality of the product is an important factor that influences the decision of every customer in buying a product. The better the quality of the product, the more the interest of consumers who want to buy the product.
product, product quality is a condition related to products, human services and the environment to meet consumer expectations. In order to achieve the quality of the desired product, a quality standard must be needed. This aims to keep the resulting product can meet the standard that has been established so that consumers will not lose confidence in the product in question. Customer experience in buying a good or bad product will affect consumers to make a return purchase or not. So it can be concluded that the quality of the product is a product that is able to meet every consumer's needs in accordance with the needs and desires of consumers.

Indikator kualitas produk
There are several benchmark product quality according to Kotler and Keller (2012:8), consisting of:
1 Form is a product that can include a size, or structure.
2 The feature is to complete the basic function of the product.
3 Adjustment is to adjust to the wishes of consumers.
4 The quality of work is the most important dimension when the company applies a model and provides high quality.
5 The quality of conformity is the production that meets the promised specifications.
6 Resilience is the size or age of a product in ordinary or stressful conditions.
7 Relind is that it allows not to fail the product
8 Ease of repair is ease when the product does not work
9 Style is the appearance and taste of the product
10 Design is to affect the appearance or function of the product based on needs.

Saluran distribusi

Distribution channels refer to a series of organizations or intermediaries involved in the process of moving products or services from producers to end consumers. This involves a number of stages or intermediaries that help the product reach the market and consumers. Distribution channels have an important role in the supply chain and the marketing mix of a product or service.

The definition of a distribution channel includes activities such as storage, transportation, and handling of products, as well as the transfer of ownership of goods from one party to another in the distribution channel. The selection of distribution channels is a strategic decision that influences how the product will reach the target market and how consumers will access the product. Distribution channels can vary, covering different types of intermediaries such as:

1 manufacturer
2 distributor
3 Agent
4 Retail traders (retailers)

The purpose of the distribution channel is to increase product availability in the market, reduce the time and cost in product displacement, and provide added value to consumers. In the modern era, the role of technology and digital platforms can also play an important role in shaping distribution channels, such as online sales through e-commerce. A good understanding of distribution channels is essential for a company to optimize its product distribution and achieve marketing success. The distribution channel is the structure of the organizational unit within the company as well as outside the company consisting of agents, wholesalers, retailers through which a product or service is marketed. Without a good distribution channel in a company, the product marketed will not reach the hands of consumers so that the expected sales revenue will not be realized. A distribution channel is a series of activities of distributing goods from producers to consumers with various alternatives and the way that companies have for some of the channeling agencies involved in it.

Distribution channels are distributor institutions that have activities to distribute or deliver goods or services from consumer producers (Mursid, 2010:85). Sofyan (2011:234) argues, distribution channels are institutions that market products in the form of goods or services from producers to consumer distribution of goods are distinguished between channels to move the right of ownership of goods and channels to physically transfer goods, namely:

Relationship with distribution channels (channel of distribution).

Activities are called physical distribution (physicalistribution).

According to Gitosudarmo (2014:309) states that distribution is an activity that must be done by entrepreneurs to distribute, distribute, transmit and deliver goods that are marketed to consumers. Therefore, there is a need for a distributor. The necessary distributors are owned by the company in marketing the goods themselves, but many distributors are not owned by the company. Based on the above definition can be concluded, a distribution channel is channel used by the manufacturer to distribute its goods, from producers to consumers or to industrial users.

Minat beli

According to (Monica, 2018:142) The purchase interest is the stage where the consumer or buyer has made his choice and will make the purchase of the product and consume it. Decision making by consumers to make a purchase of a product begins with awareness of needs and desires. Furthermore, if there is a need and desire, then consumers will look for information about the existence of the desired product.

From the various information obtained by consumers make selections on the alternatives available. Consumer buying interest is a sense of interest experienced by consumers about a product (goods or services) that is influenced by attitudes outside the consumer and in it the consumer itself (Hardiansyah, 2019).

Based on the definition of buying interest above it can be concluded that buying interest is a situation where there is a sense of wanting to buy consumers for a product and then consume it. Buying interest is a term used in marketing to describe the level of consumer interest or desire for a particular product or service. This reflects the tendency or intention of consumers to purchase such products or services.

Interest in buying can be influenced by various factors, namely:

1 Brand Trust and Image: Consumers tend to buy products or services from brands they trust and who have a positive image.

2 Product Quality: Buying interest is often influenced by consumer perceptions about the quality of the product. Products that are considered to have high quality are usually more in demand.

3 Price: Price factors also play an important role. Consumers may have a higher buying interest in products that are considered to have good value according to the price they pay.

4 Promotion: Promotional efforts, such as advertising, sales promotion, and direct marketing, can increase buying interest by attracting consumer attention and providing information about the product or service.

5 Availability and Distribution: The ease of getting a product or service can also affect buying interest. Products that are easily accessible or widely distributed tend to have a higher buying interest.

6 Consumer Needs and Desires: Buying interest is also influenced by the needs and desires of consumers. Products that meet the needs or desires of consumers have a higher potential for buying interest.

In a marketing strategy, it is important for companies to understand the factors that influence consumer buyers' interests and design appropriate strategies to increase purchasing interest in their products or services. This can be through the right market segmentation, prudent pricing, effective promotion, and product quality improvement.

Research Method

This research object is located on Jl. Lt. Col. Adrians No.999 Likes To Build 2 Kel. Sukajaya Kec. Sukarami, the city of Palembang.

The scope of this research is to discuss and analyze research so as not to deviate from the company. This research only limits the problem of the influence of product quality and distribution channels on the buying and selling interest of Nabati products at PT. Palembang's Last Red Pine. This research is a type of Quantity Analysis research or using numbers obtained from the results of calculations and research that discusses the existence of the influence between free variables and bound variables, in this case the free variable (X1) is Product Quality and (X2) is the Distribution Channel and bound Variable (Y) is the Interest of Buying.

According to Sugiyono in the journal (Ririn, 2020) the population is a generalization area consisting of objects or subjects that have certain qualities and characteristics set by the researcher to be studied and then drawn conclusions. Based on information obtained from PT. Pine Merah Abadi Palembang consumers who buy Nabati wafer products in the last 5 months, namely August 2023 to December 2023 which amounted to 780 consumers (Source: PT. Palembang's Idential Red Pine).

According to Sugiyono in the journal (Ririn, 2020) Samples are part of the number and characteristics possessed by the population. When the population is large, researchers are not likely to take all for research for example because of limited funds, energy and time, then researchers can use samples taken from that population. The sampling technique in this study is randomly sampling that the sampling is done randomly. From the calculation above, it can be known that the number of samples used in this study was 88.6 people so that it was rounded to 80 to minimize generalization errors.

Results

Validity Test

Validity test is used to measure the validity or validity of a questionnaisary. A questionnais for questioners is said to be valid if questions and questionnais can reveal something that will be measured by the questionnais. A questionnaisary is said to be valid if it has a value r count > r table. The results of the validity test calculation can be seen from the table below:

Tabel 4.5 Validity Test

Item	r_{count}	r_{table}	Information
x1.1	0,802	0,1726	valid
x1.2	0,884	0,1726	valid
x1.3	0,862	0,1726	valid
x1.4	0,887	0,1726	valid
x1.5	0,870	0,1726	valid
x1.6	0,832	0,1726	valid
x1.7	0,867	0,1726	valid
x1.8	0,783	0,1726	valid
x2.1	0,796	0,1726	valid
x2.2	0,884	0,1726	valid
x2.3	0,870	0,1726	valid
x2.4	0,931	0,1726	valid
x2.5	0,923	0,1726	valid
x2.6	0,852	0,1726	valid
x2.7	0,746	0,1726	valid
y1	0,825	0,1726	valid
y2	0,796	0,1726	valid
y3	0,893	0,1726	valid
y4	0,745	0,1726	valid
y5	0,876	0,1726	valid
y6	0,850	0,1726	valid
y7	0,859	0,1726	valid
y8	0,894	0,1726	valid

Source: data processing 2024

Based on the calculation of the validity test above, it can be concluded that all items in the questionnaisary are valid. It is characterized by the value of the r count of the entire questionnaised item has a value above the value of r table.

Reliability Test

Reliability is a tool for measuring a questionnailer that is an indicator of a variable. A questionnailer is said to be reliable or reliable if the answer to the question is consistent or stable over time (Ghozali, 2016: 41). A variable is said to be reliable if the value of Cronbach Alpha (a) >0.6.

Tabel 4.6 Reliability Test

No	Variable	Cronbach Alpha	Cronbach Minimum	Results
1	X_1	0,944	0,600	Reliable
2	X_2	0,939	0,600	Reliable
3	Y	0,940	0,600	Reliable

Sumber : Data diolah 2024

In table 4.6 explains that after the Reliability test, the value of Cronbach's alpha each product quality variable is 0.944 and 0.939 distribution channel and 0.940 buying interest which means all the variables are reliable with good decisions, because it has an alpha coefficient value above 0.600.

Uji Regresi Berganda

This research uses multiple linear regression, conducted using the enter method, where all variables are included to find the influence of independent variables there are dependent variables by regressing buying interest as dependent variables and product quality, the environment as an independent variable. Hypothesis results as listed in table 4.8

Tabel 4.8

Multiple Regression Test Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,358	1,313		2,558	0,012
	kualitas produk	0,656	0,119	0,668	5,494	0,000
	saluran distribusi	0,264	0,132	0,243	2,002	0,048

Dependent Variable: Minat Beli

Source: Data Processing

The equations of regression in this study are:

Y = a + b1 X1 + b2X2+e

Purchase Decision = 3.358 + 0.656X1 + 0.264X2 + e

1 The constant value (a) of 3.358 means that if the quality of the product and the distribution channel is assumed to be zero then the buying interest is worth 3.358.

2 The value of the product quality variable regression coefficient of 0.656 means that each increase in product quality of 1 unit will increase buying interest by 0.656 assuming another variable is fixed.

3 The coefficient value of the distribution channel variable regression by 0.264 means that each increase in the distribution channel by 1 unit will increase the buying interest by

0.244 assuming another variable is fixed.

4 Standard error probability standard error effect on Y but is not included in the equation.

The F test basically shows whether all independent or free variables have a shared influence on dependent or bound variables. To prove this, the test F is done, the results of the regression test simultaneously or the F test with statistical calculations using SPSS can be seen in table 4.9

Tabel 4.9 Hasil Uji F

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2089,760	2	1044,880	180,356	.000[b]
	Residual	504,029	87	5,793		
Total	2593,789	89				

a. Dependent Variable: Minat Beli

b. Predictors: (Constant), saluran distribusi, kualitas produk

In table 4.9 the results of the hypothesis test show that the value of Fhitung 180.356 with significance of 0.000 because the probability of significance is less than 0.05 meaning that the independent variable together has a simultaneous effect on buying interest.

The t test is used to test the significant relationship between the variables X and Y, whether the variables X1 and X 2 actually have an effect on the Y variable separately or partially (Ghozali, 2017: 88). The following will be explained the partial testing of each variable.

Tabel 4.10 T test

Coefficients[a]						
Model		nstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,358	1,313		2,558	0,012
	kualitas produk	0,656	0,119	0,668	5,494	0,000
	saluran distribusi	0,264	0,132	0,243	2,002	0,048

c. Dependent Variable: Minat Beli

Variable product quality

It is known that count 5,494 > t table 1.662 and sig 0.0001 < 0.005 means that the product quality variable has a significant effect on buying interest.

Variable distribution channels

It is known to count 2.002 > t table 1.662 and sig 0.00 < 0.005 means that the variable distribution channel is significant towards buying interest.Uji koefisien Determinasi (R_2)

This result is done to measure the ability of independent variables that are product quality, distribution channels in carrying out variations of dependent variables, namely the purchase decision of the test result of the determination coefficient can be seen in table 4.11

Table 4.11
Determination coefficient test results

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.898[a]	0,806	0,801	2,407

a. Predictors: (Constant), saluran distribusi, kualitas produk

The result of the regression calculation that the value of the determination coefficient (adjusted R square) obtained is 0.806 or 80.6% meaning that the product quality variable and the distribution channel are able to explain the variation of buying interest by 80.6%, while the remaining 19.4% is explained by other variables outside this study.

Discussion

In this study using a multiple linear regression analysis that serves to determine the presence or absence of an influence between free variables and bound variables. To find out the influence of product quality on consumer buying interest. Based on the results of the double linear regression equation, the regression coefficient for a amounted to 3.358 which means when the quality of the product and distribution channel is in normal circumstances, the purchase interest is 3.358 units. While the regression coefficient for b1 is 0.656 and b2 by 0.264 means that each increase of 1 unit in the product quality variable assuming another fixed variable, then the buying interest will increase by 0.656 units and each increase of 1 unit in the distribution channel variable assuming another variable remains, then the consumer buying interest will increase by 0.24 units. Based on the results of the study showed that the value for X1(5,494) > t table (0.934) and significance level 0.001 < 0.005 and count for X2(2,002) > t table (0.934) and significance level of 0.000 < 0.005 then Ha and Ho are rejected, meaning that the product quality variable (X1) and the distribution channel variable (X2) have a positive and significant effect on buying interest (Y). In this case the quality of the product and the distribution channel can increase the buying interest of consumers.

Conslusion

This research aims to determine the influence of product quality variables and distribution channels on the buying and selling interest of Vegetable products in PT. Palembang Eternal Red Pine. And to find out the biggest influence of both independent variables. From the formulation of research problems submitted, the analysis of data that has been done and the discussion that has been put forward in the previous chapter, some conclusions from this study are as follows:

1 It is known that the count for X1 (5,494) > t table (1,662) and significance level of 0.0001 < 0.005 then Ha is accepted and Ho is rejected, meaning that the product quality variable (X1) has a positive and significant effect on buying interest (Y).

2 It is known that the count for X2 (2,002) > t table (1,662) and significance level of 0.000 < 0.005 then Ha and Ho are rejected, meaning that the distribution channel variable (X2) has a positive and significant effect on buying interest (Y).

3 The result of Fhitung 180.356 with a significance of 0.000 because the probability of significance is less than 0.05 meaning that the independent variable together has a simultaneous effect on buying interest (Y)

4 The result of the regression calculation that the value of the determination (adjusted R square) obtained is 0.806 or 80.6% meaning that the product quality variable and the distribution channel is able to explain the variation of buying interest by 80.6%, while the remaining 19.4% is explained by other variables.

References

Abdullah, T., & Tantri, F. (2016). *Manajemen Pemasaran, PT.RajaGrafindo Persada, Jakarta.*

Abdurrahman, N. H. (2015). *Manajemen Strategi Pemasaran.Bandung:* Pustaka Setia.Assauri, S. (2017). Akuntansi Persediaan.

Akbar, Muhammad Fadhli Dzil. 2016*.,,Pengaruh Citra Merek Dan Kualitas Produk Terhadap Keputusan Pembelian Pada Pemilik Iphone (Studi Pada Mahasiswa S1 Fakultas Ilmu Sosial Dan Ilmu Politik Universitas Diponegoro),* Jurnal Ilmu Administrasi Bisnis, vol. 5, no.1.

Alvita, MurtyaNingtyas (2019) *"Pengaruh Kualitas Produk, Promosi, Harga, dan Kualitas Layanan Terhadap Loyalitas Pelanggan Sebagai Variabel*
Arianto, N., & Octavia, B. D. A. (2021). *Pengaruh Kualitas Pelayanan dan Distribusi terhadapKeputusan Pembelian.* Jurnal Disrupsi Bisnis. https://doi.org/10.32493/drb.v4i2.9867

Chandrarin, Grahita. 2017. *Metode Riset Akuntansi Pendekatan Kuantitatif.*
Darsono, *Pengaruh distribusi dan kualitas produk terhadap keputusan pembelian di pt mulia makmur lestari* jurnal (2020)

Endhar Et. Al *Pengaruh Kualitas Produk, Harga Dan Persaingan Terhadap Minat Beli. Jurnal* (Nico Rifanto Halim, Donant Alananto Iskandar 2019)

Fakultas Ekonomi dan Bisnis Universitas Muhammadiyah Surakarta.
Gerry Putra Untomo (2016) *Pengaruh Positif Personal Terhadap Keputusan Pembelian.*

Husein Umar (2015). *Riset Pemasaran dan Perilaku Konsumen. Intervening"* Skripsi. Universitas Muhammadiyah Surakarta. Jakarta : Salemba 4. KINERJA.https://doi.org/10.29264/jkin.v14i2.2484

Kotler, Philip.2000. *Marketing Manajement.Edisi Bahasa Indonesia.* Jakarta : PT. Prehalindo.

Kurniawan, Aditya. (2016). *"Pengaruh kualitas Produk Harga dan Iklan Terhadap Keputusan Pembelian Sepeda Motor Yamaha".* Skripsi.Malau,
Harman, Ph.D. 2016. *Manajemen Pemasaran. Bandung*:Alfabeta.
Muhammad Ridwan (2016). *Pengaruh Harga Dan Kualitas Produk Terhadap Minat Pembeli*

Ririn Respiani, *Pengaruh produk, promosi dan saluran distribusi terhadap minat beli konsumen pada pt robusta bhinneka cipta selaras* (jurnal 2020)
Royantah, (2021). *Pengaruh kualitas produk dan harga terhadap minat beli sepeda motor Honda Beat pada konsumen daya Motor di Kota Prabumulih.*

Sandy, A. 2011. *Pengaruh Bauran Pemasaran terhadap Keputusan Pembelian di Toko Maju Terus.* (Skripsi, Fakultas Ekonomi, Universitas Ilmu Makmur: Jakarta). Diakses dari http://lib.ui.ac.id/daftikol2?id=102.

Setiawan, A., Rois, A., & Asiyah, S. (2020). *Pengaruh Harga, Kualitas Produk, SaluranDistribusi, Brand Image, Brand Trust, Dan Promosi Terhadap Keputusan PembelianKerupuk Rambak Lestari Eco Desa Sembung Tulungagung*. E-Jurnal Riset ManajemenProdi Manajemen

Swasta, Basu dan Irawan, (2011). *Manajemen pemasaran modern. Liberty Yogyakarta*

Tjia, H. S., Suharno, S., & Kadafi, M. A. (2018). *Pengaruh harga kualitas produk dan distribusi terhadap keputusan pembelian.*
Fandi Tjiptono, *Buku Ajar Pengantar Periklanan. Jurnal* (Finnah Fourqoniah Muhammad Fikry Aransyah 2020)

Jacklin, C. G., & Sepang, J. (2017). *Pengaruh Kualitas Produk, Harga, dan Promosi*

Humairoh (2018), *Pengaruh harga, desain dan kualitas produk terhadap minat beli Konsumen sepatu all star original (studi kasus sport station cambridge Medan)*, skripsi, Fakultas Ekonomi dan bisnis Universitas Islam Negeri Sumatera Utara

Meryani (2019), *Pengaruh Kualitas produk dan harga terhadap minat beli konsumen kosmetik wardah pada gerai kosmetik carrefour Palembang Square di Kota Palembang Skripsi Fakultas Ekonomi Universitas Palembang*

Sugiyono (2018) *Metode Penelitian Pendidikan dan Pendekataan Kualiitatif, Kuantitatif, dan R&D* Alfabeta Bandung

Umar, H (2014). *Metode penelitian untuk skripsi dan tesis bisnis*. PT. Raja Grafindo Perkasa, Jakarta.
Kotler, Philip dan Kevin Lane Keller (2019). *Marketing Management*. New Jersey: Person education Limited.

Lupiyoadi R, (2014), *Manajemen Pemasaran Jasa (Praktik dan Teori)* PT. Salemba Empat Jakarta.
Imam Ghozali, (2016). *Aplikasi Analisis Multivariate deangan Program SPSS*
Universitas Diponegoro, Jakarta.

Sulastri.(2008).*Pengaruh Kualitas Produk dan Citra Merek terhadap Keputusan Pembelian Produk Kosmetik Wardah* di Cikarang Utara.Skrispsi. Universitas Pelita Bangsa Bekasi.

Asmara, Afriyani. (2022). *Pengaruh Influencer Terhadap Minat Beli Produk Scarlett Whitening Di Kalangan Mahasiswa UIN Sultan Syarif Kasim Riau.Skripsi.* Universitas Islam Negeri Sultan Syarif Kasim Riau.

THE INFLUENCE OF PROMOTION ON CONSUMER BUYING INTEREST IN GARUDA BEANS AT PT. SINAR NIAGA SEJAHTERA PALEMBANG

Lisa Andini

Student of Management Study Program, Faculty of Economics, Palembang University

Hj Zubaidah SE, M.Si

Lecturer of Management Study Program, Faculty of Economics, Palembang

Rusma Rizal SE, M.Si

Lecturer of Management Study Program, Faculty of Economics, Palembang

Abstract

The era of globalization is getting closer and closer, where free trade is a phenomenon that must be faced with thorough readiness of the various production factors owned by the company. The aim of the research is as follows: "To find out and describe the influence of promotions on consumers' buying interest in garuda nuts at PT Sinar Niaga Sejahtera. The research object was consumers of PT Sinar Niaga Sejahtera who had consumed Garuda nuts more than twice. PT Sinar Niaga Sejahtera is located at Jl. Soekarno Hatta No. 234, Siring Agung, Kec. Ilir Bar. I, Palembang City, South Sumatra 30153 data taken in 2023. Stratified sampling is a technique for taking populations that are grouped into certain strata and then samples are taken randomly in balanced proportions according to position in the population. The number of samples is the same as the population, namely 100 people.

Keywords: Promotion, Purchase Interest

Introduction

The era of globalization is getting closer where free trade becomes a phenomenon that must be faced with the mature readiness of various factors of production owned by the company. The influence of free trade is now difficult to contain, all countries in the world will feel the impact, for that the company must be prepared as well as possible so as not to be crushed by the development of the flow of globalization of the world.

In accordance with the above sentences, Promotion is seen as a communication activity for buyers and sellers and is an activity that helps in making decisions in the field of marketing and directing and sensitizing all parties to do better. Swastha in the journal (Susiladewi 2020) Proper promotion will increase consumer buying interest.

Based on BI data, a decrease in the sales index on a monthly basis occurred in all retail sectors surveyed, namely spare parts and accessories; beverage and tobacco food; motor vehicle fuel; information and communication equipment; household supplies; cultural and recreational goods; and other goods. However, when compared to September 2022, the sales index in September this year is slightly better, which is to grow 1% (year-on-year).

According to Endhar et. al in the journal (Nico Rifanto Halim, Donant Alananto Iskandar 2019, the conditions that must be met by the company in order to be successful in competition is to try to achieve the goal to create and maintain consumers one way is to continue to promote sales in order to continue to attract the interest of consumer buying.

Promotion is one form of marketing communication that is done to spread information, and influence people to be willing to buy the product.In other words, the purpose of promotion is to market the product to as many people as possible so that they know about what products are offered and what benefits they will get. Promotion can be done in many ways. It can be by creating visual content in magazines or in billboards, or audio-visual content in the form of advertisements on radio and television.

Yosin Rahmawati (2019) The Influence of Marketing Mix On Consumer Buying Interest (Case Study of Cheap Light Shops Discounted.The results of the study show that the marketing mix (products, prices, location and promotion) affects consumer buying interest in Cheap Light stores as evidenced by the value of F count >F tables or 5.805 > 2,49 with a significance value of 0.000.Anggi Nur Zakiah (2021) Effect of InnovationProducts, Prices and Promotions. The results showed that partial (test) InnovationProducts (X1) and Promotion (X3) had a significant effect on Buying Interest (Y), while Price (X2) did not have a significant effect on Buying Interest (Y). Simultaneously (test F) shows that there is a significant influence between Product Innovation variables (X1), Price (X2), and Promotion (X3) against Buying Interest (Y). And the contribution of all Adjusted R2 free variables is 73.2% to Buy Interest (Y), while the remaining 26.8% is explained by other unknown factors or variables and not included in this study.

In this study the product that will be the focus of the research is garuda nuts. The sales target that has been set by PT Sinar Niaga Sejahtera for the last 1 year has fluctuated. while for other products such as gery, chocolates, leo, and clevo sales are Stable.

Therefore, the author focused his research on garuda beans by providing target data and carried out by all parties in the company, following the data over the past 5 years which is only focused on moderntrade stores in accordance with the research studied by the author.

Table 1.1 Data penjualan selama 5 tahun terakhir

No	Tahun	Target (rata-rata)	Pencapaian (rata-rata)	Persentase (%)
1	2019	145.342.117	149.663.564	+ 2,9%
2	2020	146.795.538	142.514.000	- 2,9%
3	2021	146.795.538	150.268.098	+ 2,4%
4	2022	150.343.097	158.582.610	+ 5,4%
5	2023	158.485.679	165.485.462	+ 4,4%

All activities that have a directly or indirectly related will usually combine several forms of promotion, for example, such as advertising, discounts, or Company-branded t-shirts. For example, in area A is known there are shoe stores that put ads on a social media platform. In the ad displayed by social media, the shoe store offers a special price for the type of shoes with a famous brand. Not only that, shoe stores also include information that purchases can be done anytime and anywhere or known as online buying and selling.

Based on the results of the pre- survey conducted by researchers on sales promotion, there are still problems regarding the promotion of Garuda nut sales conducted by PT Sinar Niaga Sejahtera. That respondents answered more than 50% agree regarding the statement about the sales promotion, among others, providing product rebates, distributing product samples to be tasted, giving banded gifts and giving coupons that arouse to shop, anticipation in the event helps consumers to come at the event, and hold a quiz event to win attractive prizes to make purchases, sales promotions made by PT Sinar Niaga Sejahtera have not satisfied consumers.

Paying attention to the phenomenon, the authors consider it necessary to further review to find out how the influence of sales promotion on consumer buying interest, so that the authors conducted further research with the title "Influencing the Promotion of Consumers In Nuts Garuda PT Sinar Niaga Sejahtera".

Literature Review

Promotion (promotion) is done by marketers to support sales. Promotion communicates useful information about a product or service to influence potential buyers. Products for the services produced can be known by customers, it takes an effort to communicate the product or service through promotional activities.Therefore, promotion is all the activities that the company does to communicate the product on the target market.

Warren & Keegan (2017) states that promotion refers to consumer communication programs or sales that are paid with limited duration that add real value to a product or brand. According to Kotler & Armstrong (2018) sales promotion is the shortest short-term promotional mix tool. Sales promotion provides short-term incentives to encourage the purchase or sale of a product or service.

According to Zahara & Sembiring (2020) promotion is an activity to provide information to the public about the products that will be offered so that consumers are interested in buying the products or services offered. According to Hadibrata et al. (2017) Promotion is defined as a form of marketing communication, is a marketing activity that seeks to disseminate information, influence / persuade consumers to choose their products to be willing to accept, buy, and be loyal to the product offered by the company concerned.

It can be concluded that promotional activities are communication activities between buyers and sellers regarding the existence of products or services to ensure and refinance the product or service so that it can affect the attitude and behavior that encourages communication and marketing activities. Promotions in this study were measured by indicators: advertising, sales promotion, direct marketing, and word of mouth (Kotler & Keller, 2016).

A promotional indicator is a parameter or metric used to measure the success or effectiveness of a promotional campaign. Here are some common promotional indicators that are often used:

1. Awareness Level (Awareness):

   Indicator: The number of people who recognize or know the product or brand after the promotion campaign.

   Measurement Methods: Surveys, social media analysis, or data site traffic measurement.

2. Interest (Interest):

   Indicator: The level of consumer interest or interest in the product or service after the promotion campaign.

   Measurement Method: Analysis of social media interactions, participation in promotional events, or online search data.

3. Consumer Participation:

   Indicator: The number of people participating in events or promotional activities.

   Measurement Method: Participant registration, participation in contests, or direct interaction in the event

4. Social Media Interaction:

Indicator: The number of likes, comments, shares, or retweets related to promotional campaigns on social media platforms.

Measurement Method: Statistical analysis of social media platforms.

5. Conversion Rate:

Indicator: Percentage of increases in certain actions after exposure to the campaign, such as product purchases or website subscriptions.

Measurement Method: Delaying conversions through promo codes, affiliate links, or sales data analysis.

6. Return on Investment (ROI):

Indicator: Efficiency of promotional expenses in generating revenue or other business value.

Measurement Method: Calculate net income from promotional investments compared to promotional costs.

7. Brand Equity (Brand Equity):

Indicator: Increased perception and brand value after the promotion campaign.

Measuring Methods: Brand perception surveys, customer data analysis, or improvement in brand preferences.

8. Customer Loyalty:

Indicator: Customer retention rate or repurchase frequency after promotion campaign.

Measuring Method: Analysis of customer satisfaction survey data, or loyalty programs.

9. Effectiveness of Advertising Media:

Indicator: The extent to which the ads in the promotional campaign achieved its goals.

Measurement Method: CPM (Cost Per Mille), CTR (Click- ThroughRate) or analysis of the effectiveness of online advertising.

10. Achievement of Marketing Goals:

Indicator: The extent to which the promotion campaign achieves the marketing objectives that have been set.

Measurement Method: Assess the achievement of sales targets, market share, or other marketing objectives.

Understanding buying interest is a desire that arises in the consumer in a product as an impact of a process of observation and consumer learning of a product. Consumers who have a buying interest in a product show the attention and pleasure of the product followed by the realization of buying behavior. Interest in buying or purchasing intention is the tendency of interested consumer attitudes and then take actions related to the purchase through various stages and levels of possibilities to the ability to buy certain products, services or brands.

While the definition of buying interest according to Howard in the journal (NUNUNG 2017) is a buying interest is something related to the consumer’s plan to buy a particular product and how many units of products are needed in a certain period. It can be said that buying interest is a mental statement from consumers that reflects the purchase plan of a number of products with a specific

brand. It is very necessary for marketers to know the buying interest of consumers in a product, both marketers and economists use variables of interest to predict consumer behavior in the future.

Buy interest is the consumer's tendency to buy a brand or take action related to the purchase measured by the level of possibility of consumers making purchases.

Here are some aspects of buying interest in consumers, including:

1 Interested in finding information about the product

Consumers who are aroused need will be encouraged to find more information.There are 2 (two) levels of stimulation or stimulant consumer needs, namely the level of lighter information search or strengthening attention and the active level of searching for information is by looking for reading materials, asking friends or visiting the store to learn certain products

2 Interested in finding information about the product

Consumers who are aroused need will be encouraged to find more information.There are 2 (two) levels of stimulation or stimulants of consumer needs, namely the level of search for lighter information or attention reinforcement and active levels of information, namely by looking for reading materials, asking friends or visiting stores to learn certain products.

3 Considering buying

Based on the collection of information, consumers study competing brands as well as features of the brand. Evaluate options and start considering buying a product.

4 Interested in trying

Once consumers are trying to meet their needs, learning competing brands and also the features of the brand, consumers will seek certain benefits from product solutions and evaluate the product. This evaluation is considered a cognitively oriented process. That is, consumers are considered to judge a product very consciously and rationally that it causes interest to try.

5 Want to know the product

Once you have an interest in trying a product, consumers will have the desire to know the product.Consumers will view the product as a set of attributes with different abilities in providing benefits used to satisfy needs.

Research Method

The object of research is a consumer of PT Sinar Niaga Sejahtera who has consumed Garuda nuts more than 2 times. As for PT Sinar Niaga Sejahtera is located at Jl. Soekarno Hatta No.234, Siring Agung, Kec. Ilir Bar. I, Palembang City, South Sumatra 30153 data was retrieved in 2023

The scope of the study is so that research is directed and does not deviate from the subject matter, then the researcher limits the problem of the influence of promotion on the buying interest of agrida nut consumers in PT Sinar Niaga Sejahtera Variable which is used in this study is classified into: (1) independent variables (free), namely variables that explain and influence other variables, and (2) dependent variables (bound), namely variables described and influenced by dependent variables. An independent variable is a variable whose value depends on another variable, where the value will change if the variable that affects it changes. The dependent variable in this study is customer loyalty (Y). independent variables are variables that affect dependent variables, up whose influence is positive and negative influence.

In an activity both scientific and social, it is necessary to limit the population and the way of sampling. The sample taken must be representativeative means that it can start the whole of the population. While the population is the entire area of the individual, object, symptom or event for a generalization or a conclusion imposed.

Population

The generalization area consists of objects / subjects that have quality and characterity applied by research to be studied and then drawn conclusions. Of the 3 stores located in West Ilir 1 during the research 5 months back, 750 people were obtained who bought garuda nut products that were respondents in this study. So that the population of this study is 750 respondents.

Sample

Samples are part of the number of characteristics that the population has. When the population is sour, then the research is not likely to study everything that exists, so use the sample as a research material. Strata sampling is a population-tapping technique grouped in a certain strata then taken a random sample with a balanced proportion according to the position in the population.The number of samples is equal to the number of population, which is 100 people.

Results

Validity Test

After collecting questionnaires and respondents, then conducting a validity test back on the data obtained. Validity shows the extent of the accuracy and accuracy of a measuring instrument in performing its measuring function. Validity testing is done by using the productmoment correlation formula. r calculation is obtained from the output results, the value is further compared to the r value of the table from the statistical book.

Validity tests can be done by looking at the correlation between the scores of each item in the questionnaire with the total score that you want to measure, namely using the coefficient correlation pearson in the SPSS. If the value is significant (p value) > 0.05 then there is no significant relationship. While Value) < 0.05 then there is a significant relationship.

This committee uses an analysis tool in the form of SPSS 26 (Sattistical Package for Social Science 26). The validity results of the data can be seen in the following table.

Tabel 4 22 Variabel X

Item	Pernyataan	R Hitung	R Tabel	Ket
X1.1	Saya merasa Iklan kacang garuda selalu memberikan informasi produk yang menarik	.552**	> 0.2096	VALID
X1.2	Menurut saya pesan yang disampaikan dalam iklan kacang garuda mampu membangkitkan keinginan saya untuk mengetahui lebih dalam mengenai produk kacang garuda	.701**	> 0.2096	VALID
X1.3	Menurut saya Pesan yang disampaikan dalam iklan kacang garuda mampu mempengaruhikeputusan saya dalam menentukan kacang yang akan dikonsumsi	.706**	> 0.2096	VALID
X1.4	Menurut saya iklan kacang garuda sangat menarik perhatian	.795**	> 0.2096	VALID

X1.5	Menurut saya iklan kacang garuda selalu memberikan kesan yang baik	.730**	> 0.2096	VALID
X1.6	Iklan kacang garuda mampu menjangkau semua kalangan	.786**	> 0.2096	VALID
X1.7	Menurut saya iklan kacang garuda frekuensi penayangan iklannya termasuk sering jika dibandingkan dengan produk kompetitor lainnya	.709**	> 0.2096	VALID
X1.8	Saya merasa SPG atau MD penjual kacang garuda telah berhasil meyakinkan saya untuk menggunakan produk mereka	.380**	> 0.2096	VALID

Sumber : Data primer diolah, 2024

Tabel 4 23 Variabel Y

Item	Pernyataan	R Hitung	R Tabel	Keterangan
Y1	Saat melihat iklan maupunartikel saya merasa tertarik untuk mencari informasi kacang garuda	.659**	> 0.2096	VALID

Y2	Saya ingin mengetahui variant apa saja yang dimiliki kacang garuda	.485**	> 0.2096	VALID
Y3	Dengan adanya promo kacang garuda saya mau untuk membelinya	.297**	> 0.2096	VALID
Y4	Kacang garuda cocok masuk kedalam list daftar belanjaan saya	.616**	> 0.2096	VALID
Y5	Saya merasa tertarik untuk mencoba mengonsumsi kacang garuda	.458**	> 0.2096	VALID
Y6	Setelah diberikan tester saya tertarik ingin membeli kacang garuda	.587**	> 0.2096	VALID
Y7	Saat mengonsumsi kacang garuda saya ingin mencobai f*lavor* yang lain	.635**	> 0.2096	VALID

Y8	Saat SPG menjelaskan ke saya tentang produk garuda membuat saya ingin mengetahui lebih dalam akan kacang garuda	.695**	> 0.2096	VALID
Y9	Saya sering membeli kacang garuda saat berbelanja	.687**	> 0.2096	VALID
Y10	Dengan adanya hadiah saya membeli kacang garuda lebih banyak dr biasanya	.569**	> 0.2096	VALID

Sumber : Data primer diolah, 2024

The table above shows that all the statement items used to measure the variables used in this study have more correlation coefficients than the table. For as many as 88 people, namely from the results show that all statement items (indicators) are valid.The table above shows that all the statement items used to measure the variables used in this study have more correlation coefficients than the table. For as many as 88 people, namely from the results show that all statement items (indicators) are valid.

Reability tests are used to determine the consistency of the measuring instrument whether the measuring instrument is reliable for further use. The results of the reability test in this study using coefesienCronbach alpha, where the instrument is said to be reliable if it has the coefficient of Cronbach alpha equal to or more.

Tabel 4 24 Uji Reliabilitas

Variabel	Cronbach's Alpha	Kreteria	Keterangan
Promosi	0.830	0,7	Reliabel
Minat Beli	0.775	0,7	Reliabel

Sumber : Data primer diolah, 2024

All the results of the rehabilitation test in the table above show that all variables have a large enough alpha coefficient, namely above so that it can be concluded that all the variable measuring items of the questionnaised researcher is Reliable which means that the questionnaised questionnaised in this study is a reliable questionnais for questionnais.

4.3.1.1 Analisis Regresi Linier Sederhana (Uji Parsial)

Analysis of research results on the influence of promotion on consumer buying interest in PT Sinarniaga Sejahtera is analyzed using quantitative methods. According to Ghozali (2018), the regression model used in this study is a simple linear regression analysis. Multiple linear analysis is done with the aim to determine the direction of the influence of free variables on bound variables, whether the effect is positive or negative.

The output of the data is processed with SPSS that partially promotion has a positive and significant effect on the purchase interest with a level of significance of 0.00 < 0.05 as mentioned in the following table

Tabel 4 25 Koefisien Sederhana

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	21.529	2.474		8.704	0.000
Promosi	0.642	0.073	0.686	8.743	0.000

Sumber : Data primer diolah, 2024

The table above informs the model of the regression equation obtained by the constant coefficient and the variable coefficient in the Unstandardized Coefficients column B. Based on this table obtained the regression equation model: Y = 21.529 + 0.642X1 + e.

In the table above the promotional variables affect positively and significantly to the buying interest obtained t count 8.743 > t table 1.9872 so that Ho is rejected and Ha accepted that there is a significant influence of promotion Affected purchasing interest in PT Sinar Niaga Sejahtera Thus the hypothesis managed to confirm the theoretical empirically.

Tabel 4 26 Koefisien Determinasi

R	R Square	Adjusted R Square	Std. Error of the Estimate
.686[a]	0.471	0.464	3.072

Sumber : Data primer diolah, 2024

The table above displays the value of r which is a symbol of the correlation coefficient value. In the above value the correlation is 0.686 This value can be interpreted that the relationship between the two research variables is in the interdise category. Through this table also obtained the R Square value or coefficient of determination which shows how good the regression model is formed by the interaction of free variables and bound variables. The value of the Determination Coefficient obtained is 0.471 which can be interpreted that the free variable X (promotion) has a contribution influence of 47.1% on the variable Y (buy interest) and 52.9% others are influenced by other factors outside the variable X (promotion)

Discussion

Based on the results of the test it can be seen that the promotion has a partial and significant effect on the interest of buying so that it can be concluded that the first hypothesis is received. The theoretical framework of thought that promotion affects the buying interest in PT Sinar Niaga Sejahtera so that if the promotion is done well then it is expected that consumer buying interest becomes good as well.

The results of the hypothesis test using the SPSS tool version 26 that partial promotion has a positive and significant effect on buying interest in PT Sinar Niaga Sejahtera with a significance level of 0.00 < 0.05 and t counts 8,743 > t table 1.9872 so that Ho is rejected and Ha is accepted that there is a significant influence on the buying interest in PT Sinar Niaga Sejahtera. Thus the hypothesis successfully confirms the theory empirically. As well as the magnitude of the influence of 47.1% on variables Y (minate) and 52.9% are influenced by other factors outside the variable X (promotion). And from the explanation above we can conclude that to create consumer satisfaction, PT Sinar Niaga Sejahtera needs to have a great promotional strategy in publicizing their products, because startegipromotion is also a fundamental tool that is planned to achieve the company's goals by developing competitive advantages that are used to serve the target market. Thus, PT Sinar Niaga Sejahtera must be able to provide good and optimal promotion to provide satisfaction consumers so that it can generate significant buying interest.

In accordance with the understanding of the promotion itself, promotion is one of the elements of marketing that plays an important role in introducing, informing, and influencing consumers. According to Kotler and Armstrong (2017:424), promotions include various activities, such as advertising, personal sales, sales, and public relations, which aim to create awareness, interest, and purchase. And buying interest is a desire that arises in the consumer against a product as an impact of a process of observation and consumer learning against a product. Interest in buying or purchasing an intention is the tendency of interested consumer attitudes and then taking actions

related to purchases through various stages and possible levels to the ability to buy certain products, services or brands.

From the description above we can draw the conclusion that the promotional strategy is a factor that influences the creation of consumer satisfaction. Promotional strategies that are able to give a meaningful impression for consumers will be easier to get special attention from consumers. In increasingly strong and tight competition encourages companies to focus more on efforts to maintain consumer buying interest.To survive in the business environment, one of them by strengthening the strategy of promotion and building, maintaining, and maintaining consumer confidence so as to create satisfaction that aims to increase consumer buying interest.

Conclusion

The conclusion that can be drawn from the results of research on PT Sinar Niaga Sejahtera is as follows:

1 The implementation of the promotion carried out by PT Sinar Niaga Sejahtera, based on the results of the research turned out to be consumers consider the promsi strategy carried out by PT Sinar Niaga Sejahtera, is good. Because according to the customer response of PT Sinar Niaga Sejahtera, against the products sold is quite good, the company has also carried out a promotion strategy quite vocal, especially on trade promotion.

2 The obstacles faced by PT Sinar Niaga Sejahtera, in the implementation of the promotional strategy is the amount of the budget needed for promotional costs that still have to be more optimized and consumer tastes that can change according to the times.

References

Endhar Et. Al Pengaruh Kualitas Produk, Harga Dan Persaingan Terhadap Minat Beli. Jurnal (Nico Rifanto Halim, Donant Alananto Iskandar 2019),

Fandi Tjiptono, Buku Ajar Pengantar Periklanan. Jurnal (Finnah Fourqoniah Muhammad Fikry Aransyah 2020)

Farida Jasfar, Pengaruh Strategi Promosi Terhadap Keputusan Konsumen Menggunakan Jasa Family Dental Lab Palembang. Jurnal (Andre Dwi prayoga 2020)

I Made Darsana, Suci Rahmadani, Erni Salijah, Dkk, Strategi Pemasaran. Jurnal (2023:21)

Keegan, Warren. & Green, M, *Global Marketing* (9th Ed.). England: Pearson. (2017).

Kotler Dan Armstrong Pengaruh Bauran Promosi Terhadap Keputusan Pembelian Produk Secara Online Pada E-Commerce Shopee (2017:424)

Kotler, P. & Armstrong, G, *Principles Of Marketing* (17th Ed.). United Kingdom: Pearson. (2018).

Kotler, P. & Keller, K, *Marketing Management* (15th Ed.). England: Pearson (2016).

Lisma Yana Siregar Muhammad I.P. NasutionPengaruh Promosi, Brand Ambassador Terhadap Minat Beli Konsumen Yang Berdampak Pada Keputusan Pembelian Produk Bagi Pengguna Tokopedia Pada Mahasiswa/I Uinsu. Jurnal (2022)

Marwati Setiawan, Moh. Wahib, Amris, Abd. Karman Pengaruh Harga Dan Promosi Terhadap Minat Beli Konsumen Pada Market Place Shopee. Jurnal (2022)

Susiladewi, Pengaruh Harga, Promosi Dan Kualitas Pelayanan Terhadap Kepuasan Konsumen Di Café Kupi Datu Banjarbaru. Jurnal (2020)

SUTRAYANI (2019) Pengaruh Promosi Dan Harga Terhadap KeputusanPembelian Konsumen Pada Pt. Kumala Celebes Motor (Mazda Makassar). Jurnal. (2019)
Anggi Nur Zakaria, Pengaruh inovasi produk, harga,dan promosi terhadap minat beli consumen catering dapoer agoeng bintaro PT. Agung Jelita Pratama, Jurnal (2021)

THE INFLUENCE OF LEADERSHIP STYLE AND ORGANIZATIONAL CLIMATE ON EMPLOYEE PERFORMANCE AT ILIR TIMUR 1 PALEMBANG DISTRICT OFFICE

M Usman Maliki, Fahmi Al Hadi
ejausman7686@gmail.com
Economic Faculty, Palembang University

Abstract

Every organization must have adequate quality human resources in order to achieve organizational goals. Leadership Style and Organizational Climate are important in achieving the goals of an organization. This study aims to analyze the influence of leadership style and organizational climate on employee performance in the Ilir Timur 1 District Office of Palembang City.This type of research is an explanatory research with multiple linear regression data analysis techniques. The research method used is quantitative by using a questionnaire distributed to the employees of the Ilir Timur 1 District Office of Palembang City. The results of this study indicate that leadership style and organizational climate have a significant effect on employee performance at the Ilir Timur 1 Kecamaan Office in Palembang City.

Keywords : *Leadership Style, Organizational Climate, Performance*

1 INTRODUCTION

1.1 Background

The leadership style of one or more leaders or superiors in an organization or company and various other types of organizations is very important. A person's leadership style can be a medium for determining which direction an organization's processes are going. According to Irwansyah (Irwansyah, 2017:18) one of the leadership styles is the Directing style, where the directing leadership style is a leadership style by showing one or more employees what must be done to achieve organizational goals. Then Irwansyah (2017:18) explains the Participatory leadership style, namely a leadership style that tends to involve one or many employees in determining the policies of an organization. This theory shows that leadership style will usually increase employee enthusiasm and desire to work in an organization depending on how the boss manages the leadership style he uses. So as a writer, I am interested in using leadership style indicators to measure performance based on related theories. The Ilir Timur 1 Palembang District Agency is an organization that aims to serve the interests of the community, therefore it requires a leader who is able to organize subordinates well.

In an organizational context, every human being, especially people who work in an organization, whether at employee or manager level, of course wants adequate well-being.

Prosperity can be achieved if one or more people have worked and obtained adequate results both in terms of compensation and satisfaction with the place where they work. One of the most important things that the author raises in this research is Organizational Climate. Organizational climate is a variable that determines the success of an employee either when they work or after they work and receive the compensation they expect.

As we all know, institutions in Indonesia in general, in Palembang in particular, have mediocre facilities and levels of environmental cleanliness. This is different from developed countries such as Japan or European countries which tend to have better organizational facilities and a cleaner environment. This will affect the working atmosphere of every employee. Employees are assets where this asset requires an atmosphere that is as conducive and comfortable as possible in working to achieve organizational goals.

In this research, these two variables will be analyzed using certain methods to find out whether they influence performance and how much influence they have on employee performance in Ilir Timur 1 Palembang District.

1.2 Problem Identification

The aims of this research include:

1. To find out how much influence leadership style has on employee performance at the Ilir Timur 1 Palembang District Office
2. To find out how much influence Organizational Climate has on Employee Performance in Ilir Timur 1 Palembang District
3. To find out how much influence leadership style and organizational climate have on employee performance in Ilir Timur 1 Palembang District

2. Theoretical Foundations and Hypotheses

2.1 Leadership Style

According to Hasibuan (2014) in the article Theories, Indicators and Types of Leadership in studipustaka.com, leadership style is a way for leaders to influence their subordinates to cooperate and work productively to achieve organizational goals.

According to Istijanto (2006), a person's leadership style is generally based on two considerations, namely the first is leadership based on structure, namely leadership that emphasizes the structure of tasks and responsibilities that must be carried out which includes main tasks, functions and responsibilities as well as work performance and ideas. or ideas. Then the second is leadership based on consideration, namely leadership that emphasizes a leadership

style that pays attention to support for subordinates which includes regulations, work relationships and ethics.

According to Hasibuan (2002:169) leadership determined by a manager in an organization can create harmonious relationships. Then Cohen (2011) in The New Art of the Leader stated that there are several facts that must be known before starting to lead, including:

- One person can make the difference between success and failure in any organization.
- One of the most amazing facts is that most people become successful only through the help of others. You can get this help through leadership practices.
- You don't have to be a manager to be a leader.
- If you learn the basic elements of the combat leadership model, you will be able to lead in almost any situation
- The essence of leadership is very simple, namely motivating other people to display their maximum potential in order to achieve the goals you have set.
- Leaders are made, not just born.
- Good leadership does not depend on good circumstances or favorable working conditions.

2.2. Organizational Climate

According to Davis and Newstrom (2000) in the article Understanding and Measuring Organizational Climate, Organizational Climate is a concept that describes the internal atmosphere of the organizational environment that its members feel during their activities in order to achieve organizational goals.

Wirawan (2007) in the article Understanding and Measuring Organizational Climate, states that organizational climate is the perception of organizational members and those who are in regular contact with the organization regarding what exists or happens in the organization's internal environment on a regular basis which influences the attitudes and behavior of the organization and the performance of organizational members. which then determines organizational performance.

Steve Kelneer (1990) mentions six dimensions of Organizational Climate, including:

1. Flexibility Conformity

It is an organizational condition that provides freedom of action for employees and makes adjustments to the tasks given

2. Responsibility

This is related to employees' feelings regarding the implementation of organizational tasks carried out with a sense of responsibility and the results achieved.

3. Standards

Employees' feelings about the condition of the organization where management pays attention to the proper implementation of tasks, predetermined goals and tolerance for mistakes or things that are not appropriate or not good.

4. Rewards

This relates to employees' feelings of appreciation and recognition for good work.

5. Clarity

Related to employees' feelings that they know what is expected of them regarding their work, role and organizational goals.

6. Commitment theme

Relates to employees' feelings regarding their sense of pride in having an organization and willingness to try more when needed.

According to Asmar (2004) there are 5 (five) factors that influence organizational climate, including the following:

1. Personnel Placement

This factor is very important because if an error occurs in placement it can disrupt employee behavior and ultimately damage the organizational climate. In placement, a leader should look at various aspects such as their specialization, hobbies, skills and character experience.

2. Building Communication Relationships

In an organizational environment, the communication process cannot be separated from it. In everyday life, communication plays a very important role and an organizational climate is created because of communication.

3. Management and Conflict Resolution

Every organization will experience changes in every aspect along with changes in the environment. This change process is very important to anticipate so that stagnation or organizational decline does not occur. The role of leaders in this case is to make employees more dynamic and able to support the progress of the organization.

4. Collection and Utilization of Information

Information plays a very important role in an organization as a link between various parts of the organization so as to create organizational integrity.

5. Environmental Conditions

Work environment conditions are often referred to as the atmosphere or conditions at work. What is meant by this is that it includes the condition of existing facilities or facilities, for example rooms for leadership, meeting rooms, lobbies, living rooms, and others.

2.3 Performance

The term performance is quoted from English, performance, or job performance, as stated by experts in various human resource management literature.

Performance has an important position in management and organizations because success in doing work is largely determined by performance (Robbins, 1998). This means that if someone works in an organization or company, their performance is a series of individual behaviors and activities in accordance with the organization's goals (Arnold and Daniel, 24). In fact, Hodgetts and Kuratko emphasized that performance is related to how well someone does their job.

According to Hamzah (Hamzah, 2015:118) performance can be seen directly in everyday life as a professional activity. In this case, based on a comparison of performance and qualifications, a person can be grouped into the following categories.

a) Drive (dynamo)

A person acts as if they are still in a position in the middle when pursuing a career and always has a personal strategic plan that is continuously carried out and fulfilled. This person is always working to learn something new and hone his abilities and skills.

b) Explorer (Cruiser)

Work according to your abilities and skills, so that as a consequence you are far from stress and really enjoy your work life. Sometimes explorers can also do something well even though it is actually unrelated to the skills they use in their daily work.

c) Losers (Loosers)

According to Withmore, performance is the implementation of the functions required of a person. Furthermore, Withmore also explains performance and groups it into two activities, namely setting the person's own highest standards that go beyond what is achieved requested or expected, an achievement and a general exhibition of one's skills expressed in full potential (Withmore, 1997: 104).

Meanwhile, Ivancevich, Donnelly, and Gibson in Hamzah (2015: 121) stated that performance is the main measure of the success of an organization and its responsibilities. This

opinion emphasizes that performance is the organization's standard for achieving success for which it is responsible.

Bowdich and Buono in Hamzah (2015: 122) performance is related to behavior directed towards the mission or goals of the organization. This definition explains that performance measures are not only limited to quantity and quality standards, but more importantly there is responsibility in working to carry out the mission and goals of the organization (Hamzah, 2015: 122).

Hamzah (2015: 140) states that based on the analysis of the description of the theories above, it can be synthesized that performance is a series of behavior or work activities of a person in carrying out their duties on the basis of understanding, competence, skills, full of dedication, passion and high motivation to achieve achievement. and achieving success in organizational goals, which include work position, workplace rules, responsibilities, and cooperation with other people.

3. RESEARCH METHODS

3.1. Types of research

Methods are techniques or procedures used to collect and analyze data related to research problems or hypotheses (Leedy and Omrot, 2005; Patton, 2001).

The type of research used is explanatory research which aims to test the relationship between hypothesized variables. This research is descriptive research because it explains or describes the variables that are occurring and is called quantitative because it uses a lot of numbers, starting from data collection, data interpretation and appearance and results. (Arikunto, 2002:9).

3.2 Population and Sample

According to Sugiono (2007:800) Population is a generational area consisting of objects and subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn. In this study, the population was employees in Ilir Timur 1 Subdistrict, Palembang, while part of the population whose characteristics and characteristics met the criteria for distributing and administering questionnaires constituted the sample. According to Arikunto (1993:107) if the number of subjects used is less than 100 then it is better to take all of them.

3.3 Data Collection

According to Arikunto (1998:114) there are two data sources used, namely primary and secondary. Data collection in this research used a questionnaire distributed to both civil servants and non-PNS employees at the Ilir Timur 1 Palembang District office.

Variables measured include Leadership Style, Organizational Climate and Performance using a Likert scale, where the questions in the questionnaire have five alternative answers. The answer with the lowest weight is in the STS category (Strongly Disagree), then it increases to the TS category (Disagree), the KS category (Slightly Agree), then the S category (Agree), and finally the SS category (Strongly Agree).

The types of data used are qualitative and quantitative. Meanwhile, data collection uses documentation and questionnaires.

3.4 Data Analysis

3.4.1. Multiple Linear Regression Analysis

Data analysis in this research uses Multiple Linear Regression Analysis.

$Y = a+b1X1+b2X2+\varepsilon$

Where

Y = employee performance

X1 = leadership style

X2 = organizational climate

a = constant

b1,2,3 = regression direction coefficient

ε = standard error estimate

3.4.2. Hypothesis Testing

a. F test

Used to test the significance of the influence of the independent variable on the dependent variable simultaneously.

i. If F Sig < 0.05 then Ho is rejected and Ha is accepted.

ii. If F Sig > 0.05 then Ho is accepted and Ha is rejected.

b. T test

Used to test the significance effect of each independent variable on the dependent variable.

i. If t Sig < 0.05 then Ho is rejected and Ha is accepted.

ii. If t Sig > 0.05 then Ho is accepted and Ha is rejected.

4. RESULTS

4.1. Profile of Ilir Timur 1 Palembang District

The Ilir Timur 1 District Office, Palembang City is located on Jalan Mayor Santoso No.01, 20 Ilir D. III, Kec. Ilir Timur I, Palembang City, South Sumatra 30129. In accordance with Perwali No. 54/2015, there are several licensing authorities given by the Mayor to the District Head. Such as SIUP, Company Registration Certificate (TDP) under IDR 500 million, burial permit, 2-seat salon permit, incidental advertising permit, and PPUT. Apart from serving permits, the Ilir Timur 1 Palembang District Office also serves the interests of the non-licensing community, namely KTP and KK.

Ilir Timur I is one of the sub-districts in Palembang City, South Sumatra Province. Through this sub-district office, residents can process various forms of permits. Some of the permits that are often made are related to the issuance of micro and small business permits (IUMK), recommendations for SKCK cover letters, domicile certificates, permits to close roads for construction or events, ratification of poverty certificates, marriage dispensations, recommendations and legalization of divorce applications, unmarried , and get married. Other documents that can be processed are related to certain permits, such as letters for groundwater exploration, spring excavation, letters for changes in land use, inheritance, and waqf.

4.2. Respondent Description

The respondents in this study were employees of the Ilir Timur 1 District Office, Palembang City, both civil servants and non-PNS, which consisted of the entire population who were given questionnaires. Respondents' ages ranged from 17 years to 60 years with varying levels of education, from high school graduate to Bachelor's Degree (S2).

4.3. Multiple Linear Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.643[a]	.413	.362	2.166

a. Predictors: (Constant), V23 (Iklim Organisasi), V12 (Gaya Kepemimpinan)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	75.996	2	37.998	8.100	.002[b]
	Residual	107.889	23	4.691		
	Total	183.885	25			

a. Dependent Variable: V34

b. Predictors: (Constant), V12, V23

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	75.996	2	37.998	8.100	.002[b]
	Residual	107.889	23	4.691		
	Total	183.885	25			

a. Dependent Variable: V34

b. Predictors: (Constant), V23, V12

The SPSS output above shows the F sig value of V12 (Leadership Style variable) and V23 (Organizational Climate) of 8,100 with a significance value of 0.002. So the leadership style variable and organizational climate variable have a significant effect on V34 (performance variable).

4.4 Hypothesis Testing

Researchers suspect that there is a possibility that leadership style variables and organizational climate variables each have a significant influence on performance. This was caused by observing the conditions and situation as well as observing the results of the questionnaire that had been distributed at the Ilir Timur 1 Subdistrict Office, Palembang City. However, it will be tested first like testing the hypothesis below.

i. Uji F

The F test is intended to determine the influence of the independent variable on the dependent variable together (simultaneously). The SPSS output results above show that V12 (Leadership Style) and V23 (Organizational Climate) have a significant effect on performance with an F count of 37,998 with a significance level of 0.002. This means that Ha is accepted, which means that together (simultaneously) the variables of leadership style and organizational climate have a significant effect on performance.

ii. Uji T

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25.362	8.461		2.997	.006
	V12	.431	.179	.440	2.402	.024

a. Dependent Variable: V34

To find out whether the independent variables individually (partially) have an effect on the dependent variable. The SPSS output above shows that V12 (leadership style) has a significant effect on V34 (performance) where Standardized Beta Earn is 0.440 with a significance value of 0.024.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25.805	4.890		5.277	.000
	V23	.424	.104	.639	4.074	.000

a. Dependent Variable: V34

The SPSS output above shows that V23 (organizational climate) has a significant effect on V34 (performance) where Standardized Beta Earn is 0.104 with a significance value of 0.000. Thus, based on this T Test, Ha is accepted.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSION

As the author of this research, I draw several conclusions based on the data collection methods and research results discussed in the previous chapters, including:

1. The measuring tool in this research uses a questionnaire that is submitted to the entire population (mentioned in the discussion chapter), namely 60 people, where if it is less than 100 then the sample should be taken from the entire population.
2. The hypothesis of the F test results shows significant results. The SPSS output in the F test section shows that Leadership Style and Organizational Climate together have a significant effect on performance.
3. The results of the T test show significant results. The regression output in the T test section shows that Leadership Style (V12) has a significant effect on employee performance (V34) at the Ilir Timur 1 Palembang District Office. Then, from the results of the T test, the next variable, namely Organizational Climate (V23), also has a significant effect on employee performance (V34) at the Ilir Timur 1 Palembang District Office.

5.2 SUGGESTIONS

Based on the results of this research, I as the researcher and writer of this study formulated several suggestions, including:

1. There must be an increase in the leadership style variable if we want to continue to maintain and improve achievements in serving the community in Ilir Timur 1 Palembang District. In theory, leadership style can increase employee enthusiasm and motivation. So in the employee environment at the relevant sub-district office, even though there is a significant influence between leadership style and performance, this does not mean that the leadership implemented in the relevant office is perfect. This means that this influence must be utilized to increase work enthusiasm in Ilir Timur 1 Palembang District.

2. Given the significant influence between Organizational Climate and Performance, a good organizational climate must be maintained. This is because there is a significant influence between these two variables. This significance requires regular updates and improvements regarding matters relating to the organizational climate so that employees have a comfortable working atmosphere.
3. Good performance in an organization needs to be maintained through programs that motivate staff or employees to work more enthusiastically and help the agency in serving and achieving goals. Making breakthroughs in advances in technology and information as well as leadership patterns that are trained regularly will hopefully be able to improve services to the community.

REFERENCES

A. Cohen, William. 2011. *The New Art of The Leader*. Jakarta : Tangga Pustaka.

Arikunto, 1998. *Prosedur Penelitian Suatu Pendekatan Praktek, Edisi Revisi V.* Jakarta: PT. Rineka Cipta.

Asmar, Zul. 2004. ***Pengaruh Iklim Organisasi dan Motivasi Kerja Terhadap Kinerja Pegawai Administrasi di FPMIPA UPI.*** Bandung: UPI.

Davis, Keith, dan Newstrom. 2000. *Perilaku Dalam Organisasi, edisi 7*. Penerbit Erlangga : Jakarta.

Hamzah, Uno. 2007. *Perencanaan Pembelajaran*. Jakarta: Bumi Aksara.

Hamzah, Uno dan Nina Lamatenggo. 2015. *Teori Kinerja dan Pengukurannya.* Jakarta: Bumi Aksara.

Hasibuan, Malayu. 2002. *Manajemen Sumber Daya Manusia.* Jakarta: PT Bumi Aksara.

Istijanto. 2006. *Riset Sumber Daya Manusia.* Jakarta: Gramedia Pustaka Utama.

Kelneer. (1990). *Pengaruh Iklim Organisasi Terhadap Kinerja Pegawai Pada Biro Sektor Universitas Muhamadyah Tapanuli Selatan.* Jurnal Administrasi Publik oleh Safran Efendi Pasaribu dan Kariono.

Pengertian, Dimensi, Faktor dan Pengukuran Iklim Organisasi. Kajian Pustaka.com. 12 Januari 2018. https://www.kajianpustaka.com/2018/01/pengertian-dimensi-faktor-dan-pengukuran-iklim-organisasi.html

Teori, Indikator dan Jenis Kepemimpinan. Kajianpustaka.com. 6 April 2019. 4 Mei 2020. https://www.kajianpustaka.com/2019/04/teori-indikator-dan-jenis-gaya-kepemimpinan.html

Teori-teori Manajemen dan Organisasi, theorymanajemendanorganisasi.blogspot.com. 11 Desember 2015. http://theorymanajemendanorganisasi.blogspot.com/

Leedy, P.D., & Omrod, J.E. (2005). *Practical Research: Planning and Design.* Pearson, Upper Saddle River.

Robbinns, S.P. Edisi 8. *Organizational Behavior : Concepts, Controversies, Applications*. New Jersey : Prentice-Hall, Inc 1998.

Sugiono. 2007. *Metode Penelitian Bisnis.* Alfabeta.

Withmore,John. 1997. *Coaching For Performance:Seni Mengarahkan Untuk Mendongkrak Kinerja.* Jakarta: Gramedia Pustaka Utama.

Wirawan. 2007. *Budaya dan iklim organisasi*. Jakarta: Salemba Empat.