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# PROCEEDING 2023

International Conference of Ethics on Business, Economics, and Social Science

ICEBISS 2023  
International Conference of Ethics on Business, Economics, and Social Science

## The Future of Artificial Intelligence: Challenges and its Impact on Education, Economics, and Business

Saturday, September 23rd, 2023

Hosted by  
Faculty of Economics and Business,  
Universitas Negeri Yogyakarta



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PROGRAM STUDI  
PENDIDIKAN ADMINISTRASI PERKANTORAN  
FAKULTAS KEGURUAN DAN ILMU PENDIDIKAN  
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**INTERNATIONAL CONFERENCE OF ETHICS ON BUSINESS, ECONOMICS,  
AND SOCIAL SCIENCE (ICEBESS)**

Topics:

“The Future of Artificial Intelligence:  
Challenges and its Impact on Education, Economics, and Business”

Grand Rohan Hotel Yogyakarta, Saturday, September 23rd, 2023

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# ICEBESS 2023

International Conference of Ethics on Business, Economics, and Social Science

ICEBESS is an annual conference held by the Faculty of Economics and Business, Universitas Negeri Yogyakarta since 2014, which responds to the issues of Management Challenges, Information Technology, and Global Risk Impacts on Economics and Business Education. The current theme of this conference is The Future of Artificial Intelligence: Challenges and Its Impact on Education, Economics, and Business. The previous ICEBESS session (2022) leads scholars to respond to the issues of Management, Information Technology, and Global Risk Impacts on Economics and Business Education in the context of The New Concept of Education and Business: Challenges for Academicians and Practitioners. Many ideas have been shared and brainstormed in the meetings. Accordingly, ICEBESS continuously tries to invite scholars, practitioners, and students to respond to the issues.

Yogyakarta, September 23rd, 2023

Dr. Siswanto, M.Pd.

The Dean of the Faculty of Economics dan Business  
Universitas Negeri Yogyakarta

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## 21<sup>st</sup> CENTURY ENTREPRENEURIAL COMPETENCE OF HIGHER STUDENTS IN SURABAYA

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### ABSTRACT

**Introduction/Main Objectives:** Competencies in 21st century learning that need to be applied include collaborative competence, lifelong autonomy competence, information and communication technology (ICT) competence, critical and creative thinking competence, communication and English language competence, and entrepreneurial competence. Entrepreneurial competence in higher education is needed to fill opportunities for utilizing technology in the 21st century. Changes in education in the 21st century encourage students to be ready to be in society. In the end, entrepreneurship learning is designed in accordance with 21st century learning skills, namely critical thinking, creativity, communication and collaboration (4C). **Background Problems:** The problem that arises is that when implementing the entrepreneurship education program, many students have difficulty participating in entrepreneurship education. Several things that become obstacles include signal problems, problems operating the LMS, and according to students the evaluation questions in the LMS are too difficult to solve. **Novelty:** This research examines students who utilize technology in the form of an LMS (Learning Management System) in the entrepreneurial learning process. **Research Methods:** The population is 360 students who have taken entrepreneurship training in the form of a capacity building program. Samples were taken using proportional random sampling, resulting in 172 samples. Data analysis uses Moderated Regression Analysis (MRA). **Findings/Results:** The research findings show that entrepreneurship education cannot moderate the relationship between 21st century digital skills and students' entrepreneurial competence. The education undertaken apparently has no effect on competency development. This could be related to student motivation and a less supportive social environment. **Conclusion:** There is an influence between 21st century digital skills and entrepreneurial competence, while entrepreneurship education cannot moderate the relationship between 21st century digital skills and student entrepreneurial competence. There are other factors that can influence students' entrepreneurial competence, namely internal factors and external factors.

**Keywords:** entrepreneurship education, 21st century digital skills, entrepreneurial competence



## INTRODUCTION

The industrial revolution 4.0 is marked by very rapid technological developments in the last decade. And this development has an impact on various aspects of life. And then technological disruption occurred (Dwijayanti et al., 2023). The main issues of the industrial revolution 4.0 are cyber physical systems, internet of things, and bio-technology, namely combining automation and technology in industry (Claro et al., 2012).

As with education, several aspects of education experience changes, such as the curriculum, models, and learning media used by teachers. Apart from that, there is also the competency aspect of educators and students. Changes in the application of technology in learning are called 21st Century Teaching or 21st century learning (Zubaidah, 2020).

Competencies in 21st century learning that need to be applied include collaborative competence, lifelong autonomy competence, information and communication technology (ICT) competence, critical and creative thinking competence, communication and English language competence, and entrepreneurial competence (Fong et al., 2014).

It is hoped that the entrepreneurial competencies applied in universities will be able to answer the demands of university graduates who can create new jobs by taking advantage of the technological opportunities of the 4.0 revolution. So that every university must prepare human resources that are in line with the demands of the industrial revolution 4.0 era in order to have high competitiveness for the sake of economic growth and the nation's prosperity (Nzembayie et al., 2019; Robinson et al., 2016).

So it is necessary to adapt higher education systems and programs to make them relevant to the 4.0 revolution. One of them is through entrepreneurship education by utilizing digital technology. Life in the 21st century demands various fundamental educational changes. Based on data from Kominfo (2020), the level of digital literacy is at a medium level. This shows that the usefulness of digital tools as a learning support is very necessary in the process of achieving learning goals.

To implement these changes in the field of education, UNESCO since 1998 has put forward two basic principles: first, education must be placed on four pillars, namely learning to know, learning to do, learning to live together and learning learning to be; secondly, lifelong learning (Dwijayanti et al., 2023). Educational changes in the 21st century must be followed by universities and applied to students, so that after graduating they are ready to enter society. Advances in technology and science mean that the system adopted by each university must be gradually changed. In line with these needs and demands, this curriculum change is an effort to develop innovations towards these demands.

Entrepreneurship education has two goals, namely short-term and long-term goals. The short-term goal is to foster interest in entrepreneurship in students. Second, the long-term goal of entrepreneurship is to reduce the unemployment rate (Mitchelmore & Rowley, 2010) Looking at short-term goals, the number of entrepreneurs increased from 1.67% to 3.10% of Indonesia's total population of 225 million people in 2018 (Badan Pusat Statistik, 2019). This number is still very far compared to developed countries such as America and Japan which have entrepreneurs of more than 12% of the total population. Based on long-term goals, unemployment in Indonesia has fallen from 7.04 million people who are still unemployed to 6.87 million.

The object to be researched is at the Unesa Faculty of Economics and Business, there is an entrepreneurship education program taken by students, namely the development of HP-Life Capacity Building entrepreneurship skills in collaboration with PJI (Prestasi Junior Indonesia). All supporting infrastructure is complete, starting from learning tools, LMS (Learning Management System) based learning media, teaching materials in the form of electronic

modules, as well as evaluation questions containing 21st century (4C) learning skills. The problem that arises is that when implementing the entrepreneurship education program, many students have difficulty participating in entrepreneurship education. Several things that become obstacles include signal problems, problems operating the LMS, and according to students the evaluation questions in the LMS are too difficult to solve. There are several students who decide to stop working on the LMS and not continue entrepreneurship education activities. The education taken apparently has no effect on competency development (Delacroix & Benoit-moreau, n.d.; Dwijayanti et al., 2023; Mitchelmore & Rowley, 2010).

### **Entrepreneurship Competency**

Entrepreneurial competence is adequate skill to carry out a task or as the ability to have the skills and abilities required by a person's attitude and behavior in applying creativity, innovation, risk taking in an effort to assume financial needs, social risks, and receive remuneration and satisfaction as well as personal freedom (Chiru et al., 2012).

This entrepreneurial competency is related to the education a person experiences. It has been proven that the application of the concept of entrepreneurship to a person's education can influence competence from a psychological perspective (Susanti et al., 2014). Entrepreneurial competence is divided into two indicators, namely personal effectiveness competence and academic competence (Mojab et al., 2011) Sub indicators of entrepreneurial academic competence include (Mojab et al., 2011); (Robles & Zárraga-Rodríguez, 2015): (1) Reading and Writing, (2) Science and technology, (3) Communication: listening and speaking, (4) Critical and analytical thinking. Meanwhile, sub-indicators of personal competence include: (1) Interpersonal skills and teamwork, (2) Initiative, (3) Adaptability and flexibility, (4) Risk taking, (5) Desire to learn (Mojab et al., 2011; Robles & Zárraga-Rodríguez, 2015).

### **Entrepreneurship Education**

The development of the entrepreneurial spirit has resulted in the subject of many research articles as a means to generate business projects (Dwijayanti, 2018). Entrepreneurship education is categorized as a unique practical program because its implementation fosters not only practical skills, but furthermore the formation of thought patterns that may be different in students (Robinson et al., 2016). Fong et al., (2014) stated that entrepreneurship programs aim to not only teach students about accounting, project management and marketing, but also to foster illusory traits such as courage, innovation and creativity that are difficult to measure. The typical and ideal outcome in the entrepreneurship education process is an individual with the ability to see and evaluate business opportunities, gather the necessary resources to gain profits, and initiate appropriate actions to ensure entrepreneurial success (Dwijayanti, 2018).

Entrepreneurship education in the 21st century is often associated with the integration of technology in learning. This is because the various skills, knowledge and attitudes that must be present in entrepreneurship education need to be embedded coherently and comprehensively in the national curriculum. La Guardia et al., (2014) found one way to accommodate skills in entrepreneurship education through game-based education (Game Based Learning) which is a model that applies technology.

Entrepreneurship education has several interconnected components. According to (Tung, 2016) states that there are four components of entrepreneurship education, namely (1) Know-what (entrepreneurial knowledge), (2) Know-why (values and motives), (3) Know-who (social interaction), (4) Know-how (entrepreneurial skills and abilities)

All components of entrepreneurship education can be applied to become a measuring tool for entrepreneurship education in students. Entrepreneurship education has a relationship with

entrepreneurial competence. (Din et al., 2016) found that entrepreneurial competence in general has a significant effect on the effectiveness of the entrepreneurial learning process.

### 21st Century Digital Skills

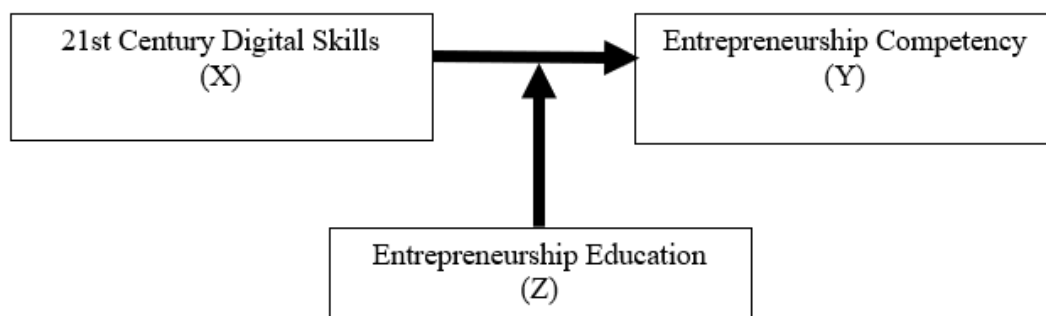
The development of the times demands that human qualities change and develop further. One of the qualities that must be possessed in the 21st century is 21st century skills or what is often called 21st Century Skills. The development of these skills can be applied to various aspects of life. One implementation of 21st century skills is Information and Communication Technology (ICT) as the main feature of development in the industrial revolution 4.0. Information and communications technology is at the heart of rapid economic change. This is not entirely relevant because human skills are needed to create human capital in a quality workforce (Anderson, 2008) 21st century digital skills have building blocks which are indicators that someone already has these skills. Indicators of 21st century digital skills consist of (Van Lar et.al, 2018): (1) Information management, (2) Communication, (3) Collaboration, (4) Creativity, (5) Critical thinking, (6) Problem solving

The development of entrepreneurship education requires technology, including to increase the output of entrepreneurship education, technological knowledge and skills, especially digital, are required (Shih & Huang, 2017). The use of digital technology has been proven to increase entrepreneurial habits (Delacroix & Benoit-moreau, n.d., 2018)

## METHOD, DATA, AND ANALYSIS

### Research Design

This research uses quantitative research methods. The primary data used in this research is descriptive, which is research that uses a survey method, namely a structured questionnaire given to respondents which is designed to obtain specific information by collecting structured data. The research design was created by researchers to find out whether 21st century digital skills influence students' entrepreneurial competence, and whether entrepreneurial education moderates the influence of 21st century digital skills on students' entrepreneurial competence.



Picture 1. Research Design

### Population and Sample

In this study, the research respondents were FEB Unesa (University State of Surabaya) students who had passed the Capacity Building-HP Life Entrepreneurship Program. The population in this study was 360 students. The sampling technique used in the research was proportional random sampling. So the sample that can be taken is 172 students.

In this research there are three variables, namely 21st century digital skills as the independent variable and entrepreneurship education as the moderating variable, and the student entrepreneurial competency variable as the dependent variable. In this research, the ratio used by researchers is the Likert scale.

The instrument in this research consists of the variables 21st century Digital Skills-DS (15 items), Entrepreneurial Competence-EC (17 items), and Entrepreneurial Education-EE (17 items). The instrument tests carried out are in the form of validity tests and reliability tests. The instrument test results showed that all instrument items were declared valid and reliable with reliability results of 21st century digital skills (0.854), entrepreneurial competence (0.864) and entrepreneurial education (0.828).

### Analysis Data

Data analysis technique used is Moderated Regression Analysis (MRA). Before analyzing the data with MRA, the researchers carried out a normality test, multicollinearity test and heteroscedasticity test. The test results are presented in the following table.

**Table 1. Normality Test Results**

		Unstandardized Residual
N		172
Normal Parameters <sup>a,b</sup>	Mean	.0000000
	Std. Deviation	4.76324967
	Absolute	.050
Most Extreme Differences	Positive	.050
	Negative	-.029
Kolmogorov-Smirnov Z		.909
Asymp. Sig. (2-tailed)		.380

**Table 2. Multicollinearity Test Results**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	9.141	3.336		2.740	.006		
1 DS	.249	.053	.233	4.680	.000	.477	2.096
ED	.260	.070	.252	3.741	.000	.261	3.833

**Table 3. Heteroscedasticity Test Results**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.637	2.090		3.176	.002
DS	.065	.041	.170	1.612	.063
EE	.075	.044	.181	1.711	.088

First, the direct effect test was carried out. The direct effect test is used to test the hypothesis. This test is used to find out how much influence the independent variable has on the dependent variable.

**Table 4. Direct Effect Test Results (t Test)**

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
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		B	Std. Error	Beta		
	(Constant)	61.633	.497		124.097	.000
1	Zscore(KD)	2.028	.390	.264	5.198	.000
	ABS1	.523	.513	.047	1.020	.308

Based on the table of direct influence test results (t-test), it states that the digital skills variable has a significance value below 0.05 with a positive coefficient value.

*H1: 21st century digital skills have a positive and significant effect on students' entrepreneurial competence*

The research results from the table above show that the entrepreneurial skills coefficient value is 2.028, which indicates that there is a positive relationship. Meanwhile, the significant value of entrepreneurial skills is 0.000 or lower than 0.05 with a t count of 5.198. Therefore, it is concluded that the first hypothesis which states that digital skills have a positive and significant effect on students' entrepreneurial competence is accepted.

Second, this test is used to find out whether the entrepreneurial education (ED) variable is able to moderate the influence of the digital skills variable on students' entrepreneurial competence (EC).

**Table 5. Moderating Effect**

Model	Unstandardized Coefficients			Standardized Coefficients	t	Sig.
	B	Std. Error	Beta			
	(Constant)	61.633	.497		124.097	.000
	Zscore(KD)	2.028	.390	.264	5.198	.000
1	ABS1	.523	.513	.047	1.020	.308

Based on the table above, it shows that the significance value is ABS1 ( $|Zscore_{ED} - Zscore_{EC}|$ ) above 0.05 with a positive coefficient.

*H2: Entrepreneurship education moderates the influence of 21st century digital skills on entrepreneurial competence*

The results of the moderation effect test show that the coefficient value of the absolute difference between digital skills and entrepreneurial skills variables is 0.523, which indicates a positive relationship towards student entrepreneurial competence, while the significance is 0.308, which has a significant value above 0.05 and the calculated t value is 1.020. Based on these results, the second hypothesis which states that entrepreneurial education moderates the influence of digital skills on students' entrepreneurial competence is rejected.

## RESULT AND DISCUSSION

### The Effect of 21st Century Digital Skills on Student Entrepreneurial Competence

Based on data analysis, the results showed that 21st century digital skills influence students' entrepreneurial competence. This decade saw the rapid integration of new communications and information technologies (ICT) produce ever-evolving digital skills necessary for employment and participation in society. In an age where ICT dominates, people need the ability to develop inside and outside of education (Littlejohn et al., 2012).

Based on findings in the field, the use of digital tools in the realm of education, especially in classroom learning, is an important thing to do, especially after the post-pandemic where all aspects rely on information technology in daily activities. Technology has colored and even

changed the fabric of human life every day today. In the end, the impact of technology, especially digital, has an impact on innovation, entrepreneurial technology, and the process of creating new businesses and modifying all aspects of life. Students taking entrepreneurship courses at the Faculty of Economics and Business (FEB) use advances in digital technology in their learning process. The digital technology referred to in the discussion above can take the form of digital artifacts, digital platforms, and digital infrastructure (Nzembayie et al., 2019). This entrepreneurship learning is designed to plan a business directly where students create superior products and then market the products. Marketing the products made through social networks such as Instagram, Facebook, WhatsApp and several marketplaces so that students can immediately determine a good marketing strategy. Entrepreneurship learning designed with a student centered learning approach. In this way, students can participate in entrepreneurial activities through the assignments given. Apart from that, assignments are carried out with a marketing mix, namely product, price, place, promotion. This is done to train students from making products to marketing products. Product marketing is carried out by utilizing internet technology which involves several applications such as Facebook, Instagram, Shope, Bukalapak, Tokopedia and applications that can be used to facilitate product marketing. This learning process by utilizing digital technology can improve students' entrepreneurial competence with the conveniences offered by the industry 4.0 era.

The use of digital technology has been proven to increase entrepreneurial habits (Delacroix & Benoit-moreau, n.d., 2018). The use of digital technology in entrepreneurship is not only a medium or infrastructure in the learning process but can be a means of forming entrepreneurial competencies (Hull et al., 2007).

### **The Effect of 21st Century Digital Skills on Student Entrepreneurial Competence**

Based on the results of data analysis, it was found that entrepreneurship education cannot moderate 21st century digital skills on students' entrepreneurial competence. The direct influence test shows that 21st century digital skills have a positive and significant effect on entrepreneurial intentions, but the presence of entrepreneurship education as a moderation cannot provide changes in either strengthening or weakening entrepreneurial skills on the entrepreneurial competence of students who have taken part in the Capacity Building-HP Life entrepreneurship training program.

Skills are a person's personal traits, knowledge and abilities that are relevant in carrying out their duties effectively. The entrepreneurial process includes the behavior, skills and attributes that a person has in entrepreneurial education. Developing entrepreneurial behavior requires a process that includes identifying traits related to entrepreneurship both in the form of skills and attributes inherent in entrepreneurship (Usman et al., 2012).

When students take the Capacity Building-HP Life entrepreneurship training program. The problem that emerged was that during the implementation of the program, many students had difficulty participating in entrepreneurship education (Capacity Building-HP Life). Several things that become obstacles include: signal problems, problems operating the LMS, and according to students the evaluation questions in the LMS are too difficult to solve. There are several students who decide to stop working on the LMS and not continue entrepreneurship education activities. This is in line with research by Anwas (2013) which stated that the education received did not have an effect on competency development. This could be related to student motivation and a less supportive social environment. Students described taking entrepreneurship education only to get grades and used it as a "break from the obligation" to only take entrepreneurship courses. In fact, there are important things that students can gain

after taking entrepreneurship education, namely the internalization of entrepreneurial values which are important to apply if students want to become a start-up.

(Tung, 2016) states that the social environment is a figure that is a motivator for entrepreneurship. A supportive social environment for students, adequate facilities and infrastructure if students do not have good self-confidence cannot strengthen entrepreneurial competence. If students have high entrepreneurial skills and are able to develop their businesses, the social environment can strengthen students' entrepreneurial competencies.

## CONCLUSION

Based on the study results, 21st century digital skills influence students' entrepreneurial competence. And then, Entrepreneurship education cannot moderate 21st century digital skills on students' entrepreneurial competence. Entrepreneurship education cannot moderate 21st century digital skills on students' entrepreneurial competence. This means that the entrepreneurship education that has been provided, either in the form of classroom learning processes or in the form of training programs, cannot automatically strengthen students' entrepreneurial competencies. There are other factors that can influence students' entrepreneurial competence, namely internal factors and external factors. Further research can address other factors that can influence students' entrepreneurial competence. Internal factors relate to self-confidence and motivation. Meanwhile, external factors are related to the social environment, family environment and students' immediate environment.

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# Adoption of Digital Technology for MSME in DIY Province in Facing the Covid-19 Pandemic

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## ABSTRACT

**Introduction/Main Objectives:** Coronavirus disease (Covid-19) poses a big challenge to society, such as life-struggle and the economic sector. MSME is a business sector in Indonesia that was severely affected by the Covid-19 pandemic. The impact arises as their businesses are daily and rely on direct interaction with buyers. Various ways need to conduct to survive and thrive during the pandemic, and beyond. The government has issued a policy to save MSME from the impact of the pandemic. But, it needs short-term and long-term strategies for the MSME. MSME is a sector of economic that also drives the economy in the Special Region of Yogyakarta

**Background Problems:** During the pandemic, there is no increase in the number of enterprises, the number of workers, and turnover for 1 year. Whereas, in the previous few years, there has always been an increase every year. In short, the Covid-19 pandemic has greatly affected the lives of MSME.

**Research Methods:** The research was quantitative with survey methods. And, data analysis used descriptive, correlation, and different tests. **Finding/Results:** The results showed that the efforts conducted by MSME towards digitalization, which was manifested by the adoption of digital technology, level of digitalization, and business models, help in responding to the pandemic situation. **Conclusion:** MSME needs to push to reach an optimal digitalize. In spite, of course, it does not completely leave the offline business, but the online-strategy business also needs for MSME. The implementations of enterprise digitalization are more used to cope and face the crises in quick and effective way.

**Keywords:** adoption, digital technology, MSME, Yogyakarta, covid 19

## INTRODUCTION

The coronavirus disease (Covid-19) broke out at the end of 2019. And, it spread rapidly to many countries until became an international pandemic. This situation causes a health crisis in the middle of the community. Also, it poses a big challenge to society, such as the life-struggle and economy sector, including the MSME. The growth of MSME sector also impacted by pandemic situation (Lim, Dominic SK et al., 2020). The Covid-19 pandemic has damaged the economy in various business lines. Also, its impact on the MSME business. There are three most business risks in Czech for MSME, both after and before the pandemic situation. They are market risk, financial, and labor (Cepel, Martin, et al., 2020). A business sector, where the MSME run in Indonesia was severely affected by the pandemic. The risks are the decrease of income and production, but increase the price and delays in the shipping of raw materials (Safi'i et al., 2020). The impact on the MSME sector is also very affected to the state's economic condition due to MSME contribute greatly to the Indonesian economy).

MSME needs to wake up and fight the pandemic. Various ways need to perform to survive and thrive during the pandemic. In addition, it needs short-term and long-term strategies for the MSME as an actor in the economic sector in Indonesia (Sugiri, 2020). Survival strategies for MSME are e-commerce trading, product quality improvement, online marketing, adding services, and optimizing and establishing the relationships of customer marketing (Hardilawati, 2020). MSME needs to perform strategies, such as financial strategies, resize, finding new markets with the help of social media and collaborating with local governments in social service programs that are very intensively carried out to upscale the marketing (Safi'i et al., 2020). MSME can apply an approach of the Canvas-Business Model to help the business during the pandemic (Fitriasari, 2020). MSME have a major role in increasing the number of job opportunity, and at the same time maintaining social stability, as well as promoting technological innovation. But, MSME consider easier to have impact on public crises comparing to companies due to lack of resources.

Today, digitalization is needed by the business world, including MSME. And, it has the opportunity to respond effectively to crises by enabling its dynamic capabilities using technologies, such as computing, communication, information technology, and connections to drive a change in the organization. The transformation process into digital need a careful management as involving a technological, cultural, and organizational series, as well as social changes. And, the process have an impact on the organization structure (Casalino et al., 2019). An important role in response to the crisis is the adoption of digital technology.

Several countries have used cloud computing, databases, artificial intelligence (AI), and other technologies in respond the pandemic situation of Covid-19, such as tracking and monitoring viruses, treatment of disease, and work. Research by Khai reviews the importance of MSMEs in Malaysia to re-evaluate their business models by featuring digitalization and automation in their business operations (Khai et al., 2020). Database technology provides powerful support to monitor and track pandemics in real-time. Online office software can be adapted to allow employees to work flexibly.

MSME is a sector of economic that also drives the economy in the Special Region of Yogyakarta. The number of MSMEs from 2017 to 2019 has always increased and is stagnant in 2020, which is 262,130. The trend of the number of MSME follows the increase of employment absorption by MSME. The trend of the number of businesses and workers, and turnover in 1 year for each category is the same, which increase from 2017-2019 and is stagnant in 2020. The data show that there is no increase in the aspect of the number of businesses and workers and turnover in 1 year during the pandemic. Whereas, in the previous few years, there has always been an increase every year. In short, the Covid-19 pandemic has greatly affected the lives of MSME. Based on the background, it needs to find out how the adoption of digital technology for the MSME in DIY Province in facing the Covid-19 pandemic.

## Literature Review

### A. Micro, Small and Medium Enterprises (MSME)

MSME is a type of business with the employee number is below a certain limit. In fact, the sector of MSME have a major role in the modern economy, which proved to be the most interesting and extraordinary innovative system. The employees number in MSME is varied. The CEO of MSME is often the founder, manager, or owner. In MSME, CEO requires to allocate the energy and time, as well as their assets to grow up their business. Also, the CEO is the reason of success, thrive or fail of a MSME.

The Decree of the President of the Republic of Indonesia Number 99 of 1998 defines MSME as small-scale people's business, that the business fields are generally small-business and be priority-protected by the government. It aims to prevent unfair competition in the world of business. Meanwhile, Central Statistics Agency (BPS) defines MSME as a people's business based on total number of workers. According to Law Number 20 of 2008, the turnover and assets is factor to classify the MSME.

TABLE 1. TABLE OF MSME CRITERIA

No	Enterprise	Criteria of Aset	Criteria of Omset
1	Micro Enterprise	Max.50 million	Max. 300 million
2	Small Business	>50 million-500 million	> 300 million-2.5 Billion
3	Medium Enterprises	>500 million-10 Billion	>2.5 Billion- 50 Billion

Source: Ministry of Cooperatives and Small and Medium Enterprises, 2012

From its development perspective, MSME is the group of businesses that has the largest number. Moreover, this group is proven as a strong economic-business sector to cope with various kinds of economic crises. So, it is imperative to strengthen and support the MSME that involves many groups. MSME is very important in Indonesia, especially either providing and growing job opportunities or sources of income for people and households. This conclusion is drawn from empirical facts that this business group absorbs more people than big businesses or companies (Tambunan, 2009).

### B. Digitalization: Perspective of Dynamic Capabilities

The term of digitalization is organizational transformation process through technology adoption into the process (Sebastian et al. 2017; Vial 2019). The process mainly manifest in organizations as digital of platforms, artifacts, and infrastructure (Briel et al. 2018; Giones and Brem 2017; Nambisan 2017; Nambisan et al. 2019; Yi et al. 2019), and digital management and business models (Srinivasan and Venkatraman 2018). The technology of digital is a combined of computerized information technologies and communication (Sturgeon 2019). It classify into seven types, including big data, social, mobile, platform development, Internet of Things (IoT), cloud computing, and AI-related technologies (Bottle 2019; Sebastian et al. 2017).

Digital technology is addressable, programmable, understandable, traceable, communicated, memorable, and associable (Yoo, 2010). Then, digitalization process helps companies to reach and maintain an advantage of business competitive by increasing the resilience and flexibility of their organizations (Briel et al. 2018). Other supported factor is through upgrading dynamic capabilities (Vial 2019; Sambamurthy et al., 2003). And, the digital transformation has benefits on the dynamic capabilities of enterprises. First, it helps companies sense a changing environment (Vial 2019; Warner and Maximilian 2018; Yoo 2010). The huge digital resources advantages, such as speed, variety, volume, and value, allow companies to retrieve and obtain information sources in the external environment at a low cost (Gandomy and Haider 2015). Moreover, the adoption, both big data and IoT technologies analysis systems, helps companies to have high-speed computing to filter valuable information. As the impact, they can predict

and sense a change in an environment in a certain limit (George et al. 2014; Sambamurthy et al. 2003).

Next, companies could be better grab the opportunities in a crisis by using a digital technology. Moreover, the process of digitalization also create new opportunities during the Covid-19 pandemic (Nambisan et al. 2019). Not only an opportunity, but also create areas and spaces, such as online learning, work, and delivery using robot. Furthermore, the decentralized nature of digital technologies breaks down barriers in space and time, and encourages interaction between focal firms and value co-creators, thereby increasing their opportunities in open networks (Zeng and Glaister 2018). And, the combined of high-speed cloud analytics and high-volume big data helps companies increasing the business analysis accuracy and identifying the opportunities in an complicated environment (Briel et al.2018). Moreover, technology changed the ways of finding a new opportunity, in newer ways (Nambisan et al. 2019).

The last, the digitalization process allows companies to recalculate their resources as an act of respond the crises. Digital transformation process increases the resources availability of an enterprise in scale, scope, and flexibility, such as technology of information either reduces the costs of communication activities within the company, or promotes the flexibility resource allocation (Kane et al. 2015). Moreover, technology is fundamentally changing the business processes, relationships between companies, products, and service. Then, it greatly reduce the costs and barrier of switching resources (Nambisan et al. 2019). For example, cloud computing, blockchain technology, and IoT have shortened the time to launch new products and transform businesses, so that enable companies to adapt the business management at low cost (Warner and Maximilian 2018). Highly digitalized companies during the Covid-19 pandemic, such as Freshhema and Meituan, can quickly help businesses to minimize the impact of the crisis

## **METHOD, DATA, AND ANALYSIS**

The research used a quantitative approach, with a survey method. Survey research is used to find out the adoption of digital technology by MSME in DIY Province in facing the COVID-19 pandemic. And, the method could describe the background, nature, and character of MSME in DIY Province during the pandemic. The population was MSME in DIY Province. Meanwhile, the sample was selected using cluster sampling from four regencies and one city in DIY Province using the slovin formula to determine the number of respondents. Data collection techniques were observation, survey, and documentation. The questionnaire used a Likert scale with five answer choices. The answer choice categories were strongly agreed (SS), agree (S), undecided (R), disagree (TS), and strongly disagree (STS). Respondents chose one answer from the five categories. Questions in the positive category with quantitative weights of 5, 4, 3, 2, and 1 as the Likert category score scale. Data analyzing techniques were inferential statistical analysis.

## **RESULT AND DISCUSSION**

### **RESULT**

The data description explains the frequency distribution characteristics of the research scores of each subject. The population was an actor of MSME in the Province of Special Region of Yogyakarta (DIY), which consisted of 262,130 from 5 regencies/cities. Questionnaires were sent to business owners and managers through various media. A total of 309 samples have been collected from 5 regencies/cities. Table 2 showed that 90.09% of the sample are private-business owned. Group and families owned were 7.4% and 1.3% of the total sample. The

highest number of MSME was in the city of Yogyakarta, by 36.9%. 80% of the sample were conducted offline, good plenty of room for digital transformation. The type of sample business was distributed across various industries, including cafes and restaurants (38.5%); souvenirs (27.2%); homestay, and tour and travel were the same of 17.2% of the total sample.

The MSME in DIY Province have made initial achievements in digitalizing, but a lot of room need for improvement as presented in Table 3. On average, the digitalization of MSME in DIY Province was low. However, the value of the company's digitalization level was 3.42 and the adoption of digital technology was 2.84. Those levels showed early efforts of digitalization process conducted by MSMEs. The findings imply that MSME has implemented the digitalization value in the amid of COVID-19 pandemic.

TABLE 2 TABLE OF SAMPLE DESCRIPTION

Characteristic of Respondent		%
What is your company's main business?	Online	21.4
	Offline	78.6
Long of have this Business?(in year)	< 6 years	52.4
	6-10 years	21.7
	11-15 years	10
	16-20 years	8.4
	> 20 years	7.4
Business Ownership	Private	90.9
	Group	7.4
	Family	1.3
	Foundation	0.3
City/Regency	Sleman	21
	Bantul	9.1
	Kulon Progo	13.6
	Yogyakarta	36.9
	Gunung Kidul	19.4
Type/Field of Business	Homestay	17.2
	Cafe and Restaurant	38.5
	Tour and Travel	17.2
	Souvenir	27.2

TABLE 3. TABLE OF DESCRIPTIVE STATISTIC

Variable	Indicator	Mean	SD	Min	Max
Digitalization	Rate of Enterprise digitalization	3.4249	0.99935	1	5
	Digital technology adoption	2.843	1.07694	1	5
	Business model	0.7864	0.41051	0	1

TABLE 4. TABLE OF CORRELATION ANALYSIS RESULT

	(1)	(2)	(3)	(4)	(5)	(6)
Long of have this Business?(in year)	1					
Business Ownership	-0.08	1				
City/Regency	0.038	-.117*	1			
Rate of Enterprise digitalization	.141*	0.044	-0.063	1		
Digital technology adoption	177**	-0.056	0.058	-.165**	1	
Business model	0.067	0.026	0.029	0.036	-.249**	1

\* Correlation is significant at the 0,05 level (2-tailed)

\*\* Correlation is significant at the 0,01 level (2-tailed)

Table 4 presented descriptive statistics with variable correlation. The control variables were business period, business ownership, and location of business. The findings showed that the proses of digitalization of MSME was positively related to the implementation of strategies and performance on response to the crisis. In other hand, the strategies of crisis response were also positively related to performance. And, it needs to find out the relationship between variables.

## Discussion

The survey showed that the higher level of digitalization, the more possible it is to be effective against the Covid-19 pandemic. The research emphasized the role of digitalization from the dynamic capabilities perspective. The high digitalization conducted by companies can leverage dynamic ability to sense crises, grab opportunities during crises, and recalculate the resources to respond the crises (Vial 2019; Warner and Maximilian 2018; Yoo 2010). It means, the companies are possible to respond in a quick and effective way.

Digital technology become the center of a digitalization process. Sebastian et al., in 2017, build the SMACIT framework that used for classifying digital technologies. An open and sensitivity of digital technologies enable rapid response and provide flexible access to the external environment. The literature and research suggests the digitalization process can enhance the a companies' dynamic capabilities (Vial 2019; Warner and Maximilian 2018; Yoo 2010), and be adapt to unpredicted environments (Briel et al. 2018). Different to traditional companies, digital companies are better equipped to sense the environment (Vial 2019; Nylen and Holmstrom 2015; George et al. 2014), grab opportunities, and recalculating their resources (Briel et al. 2018; Vial 2019).

Whereas, the connotation of dynamic capabilities changes to the digital transformation context. And, by the wide-spread of digital technologies, it reforms purpose and nature of dynamic capabilities (Warner and Maximilian 2018). It is caused by the generation and aggregation of powerful digital technologies enhance the dynamic capabilities of enterprises. For example, platform development, cloud computing, and IoT, allow companies to enlarge the business scale and scope. A digital dynamic capabilities might be a major competitive advantage for companies in discussing digital economy (Warner and Maximilian 2018). But, the limits of dynamic capability are also changing, such as reclassifying dynamic abilities into renewing and regenerative abilities, and manifested by indicators of sensing, reconfiguration, utilizing, learning, and seizing, as well as create an integration and insight (Makkonen et al., 2014).

The company today operates in the era of "VUCA", which is characterized by ambiguity, complexity, volatility, and uncertainty (Bennett and Lemoine 2014). An increasing number of crises occur in recent years, such as the last four public crises have occurred since the beginning of 2020, including oil prices crash, the COVID-19 pandemic, and the meltdown of stock market in the US. All the crises seem to warn to lead to a response, such a company must escalate, cooperate, and recalculate the resources to respond the highly, volatile, and complicated environments (Bennett and Lemoine 2014; Smart and Vertinsky 1984). The world today is experiencing a new industrial revolution, namely the digital revolution (Rindfleisch et al. 2017). It creates business opportunities, and a question arises; whether the opportunities can help companies to survive or take benefit from the crisis.

The literature on crisis responses of company more focus on the company level, such as reputational damage, bankruptcy, and stock price declines (Mayr et al. 2016; Wei et al. 2017; Snyder et al. 2006). But, it rarely checked the responses of public crisis. Furthermore, studies of public crises often discuss the issues of community resilience and management (Donaldson 1991; Martinelli et al. 2018), and ignore the companies' role. The finding on the survey shows that the process is useful to response the pandemic. The theory of dynamic capabilities is not

the only theory to understand digitalization and the response to pandemics. Other traditional management theories are possible to involve in digitalization. And, digitization theory itself deserves to have further exploration.

Although this research only focuses on the performance of MSME today, future research should consider the performance of today and the future due to digitalization strategy has a long-term impact on the company. Digitalization has profoundly changed the way of business (Ofek and Wathieu 2010), which it might be used as a new competitive advantage resource for companies. And, it improve the operational efficiency of a company by increase the efficiency of business processes, automating the decision-making, and costs saving (Andriole 2017; Pagani 2013).

A technology, such as cloud computing, provides a felxible source, which used to reduce the costs of maintaining, managing, and recruiting the IT talent (Kane et al., 2015). Big data technologies speed up the decision-making processes of companies and respond to intelligent services and products (Bharadwaj et al. 2013). In constrast, the process of digital transformation involves innovation activities of digital technology (Li et al. 2017), such as creating new business models, services, organizational forms and products (Autio et al. 2018; Yoo 2010). Since it often occurs at the enterprise level, companies need to adopt a holistic strategy (Fitzgerald 2014), namely a strategy of digitalization. But, it is not clear how a company should implement the design its strategy of digitalization. It has been found the urgent of digitalization strategy, such as the company's performance through designing the strategies of digital business, adoption of digital technology, and changing the value creation path (Vial, 2019).

## CONCLUSION

The Covid-19 pandemic is a public health crisis. It poses a major challenge for the survival and growth of MSMEs during the pandemic situation. The situation also highlights the big role of technology in facing the situation. The questionnaire survey was used to find out the digital transformation for MSME during the COVID-19 pandemic. The survey showed that efforts conducted by MSME towards digitalization, which which was manifested by the adoption of digital technology, level of digitalization, and business models, help in responding to the pandemic situation.

MSME needs to push to reach an optimal digitalize. In spite, of course, it does not completely leave the offline business, but the online-strategy business also needs for MSME. The implementations of enterprise digitalization are more used to cope and face the crises in quick and effective way. Further research should find out the process reform of digital transformation the dynamic capabilities of enterprises as it is important to find out the relationship between digital transformation and crisis response strategies on enterprise-level. In short, further research will discuss the strategy of digital transformation and the impact on the company's competitive advantage.

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# AI – DRIVEN ONBOARDING AND TRAINING: PERSONALIZED EXPERIENCES AND CUSTOMIZED LEARNING PROGRAMS

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## ABSTRACT

AI-driven onboarding and training have emerged as powerful tools for organizations to provide personalized experiences and customized learning programs to their employees. By leveraging AI technologies, organizations can create tailored learning journeys that adapt to individual needs, enhance engagement, and optimize knowledge retention. It explores the concept of AI-driven onboarding and training, highlighting the benefits, challenges, and implications for the future of corporate training. It emphasizes the importance of collaborative human-AI learning environments, ethical considerations, and the need for further research and exploration in this field. Finally, by emphasizing the transformative potential of AI-driven onboarding and training in fostering continuous learning cultures and empowering employees to thrive in a rapidly changing business landscape.

**Keywords: AI Integration, Personalized Training with AI, AI in Onboarding, Ethical AI Training Challenges, AI – Enhanced Corporate Learning.**

## 1 INTRODUCTION

### 1.1 Background and Motivation

In today's rapidly evolving business landscape, organizations face the challenge of equipping their employees with the necessary skills and knowledge to stay competitive. Traditional onboarding and training programs often follow a one-size-fits-all approach, which can lead to disengagement and limited learning outcomes. However, with the advancements in Artificial Intelligence (AI) technologies, there is a growing opportunity to revolutionize the onboarding and training process (Lawler and Elliot, 1996; Baker, 2019; George and Thomas, 2019). AI-

driven onboarding and training offer the potential for personalized experiences and customized learning programs that cater to the unique needs and preferences of individual employees (Clark, 2020). By leveraging AI algorithms and data-driven insights, organizations can create tailored learning journeys that adapt to each employee's learning style, pace, and proficiency level (Garima et al., 2020; Parveen and Palaniammal, 2019; Beatty and Leigh, 2010). This introduction provides the background and motivation for exploring AI-driven onboarding and training, highlighting the need for personalized experiences and customized learning programs to enhance employee engagement, knowledge retention, and overall performance in the modern workplace (Farrington and Callaghan, 2018).

## 1.2 Research Objectives

- ❖ To explore the effectiveness of AI-powered personalized onboarding experiences in terms of employee engagement, satisfaction, and productivity.
- ❖ To investigate the impact of customized learning programs generated by AI algorithms on employee learning outcomes and skill development.
- ❖ To assess the role of AI in improving the efficiency and effectiveness of onboarding and training processes, including time and cost savings.
- ❖ To examine the potential challenges and ethical considerations associated with AI-driven onboarding and training, such as privacy concerns and bias in algorithmic decision-making.
- ❖ To identify best practices and strategies for the successful implementation and adoption of AI technologies in onboarding and training initiatives.
- ❖ To evaluate the perception and acceptance of AI-driven onboarding and training among employees and HR professionals, including factors influencing their attitudes and willingness to adopt these technologies.
- ❖ To explore the long-term impact of AI-driven onboarding and training on employee retention, career development, and organizational performance.
- ❖ To investigate the potential role of AI in promoting diversity and inclusion in onboarding and training processes by mitigating bias and providing equal opportunities for all employees.

## 1.3 Scope of AI-driven onboarding and training

- ❖ **Personalized onboarding experiences:** AI can analyze individual employee data to provide tailored onboarding experiences that meet the specific needs and preferences of each employee.
- ❖ **Customized learning programs:** AI algorithms can generate personalized learning programs based on employee skills, learning styles, and career goals, enhancing the effectiveness and efficiency of training initiatives.
- ❖ **Enhanced engagement and productivity:** AI-driven onboarding and training can increase employee engagement, satisfaction, and productivity by providing relevant and meaningful content.
- ❖ **Data-driven decision-making:** AI can analyze large datasets to identify trends and patterns related to employee onboarding and training, enabling HR professionals to make data-driven decisions and optimize these processes.

## 2 ONBOARDING AND TRAINING

### 2.1 Onboarding and training

Onboarding and training are critical components of an organization's talent development strategy. They play a crucial role in welcoming new employees, helping them integrate into the company culture, and providing them with the necessary skills and knowledge to excel in their roles (Abraham et al., 2019). Effective onboarding and training programs have been shown to improve employee retention, job satisfaction, and overall performance. However, traditional approaches to onboarding and training often face challenges such as information overload, lack of personalization, and limited engagement. This has led organizations to explore innovative solutions, and one such solution is leveraging artificial intelligence (AI) to enhance the onboarding and training experience.

### 2.2 AI in Onboarding and training

AI technology is transforming the onboarding and training process by providing personalized and adaptive learning experiences. Through AI algorithms, employees can receive customized learning paths based on their individual needs, preferences, and proficiency levels (Kizilcec et al., 2015; Maity, 2019). AI-powered platforms deliver training content in various formats, such as interactive videos or gamified simulations, to promote engagement and knowledge retention. Virtual assistants and chatbots powered by AI offer on-demand support, answering questions and providing guidance throughout the onboarding and training journey (Baker, 2019). Data analytics and predictive algorithms enable organizations to gain insights into employee progress and identify future training needs (Escobar-Jimenez et al., 2019; Dunlap and Lowenthal, 2019). With AI, onboarding and training become more efficient, effective, and tailored to the unique requirements of each employee, leading to improved performance and overall organizational success (Clark, 2020; George and Thomas, 2019).

### 2.3 Role of AI in Corporate training

- ❖ **Personalization:** AI can analyze employee data to create personalized learning experiences, tailoring content and delivery methods to individual needs and preferences.
- ❖ **Adaptive learning:** AI algorithms can dynamically adjust the difficulty and pace of training programs based on employee performance, ensuring optimal learning outcomes.
- ❖ **Content curation:** AI can curate relevant and up-to-date training materials from various sources, saving time and effort for trainers and learners.
- ❖ **Skill gap analysis:** AI can identify skill gaps within the organization and recommend targeted training programs to address those gaps.
- ❖ **Continuous learning:** AI-powered chatbots and virtual assistants can provide on-demand learning support, answering employee questions and providing just-in-time information.
- ❖ **Data-driven insights:** AI can analyze training data to provide insights on employee engagement, effectiveness of training programs, and areas for improvement.
- ❖ **Automation of administrative tasks:** AI can automate administrative tasks, such as scheduling training sessions and tracking employee progress, freeing up time for

trainers to focus on more strategic activities.

- ❖ **Gamification and immersive experiences:** AI can enhance corporate training through gamification techniques, virtual reality (VR), and augmented reality (AR), making the learning process more engaging and interactive (Hardin and Long, 2020).

## 2.4 Advantages of AI– driven approaches

- ❖ **Accessibility:** AI-powered platforms can provide training content in various formats, such as text, audio, and video, making it accessible to employees with different learning preferences and abilities. This inclusivity ensures that all employees can engage in the learning process effectively.
- ❖ **Real-time feedback and assessment:** AI algorithms can provide instant feedback and assessments to employees, allowing them to track their progress and identify areas for improvement. This immediate feedback helps employees to continuously refine their skills and knowledge.
- ❖ **Personalized recommendations:** AI can recommend additional learning resources, courses, or modules based on an employee's specific needs and interests. These personalized recommendations help employees explore relevant topics and expand their knowledge beyond the mandatory training requirements.
- ❖ **Remote and flexible learning:** AI-driven platforms enable employees to access training materials and resources anytime, anywhere, and from any device. This flexibility allows for remote learning and accommodates the needs of a distributed workforce or employees working in different time zones.
- ❖ **Collaboration and social learning:** AI can facilitate social learning by connecting employees with similar learning interests or goals. It can create virtual communities, discussion forums, or chat groups where employees can collaborate, share knowledge, and learn from each other.
- ❖ **Predictive analytics:** AI algorithms can analyze employee data to predict future training needs and identify high-potential employees who may benefit from additional development opportunities. This proactive approach helps organizations plan and allocate resources more effectively.
- ❖ **Reduced training time:** AI-driven approaches can shorten the time required for onboarding and training by delivering targeted and relevant content. By focusing on specific skills and knowledge gaps, employees can quickly acquire the necessary competencies to perform their roles effectively.
- ❖ **Continuous improvement:** AI can continuously analyze training data, learner feedback, and performance metrics to identify areas of improvement in the training programs. This iterative approach allows organizations to refine and enhance their onboarding and training initiatives over time, ensuring they stay relevant and effective.

## 2.5 Types of AI technologies used

- ❖ **Natural Language Processing (NLP):** NLP technology enables AI systems to understand and process human language. It is used in chatbots and virtual assistants to provide interactive and conversational learning experiences, allowing employees to ask questions, receive explanations, and engage in dialogue.

- ❖ **Machine Learning (ML):** ML algorithms enable AI systems to learn from data and make predictions or recommendations based on patterns and trends. In onboarding and training, ML can be used to analyze employee data, such as skills, performance metrics, and learning preferences, to personalize training content and create adaptive learning paths.
- ❖ **Virtual Reality (VR) and Augmented Reality (AR):** VR and AR technologies create immersive and interactive learning experiences. They can be used in onboarding and training to simulate real-life scenarios, provide hands-on practice, and enhance engagement and knowledge retention.
- ❖ **Data Analytics:** AI-powered data analytics tools can analyze large volumes of training data, such as assessment results, performance metrics, and feedback, to gain insights into the effectiveness of training programs. This helps organizations identify areas for improvement and make data-driven decisions to enhance the training experience.
- ❖ **Recommender Systems:** AI-based recommender systems use algorithms to suggest relevant training materials, resources, or courses based on an employee's profile, interests, and past training history. This helps employees discover and access the most relevant and useful content for their learning needs.
- ❖ **Speech Recognition:** Speech recognition technology enables AI systems to convert spoken language into written text. It can be used in onboarding and training to transcribe training sessions or provide voice-controlled interactions with AI-powered assistants (Davenport and Kalakota, 2019).

### 3. Personalized Onboarding experiences

#### 3.1 Understanding the individual learner

Understanding the individual learner is essential for effective onboarding and training. AI technologies enable organizations to gather and analyze data on learners' needs, preferences, and progress, providing valuable insights (Stone et al., 2015; Chen and Chen, 2019). By leveraging learning analytics, personalized recommendations, adaptive learning, natural language processing, competency mapping, and learning styles analysis, AI helps tailor training experiences to meet the unique requirements of each learner. This personalized approach enhances engagement, addresses knowledge gaps, and promotes effective skill development, ultimately leading to more successful onboarding and training outcomes (Maity, 2019).

#### 3.2 Adaptive content delivery

Adaptive content delivery utilizes AI technologies to dynamically adjust and personalize the delivery of training content based on the individual learner's needs, preferences, and proficiency levels. Through the analysis of learner data, including performance metrics, learning styles, and past interactions, AI algorithms can determine the most appropriate format, difficulty level, and sequencing of content for each learner. This ensures that learners receive the right information at the right time, in a manner that resonates with their learning preferences (Holzer and Siering, 2020). Adaptive content delivery optimizes engagement, knowledge retention, and skill development, creating a more effective and tailored learning experience for

each individual learner.

### **3.3 Virtual mentors and role – specific guidance**

Virtual mentors and role-specific guidance are AI technologies that provide personalized support and guidance to learners in their onboarding and training journeys. Virtual mentors simulate the role of a real mentor, offering advice, answering questions, and providing feedback to learners (Kizilcec et al., 2013). They leverage natural language processing and machine learning to understand and respond to learner queries, creating interactive and conversational experiences. Role-specific guidance, on the other hand, focuses on delivering targeted information and resources that are specific to the learner's role or job function. By analyzing learner data and job requirements, AI algorithms can recommend relevant training materials, best practices, and real-world examples tailored to the learner's specific role (Inayatullah and Khan, 2020). These AI technologies enhance the learning experience by providing individualized support and guidance, helping learners acquire the necessary skills and knowledge to excel in their roles (Chugh and Williams, 2017).

## **4. Customized learning programs**

### **4.1 Data – driven training content**

AI-driven onboarding and training utilize artificial intelligence technologies to provide personalized experiences and customized learning programs based on data-driven training content. This approach leverages AI algorithms and analytics to analyze employee data, job requirements, and industry trends to create tailored training materials and resources. Personalized experiences in onboarding and training involve understanding the unique needs, preferences, and skills of individuals. AI algorithms can assess employee profiles, performance metrics, and learning history to recommend relevant training content (Li and Prey, 2019, a). This ensures that employees receive training materials that are specifically tailored to their roles and learning objectives, increasing engagement and knowledge retention. Customized learning programs are developed by analyzing data on employee performance, job requirements, and industry trends. This data-driven approach allows organizations to identify skill gaps and create targeted training modules to address those gaps. By focusing on specific needs, organizations can optimize training resources and provide employees with the most relevant and effective learning materials (Rodríguez-Triana et al., 2018).

### **4.2 Skill and competency assessment**

- ❖ **Self-assessment:** Individuals evaluate their own skills and competencies based on their perception and understanding of their capabilities. This can be done through self-reflection, questionnaires, or self-assessment tools.
- ❖ **Performance evaluations:** Supervisors or managers assess an individual's skills and competencies based on their observed performance in the workplace. This can involve reviewing work samples, conducting performance reviews, or using performance evaluation frameworks.
- ❖ **Tests and quizzes:** Objective assessments, such as multiple-choice tests or quizzes, are used to measure an individual's knowledge and understanding of specific subjects or skills. These assessments can be administered online or in-person.
- ❖ **Simulations and role plays:** Interactive exercises and simulations allow individuals to demonstrate their skills and competencies in realistic scenarios. These assessments



provide a more practical evaluation of an individual's abilities.

- ❖ **Portfolios:** Individuals compile a collection of their work samples, projects, or accomplishments to showcase their skills and competencies. Portfolios provide tangible evidence of an individual's capabilities and can be reviewed and assessed by others.

#### 4.3 Continuous learning paths

- ❖ **Microlearning:** AI systems can deliver bite-sized, targeted learning modules or resources to learners based on their specific needs and preferences. This enables learners to engage in continuous learning by accessing short, focused content whenever they have a few minutes to spare. Microlearning promotes ongoing skill development without disrupting daily work routines.
- ❖ **Personalized Learning Paths: AI algorithms can analyze learner data to create personalized learning paths.** These paths are tailored to each individual's skills, knowledge gaps, and career goals. By providing learners with a clear roadmap for their ongoing learning journey, AI-driven systems ensure that they are continuously acquiring new knowledge and skills relevant to their roles.
- ❖ **Adaptive Assessments: AI-powered assessments can be used to continuously evaluate learners' progress and identify areas for improvement.** These assessments adapt to the learner's skill level and dynamically adjust the difficulty of questions or tasks. Continuous assessment helps learners track their growth and encourages them to engage in ongoing learning to address any identified gaps.
- ❖ **Recommender Systems:** AI-driven recommender systems can suggest additional learning resources, courses, or modules based on learners' interests and past engagement. These recommendations encourage learners to explore new topics and expand their knowledge in areas related to their roles. By providing personalized recommendations, AI systems facilitate continuous learning beyond the initial onboarding phase.
- ❖ **Performance Analytics:** AI technologies can analyze performance data to provide insights into learners' strengths and weaknesses. By tracking and analyzing performance metrics, AI-driven systems can identify areas where learners can benefit from further training or development. This feedback loop encourages learners to continuously improve their performance and seek out learning opportunities.
- ❖ **Just-in-Time Learning:** AI-powered platforms can deliver relevant learning content or resources at the moment of need. This enables learners to access information or guidance when faced with a specific task or challenge. Just-in-time learning supports continuous learning by providing immediate support and knowledge reinforcement in real-time (Mok and Lee, 2020).

## 5. Benefits and Opportunities

### 5.1 Improved engagement and motivation

Improved engagement and motivation are key benefits and opportunities of utilizing AI

technologies in learning environments. AI-powered tools and techniques, such as gamification, personalized recommendations, and adaptive learning, can enhance learner engagement by creating interactive and immersive experiences. By tailoring content, delivery methods, and pacing to each individual learner's preferences and needs, AI helps to maintain learner interest and motivation throughout the learning process. AI can also provide real-time feedback and progress tracking, allowing learners to see their growth and achievements, which further boosts motivation. Additionally, AI can leverage data analytics to identify areas where learners may be struggling or disengaged, enabling timely interventions and support to keep them on track. Overall, improved engagement and motivation lead to more effective learning outcomes and a positive learning experience for individuals (Aldulaimi et al., 2020).

## **5.2 Enhanced knowledge retention**

Enhanced knowledge retention is another significant benefit and opportunity that AI technologies bring to the learning environment. AI-powered tools can leverage data analytics and adaptive learning algorithms to identify and reinforce areas where learners may struggle or have gaps in their understanding. By providing targeted and personalized content, AI helps learners retain information more effectively. Additionally, AI can employ various techniques, such as spaced repetition and microlearning, to optimize memory retention and reinforce learning over time (Li and Prey, 2019, b). AI can also analyze learner data to identify patterns and trends in knowledge retention, allowing for further customization of learning experiences to address individual needs. By improving knowledge retention, AI technologies contribute to more meaningful and long-lasting learning outcomes, enabling individuals to apply their acquired knowledge and skills in real-world scenarios (Garima et al., 2020).

## **5.3 Scalability of Training Efforts**

Scalability is a significant advantage of using AI technologies in training efforts. AI-powered training solutions can be easily scaled to accommodate a large number of learners simultaneously. Unlike traditional training methods that often require physical resources and instructors, AI technologies can deliver training content and support remotely and at scale. This scalability allows organizations to provide consistent and standardized training experiences to a geographically dispersed workforce or a large number of learners, regardless of their location or time zone. AI also enables on-demand access to training materials, eliminating the need for scheduling and logistical constraints. Additionally, AI-powered solutions can analyze learner data and adapt the training content dynamically, ensuring that the training efforts are efficient and effective for each individual. By leveraging AI for scalability, organizations can efficiently train and upskill their workforce, leading to improved productivity and performance across the board (Li and Prey, 2020,c).

## **6. Challenges and considerations**

### **6.1 Data privacy and security**

To ensure data privacy and security in AI-driven onboarding and training programs with personalized experiences and customized learning programs, organizations should:

1. Collect and store only necessary data.
2. Obtain clear and informed consent from learners.
3. Implement robust security measures for data storage.
4. Utilize anonymization and aggregation techniques to protect learner identities.

5. Implement access controls and user authentication mechanisms.
6. Ensure compliance with data protection regulations.
7. Evaluate AI vendors' data privacy and security practices.
8. Conduct regular audits and assessments to identify vulnerabilities.

#### 6.2 Bias and fairness in AI algorithms

AI-driven onboarding and training programs that aim to provide personalized experiences and customized learning programs, it is essential to address bias and ensure fairness in AI algorithms. Organizations must be mindful of potential biases in the training data used to develop these algorithms and strive to create diverse and representative datasets that are free from discriminatory patterns. Regular assessment of the algorithms is necessary to identify any bias and discriminatory impacts on different groups of learners. Ethical AI development principles should be implemented, focusing on fairness, accountability, transparency, and explainability (Aldulaimi et al., 2020). Ongoing monitoring and evaluation of the algorithms are crucial to mitigate biases that may emerge over time. User feedback and input should be actively sought to identify and rectify any biases or unfairness. Promoting diversity and inclusion in the development and testing of AI algorithms helps minimize the risk of biases and ensures fairness across different learner groups. Additionally, transparency and explainability of the algorithms are vital to providing clear explanations to learners, including how decisions are made, why certain recommendations are provided, and how bias mitigation measures are implemented. By addressing bias and ensuring fairness, organizations can create equitable learning experiences that mitigate potential discriminatory impacts.

#### 6.3 Balancing AI with human interaction

AI-driven onboarding and training programs offer numerous benefits, it is crucial to strike a balance between AI and human interaction. While AI algorithms can provide personalized experiences and customized learning programs, human interaction adds a vital element of empathy, emotional intelligence, and individualized support. Human interaction allows for real-time feedback, clarification of doubts, and personalized guidance that AI may struggle to provide (Jia et al., 2018). It also fosters a sense of connection, trust, and engagement with learners. Organizations should design onboarding and training programs that incorporate both AI-driven elements and opportunities for human interaction, such as mentorship, coaching, or group discussions. This hybrid approach ensures that learners receive the benefits of AI-driven personalization while still having access to human expertise and support when needed. By striking the right balance, organizations can create a comprehensive and effective onboarding and training experience that combines the strengths of AI and human interaction.

### 7. Case studies

#### 7.1 Company A: Transforming Onboarding through AI

Company A, a global technology company, recognized the need to enhance their onboarding process to ensure new employees had a seamless and personalized experience. They leveraged AI-driven technologies to transform their onboarding program and provide personalized experiences and customized learning programs.

##### 7.1.1. Personalized Onboarding Experiences

Company A implemented an AI-powered onboarding platform that could collect and analyze data from new employees, such as their background, skills, and preferences. Using this

information, the platform generated personalized onboarding plans tailored to each employee's needs and goals. This allowed new hires to receive relevant and targeted information, resources, and training materials from day one.

### **7.1.2. Customized Learning Programs**

The AI-driven onboarding platform at Company A utilized machine learning algorithms to assess the skills and competencies of new employees. Based on this assessment, the platform recommended customized learning programs to fill any skill gaps and accelerate the onboarding process. Employees were provided with access to online courses, interactive modules, and virtual simulations that were specifically curated to meet their individual learning needs.

### **7.1.3. Skill and Competency Assessments**

To ensure ongoing development and progress tracking, Company A incorporated skill and competency assessments into their AI-driven onboarding program. The platform assessed employees' skills and competencies through online quizzes, simulations, and interactive exercises. Real-time feedback and evaluation were provided, allowing employees to measure their progress, identify areas for improvement, and receive targeted training interventions.

### **7.1.4. Human Interaction and Support**

While AI played a central role in the onboarding program, Company A recognized the importance of human interaction and support. They assigned mentors to new employees who provided guidance, answered questions, and facilitated discussions. Additionally, regular check-ins and feedback sessions were conducted by managers to provide personalized support and address any concerns.

### **7.1.5 Outcome**

By implementing AI-driven onboarding and training, Company A achieved significant improvements in their onboarding process. New employees reported higher levels of satisfaction and engagement, as they received personalized attention and resources aligned with their individual needs. The customized learning programs led to faster skill acquisition and reduced time to productivity. The skill and competency assessments enabled employees to track their progress and identify areas for growth. The combination of AI and human interaction created a comprehensive onboarding experience that resulted in improved employee performance and retention.

## **7.2 COMPANY B: AI – DRIVEN UPSKILLING FOR EMPLOYEES**

Company B, a manufacturing company, recognized the need to upskill their workforce to keep up with technological advancements and industry demands. They implemented AI-driven technologies to provide personalized experiences and customized learning programs for their employees' upskilling needs.

### **7.2.1. AI-Powered Skills Assessment**

Company B deployed an AI-powered skills assessment tool that analyzed the existing skills and competencies of their employees. The tool collected data on employees' performance, experience, and certifications. Using this data, the AI algorithm identified skill gaps and recommended targeted upskilling programs for each employee.

### **7.2.2. Personalized Learning Paths**

Based on the skills assessment results, Company B's AI platform generated personalized learning paths for employees. These paths included a combination of online courses, interactive modules, and hands-on exercises. The AI algorithm continuously adapted the learning paths based on employees' progress and feedback, ensuring the content remained relevant and effective.

### **7.2.3. Microlearning and Bite-sized Modules**

To make learning more accessible and flexible, Company B incorporated microlearning and bite-sized modules into their AI-driven upskilling program. Employees could access short, focused modules on specific topics or skills, allowing them to learn at their own pace and fit learning into their busy schedules. The AI platform tracked progress and provided recommendations for the next module based on the employee's performance.

### **7.2.4. AI-Powered Virtual Assistants**

To provide personalized support and guidance, Company B implemented AI-powered virtual assistants. These assistants were accessible through chatbots or voice interfaces and could answer employees' questions, provide additional resources, and offer real-time assistance during the learning process. The virtual assistants utilized natural language processing to understand employees' queries and provide relevant and accurate responses.

### **7.2.5. Gamification and Rewards**

To enhance engagement and motivation, Company B introduced gamification elements into their AI-driven upskilling program. Employees earned points, badges, and rewards for completing modules, achieving milestones, and demonstrating mastery of skills. Leaderboards and friendly competitions were also incorporated to foster a sense of healthy competition and peer recognition.

### **7.2.6. Outcome**

By leveraging AI-driven technologies for upskilling, Company B witnessed significant improvements in their employees' knowledge and capabilities. The personalized learning paths and bite-sized modules allowed employees to learn at their own pace and focus on areas of improvement. The AI-powered virtual assistants provided immediate support and guidance, minimizing downtime and frustration. The gamification elements increased engagement and motivation, leading to higher completion rates and improved knowledge retention.

## **8. Ethical Implications**

### **8.1 Ensuring transparency in AI recommendations**

AI-driven onboarding and training programs that provide personalized experiences and customized learning programs bring ethical implications that require ensuring transparency in AI recommendations. Transparency is essential to address concerns regarding fairness, accountability, and user trust. Organizations must prioritize explainability by providing clear and understandable explanations for the AI recommendations. This includes disclosing the factors and data used by the AI algorithm to arrive at a recommendation. Contextual information should also be provided, highlighting any limitations, biases, or uncertainties associated with the recommendation. Algorithmic transparency is crucial, necessitating the disclosure of the algorithms used and insights into their functionality, input variables, and decision-making process. Transparently addressing the data sources used for training the AI system, along with any biases and the steps taken to mitigate them, is vital. User control and

feedback play a role in transparency as well, allowing users to customize or adjust recommendations and providing mechanisms to collect feedback on the recommendations. By ensuring transparency in AI recommendations, organizations can navigate the ethical implications associated with AI-driven onboarding and training, fostering trust, and empowering users to make informed decisions.

## **8.2 Mitigating algorithmic bias**

Mitigating algorithmic bias is a critical consideration in AI-driven onboarding and training programs. Algorithmic bias refers to the potential for AI algorithms to discriminate against certain individuals or groups, perpetuating unfair outcomes. To address this, organizations need to implement robust strategies for bias mitigation.

Firstly, it is essential to carefully curate and diversify training datasets to ensure they are representative of the target population. By incorporating diverse perspectives, experiences, and demographics, organizations can reduce the risk of biased outcomes. Regularly reviewing and updating these datasets can help ensure ongoing fairness.

Secondly, organizations should conduct thorough audits and assessments of their AI algorithms to identify and mitigate any existing biases. This can involve evaluating the impact of the algorithms on different demographic groups and identifying patterns of disparate outcomes. By actively monitoring and addressing biases, organizations can work towards creating more equitable and fair AI systems.

Transparency is also crucial in mitigating algorithmic bias. Organizations should be transparent about the factors and variables considered by the algorithms and provide clear explanations of the decision-making process. This allows individuals to understand how the AI system arrives at its recommendations and helps detect and rectify potential biases.

Additionally, involving diverse teams in the development and testing of AI algorithms can help uncover and address biases more effectively. By incorporating different perspectives and experiences, organizations can identify and challenge biases that may be overlooked otherwise. Ongoing evaluation and feedback mechanisms are essential to ensure the effectiveness of bias mitigation efforts. Collecting user feedback and continuously monitoring the performance of AI algorithms can help identify and rectify any emerging biases or unintended consequences. By implementing these strategies, organizations can mitigate algorithmic bias and foster more inclusive and fair AI-driven onboarding and training programs. This not only promotes diversity and equality but also enhances the overall effectiveness and trustworthiness of the AI systems.

## **8.3 Preserving human – centric approaches**

- ❖ **Empathy and Emotional Support:** Recognize the importance of human emotions and provide avenues for empathy and emotional support. AI-driven platforms can be designed to incorporate features like chatbots or virtual assistants that offer empathetic responses and resources for employees who may need emotional support during the onboarding and training process.
- ❖ **Human Interaction:** While AI can provide recommendations and guidance, human interaction should not be replaced entirely. Incorporate opportunities for employees to interact with human mentors, trainers, or peers who can offer personalized guidance, answer questions, and provide real-time support. This human connection fosters a sense

of trust, engagement, and collaboration.

- ❖ **Individual Learning Preferences:** Acknowledge and accommodate individual learning preferences. AI-driven platforms should be adaptable to different learning styles and preferences, allowing employees to choose from various formats, modalities, and pacing options. This flexibility ensures that the learning experience is tailored to individual needs, enhancing engagement and knowledge retention.
- ❖ **Ethical AI Design:** Ensure that AI algorithms and systems are designed and developed with ethical considerations in mind. This includes addressing biases, promoting fairness, and respecting privacy and data protection. AI models should be regularly audited and evaluated to identify and rectify any biases or unintended consequences that may arise.
- ❖ **Transparency and Explanation:** Foster transparency by providing clear explanations of how AI algorithms work and the basis for their recommendations. Employees should have access to information about the data used, the decision-making process, and how their personal information is handled. Transparent communication helps build trust and allows individuals to understand and participate in the AI-driven onboarding and training process.
- ❖ **Continuous Improvement and Feedback:** Establish mechanisms for continuous improvement and feedback. Encourage employees to provide feedback on their experiences with AI-driven onboarding and training, allowing organizations to identify areas for improvement and address any concerns. Incorporate this feedback into the iterative development of AI systems to ensure they remain aligned with human needs and expectations.

## 9. Future directions

### 9.1 Evolving role of AI in training

- ❖ **Adaptive Learning:** AI can play a crucial role in adaptive learning, where training programs dynamically adapt to individual learners' needs and progress. By continuously analyzing learner data, AI algorithms can personalize the learning experience, optimizing content delivery, and pacing to maximize engagement and knowledge retention.
- ❖ **Natural Language Processing (NLP):** NLP advancements enable AI systems to understand and generate human language, making it possible for learners to interact with AI-driven training platforms using natural language. Conversational agents powered by NLP can provide real-time feedback, answer questions, and guide learners in a more interactive and conversational manner.
- ❖ **Virtual Reality (VR) and Augmented Reality (AR):** AI-driven onboarding and training can be enhanced through the integration of VR and AR technologies. VR can create immersive simulations that allow learners to practice real-life scenarios, while AR overlays digital information onto the physical environment, providing contextual guidance and support. AI algorithms can optimize and personalize these experiences based on individual learner performance and needs.
- ❖ **Intelligent Content Creation:** AI can support the creation of training content by

automating repetitive tasks, analyzing vast amounts of data, and generating personalized learning materials. AI algorithms can curate and recommend relevant content based on learner preferences, performance, and skill gaps, ensuring that training materials are up to date and tailored to individual needs.

- ❖ **Continuous Learning and Microlearning:** AI can enable continuous learning and microlearning approaches by providing personalized, bite-sized learning experiences. AI algorithms can deliver targeted learning modules, reminders, and reinforcement materials based on individual learner goals and performance. This facilitates ongoing skill development and knowledge retention beyond traditional training programs.

## 9.2 Integration of immersive technologies

- ❖ **Virtual Reality (VR) Simulations:** VR can create realistic and immersive training simulations, allowing employees to experience real-life scenarios in a safe and controlled environment. For example, VR can simulate complex operational procedures, emergency situations, or customer interactions. AI algorithms can analyze employee performance within these simulations and provide personalized feedback and guidance to enhance learning outcomes.
- ❖ **Augmented Reality (AR) Guidance:** AR overlays digital information onto the physical environment, providing real-time guidance and support. In onboarding and training, AR can offer step-by-step instructions, visual cues, and annotations to assist employees in performing tasks or using specific equipment. AI algorithms can optimize the AR guidance based on individual needs and learning progress.
- ❖ **Interactive Learning Experiences:** Immersive technologies enable interactive and hands-on learning experiences. AI algorithms can track employee interactions within VR or AR environments, providing real-time feedback and adaptive learning paths. This allows employees to actively engage with the content, practice skills, and receive personalized guidance, enhancing knowledge retention and skill development.
- ❖ **Remote Training and Collaboration:** Immersive technologies can facilitate remote training and collaboration. VR can create virtual meeting spaces, allowing employees from different locations to come together for training sessions, discussions, or collaborative projects. AI algorithms can optimize these virtual environments to enhance communication, collaboration, and engagement among remote teams.
- ❖ **Gamification and Scenario-based Learning:** Immersive technologies can be combined with gamification elements and scenario-based learning to create engaging and interactive training experiences. AI algorithms can analyze employee performance and preferences within these gamified scenarios, adapting the difficulty level, providing personalized challenges, and offering targeted feedback to drive motivation and skill development.

## 9.3 Collaborative human-AI learning environments

- ❖ **Co-creation of Learning Content:** Employees can collaborate with AI systems in the creation of learning content. AI algorithms can analyze employee preferences, performance data, and feedback to generate personalized recommendations for content creation. Employees can contribute their expertise, insights, and real-world examples,



ensuring that the learning content is relevant, engaging, and practical.

- ❖ **AI-supported Mentoring and Coaching:** AI systems can assist human mentors and coaches in providing personalized guidance and support to employees. AI algorithms can analyze employee data and recommend specific areas for improvement or additional resources. Human mentors can then leverage these recommendations to offer targeted feedback, answer questions, and provide contextual guidance, creating a collaborative learning experience.
- ❖ **Collective Intelligence:** AI-driven platforms can facilitate collective intelligence by aggregating and analyzing data from multiple employees. By pooling together the knowledge, experiences, and perspectives of a diverse workforce, AI algorithms can generate insights, identify best practices, and foster collaborative problem-solving. This collective intelligence approach encourages employees to learn from each other and leverage the collective expertise of the organization.
- ❖ **Feedback and Iterative Improvement:** Collaborative human-AI learning environments enable employees to provide feedback on AI-driven onboarding and training systems. This feedback can be used to improve the AI algorithms, user interface, and overall learning experience. Employees can contribute their insights and suggestions, ensuring that the AI system evolves and adapts to their changing needs.
- ❖ **Hybrid Learning Experiences:** Collaborative human-AI learning environments can involve a combination of traditional human-led training and AI-driven personalized learning. Employees can participate in group discussions, workshops, or hands-on activities facilitated by human trainers, while AI algorithms provide personalized recommendations, resources, and adaptive learning paths. This hybrid approach leverages the strengths of both humans and AI to create a comprehensive and effective learning experience.

## RESULT AND DISCUSSION

The author needs to report the results in sufficient detail so that the reader can see which statistical analysis was conducted and why, and later to justify their conclusions. The “Result & Discussion” part, highlights the rationale behind the result answering the question “why the result is so?” It shows the theories and the evidence from the results. The part does not just explain the figures but also deals with this deep analysis to cope with the gap that it is trying to solve.

Articles can contain tables or images. Tables or figures should not be too long, too large, or too many. The author should use a variety of table and figure presentations. The tables and figures presented should be referenced in the text. The font size of table entries can be reduced.

### 10. Conclusion

#### 10.1 Recap of key findings

- ❖ **Personalization:** AI enables personalized learning experiences by analyzing individual data and preferences, delivering targeted content, and adapting the learning journey to meet specific needs.

- ❖ **Customization:** AI-driven platforms can create customized learning programs that cater to different learning styles, modalities, and pacing options, ensuring a more effective and engaging training experience.
- ❖ **Ethical Considerations:** Preserving a human-centric approach is essential in AI-driven onboarding and training. Ethical considerations such as empathy, transparency, and bias mitigation should be prioritized to ensure the well-being and trust of employees.
- ❖ **Future Directions:** The evolving role of AI in training holds promise for adaptive learning, natural language processing, VR and AR integration, intelligent content creation, continuous learning, and data-driven insights.
- ❖ **Collaborative Human-AI Learning Environments:** By fostering collaboration between employees and AI systems, organizations can leverage the strengths of both to create synergistic learning experiences, co-create content, and foster collective intelligence.

## 10.2 Implications for the future of corporate training

- ❖ **Enhanced Efficiency:** AI algorithms can automate repetitive tasks, analyze large amounts of data, and generate personalized recommendations, leading to more efficient and effective training processes. This can save time and resources for organizations, allowing them to focus on higher-value training activities.
- ❖ **Improved Learning Outcomes:** Personalized experiences and customized learning programs enable employees to learn at their own pace and in a way that aligns with their individual needs, preferences, and skill gaps. This leads to improved knowledge retention, skill development, and overall learning outcomes.
- ❖ **Continuous Learning Culture:** AI-driven onboarding and training facilitate continuous learning by providing bite-sized modules, reinforcement materials, and just-in-time resources. This encourages employees to engage in ongoing skill development, fostering a culture of continuous learning within the organization.
- ❖ **Scalability and Accessibility:** AI-driven training platforms can scale to accommodate a large number of employees simultaneously. Additionally, AI can make training more accessible by providing personalized learning experiences that cater to different learning styles, abilities, and backgrounds.
- ❖ **Data-Driven Decision Making:** AI algorithms can analyze training data to provide actionable insights and analytics. This allows organizations to make data-driven decisions regarding training effectiveness, resource allocation, and employee development strategies.
- ❖ **Employee Engagement and Satisfaction:** Personalized experiences and customized learning programs increase employee engagement and satisfaction by providing relevant, engaging, and interactive training content. This, in turn, can lead to higher employee retention and performance.
- ❖ **Adaptability to Changing Needs:** AI algorithms can quickly adapt training programs to meet changing business needs, industry trends, or regulatory requirements. This ensures that employees are equipped with the latest knowledge and skills required for their roles.
- ❖ **Integration of Emerging Technologies:** AI-driven onboarding and training can integrate emerging technologies like VR, AR, and NLP, providing immersive and interactive learning experiences. This opens up possibilities for realistic simulations, contextual guidance, and natural language interactions.

## 10.3 Call for further research and exploration

- ❖ **Long-term Impact:** More research is needed to understand the long-term impact of AI-driven onboarding and training on employee performance, skill retention, and career advancement. Studying the effectiveness of personalized experiences and customized learning programs over extended periods can provide insights into their sustained benefits.
- ❖ **Ethical Considerations:** Ethical considerations surrounding AI-driven onboarding and training require continued exploration. Research should focus on addressing bias, ensuring transparency, and maintaining human oversight to ensure fair and responsible use of AI technologies.
- ❖ **User Experience:** Further research is needed to understand the user experience of AI-driven onboarding and training. Exploring factors such as user satisfaction, engagement, and ease of use can help optimize the design and implementation of AI-driven training platforms.
- ❖ **Hybrid Approaches:** Investigating the optimal balance between human-led training and AI-driven personalized learning is crucial. Research should explore how to effectively combine the expertise of human trainers with the scalability and personalization capabilities of AI systems.
- ❖ **Skill Transfer and Application:** Research is needed to assess the transferability and application of skills acquired through AI-driven onboarding and training. Understanding how well employees can apply their learning to real-world scenarios and adapt to new situations is essential for evaluating the effectiveness of training programs.
- ❖ **Impact on Employee Motivation:** Further exploration is needed to understand how AI-driven onboarding and training impact employee motivation, job satisfaction, and overall engagement. Research should investigate the role of personalized experiences and customized learning programs in fostering a positive learning environment.
- ❖ **Organizational Adoption:** Research should focus on understanding the organizational factors that influence the adoption and implementation of AI-driven onboarding and training. Exploring barriers, enablers, and strategies for successful integration can help organizations effectively leverage AI technologies.

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# ANALYSIS OF BANKING PERFORMANCE IN INDONESIA DURING THE COVID-19 PANDEMIC; WHAT FACTORS DETERMINE?

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## ABSTRACT

**Introduction/Main Objectives:** This paper attempts to analyze the financial performance of banks during the pandemic and investigate the determining factors. **Background Problems:** The study of the determinants of bank profitability became important after the 2008 crisis. The various results are also a factor that is still interesting in research on banking performance and the factors that determine it. **Novelty:** The novelty of this study is the measurement of governance which includes the existence of a board of directors and a board of commissioners. **Research Methods:** The research population is 54 banks listed on the Indonesia Stock Exchange in 2021. A total of 108 unbalanced banking panel data units during 2020-2021 were analyzed using descriptive analysis methods and panel data regression analysis. **Finding/Results:** The results show there is a very significant decrease in ROA and ROE of banking in Indonesia during pandemic. The panel data regression test results (Random effects or Generalized Least Squares) indicate significant impact from bank size, leverage, LDR, and NPL to ROA. The results of pooled least squares (PLS) analysis show positive impact of bank size on ROE and negative impact of NPL to ROE. In addition, GCG measured with meeting commissioners can determine ROE significantly even to a degree significance of 10%. **Conclusion:** Analysis results in a manner general confirm that bank size and NPL is the most decisive factor performance banking in Indonesia during pandemic.

**Keywords:** banking performance, bank size, governance, non-performing loans

## INTRODUCTION

A country's economic growth is evidenced by the operation of a good financial system. However, during 2020-2021 the COVID-19 pandemic has hit the world and made banking performance challenges (including in Indonesia) very difficult. Indonesia has better infrastructure, so the impact is different compared to the 1998 crisis (Cakranegara, 2020). Data from the Financial Services Authority (OJK, 2021) shows that in December 2020 the ROA rate (return on assets) decreased to 1.59% from 2.47% in the same period the previous year.

Banking performance has been a concern of researchers for a long time. Financial performance is one of the banking performance indicators that reflects the soundness and sustainability of the business. Stakeholders are very concerned about this indicator in making business decisions (Egbunike & Okerekeoti, 2018). Bank profitability is the subject of an extensive empirical study reviewed by researchers (Garcia & Trindade, 2019). Profitability is a very familiar proxy used to see banking financial performance. The measure that is often used by many researchers is return on assets (ROA) as a measure of bank profitability, such as (Bansal et al., 2018; Garcia & Trindade, 2019; Saif-Alyousfi & Saha, 2021). In addition, there are other measures such as the ratio of net interest margin (Fidanoski et al., 2018) or net interest margin (Menicucci & Paolucci, 2016).

The study of the determinants of bank profitability became important after the 2008 crisis (Fidanoski et al., 2018). The various results are also a factor that is still interesting in research on banking performance and the factors that determine it. Good corporate governance (GCG) is a factor that will determine the level of bank performance. Good governance will ensure that the organs in the bank can carry out their duties as well as possible and in accordance with applicable regulations. The results of previous studies show that ROA and ROE are determined by the corporate governance significantly (Manu et al., 2019). Corporate governance is a factor that can affect the profitability performance of Islamic banks. GCG guarantees that the organs in sharia banks can carry out their duties by considering existing sharia regulations (Nurkhin et al., 2018).

In addition to GCG factors, the specific characteristics of banks are also widely studied to analyze their impact on banking performance. Bank size is one of the factors that will determine the level of profitability. The results of previous studies provide indications of inconsistency, including a positive effect on ROA (Bolarinwa & Soetan, 2019; Egbunike & Okerekeoti, 2018; R. Yadav et al., 2015). Other findings show otherwise (R. Yadav et al., 2015), even insignificant (Bougatef, 2017). Other factors are liquidity (Fidanoski et al., 2018; Saif-Alyousfi & Saha, 2021), efficiency (Bolarinwa et al., 2019; Bougatef, 2017), capitalization (Bansal et al., 2018; Öhman & Yazdanfar, 2018) and non-performing loans (Saif-Alyousfi & Saha, 2021).

This study aims to analyze the financial performance of Indonesian banks during the pandemic. Financial performance is focused on measuring banking profitability. In addition, the purpose of this research is to investigate the determinants of banking profitability during the COVID-19 pandemic. Governance factors and bank-specific characteristics are the factors that are the focus of this research. Challenges during a pandemic require better quality governance so that it will have a significant impact on banking performance. The specific characteristics of banks are also important elements that must be considered in maintaining bank conditions during a pandemic. The novelty of this study is the measurement of governance which includes the existence of a board of directors and a board of commissioners with various relevant measures. In addition, the panel data analysis model will use the best model.

## LITERATURE REVIEW

The literature of performance includes two broad approaches: accounting-based research and economics-based research (Olson & Zoubi, 2011). Accounting-based studies are focused mainly on the use of information provided from financial reports. Researchers have measured good bank performance using returns on assets (ROA), returns on equity (ROE) or net interest margin (NIM). However, the limitations addressed to this method coupled with advances in the methods used in the social sciences (parametric and non-parametric methods) have led to the development of an alternative method called an economics-based approach (Talbi & Bougatef, 2018).

The determinants of profitability can be divided into two, namely internal factors and external factors (Al-Harbi, 2019). Internal factors refer to indicators that can be managed by

bank management in the form of policies and other decision making (Kassem & Sakr, 2018). Internal factors include variables related to financial reports and others. While external factors refer to indicators that cannot be controlled by bank management, such as government regulations, inflation, competition, and others.

The determinants of banking performance during the COVID-19 pandemic are interesting to study, including in the Indonesian context. The Financial Services Authority (OJK) report stated that Indonesian banks experienced more challenges during the pandemic even though the policies and infrastructure were adequate. OJK has also issued policies that will encourage Indonesian banks to show prospective performance during the pandemic. Factors that will affect bank profitability include bank size, liquidity, efficiency, and so on. This research attempts to analyze the determinants of bank profitability in Indonesia during the COVID-19 pandemic.

This research is aimed at analyzing banking performance (profitability) during the COVID-19 pandemic and investigating the determining factors. GCG variable is an important factor in determining bank performance. Effective GCG will encourage bank management to take appropriate policies in financial technology innovations that are applied in bank operations. Service to customers will be faster and more accountable so that customer satisfaction is guaranteed. In the end, the bank's performance has reached its best point, even though the pandemic is still going on.

This research will also investigate other factors that will be able to determine bank performance besides the GCG factor, namely the bank's specific characteristics. The variables referred to include bank size, liquidity, cost efficiency, capital adequacy ratio, and non-performing loan. This factor is also important and must be considered by the bank's management so that it will be able to analyze the bank's position from various points of view. Thus, strategic policies will be decided in an appropriate and relevant manner to the internal condition of the bank as well as general economic conditions.

The relationship between firms' size and profitability is a traditional question of business and industrial economics. Theoretical and empirical studies provide inconsistent results (I. S. Yadav et al., 2021). The findings of previous studies show a variety of results, including bank size which has a negative effect on ROA (Saif-Alyousfi & Saha, 2021). firm size determines ROA and ROE negatively and significantly (I. S. Yadav et al., 2021). Size has a positive and significant effect on ROA (Bolarinwa et al., 2019; Bolarinwa & Soetan, 2019; Egbunike & Okerekeoti, 2018; Fidanoski et al., 2018; Menicucci & Paolucci, 2016). Size is also proven to positively and significantly determine a bank's ROE (Ali & Puah, 2019). However, ROA is not significantly affected by bank size (Bougatef, 2017). Other results show that there is no relationship between bank size and ROA (Öhman & Yazdanfar, 2018).

Company size is a significant determinant of a company's success in achieving significant profits, including in the non-bank industry. firm size has a positive and significant effect on the profitability of the hospitality industry (Menicucci, 2018), manufacturing industry profitability (Nanda & Panda, 2018, 2019), pharmaceutical company profitability (Lim & Rokhim, 2020; Tyagi & Nauriyal, 2017) and insurance company profitability (Alhassan et al., 2015). firm size did not significantly affect the profitability of the manufacturing industry prior to the 2008 economic crisis (Nanda & Panda, 2018). Other results show that firm size does not significantly affect the profitability of insurance companies (Zainudin et al., 2018). firm size is also proven to positively and significantly influence ROE (Alarussi & Alhaderi, 2018).

Another factor that can affect profitability is liquidity, namely the ability of a bank to meet cash needs quickly. Empirical studies have proven that liquidity has a positive and significant effect on ROA (Bougatef, 2017; Egbunike & Okerekeoti, 2018; Fidanoski et al., 2018; Saif-Alyousfi & Saha, 2021). However, there are results of previous studies which indicate that a bank's ROA is not significantly affected by liquidity (Bolarinwa & Soetan, 2019). Liquidity



does not significantly affect the profitability of insurance companies (Zainudin et al., 2018) and ROA of pharmaceutical companies (Lim & Rokhim, 2020). Liquidity is also not proven to be able to affect ROE (Alarussi & Alhaderi, 2018).

An important determinant of bank profitability that has not been adequately discussed in the empirical literature is cost efficiency. This has not enjoyed unanimous agreement among scholars. The research results prove that efficiency is a very strong factor affecting bank profitability (Bolarinwa et al., 2019). However, there are different findings that efficiency ratio has a negative and significant effect on ROA (Fidanoski et al., 2018). Managerial efficiency was found not to significantly affect the bank's ROA (Bougatef, 2017). The results of previous research emphasize the importance of further research to find the relationship between efficiency and profitability.

Bank profitability can also be affected by the ratio of capital adequacy and non-performing loan. The results regarding the impact of the capital adequacy ratio should be seriously considered when deciding the balance between capital structure and risk exposure (Fidanoski et al., 2018). Previous studies provide evidence that capital adequacy ratio has a positive and significant effect on ROA (Bansal et al., 2018; Fidanoski et al., 2018; Saif-Alyousfi & Saha, 2021). CAR has a positive and significant relationship with the bank's ROA (Menicucci & Paolucci, 2016; Öhman & Yazdanfar, 2018). Bank capitalization is proven to have a positive and significant effect on ROA (Bougatef, 2017). Other research results show that non-performance loan has a negative effect on ROA (Saif-Alyousfi & Saha, 2021).

CAR, liquidity, and Size has a positive and significant effect on RNIM while efficiency has a negative effect on RNIM (Fidanoski et al., 2018). Liquidity determines NIM positively and significantly (Talbi & Bougatef, 2018). Bank size and capitalization also significantly affect NIM (Menicucci & Paolucci, 2016). No significant effect was found of size, efficiency, and liquidity on NIM. Only bank capitalization has proven to have a significant effect on NIM (Bougatef, 2017).

The research hypothesis proposed in the study is as follows:

H1 good corporate governance can determine the ROA and ROE of banking in Indonesia during a pandemic.

H2 specific characteristics can determine the ROA and ROE of banking in Indonesia during a pandemic.

The research framework is presented in Figure 1 below.

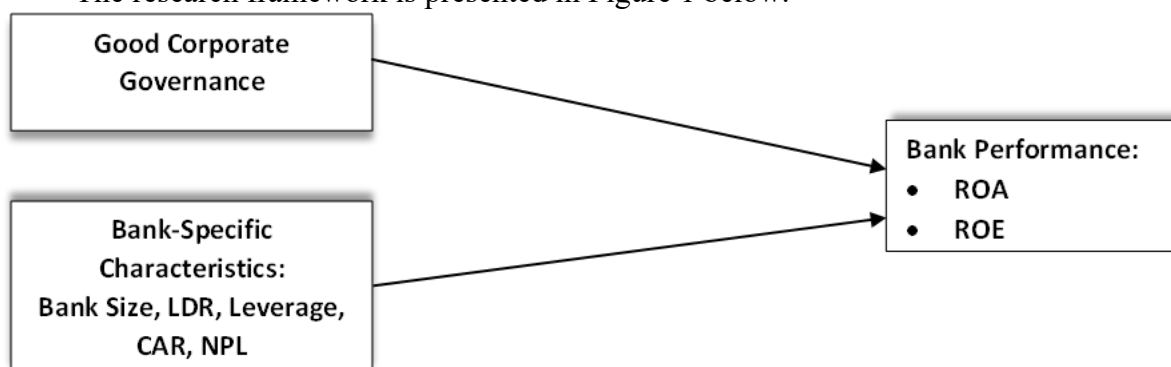


Figure 1. Research Framework

## METHOD, DATA, AND ANALYSIS

### Population and sample

This research is quantitative research with descriptive statistics and causality test. The research population is a bank listed on the Indonesian stock exchange. The observation year is 2 years (2020 and 2021). The number of banks listed on the Indonesia Stock Exchange

(IDX) as of December 2021 is fifty-four banks. The sampling method is purposive sampling with the criteria of banks issuing annual reports during the observation period (in 2020 and 2021). Obtained 108-unit unbalanced panel data in this study.

### **Research variables measurement**

The dependent variable in this study is profitability as measured by ROA (return on assets) and ROE (return on equity). ROA is obtained from the profit before tax ratio divided by total assets. ROE is calculated from the ratio of profit before tax divided by capital. While the independent variables are the GCG mechanism, bank size, CAR, leverage, LDR, and NPL. The GCG mechanism will be measured by the board of directors, independent board of commissioners, and the quality of GCG implementation obtained from the self-assessment of each bank. Bank size is calculated from total assets. Liquidity is calculated from the loan to deposit ratio (LDR), namely the ratio of loans extended divided by total third-party funds. Bank capitalization is calculated from the capital adequacy ratio (CAR), namely the ratio of bank capital to risk-weighted assets. And non-performing loans are calculated from the ratio of bad loans divided by total loans.

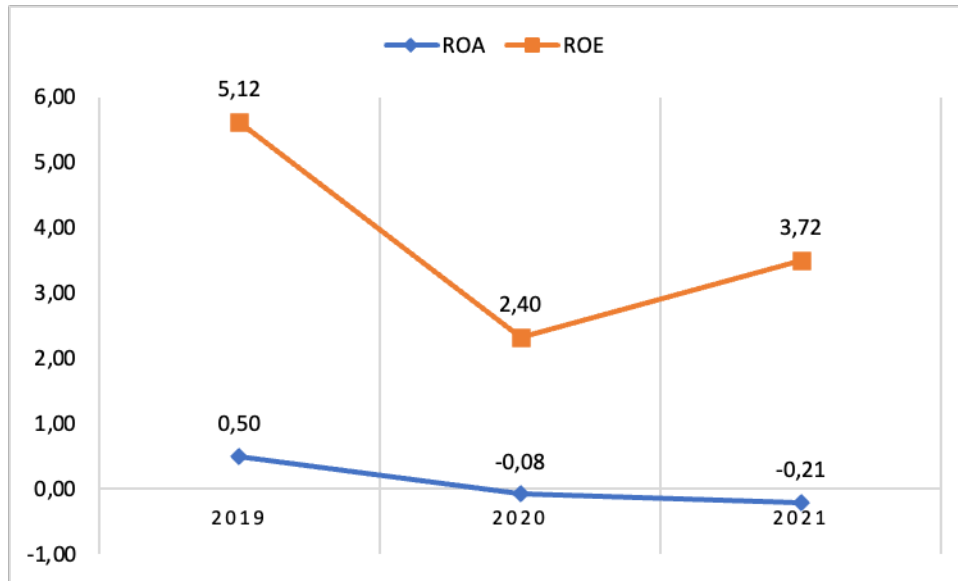
### **Data collection and analysis**

The data collection method used is documentation in the form of financial reports and annual reports from each bank. The analytical method used is descriptive analysis and panel data regression analysis. Descriptive analysis is intended to analyze the performance of Indonesian banking during the pandemic. Panel data regression analysis was carried out to investigate the determinants of Indonesian banking profitability during the COVID-19 pandemic. STATA version 17 is used to analyze the panel data that has been obtained in this study.

## **RESULT AND DISCUSSION**

### **Banking Performance in Indonesia during the COVID-19 Pandemic**

Figure 2 below shows the banking performance in Indonesia during 2019-2021. It seems clear that banking profitability in Indonesia during the pandemic (2020-2021) has experienced a very significant decline. ROA in 2019 was 0.50%, decreased sharply in 2020 which touched -0.08% and decreased again in 2021 by -0.21%. ROE also shows almost the same thing. ROE in 2019 was 5.12% and decreased sharply in 2020 which was only 2.40%. However, in 2021 ROE has increased significantly to 3.72. This means that banking performance in Indonesia (ROE) has improved.



Picture 2. The Performance in Indonesian Banking during the COVID-19 Pandemic

### Descriptive Statistics of Research Variables

Descriptives statistics of the research variables are presented in table 1 below. The average ROA is -0.14% and ROE is 3.05%. There are banks that experience a negative ROA of -38% and a negative ROE of -95%. Banking experienced very heavy challenges so that its profitability performance became negative. Even so, in 2021, the ROE will begin to experience an increase in performance (ROE). The quality of GCG implementation as measured by the self-assessment score shows a good average during 2020-2021. The role of the board of directors and commissioners is indicated by the number of meetings that have been held. The average meeting is 31 times for the board of directors and 12 times for the meeting of the board of commissioners. The specific characteristics of a bank are indicated by the indicators of total assets, LDR, CAR, leverage and NPL. The total banking assets in Indonesia have experienced quite a significant trend from 2020-2021. The average LDR is 83%, which means that banks in Indonesia are sufficiently able to extend loans to customers. The average CAR is 19297.07% which shows a very good capital adequacy ratio during the pandemic. The average leverage is 79.81% which indicates a controlled debt ratio. Meanwhile, the average NPL is 37.18% and indicates a very large ratio. Banking needs to anticipate the risk of failure to receive payment of receivables from customers.

**Table 1. Descriptive Statistics of Research Variables**

No.	Research variables	Minimum	Maximum	Means	std. Deviation
1.	ROA	-38	5.16	-.1474074	5.532278
2.	ROE	-95.44	84.61	3.057037	18.68378
3.	Board of Directors meeting	2	227	31.65741	31.0836
4.	Commissioners meeting	2	62	12.53704	12.94375
5.	Composition of the Independent Board of Commissioners	0	100	58.40667	14.15096
6.	GCG Quality	2	5	3.953704	.4612915
7.	Bank Size	1441234	1.73e+09	1.59e+08	3.52e+08
8.	LDR	12.35	241.98	83.62944	32.04442
9.	CAR	11	2100000	19297.07	201140.5
10.	leverage	16.42	99.9	79.81889	12.5341
11.	NPLs	0	2227	37.18722	252.0581

### Determinants of Banking ROA in Indonesia during the COVID-19 Pandemic

Panel data regression testing begins with determining the most appropriate model in between pooled models least square (PLS), fixed effect (FE), and random effects (RE). Panel data regression analysis shows that the model is random effect (RE) is the most appropriate compared to other models in investigating the determinants of Indonesian banking ROA during the COVID-19 pandemic. The Hausman test results show that the Prob > chi2 value is 0.0102.

Random-effects GLS regression analysis is shown in table 2 below. P value > |z| which is less than the significance level of 5% is shown by bank size, LDR, leverage, and NPL variables. Each has a value of P > |z| of 0.023, 0.006, 0.035, and 0.000. The test results show that these four variables have had a significant impact on Indonesian banking ROA during the pandemic. Bank size, LDR, and leverage have a positive effect while NPL has a negative effect.

**Table 2. Results of Random-effects GLS Regression Analysis**

Independent Variables	coefficient	std. err.	z	P >  z
Board of Directors meeting	-.0160554	.0122883	-1.31	0.191
Commissioners meeting	-.0403413	.0322527	-1.25	0.211
Composition of the Independent Board of Commissioners	-.0269299	.022571	-1.19	0.233
GCG Quality	.2865251	.8679319	0.33	0.741
Bank Size	2.57e-09	1.13e-09	2.27	0.023*
LDR	.0360165	.0132343	2.72	0.006**
CAR	.0320531	.022321	1.44	0.151
leverage	.1233327	.058654	2.10	0.035*
NPLs	-.0180376	.0015427	-11.69	0.000***

Source: STATA 17 output, processed by authors (2023)

### Determinants of Banking ROE in Indonesia during the COVID-19 Pandemic

Panel data regression testing begins with determining the most appropriate model between the PLS, FE, and RE models. The test results show that the PLS model is the most appropriate in investigating the determinants of banking ROE in Indonesia during the pandemic. The Lagrange multiplier (LM) test results shows that the Prob > chibar2 value is 0.0008. The results

of the analysis provide empirical evidence that the Prob > F value is 0.0047 with an Adj R-squared of 0.1364. The regression model in this study meets the criteria (fit) and is 13.64% able to explain the effect of the independent variables on banking ROE in Indonesia during the pandemic.

The results of panel data regression analysis using the PLS model can be seen in table 3 below. Only bank size and NPL variables have  $P > |z|$  values less than the significance level of 5%. The results of the analysis indicate that the bank size variable has a positive and significant impact on ROE. Meanwhile, NPL has a negative and significant effect on ROE. Meanwhile, the value of  $P > |z|$  commissioners' meeting is 0.084 or less than the 10% significance level. These results also show a significant and negative effect on ROE. In addition, other variables are not proven to significantly determine ROE.

**Table 3. Result of Pooled results least squares (PLS) Analysis**

<b>Independent Variables</b>	<b>coefficient</b>	<b>std. err.</b>	<b>z</b>	<b>P&gt; z </b>
Board of Directors meeting	-.066597	.0622499	-1.07	0.287
Commissioners meeting	-.2855147	.1633808	-1.75	0.084
Composition of the Independent Board of Commissioners	.1447744	.1312177	1.10	0.273
GCG Quality	4.749019	4.883393	0.97	0.333
Bank Size	1.31e-08	5.64e-09	2.33	0.022*
LDR	-.0108838	.069225	-0.16	0.875
CAR	.1811625	.1367491	1.32	0.188
leverage	.3725117	.3300371	1.13	0.262
NPLs	-.0183337	.0079082	-2.32	0.023*

Source: STATA 17 output, processed by authors (2023)

## Discussion

The results of panel data regression testing show that bank size, LDR, and leverage have had a positive and significant effect on banking ROA in Indonesia during the pandemic. Meanwhile, NPL has a negative effect on ROA. Bank size has also proven to have a positive and significant effect on ROE. NPL also has a negative and significant impact on ROE. Other results indicate a significant effect Commissioners' meetings on ROE, even at a significance level of 10%.

Empirical evidence confirms that bank size is an important factor that greatly determines banking ROA and ROE. This means that the amount of assets owned by the bank can affect the bank's efforts to obtain the best profit. When a bank can manage its assets, the opportunity to earn profits is greater. The results of this study support previous findings which indicate a positive and significant effect of bank size on ROA (Bolarinwa et al., 2019; Bolarinwa & Soetan, 2019; Egbunike & Okerekeoti, 2018; Fidanowski et al., 2018; Menicucci & Paolucci, 2016) and ROE (Ali & Puah, 2019). However, there are findings that firm size determines ROA and ROE negatively and significantly (I. S. Yadav et al., 2021). Meanwhile, other empirical evidence shows that there is no relationship between bank size and ROA (Öhman & Yazdanfar, 2018).

LDR is a ratio that shows bank liquidity and provides an explanation of the bank's ability to maintain the smooth flow of third-party funds for use by banks as loans. The higher the LDR will have a significant impact on obtaining profits through disbursed loans. However, a high LDR ratio will present a liquidity risk. The results of the analysis provide evidence that LDR can positively and significantly determine ROA. This means that third party funds channeled as loans have a positive impact on the profit earned by the bank. This means that loans

disbursed can be managed properly. These results support previous findings which have proven that liquidity has a positive and significant effect on ROA (Bougatef, 2017; Egbunike & Okerekeoti, 2018; Fidanoski et al., 2018; Saif-Alyousfi & Saha, 2021). However, there are findings to the contrary where liquidity has no significant effect on ROA (Bolarinwa & Soetan, 2019). Other results also confirm that liquidity does not significantly affect the profitability of insurance companies (Zainudin et al., 2018) and ROA of pharmaceutical companies (Lim & Rokhim, 2020). Liquidity is also not proven to be able to affect ROE (Alarussi & Alhaderi, 2018).

The results of other analyzes provide empirical evidence that leverage is a significant determinant of ROA. Leverage is a ratio that shows a bank's ability to use debt funds obtained. In a pandemic situation, banks need very large capital to maintain the quality of their services to customers. The situation is very uncertain, forcing the bank's management to be careful in managing debts that have been obtained. The positive effect of leverage on ROA means that banks will be able to present the best performance (earn profit) by channeling loans and carrying out operations as well as possible.

NPL has also been proven to be able to determine Indonesian banking performance negatively and significantly (ROA and ROE). NPL shows the bank's ability to manage the loans it must keep minimizing the risk of non-payment of loans from customers. The negative influence means that the smaller the NPL, the ROA and ROE will change vice versa (become bigger). The NPL ratio must be reduced to achieve better performance. A large NPL indicates a large risk of loss as well. The results of this study support previous findings which obtained empirical evidence that non-performing loans have a negative effect on profitability (Saif-Alyousfi & Saha, 2021).

## **CONCLUSION**

The purpose of this research is to analyze banking performance in Indonesia during the COVID-19 pandemic. The results of the analysis provide data that banking performance as measured by ROA and ROE presented a declining performance during the pandemic. Even so, ROE presented a significant increase towards the end of the pandemic. This research also aims to investigate important factors that can determine banking performance during a pandemic. The panel data regression test results indicate that ROA can be positively and significantly influenced by bank size, LDR, and leverage. NPL is proven to negatively affect ROA. The results of other analyzes provide empirical evidence that only bank size can positively determine ROE and the negative effect of NPL on ROE. In addition, GCG is unable to determine banking performance in Indonesia during the pandemic. Meetings held by directors and commissioners have not proven to be effective. GCG quality in general also did not have a significant impact on banking performance during the pandemic, which presented very tough performance challenges.

The recommendation from this study is the significant impact of bank size and NPL on ROA and ROE. Bank management should be able to manage assets owned so that they can be used for the effectiveness and efficiency of bank operations. The quality of bank services can be maintained so that financial performance can be achieved well. Bank management must also pay close attention to the NPL position because it is associated with the risk of loss. The situation during a pandemic requires bank management to be careful in distributing loans to customers. Strategic policies must be taken properly so that the loans disbursed can still bring the best profit.

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# ANALYSIS OF READINESS FOR UTILIZATION OF E-COMMERCE IN FASHION MSMEs IN WEST JAVA

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## ABSTRACT

**Main Objectives :** The aim of this research is to analyze the readiness to use e-commerce in fashion MSMEs in West Java.

**Background Problems :** This research is motivated by the high development of e-commerce use among MSMEs in West Java, but in practice it faces many problems, so it is necessary to conduct research on the readiness of MSMEs to use e-commerce. **Novelty** of this research is that the TRI indicator is used to modify according to the conditions in the analysis unit and is carried out on relatively advanced MSMEs in West Java and is urgent for research.

**Research Methods :** This research was conducted using a survey method among 225 Fashion MSME owners in West Java. Readiness for e-commerce is demonstrated by 1) digital infrastructure 2) technology adoption and digital literacy 3) transaction security 4) transaction security, 5) logistics readiness 6) e-commerce adoption and 7) availability of regulations using the Technology Readiness Index (TRI) technique. Data collection was carried out by conducting interviews and distributing questionnaires to MSME owners. The data that has been obtained is then analyzed using descriptive statistics.

**Results :** This research reveal that of all the indicators used, readiness to use the internet is in the medium and low range. Readiness is moderate in terms of availability of internet access, effectiveness of goods delivery, ease of transactions with suppliers, while relatively low in terms of speed of internet access, security, ownership of a commerce website and understanding of e-commerce regulations. access speed is considered insufficient.

**Conclusion :** By knowing the shortcomings in readiness to use the internet, it is hoped that this can provide input on how to utilize e-commerce to support business processes and carry out competency development programs for MSME owners so that the use of e-commerce can support work efficiency and make transactions safely.

*Keywords: e-commerce, readiness, utilization, TRI, MSMEs*

## INTRODUCTION

Industrial revolution 4.0 is marked by digitalization in all fields. One of them is trading. The digitalization of trade is known as e-commerce. The Covid-19 outbreak for two years has begun to introduce and sharpen the use of e-commerce in trade transactions, until now, the use of e-commerce in trade continues to increase, because of the many efficiencies it creates. Based on data from the Central Statistics Agency (BPS), there were 2.36 million e-commerce

businesses spread across the country in 2020, this shows that the use of e-commerce in Indonesia is increasingly widespread. Of the 2.36 million e-commerce businesses, 1.77 million businesses (75.15%) are on the island of Java. This happens because Java is the center of the economy and has more adequate digital infrastructure and West Java is the region with the largest number of e-commerce businesses in Indonesia. There are at least 473,283 e-commerce businesses (20.05%) carried out in the province. Followed by East Java which has 467,996 e-commerce businesses (19.82%). Likewise, the use of e-commerce among MSMEs, the trend of using e-commerce for MSMEs has increased significantly throughout Indonesia, including in West Java, in recent years. Several factors that have encouraged the growth of e-commerce for MSMEs include increased Internet access, ease of use of e-commerce platforms, high support from the government and financial institutions, changes in consumer behavior who tend to prefer online shopping, and the increasing number of training and education programs. which supports MSMEs to be able to use e-commerce platforms effectively (<https://bppk.kemenkeu.go.id>). Apart from the benefits and convenience provided by the use of e-commerce in business, e-commerce in Indonesia has many problems, including infrastructure that does not yet reach remote areas of Indonesia, personal data security problems, online shopping fraud, consumer protection, problems with logistics and transportation delays (<https://bppk.kemenkeu.go.id/pusdiklat-keuangan-umum/berita/e-commerce-untuk-umkm-dan-perbangun-Ekonomi-indonesia-237095>)

The high benefits and convenience that result from using e-commerce, as well as the problems that arise, mean that business people need to be prepared to use e-commerce so that problems with e-commerce can be minimized. Analysis of MSME readiness for e-commerce needs to be carried out to identify market potential for goods and services, whether MSME business development needs to be developed towards online business, assist MSMEs in planning technological infrastructure, help identify potential risks and design efforts to protect consumers. Based on this, this research needs to be carried out. There have been many previous studies that have analyzed the readiness of MSMEs in running e-commerce. Readiness to use e-commerce in research is based on the TRI (Technology Readiness Index) (Parasutaman, 2014) which is a measurement tool or method used to assess the readiness of a group or country to adopt and integrate technology in everyday life or in business and industry. In analyzing the readiness to use e-commerce for MSMEs, previous research used the technology acceptance model (TAM)(Agung Ayu Puty Andrina et al., 2022);(Fedorko et al., 2018); (Md Johar & Ahmad Awalluddin, 2011)). Besides that. The model used is the Technological Readiness Index (TRI) ((Astuti & Nasution, 2014); (Pahlawansah et al., 2023); (Riswandi & Permadi, 2022); (Santos et al., 2022). The novelty of this research is the indicators used in the e-commerce readiness model which include 1) digital infrastructure 2) technology adoption and digital literacy 3) transaction security 4) transaction security, 5) logistics readiness 6) e-commerce adoption and 7) availability of regulations (Irawan et al, 2023) while in previous research the methods used were Optimism, Innovativeness, Discomfort, and Insecurity. Apart from that, this research examines fashion MSMEs which are MSMEs that are relatively advanced in the use of e-commerce and are the mainstay of MSMEs in West Java. Based on this, this research focuses on the research question of how prepared MSMEs are to utilize e-commerce in Fashion MSMEs. This research was conducted with a survey of MSME owners in Bandung City. Based on this, this research aims to measure the level of technological readiness of Fashion MSMEs in West Java.

## **METHOD, DATA, AND ANALYSIS**

### ***Method***

This research was conducted using a quantitative approach using survey methods, exploratory survey method, by cross section data. The research carried out includes the stages (1)

formulating research problems (2) developing survey designs (3) developing data collection instruments (4) determining samples (5) Collecting data (6) Data processing (7) Descriptive and inferential data analysis (8) Data interpretation (9) Making conclusions.

**Population and sample**

The subjects of this research are fashion MSME owners in West Java. With non-probability sampling, the sample size used was 225.

**Collecting Data and Instrumen**

Data collection was carried out by distributing questionnaires to respondents. The instruments used were questionnaires and interview guides. The instruments used are on an ordinal scale with a gradation of 1-5 from inadequate to very adequate infrastructure.

**Data Analysis**

The data that has been collected is then analyzed using descriptive statistics. The way to measure readiness with TRI which was modified into ECRL is done by checking the level of very adequate to inadequate on a scale of 1 to 5, which then determines the level of readiness.

**RESULT AND DISCUSSION**

The results of this research the results of the technology Readiness index survey which was modified into ECRL which usually includes several components or factors that measure a region's readiness to adopt e-commerce, namely, 1) digital infrastructure (A) 2) technology adoption and digital literacy (3) transaction security 4) transaction security, 5) logistics readiness 6) e-commerce adoption and 7) availability of regulations (Parasuraman, 2014). Base on deskriptive analysis, the results are in Tabel 1.

**Table 1. Score of E Commerce Readiness**

	N	Min.	Max.	Sum	Mean	Std. Deviation	Criteria
A1	225	1,00	5,00	754,00	3,964	,84440	Middle
A2	225	1,00	5,00	525,00	4,111	,97336	Low
T1	225	1,00	5,00	645,00	4,142	,86460	Middle
T2	225	1,00	5,00	683,00	3,035	,91054	Middle
M1	225	1,00	5,00	587,00	3,977	,80425	Low
M2	225	1,00	5,00	576,00	4,337	,82465	Low
P1	225	2,00	5,00	624,00	4,528	,63408	Middle
P2	225	1,00	5,00	643,00	3,320	1,16297	Middle
K1	225	1,00	5,00	623,00	3,888	1,05268	Middle
K2	225	1,00	5,00	742,00	3,586	,86231	Middle
C1	225	1,00	5,00	543,00	3,275	1,06259	Low
C2	225	1,00	5,00	759,00	3,377	1,10728	Middle
R1	225	1,00	5,00	632	4,044	,93435	Middle
R2	225	1,00	5,00	542	3,964	,89071	Low
Valid (listwise)	N 225						

Source : Primary Research : 2023

Where

A1 : Infrastructure readiness  
A2 : speed of internet access

P1 : availability of credit cards  
P2 : digital wallets

T1 : frequency of use of digital technology in internal business processes	K1 : logistics readiness
T2 : online trade transactions	K2 : goods delivery efficiency
M1 : legal protection	C1 : ownership of e-commerce sites
M2 : transaction security	C2 : frequency of the number of online products and frequency

Based on the research results, the overall indicator scores for the 7 indicators are at medium and low levels. An indicator that is relatively high compared to others is the frequency of online transactions in the form of buying and selling raw materials or buying and selling final products with consumers. Apart from that, MSMEs stated that they were relatively ready in terms of ease of internet access. This is possible because West Java Access has implemented several superior programs to facilitate internet access for the entire community, namely digital village, digital literacy, Fixed broadband internet, and Telkom's Digital Village program. Apart from that, the indicator that is relatively low is understanding of e-commerce regulations. The results of this research state that many MSME owners do not understand government regulations regarding e-commerce. This lack of understanding of legal issues results in frequent violations of e-commerce law, loss of consumer trust, business sanctions and damaged reputations. Apart from the problem of low understanding of e-commerce regulations, an obstacle to e-commerce transactions is the problem of slow networks, so that business processes do not run smoothly. In detail, e-commerce readiness for each indicator is explained.

### ***Digital Infrastructure Readiness***

Digital infrastructure is the set of technologies, hardware, software, networks, and computing resources that support various aspects of electronic communication, storage, processing, and exchange of data. Digital infrastructure consists of several main components of digital infrastructure including, Communication networks, Data Centers, Hardware, Software, Cyber Security, Cloud Computing, IoT (Internet of Things), Big Data and Analytics, Internet Connections (Wibowo, 2023). In this research. Infrastructure readiness is indicated by (1) ease of internet access (A1) and speed of internet access (A2). The research results reveal that entrepreneurs can access the internet but the access speed is considered insufficient. The relatively low speed causes business transactions to be hampered and business to run less smoothly.

### ***Technology Adoption***

Technology adoption is a process in which individuals, organizations, businesses or society as a whole integrate new technology into routine activities, activities or daily operations ((Effendi, M. et al., 2020)). This process involves understanding, accepting, implementing , and the use of new technologies to solve problems or meet specific needs. Technology adoption can take place at various levels, including the individual, corporate, government, or wider society. Technology adoption and digital literacy are reviewed from 1) the frequency of use of digital technology in internal business processes (T1) and online trade transactions (T2). The results of this research state that the frequency of internet use for internal business processes is moderate. However, in this case the frequency of internet use for buying and selling needs is greater than for other needs such as access to information, searching for profitable suppliers and consumers and providing resources. Good technology adoption allows for increased Operational Efficiency, especially by automating business processes, cost savings that occur from reducing manual involvement in business processes, businesses can save on labor costs, increase market access, expand marketing networks and improve customer service.

### ***Digital Security***

Digital transaction security reflects the protection of integrity, confidentiality and authentication of electronic transactions carried out through various digital device platforms ((Ayu et al., 2019))). This includes techniques and practices that aim to secure the transaction process and protect the personal data of transacting parties. The efforts made to UK develops digital transaction security is encryption, authentication, tokenization, access control, monitoring and tracking, device security, network security and legal compliance. Transaction security used in this research includes adequate legal protection (M1) and transaction security (M2).

The results of this research state that legal protection for business actors and consumers is relatively low and transaction security is low. This low level of legal protection for business actors can be caused by regulatory inequality between countries, lack of consumer awareness, technical complexity, difficulty identifying perpetrators and lack of law enforcement. This can be overcome with legal protection in e-commerce, cooperation between the government, regulatory bodies, e-commerce businesses and consumers. Creating relevant and effective regulations, strict law enforcement, consumer education, and implementing high security standards are some of the steps that can help improve legal protection in e-commerce ((Wibowo, 2023.)). Low transaction security is caused by a lack of security on the Website or Application which includes a lack of protection against cyber attacks such as phishing attacks, malware and hacking. Use of insecure internet connections, data security breaches, online fraud, insufficient security of user accounts, phishing and social engineering, device insecurity not properly verifying identity, insecure payment providers, non-compliance with security regulations of some countries.

### ***Online Payment Methods***

The methods used to carry out financial transactions electronically via the internet are called online payment methods. It allows users to pay for products or services digitally without the need to use cash or physical checks. Methods that can be used include credit cards, debit cards, digital wallets, online bank transfers (Luthfi et al., 2023))). The online payment method indicators used in this research are the availability of credit cards (P1) and digital wallets (P2). The results of this research state that more than 50% of business actors use credit/debit cards and digital wallets. In other words, readiness to use e-commerce is supported by the availability of credit cards and digital wallets. This shows that the perpetrator has tried to shorten transactions by using digital payment tools. The benefits obtained from using digital payment methods are convenience and speed, transaction security, automatic payments, transaction transparency, being able to assist long distance transactions, cost savings, 24 hour availability, and reduced physical contact.

### ***Logistics and Delivery Readiness***

Logistics and delivery readiness is an important factor in running an efficient and smooth e-commerce business. Logistics readiness includes physical infrastructure, stock management, technology and software, integration with payment systems, scalability, and logistics cooperation (Luthfi et al., 2023) Logistics readiness in this research includes logistics readiness (K1) and goods delivery efficiency (K2).

The results of this research state that the majority of business actors have logistics readiness, meaning that business actors are able to manage and coordinate all aspects related to procurement, storage, transportation, distribution and management of goods or services needed to achieve business or operational goals. The benefit of logistics readiness is increasing efficiency in the procurement, storage, transportation and distribution of goods or services. With a good logistics system, companies can avoid excess inventory, reduce shipping costs,

and optimize resource use, improving service to customers, reducing production costs and reducing losses.

### ***E-commerce Adaptation***

E-commerce adaptation is the process of integrating a business into an e-commerce environment, which involves selling products or services online (MK, 29). The e-commerce adaptation strategy is an important strategy to keep up with the rapid growth of electronic commerce in recent years. E-commerce adaptation in research is shown by ownership of e-commerce sites such as Shopify, WooCommerce (for WordPress), Magento (C1). Apart from that, it is shown by the frequency of the number of online products and frequency (C2). ((Wardhana, 2022).

The results of research on adapting e-commerce to owning an e-commerce site state that the majority of MSMEs do not yet have an e-commerce website, but many MSMEs use online transactions. Most business owners prefer to join an e-commerce website because the costs are lower, they can access a large number of customers, they are more practical and simpler, and they get technical support. However, not having your own website results in limited control, large costs, dependence on third parties, and brand limitations.

### ***E Commerce Regulations***

E-commerce regulations are rules/regulations imposed by the government or regulatory bodies to regulate and supervise e-commerce business operations and protect consumer rights and security. E-commerce regulations include consumer protection, privacy and data protection, intellectual property rights protection, security and authenticity of transactions, e-commerce taxes, business terms, protection against fraud and abuse, shipping and logistics, return policies. The results of this research state that respondents' understanding of regulations is still low. This lack of understanding results in legal violations, business uncertainty, financial risks, reputational losses, inequality and discrimination, environmental or public health damage, stifling of innovation, consumer uncertainty, insecurity and risk. As for ways that can be done to increase understanding of MSME regulations, they need to continue to build knowledge, attend seminars and join associations.

### ***Conclusion***

High readiness for e-commerce is demonstrated by 1) digital infrastructure 2) technology adoption and digital literacy 3) transaction security 4) transaction security, 5) logistics readiness 6) e-commerce adoption and 7) availability of regulations. Of all the indicators used, readiness is in the medium and low range. Readiness is moderate in terms of availability of internet access, effectiveness of goods delivery, ease of transactions with suppliers, while relatively low in terms of speed of internet access, security, ownership of a commerce website and understanding of regulations. access speed is considered insufficient. The relatively low speed causes business transactions to be hampered and business to run less smoothly. Insecurity in e-commerce transactions causes customer financial losses, theft of personal data, disruption of company business operations. Ecommerce security can be improved through selecting a security platform, verifying user identity and security certificates. Most business owners prefer to join an e-commerce website because the costs are lower, they can access a large number of customers, they are more practical and simpler, and they get technical support. However, not having your own website results in limited control, large costs, dependence on third parties, and brand limitations. Low understanding of regulations. This low understanding results in legal violations, business uncertainty, financial risks, reputational losses, inequality and discrimination, environmental or public health damage, inhibition of innovation, consumer uncertainty, insecurity and risk. As for ways that can be done to increase understanding of

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# CONVERGING MINDS AND MACHINES: A GLIMPSE INTO THE FUTURE OF AI COLLABORATION BETWEEN ACADEMIA AND INDUSTRY

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## ABSTRACT

**Introduction/Main Objectives:** The integration of academic research and industrial application is poised to redefine the landscape of artificial intelligence (AI). "Converging Minds and Machines: A Glimpse into the Future of AI Collaboration between Academia and Industry" explores the symbiotic relationship between academia and industry in shaping the trajectory of AI advancements. Ethical considerations and regulatory implications arising from collaborative AI ventures are also examined, underlining the importance of responsible innovation. By forecasting emerging trends and envisioning prospective outcomes, this article underscores the critical role of interdisciplinary cooperation in unlocking AI's full potential, while safeguarding ethical integrity. It offers an in-depth exploration of the dynamic interplay between these two realms and its profound implications for AI advancement. **Background Problems:** This article delves into the benefits and challenges of collaborative endeavors, emphasizing their potential to accelerate research, bridge theoretical gaps, and address practical challenges. **Research Methods:** Conceptual study has used in this paper. **Finding/Results:** As the AI landscape continues to evolve, this research serves as a foundational guide for stakeholders invested in forging the path toward a future where minds and machines converge for societal progress. **Conclusion:** It presents compelling case studies that illustrate the transformative impact of such collaborations across diverse sectors.

**Keywords:** AI Advancements, AI Advancements, Symbiotic Relationship, Interdisciplinary Cooperation

## INTRODUCTION

In an era defined by rapid technological advancements, artificial intelligence (AI) stands as a beacon of innovation, promising to reshape industries, economies, and the very fabric of societies. Central to this journey of transformation is the intriguing interplay between the intellectual realm of academia and the practical domain of industry. As the boundaries between theoretical exploration and real-world application blur, the collaborative fusion of minds and machines emerges as a formidable force poised to redefine the trajectory of AI's evolution. This exploration delves into the symbiotic relationship unfolding at the crossroads of academia and industry. While AI's potential is undeniable, its true transformative power becomes evident when these two spheres converge. Bridging the gap between theoretical inquiry and pragmatic implementation, this convergence accelerates research endeavors,



addresses complex challenges, and propels innovations with far-reaching implications. At its core, this partnership is a fusion of academic curiosity and industrial pragmatism. It unites the theoretical insights cultivated in the halls of academia with the applied expertise honed through industry experiences. As AI traverses uncharted territories, academia's ability to pioneer novel algorithms and methodologies intersects seamlessly with industry's drive to translate these advancements into tangible solutions.

Yet, as the landscape of collaboration expands, it brings forth a dynamic interplay of benefits and challenges. The accelerated pace of research, the bridging of theoretical gaps, and the creation of solutions that resonate across sectors underscore the inherent advantages. However, reconciling the differing timelines, goals, and intellectual property concerns of academia and industry poses a complex challenge. Crafting effective strategies to navigate these intricacies forms a cornerstone of successful collaborative ventures. Ethical considerations are a crucial facet of this partnership. As AI's capabilities grow, the need for responsible innovation becomes paramount. Striking a balance between pushing the boundaries of technological innovation and ensuring ethical integrity becomes a shared endeavor.

Moreover, as collaborative AI ventures expand, regulatory frameworks must evolve to address the new dimensions of cross-disciplinary innovation. Academia has the expertise in developing new AI algorithms and technologies. Industry has the resources to deploy these technologies at scale and to bring them to market. By collaborating, academia and industry can accelerate the development and adoption of AI, and solve some of the world's most pressing problems. There are many examples of successful AI collaborations between academia and industry. For example, the Google Brain team at Stanford University developed the TensorFlow machine learning library, which is now used by millions of developers around the world. Another example is the DeepMind team at the University of Oxford, which developed the AlphaGo program that defeated a human Go champion in 2016.

Envisioning the future of AI collaboration unveils a tapestry of possibilities. Interdisciplinary cooperation is poised to drive emerging trends, bringing together diverse perspectives to create holistic solutions. Public-private partnerships and governmental initiatives play pivotal roles in shaping this future landscape, influencing the trajectory of AI development on a global scale. In the pages that follow, we embark on a comprehensive journey through the nuances, opportunities, obstacles, and transformative potentials of the collaborative dynamic between academia and industry in the realm of AI. As we peer into the future, where the convergence of minds and machines shapes the very fabric of technological progress, we anticipate a landscape defined by unprecedented innovation and societal advancement. The future of AI is bright, and it is clear that collaboration between academia and industry will be essential to its success. By working together, we can accelerate the development and adoption of AI, and solve some of the world's most pressing problems.

## **HISTORICAL OVERVIEW OF AI COLLABORATION:**

The history of AI collaboration between academia and industry can be traced back to the early days of AI research. In the 1950s, a number of AI labs were established at universities around the world, and these labs began to collaborate with industry partners on AI projects.

One of the earliest examples of AI collaboration between academia and industry was the development of the Shakey robot at the Stanford Research Institute (SRI) in the 1960s. Shakey was a mobile robot that could navigate its environment and perform simple tasks. The project was a collaboration between SRI and the Westinghouse Electric Corporation. In the 1970s, AI research experienced a period of decline, but collaboration between academia and industry continued. In the 1980s, there was a resurgence of interest in AI, and this led to increased collaboration between academia and industry.

One of the most successful examples of AI collaboration between academia and industry in the 1980s was the development of the Dendral expert system for the diagnosis of cancer. The project was a collaboration between the Stanford University Medical School and the Digital Equipment Corporation.

In the 1990s, AI research continued to grow, and there was even more collaboration between academia and industry. One of the most notable examples of this collaboration was the development of the ARPANET, which was a precursor to the internet. The ARPANET was a collaboration between the U.S. Department of Defense and a number of universities.

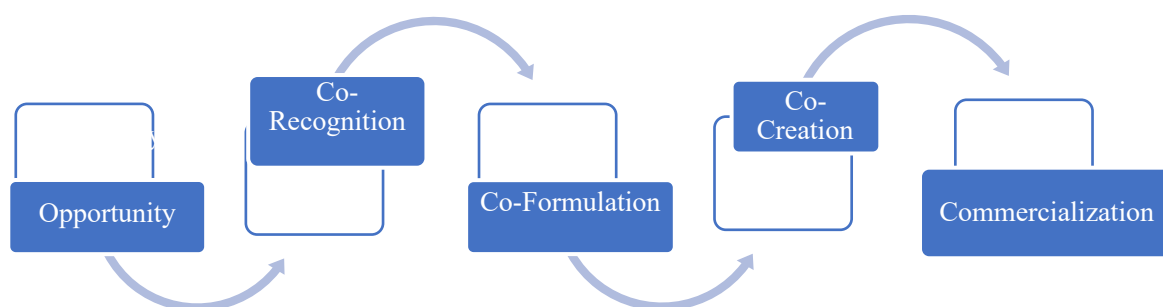
In the 2000s, AI research entered a new era of excitement and innovation. This was due in part to the development of new machine learning algorithms and the availability of large datasets. There was also increased collaboration between academia and industry, as businesses began to see the potential of AI for solving real-world problems. One of the most notable examples of AI collaboration between academia and industry in the 2000s was the development of the Watson computer system. Watson was developed by IBM in collaboration with a number of universities, and it was able to defeat a human champion on the game show Jeopardy!.

In the 2010s, AI research has continued to grow at a rapid pace. There has been even more collaboration between academia and industry, as businesses have invested heavily in AI technologies. One of the most notable examples of this collaboration is the development of the AlphaGo program by DeepMind. AlphaGo was able to defeat a human Go champion, which was considered to be a major breakthrough in AI research. This collaboration has been essential to the development of AI technologies, and it will continue to be important in the years to come.

## STRATEGIC FRAMEWORK FOR SUCCESSFUL INNOVATION

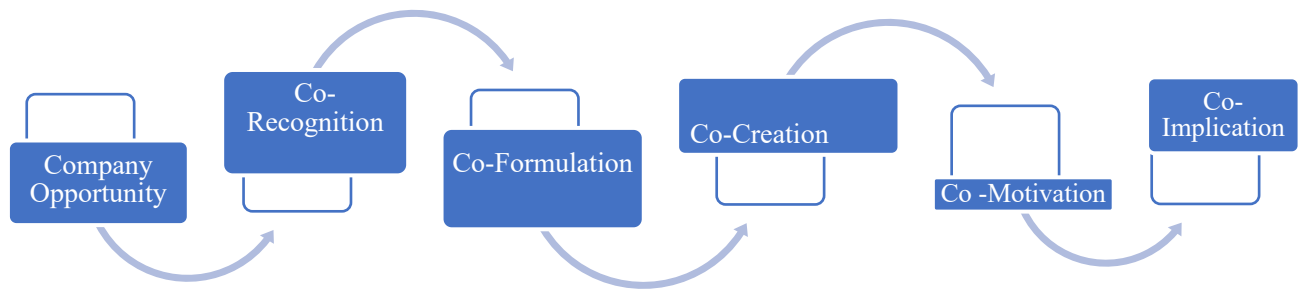
The complex phenomenon of innovation involves a number of intricate processes that must be managed in order to produce the intended results. The suggested strategy is developed by specifying and detailing strategic directions for successful cooperation between academic institutions and business and economic partners. The focus is on knowledge transfer between institutions and industry to promote new collaboration.

Knowledge transfer is crucial for innovation and development. Therefore, placing a focus on culture encourages innovation, but a balanced approach to culture creation results in better knowledge transfer and exploitation from institutions, which encourages innovation.



**Figure.1: Five Stage Model of Academia- Industry Collaboration**

It is described as following a five-stage model: Company Opportunity, Co- Creation (partners create opportunity for innovation processes, products, or markets), Co Formulation (focus on addressing the needs and opportunities of the business partner), Co-Recognition (identification of business needs), and Commercialization (main goal of industrial partners is the commercialization). There are leaps and returns in the transfer of knowledge process as these stages are not addressed linearly.



**Figure.2: Seven Stage Model of Academia- Industry Collaboration**

Based on this model and identifying characteristics nationwide, two stages can be added to this model: Co-Motivation: to pinpoint the components that contribute to value creation in academic institutions and commercial partners/industry. Co-Implication: the active engagement of partners in collaboration to achieve goals.

### **ACADEMIA INDUSTRY COLLABORATION PLAN**

The university should concentrate on the elements that have a significant impact on industrial partnership. When we understand the university's capacity for successful collaboration, we can increase the likelihood of successful partnership between academia and industry.

As previously said, it is clear that closing the gap between academics and industry is important, but even more so is closing the gap between requirements engineering as it is described in the literature and how it is put into practice. As a result, it's important to pinpoint the problem domain, which comprises the following.

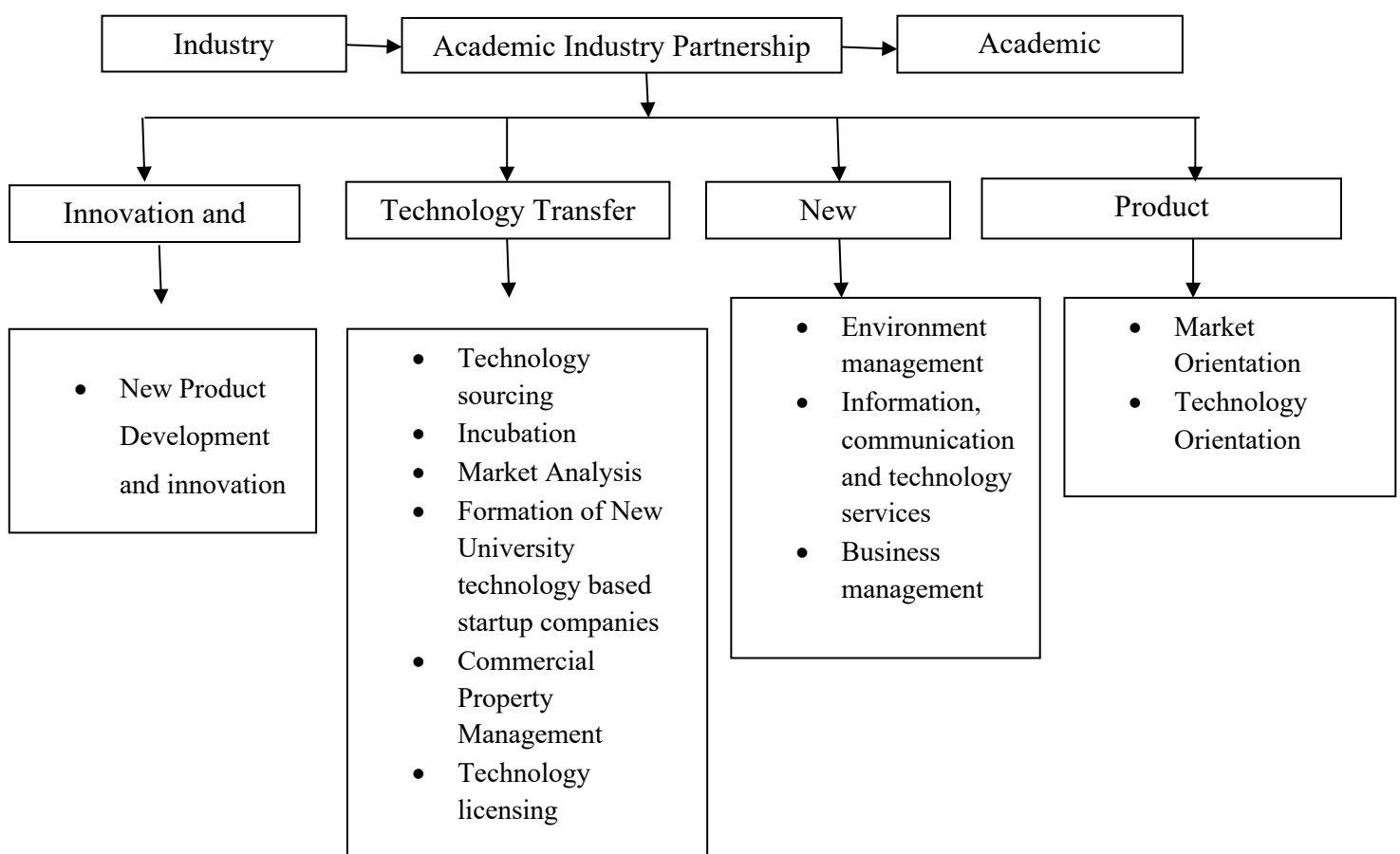
- Implement outdated procedures and methods when new ones have already been proposed by researchers.
- On the other hand, when put into practice, the theoretically established method could not be applicable in the industrial setting.
- Students' skills are used in the workplace, but how they are applied changes depending on the circumstances.
- There is a gap between researchers in academia and those in business.
- In many circumstances, a student has no notion how to promote oneself outside of the classroom.
- Resources made available to scholars and practitioners.
- While academics is reluctant to adopt innovative teaching strategies, industry is reluctant to put new concepts into practice.
- Over time, there is little of a trust gap between the two spouses.

Both parties should be aware that innovation is necessary for technical advancement. The establishment of enduring relationships amongst key stakeholders has become essential. As a result, we are emphasizing key aspects of the problem area that may signal the beginning of a plan for academic and industrial cooperation. In industrial settings, theoretical norms should be put into practice.

- There should be an internship program.
- To promote knowledge transfer with academia, project managers for industrial workers with explicit knowledge will deliver lectures.

- In order to help its partners, academia reports on novel process models and shares fresh findings with the industry.
- When instructing students, relevancy to the workplace is crucial.
- Resources must be shared between business and academia. Online resources should be available to both students and staff so they can get references from books, reports, and current research.
- Cooperation shouldn't be limited to national borders; rather, employment and student exchanges should take place internationally.
- It has become important to create committees to oversee and develop this partnership.

Before moving on to the next stage of AICP, only these few items need to be completed. Understanding the necessity of collaboration between academia and industry is crucial, and these contacts must be based on shared benefits.



**Figure.3: Collaboration plan of Academia and Industry**

### HOW AI COLLABORATIONS FACILITATE THE EXCHANGE OF KNOWLEDGE, INSIGHTS, AND EXPERTISE?

AI collaborations serve as dynamic conduits for the exchange of knowledge, insights, and expertise between academia and industry. Academic institutions, renowned for their depth of theoretical exploration, contribute a wealth of foundational knowledge to this exchange. Researchers within these institutions unravel the intricacies of AI algorithms, delve into the nuances of ethical considerations, and push the boundaries of theoretical frameworks. On the

flip side, industry stakeholders bring to the table a wealth of domain-specific insights, real-world challenges, and the impetus to translate theoretical constructs into practical solutions. This confluence of academia and industry cultivates an environment where the unique strengths of each party complement and amplify the other.

Collaborative projects, workshops, and knowledge-sharing initiatives function as conduits through which this exchange is facilitated. Researchers, professionals, and practitioners from academia and industry gather to engage in vibrant dialogues, sharing their diverse perspectives and methodologies. This cross-pollination of ideas ignites the spark of innovation, leading to the emergence of novel approaches and insights that would be unlikely to manifest within isolated silos. The interchange of knowledge flows in both directions, enriching academic research with practical relevance and empowering industry with cutting-edge advancements.

What distinguishes this exchange is its bidirectional nature. Academia informs industry of theoretical breakthroughs, enabling industry partners to harness the latest research findings to craft innovative solutions. Simultaneously, industry offers invaluable context to academia, illuminating the real-world intricacies that drive research priorities. This process sharpens research focus, ensuring that academic exploration aligns with the needs and challenges faced by industry. As a result, the academic-industry partnership functions as a virtuous cycle, where insights are continuously exchanged and refined, culminating in holistic solutions that merge the rigor of academia with the practicality of industry.

In this expansive landscape, knowledge, insights, and expertise are not merely exchanged; they are amalgamated into a dynamic force that propels AI innovation forward. This interplay fosters a profound understanding of AI's multifaceted dimensions, encompassing theoretical foundations and real-world applicability. As AI continues to reshape industries and societies, this exchange remains integral, fostering an ecosystem where minds converge, ideas flourish, and the collaborative endeavor transcends the sum of its parts, leading us toward a future of unprecedented technological possibilities.

## **THE LANDSCAPE OF AI COLLABORATION IN ACADEMIC INDUSTRY PARTNERSHIP**

The landscape of AI collaboration within the realm of academic-industry partnerships is a multifaceted ecosystem that thrives on the dynamic interaction between intellectual exploration and practical application. It represents a convergence point where the rigorous inquiry of academia harmonizes with the pragmatic demands of industry, resulting in a synergistic exchange that propels the field of artificial intelligence forward. Within this landscape, academic institutions and industrial entities form collaborative alliances that transcend traditional boundaries, capitalizing on their respective strengths to drive innovation, address challenges, and shape the trajectory of technological progress.

At its core, this landscape is driven by a shared objective: to harness the collective power of academia's theoretical depth and industry's practical acumen. Academic institutions serve as repositories of foundational knowledge, nurturing researchers who delve into the intricacies of AI algorithms, ethics, and theoretical frameworks. On the other hand, industry brings real-world context, domain-specific expertise, and the impetus to transform theoretical advancements into tangible solutions that resonate with market demands. This symbiotic partnership sparks a reciprocal exchange of insights, wherein academia informs industry's innovation trajectory, and industry guides academia's research direction by presenting relevant challenges and use cases.

Collaborative models within this landscape take diverse forms, ranging from joint research centers and consortiums to public-private partnerships. These models foster an

environment of open communication, knowledge sharing, and cross-disciplinary interactions. Workshops, seminars, and collaborative projects become platforms for researchers, scientists, engineers, and industry professionals to converge, sharing their expertise, methodologies, and perspectives. This cross-pollination of ideas enriches the research process, igniting novel approaches and generating insights that transcend the boundaries of any single discipline.

Moreover, the landscape of AI collaboration extends beyond knowledge exchange alone. It encompasses the sharing of resources, datasets, computing infrastructure, and even personnel, facilitating a holistic approach to problem-solving. As academia and industry collaborate to tackle real-world challenges, researchers gain exposure to the complexities and intricacies of industry needs, refining their research to address practical issues. Simultaneously, industry benefits from the infusion of cutting-edge research findings, leveraging these insights to innovate, optimize processes, and create solutions with lasting impact.

Ultimately, the landscape of AI collaboration encapsulates a dynamic interplay that shapes the trajectory of AI advancements. It embodies a collective effort to push the boundaries of what's possible while remaining grounded in practical application. This collaborative ecosystem is not only essential for driving innovation but also for nurturing a comprehensive understanding of AI's implications across sectors. As this landscape continues to evolve, it presents opportunities to amplify the exchange of knowledge, insights, and expertise, further propelling the dynamic partnership between academia and industry into uncharted territories of technological progress.

## **BENEFITS OF AI COLLABORATION IN ACADEMIA INDUSTRY PARTNERSHIP**

The benefits of AI collaboration in academic-industry partnerships span a wide spectrum, ushering in a new era of innovation, accelerated research, and transformative impact. At the heart of these collaborations lies the convergence of theoretical inquiry and practical application, leading to outcomes that surpass the achievements of isolated efforts. One of the foremost advantages is the exponential acceleration of research and development. Through collaboration, academia and industry synergize their expertise, reducing the time required to move from theoretical concepts to tangible applications. This acceleration is further fueled by the ability to access industry resources, including data sets, computational power, and real-world testing environments.

Collaboration also addresses the gap between academic research and industry needs, leading to solutions that are not only technically sophisticated but also relevant to practical challenges. Academic institutions bring forward groundbreaking algorithms, ethical considerations, and innovative methodologies, while industry injects real-world context, feedback, and application insights. This merging of perspectives generates solutions that are robust, deployable, and effective in solving complex problems. Additionally, AI collaboration nurtures a culture of interdisciplinary innovation. Experts from diverse fields collaborate, encouraging the cross-fertilization of ideas and approaches. This interdisciplinary synergy results in holistic solutions that consider ethical, social, and technical dimensions.

Economic growth and societal impact emerge as noteworthy benefits. Collaborative efforts drive the creation of new products, services, and industries, fostering economic development. Furthermore, the solutions developed through collaboration have the potential to revolutionize sectors such as healthcare, finance, manufacturing, and more. This, in turn, improves quality of life, enhances efficiency, and addresses pressing global challenges. Beyond tangible outcomes, AI collaboration cultivates a new generation of skilled professionals. Students and researchers gain exposure to real-world projects, bridging the gap between academia and industry expectations. This nurtures a workforce adept at navigating the complexities of AI in practical contexts.

Moreover, collaboration engenders responsible AI development. Ethical considerations, bias mitigation, and transparency are given heightened importance when academia and industry collaborate. This ensures that the deployment of AI technologies is guided by ethical principles and societal well-being. Finally, AI collaboration transcends borders, fostering international partnerships that drive global progress. Collaborative initiatives enable knowledge sharing, best practices, and solutions that have the potential to address complex, worldwide challenges.

In summation, the benefits of AI collaboration in academic-industry partnerships are multifaceted and transformative. They encompass accelerated research, real-world relevance, interdisciplinary innovation, economic growth, societal impact, ethical responsibility, skill development, and international cooperation. These benefits collectively underline the potential of collaborative endeavors to shape the trajectory of AI advancement, propelling us toward a future where innovation knows no bounds and the possibilities for positive change are boundless.

## **HOW COLLABORATION CAN LEAD TO ETHICAL AND REGULATORY CONSIDERATIONS IN AI DEVELOPMENT?**

Collaboration between academia and industry in the realm of AI development serves as a powerful catalyst for cultivating ethical awareness and regulatory considerations. This partnership creates an environment where the convergence of theoretical exploration and practical implementation prompts a comprehensive examination of the ethical and societal implications inherent to AI technologies. By harnessing the collective expertise of both domains, collaboration triggers a multifaceted dialogue that not only elevates technical innovation but also places responsible AI development at the forefront of the agenda.

Within this collaborative ecosystem, ethical considerations emerge as a central pillar. Academia's deep-rooted understanding of ethical frameworks and principles merges seamlessly with industry's real-world insights into AI deployment. This partnership leads to a rigorous evaluation of potential biases, transparency issues, and societal impacts that AI systems may introduce. The interplay of theoretical inquiry and practical application spurs the development of algorithms that prioritize fairness, transparency, and accountability, thereby aligning with evolving ethical standards.

Furthermore, collaboration catalyzes proactive regulatory considerations. Regulatory frameworks often lag behind technological advancements, but collaborative efforts bridge this gap by proactively engaging legal experts, policymakers, and industry stakeholders. This engagement not only anticipates regulatory needs but also fosters the co-creation of guidelines and standards that ensure AI technologies adhere to ethical norms and societal expectations. The collaboration's real-world insights empower regulators to craft informed policies that strike a delicate balance between innovation and safeguarding human rights.

Collaboration in AI development also facilitates a proactive stance on data privacy and security. Academia's research into privacy-enhancing technologies couples with industry's operational experience to engender AI systems that protect user data while enabling meaningful analysis. This not only addresses legal requirements, such as GDPR, but also instills a culture of data stewardship that resonates throughout the AI ecosystem.

In essence, collaboration serves as a crucible for the ethical and regulatory considerations that underpin AI development. By intertwining academic rigor with industry pragmatism, these partnerships amplify ethical awareness, infuse regulatory foresight, and bring ethical AI principles to life. The dialogue forged within this collaborative landscape transcends mere compliance, aiming to proactively shape a future where AI technologies are

not only innovative and efficient but also ethically sound, trustworthy, and respectful of the societal values they touch.

## **ETHICAL AND SOCIAL IMPLICATION**

The convergence of minds and machines through AI collaboration between academia and industry heralds a promising era of innovation, but it is accompanied by a complex web of ethical and societal implications that demand careful consideration. As the boundaries between theoretical inquiry and practical application blur, the partnership between academia's pursuit of knowledge and industry's drive for market-driven solutions unveils a tapestry of considerations that stretch far beyond technical advancements. Delving into the intricate interplay of these two realms uncovers a series of ethical and societal dimensions that underscore the need for responsible and balanced AI development.

At the heart of this collaboration lies the ethical design and deployment of AI systems. The fusion of academia's commitment to rigorous analysis and industry's understanding of real-world contexts can lead to the creation of AI algorithms that not only excel in performance but also uphold ethical principles. This extends to the critical issue of bias mitigation – a challenge that often arises due to biased training data or algorithmic design. The collaborative efforts of academia and industry hold the potential to foster the development of AI models that are not only aware of biases but actively seek to mitigate them, thereby ensuring fairness and equity in AI applications.

Transparency and accountability form another ethical cornerstone of this collaboration. The partnership brings to the fore the imperative to design AI systems that can be explained and understood, bridging the gap between academia's emphasis on algorithmic transparency and industry's need for proprietary technology. By melding these perspectives, AI solutions can be crafted in a manner that empowers end-users with insights into decision-making processes while safeguarding industry's competitive edge.

In the realm of data privacy and security, the collaboration between academia and industry takes on an ethical dimension of paramount importance. As data fuels AI advancements, robust data governance frameworks that protect individual privacy while enabling meaningful research and development become vital. Academia's expertise in privacy-preserving techniques can merge harmoniously with industry's experience in handling large-scale datasets, cultivating an environment where the potential of AI is harnessed while individuals' data rights are respected.

Beyond the technical considerations, the societal implications of this collaboration cast a wide net. Both academia and industry bear the responsibility to assess the broader impact of their collaborative endeavors. The products of this partnership have the potential to reshape industries, redefine human interaction, and even alter the employment landscape. Ensuring that these shifts are positive and equitable requires foresight and a commitment to social responsibility. As AI becomes more intertwined with daily life, the collaborative partnership must align with ethical guidelines and regulatory standards that safeguard human rights, promote societal well-being, and address the potential for unintended consequences.

The ethical and societal implications inherent in the convergence of minds and machines through AI collaboration between academia and industry are profound. The synergy between academia's intellectual pursuit and industry's practical insights holds the promise of responsible AI development that positively impacts society. By jointly navigating these implications, academia and industry can create a future where the potential of AI is harnessed ethically, innovation is guided by a deep sense of responsibility, and the collaboration becomes a driving force for a more equitable and inclusive technological landscape.



## CASE STUDIES

- a) **Healthcare Revolution: Enhancing Medical Diagnostics:** Collaborative efforts between a leading medical research institution and a healthcare technology company have led to a breakthrough in medical diagnostics. Academia contributed advanced machine learning algorithms for early disease detection, while industry provided access to vast clinical datasets. The resulting AI-powered diagnostic tool offers accurate predictions for diseases like cancer and rare disorders, significantly improving patient outcomes.
- b) **Smart City Planning: Urban Sustainability Through AI:** An urban planning research center partnered with a smart city solutions provider to tackle urban challenges. Academia's expertise in spatial analytics combined with industry's sensor data collection and infrastructure insights resulted in a comprehensive AI model for optimizing traffic flow, waste management, and energy consumption in a metropolitan area, promoting sustainability and livability.
- c) **Financial Fraud Detection: Defending Against Sophisticated Threats:** A collaboration between a university's cybersecurity research lab and a financial institution has yielded a cutting-edge fraud detection system. By combining academia's understanding of anomaly detection algorithms with industry's real-time transaction data, the system identifies and prevents fraudulent activities in complex financial networks, safeguarding both customers and institutions.
- d) **Agricultural Advancements: Precision Farming for Food Security:** A partnership between an agricultural research institute and an agtech company has transformed farming practices. Academia's expertise in remote sensing and crop modeling merged with industry's sensor technologies and data analytics to create an AI-driven precision farming solution. This innovation optimizes irrigation, fertilizer application, and pest control, enhancing crop yield and food security.
- e) **Language Translation Innovation: Breaking Down Communication Barriers:** Collaborative efforts between a linguistics department and a tech giant have led to a breakthrough in machine translation. Academia's research into linguistics theories and natural language processing combined with industry's large-scale computing resources resulted in an AI language translation tool that accurately captures nuances, dialects, and context, facilitating global communication.
- f) **Robotics and Assistive Technologies: Enabling Accessibility:** An academic robotics lab partnered with a robotics company to develop assistive technologies for differently-abled individuals. Academia's knowledge of human-robot interaction and machine learning integrated with industry's engineering capabilities, leading to the creation of AI-powered prosthetics and mobility devices that enhance quality of life.

These hypothetical case studies offer glimpses into the diverse ways in which AI collaboration between academia and industry can lead to transformative advancements across

sectors. They highlight the synergies that emerge when theoretical inquiry converges with practical application, resulting in innovative solutions that shape the future of AI.

## FUTURE TRENDS

As technology continues to evolve, the interplay between theoretical exploration and practical application is poised to redefine the nature of collaboration and its impact on AI advancement.

- a) **Interdisciplinary Fusion:** The lines between disciplines will continue to blur as AI becomes increasingly integrated into various fields. Collaborations will span not only traditional academic and industrial domains but also extend to sectors like arts, humanities, and social sciences. This interdisciplinary fusion will bring diverse perspectives to the table, fueling innovation that transcends conventional boundaries.
- b) **Ethics-Centric Collaboration:** Ethical considerations will gain prominence as AI's societal impact deepens. Collaborations will prioritize responsible AI development, emphasizing transparency, fairness, and accountability. Ethicists, policy experts, and advocacy groups will join forces with technologists, fostering a holistic approach to AI that safeguards human rights and values.
- c) **Global Collaborative Networks:** Collaborations will extend beyond national borders, giving rise to global networks of AI expertise. Virtual collaboration platforms will facilitate real-time knowledge exchange among researchers, practitioners, and policymakers worldwide. International partnerships will pool resources, talent, and insights, accelerating AI research on a global scale.
- d) **Open Source Innovation:** Open source collaboration models will thrive, enabling researchers and developers to collectively contribute to AI solutions. Industry and academia will coalesce around shared repositories, tools, and frameworks, democratizing access to AI technology and fostering rapid innovation through collaborative iteration.
- e) **Human-AI Hybrid Teams:** Collaborations will witness the rise of human-AI hybrid teams, where AI augments human intelligence in decision-making processes. Academics and industry professionals will work hand-in-hand with AI systems, leveraging their complementary strengths to solve complex challenges across domains.
- f) **Decentralized Data Collaboratives:** Collaborative efforts will address data privacy concerns through decentralized data collaboratives. Federated learning and privacy-preserving techniques will enable AI models to be trained on distributed data sources without compromising individual privacy, catalyzing advancements in healthcare, finance, and more.
- g) **Policy and Regulation Co-Creation:** Academia and industry will actively engage in shaping AI policies and regulations. Collaborative efforts will involve stakeholders working collaboratively with policymakers to design frameworks that foster innovation while upholding ethical and legal standards.

- h) **Lifelong Learning Ecosystems:** Collaborations will drive the development of lifelong learning ecosystems. Academia and industry will collaborate on upskilling and reskilling initiatives, harnessing AI for personalized, continuous learning pathways that adapt to individual career trajectories.
- i) **AI for Social Good:** Collaborations will increasingly align with AI for social good initiatives. Partnerships will be dedicated to solving global challenges such as climate change, healthcare disparities, and education accessibility, demonstrating AI's potential to drive positive societal impact.
- j) **Inclusive Collaboration:** Diversity and inclusivity will shape collaborations, ensuring representation of underrepresented groups. This diversity of voices will enrich AI development, preventing bias and ensuring technologies cater to diverse user needs.

In summary, the future trends in the convergence of minds and machines through AI collaboration between academia and industry are poised to amplify the transformative potential of these partnerships. With a strong emphasis on ethics, open innovation, interdisciplinary cooperation, and global reach, these collaborations are set to drive AI advancements that transcend boundaries, benefit humanity, and reshape the trajectory of technological progress.

## CHALLENGES AND CONSIDERATION

The endeavor to converge minds and machines in the future of AI collaboration between academia and industry is not without its challenges and considerations, stemming from the intricate interplay of theoretical exploration and practical application. One prominent challenge lies in reconciling differing objectives and timelines. Academia is driven by the pursuit of knowledge and fundamental research, while industry operates within the constraints of market demands and competitive landscapes. Navigating this divergence requires careful negotiation to align research goals with tangible outcomes without compromising the depth of inquiry.

Intellectual property concerns also loom as a significant consideration. Collaborative projects often involve the exchange of ideas, methodologies, and innovations. Balancing the open exchange of knowledge with the need to protect intellectual property rights can be intricate, necessitating clear agreements on ownership, usage, and commercialization. Additionally, data sharing poses both technical and ethical challenges. Industry can provide valuable real-world data, but concerns about privacy, security, and potential biases demand robust data governance frameworks that satisfy regulatory mandates and ethical norms.

Cultural disparities between academia and industry can also pose hurdles. Academia emphasizes peer-reviewed publications and scholarly recognition, whereas industry focuses on proprietary innovation and market advantage. Bridging this cultural gap necessitates effective communication strategies that translate research findings into practical applications while preserving the academic integrity of the work. Furthermore, maintaining a balance between innovation and ethical responsibility is paramount. As AI technologies rapidly advance, ethical considerations such as bias, accountability, and transparency must be woven into collaborative efforts to ensure responsible and trustworthy AI deployment.

Scaling collaborations is yet another challenge. While individual collaborations can yield transformative outcomes, extending these successes to broader contexts requires robust infrastructures, shared standards, and sustainable funding models. Ensuring that the collaborative momentum doesn't wane over time is crucial for fostering long-term impacts.

Moreover, interdisciplinary collaboration can be intricate due to varying terminologies, methodologies, and perspectives across fields. Effective cross-disciplinary communication and mutual understanding are pivotal in leveraging the full potential of diverse expertise.

Addressing these challenges demands not only technical acumen but also strong communication, shared values, and a commitment to harnessing the synergies of academia and industry for the betterment of AI innovation and its responsible deployment. By acknowledging and proactively addressing these challenges, the collaboration can pave the way for a future where the collective intelligence of minds and machines propels AI to unforeseen heights.

## CONCLUSION

In the evolving landscape of AI collaboration between academia and industry, the convergence of minds and machines emerges as a transformative force that holds the potential to shape the future of technological advancement. This collaborative endeavor, which bridges the realms of theoretical inquiry and practical application, has illuminated a pathway to innovation that transcends the limitations of isolated efforts. As we peer into the horizon of this partnership, the interplay between academia's pursuit of knowledge and industry's drive for tangible solutions reveals a dynamic exchange of insights, expertise, and visions that not only accelerates the progress of AI but also enriches its ethical dimensions.

In the tapestry of this collaboration, we find a fusion of strengths that empowers AI development with unprecedented vigor. Academia, armed with its theoretical depth, curiosity-driven exploration, and commitment to ethical considerations, forms a symbiotic alliance with industry, the crucible of real-world challenges, domain-specific expertise, and the pulse of market dynamics. This partnership, as illustrated by the case studies, leads to innovations that transcend disciplinary boundaries, addressing complex problems across sectors such as healthcare, urban planning, finance, and more.

Yet, this convergence is not without its challenges and ethical considerations. The careful negotiation of objectives, the protection of intellectual property, the mitigation of biases, and the responsible handling of data represent aspects that demand collaborative solutions. As minds and machines meld, transparency, fairness, accountability, and privacy become the keystones upon which the edifice of AI collaboration must be constructed.

Navigating these waters is a testament to the commitment of academia and industry to forge a future that balances innovation with ethics, technical advancement with societal responsibility, and competition with collaboration. As we peer into the future, the trends of interdisciplinary fusion, global networks, open source innovation, and human-AI hybrid teams beckon, signaling a landscape that thrives on diversity, inclusivity, and lifelong learning.

In the grand tapestry of the collaborative mosaic, ethical and societal considerations emerge as guiding stars. The partnership has the power to catalyze responsible AI development that champions transparency, upholds fairness, respects privacy, and aligns with human values. It becomes a compass steering AI towards a future where it is not just a tool of progress, but a beacon of positive transformation that uplifts humanity.

In summation, the convergence of minds and machines through AI collaboration between academia and industry is a beacon of hope in the uncharted seas of technological evolution. This collaboration is not just a glimpse into the future, but a steadfast commitment to shaping a future where the collective intelligence of minds and machines converges for the greater good – where AI empowers, augments, and uplifts humanity while safeguarding the ethical integrity that defines our shared values.

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# CUSTOMER-CENTRIC AI: REVOLUTIONIZING BUSINESS PRACTICES FOR ENHANCED ENGAGEMENT

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## ABSTRACT

In today's rapidly evolving business landscape, customer-centricity has emerged as a pivotal driver of success. As organizations strive to meet and exceed customer expectations, the integration of Artificial Intelligence (AI) technologies has proven to be transformative. This paper explores the profound impact of customer-centric AI solutions on business practices and their ability to revolutionize customer engagement strategies. Customer-centric AI leverages machine learning, natural language processing, and data analytics to gain actionable insights into customer behaviour, preferences, and needs. Through personalized recommendations, predictive analytics, and chatbots, businesses can create a seamless and hyper-personalized customer experience. Moreover, AI-powered sentiment analysis and customer feedback processing enable organizations to better understand customer sentiment and proactively address concerns, fostering loyalty and trust.

**Keywords:** Customer-centricity, Artificial Intelligence (AI), Customer expectations, Business practices, Customer engagement strategies.

## INTRODUCTION

In today's rapidly evolving business landscape, organizations face unprecedented challenges and opportunities. The advent of the digital age has transformed the way businesses operate and interact with their customers. Customers, armed with more information and higher expectations than ever before, are at the forefront of these changes (Soni et al., 2018). They demand not just products or services but exceptional experiences tailored to their needs and

preferences. Consequently, businesses are compelled to shift their focus towards customer-centricity to thrive in this dynamic environment. Traditional business models that primarily relied on product-centric strategies are increasingly becoming obsolete. Customers now hold the power to influence market trends and disrupt industries. The emergence of e-commerce, social media, and digital platforms has given rise to a highly competitive marketplace where customer loyalty is elusive, and the cost of losing a customer can be substantial (Ransbotham et al., 2018; Xiong et al., 2020).

### **1.1 Purpose of the Paper**

The purpose of this paper is to explore and elucidate the transformative role of Artificial Intelligence (AI) technologies in fostering customer-centricity within organizations. It seeks to investigate how AI-driven solutions can enable businesses to not only meet but exceed customer expectations. By delving into the integration of AI, this paper aims to provide a comprehensive understanding of how these technologies can revolutionize business practices and redefine customer engagement strategies.

### **1.2 Scope and Objectives**

The scope of this paper encompasses the intersection of AI and customer-centricity in contemporary business environments. It will delve into the various facets of this integration, with a focus on the utilization of machine learning, natural language processing, and data analytics to gain actionable insights into customer behaviour, preferences, and needs. Through an exploration of personalized recommendations, predictive analytics, and chatbots, this paper will demonstrate how businesses can create a seamless and hyper-personalized customer experience.

### **1.3 Customer-Centricity in the Digital Era**

In the digital era, customer-centricity has emerged as a defining principle for businesses seeking not only survival but sustained success. This shift in focus has been catalysed by the rapid evolution of customer expectations.

## **2. Evolution of Customer Expectations**

The digital age has fundamentally altered the way customers perceive and interact with businesses. With the internet and smartphones, customers are armed with unprecedented access to information, products, and services. They expect seamless and personalized experiences, quick response times, and the ability to engage with brands through multiple channels. The rise of e-commerce giants like Amazon and the popularity of social media platforms have set high



benchmarks for customer service and convenience. In this landscape, customer-centricity is not merely a buzzword but a strategic imperative. It involves aligning every aspect of a business with the needs and preferences of the customer. Organizations that prioritize customer-centricity gain a competitive edge by fostering customer loyalty, increasing customer lifetime value, and driving positive word-of-mouth marketing (Palanivelu and Vasanthi, 2020). Moreover, customer-centric businesses are better equipped to adapt to changing market conditions and emerging technologies. However, achieving customer-centricity is not without challenges. It requires a cultural shift within organizations, where employees at all levels prioritize the customer's perspective. Siloed data and legacy systems can hinder a comprehensive view of the customer, making it difficult to deliver personalized experiences. Additionally, maintaining consistency across various touchpoints and sustaining the effort over time can be challenging.

### **3. The Role of Artificial Intelligence in Business**

In the 21st century, the integration of Artificial Intelligence (AI) into various facets of business operations has ushered in a new era of transformation. AI, often dubbed the "fourth industrial revolution," holds immense promise for enhancing efficiency, driving innovation, and creating value across industries. This essay delves into the multifaceted role of AI in business, highlighting its overview, impact on various industries, and particular relevance in the realm of customer engagement (Harmon and King, 1985; Vardarlier and Zafer, 2020). Artificial Intelligence, a branch of computer science, aims to create machines capable of performing tasks that typically require human intelligence. This includes tasks such as problem-solving, learning, reasoning, and perception. AI systems can analyse vast datasets, identify patterns, make predictions, and even interact with humans through natural language interfaces (Akerkar, 2019). Machine learning, a subset of AI, empowers systems to improve performance over time by learning from data. AI's influence extends far and wide, transcending industry boundaries (Loureiro et al., 2021). In healthcare, AI assists in disease diagnosis, drug discovery, and personalized treatment plans. Manufacturing benefits from AI-driven automation and predictive maintenance, optimizing production processes (Feuerriegel et al., 2022). Financial services rely on AI for fraud detection, algorithmic trading, and customer service chatbots. In transportation, self-driving cars leverage AI for navigation and safety (Klumpp, 2018). Even creative industries like entertainment and marketing utilize AI to analyse consumer preferences and tailor content. Among its myriad applications, AI's significance in customer engagement cannot be overstated. In today's competitive business landscape, customers expect personalized, timely, and relevant interactions. AI technologies, such as machine learning and

natural language processing, enable businesses to analyse customer data, understand behaviour, and anticipate needs. This insight drives hyper-personalized marketing campaigns, product recommendations, and customer service interactions (Dirican, 2015; Kulkov, 2021). Chatbots and virtual assistants powered by AI provide round-the-clock customer support, enhancing convenience and responsiveness. Sentiment analysis algorithms gauge customer sentiment from feedback and social media, enabling proactive issue resolution and sentiment-driven product development. These AI-driven initiatives foster customer loyalty, trust, and long-term relationships, ultimately contributing to business success (Enholm et al., 2022).

#### **4. Predictive Analytics for Customer Insights**

In today's dynamic business landscape, understanding and engaging with customers on a deeper level has become a key competitive advantage. The advent of Artificial Intelligence (AI) has transformed the way businesses approach customer-centricity, especially through predictive analytics. This essay explores how predictive analytics, driven by AI, is revolutionizing customer insights and enhancing personalization, leading to improved customer engagement. AI has ushered in a new era of data analysis. It can process vast volumes of customer data, encompassing browsing history, purchase behaviour, and demographic information. By doing so, AI uncovers patterns and trends that would be nearly impossible to discern manually. This capability provides businesses with invaluable insights into what makes their customers tick. One of the core strengths of AI is its ability to segment customers into smaller, more homogeneous groups based on their preferences and behaviours. This enables businesses to create highly targeted campaigns and recommendations. Rather than taking a one-size-fits-all approach, companies can tailor their strategies to specific customer segments, thereby increasing the relevance of their marketing efforts. AI excels at predictive analytics, which involves forecasting customer behaviour. It can predict the likelihood of a customer making a purchase or churning from a service. Armed with these predictions, businesses can proactively address customer needs and concerns, ensuring a higher level of customer satisfaction. This proactive approach enhances the overall customer experience. AI-powered recommendation engines are a hallmark of personalization. These engines analyse a customer's past interactions and suggest products or content that align with their interests. Think of platforms like Netflix or Amazon, which excel at recommending movies or products based on your history. These tailored recommendations capture and retain user attention, leading to higher engagement rates. In the realm of customer service, AI-driven chatbots and virtual assistants shine (Kerzel, 2021). These tools provide personalized customer service by understanding and responding to customer inquiries in real-time. They can handle routine tasks,

answer questions, and even personalize responses based on user interactions. This real-time personalization not only resolves customer issues efficiently but also enhances the perception of the brand. The benefits of AI-powered personalization are multifold. Firstly, it results in an enhanced customer experience. Personalization creates a sense of being understood and valued, which translates into higher customer satisfaction. Customers appreciate businesses that cater to their preferences and needs. Secondly, AI-driven personalization leads to increased engagement. Tailored content and recommendations capture and retain user attention, ultimately boosting engagement rates. This heightened engagement can translate into increased brand loyalty. Thirdly, businesses can realize improved conversion rates through personalization. By presenting relevant products or services to customers, businesses increase the likelihood of conversion and sales. Customers are more likely to make a purchase when they see offerings that align with their interests and needs. Moreover, personalization fosters higher customer loyalty. When customers feel a stronger connection to brands that cater to their preferences, they are more likely to remain loyal over the long term. This loyalty can translate into repeat business and positive word-of-mouth referrals. Lastly, AI streamlines personalization processes, making them more efficient. Automation reduces the time and effort required for manual segmentation and analysis, allowing businesses to allocate resources more effectively. Spotify, with its AI-powered algorithms, creates personalized playlists and recommends songs based on a user's listening history, ensuring a unique music experience for each user. Netflix analyses your viewing history to suggest movies and TV shows that align with your tastes, keeping you engaged and subscribed. Amazon's product recommendations are a prime example of AI-powered personalization. They analyse your purchase history and browsing behaviour to suggest products you might like. Sephora utilizes AI chatbots to provide personalized skincare and makeup recommendations to customers, helping them find the right products for their skin type and preferences (Rose, 2020).

## **5. Predictive Analytics for Customer Insights**

In the ever-evolving landscape of business, customer-centricity has emerged as a defining principle. Companies that prioritize understanding and meeting customer needs often outperform their competitors. However, achieving true customer-centricity is no longer possible without harnessing the power of predictive analytics driven by Artificial Intelligence (AI). In this essay, we will explore the pivotal role of predictive analytics in transforming how businesses engage with customers and why it has become an indispensable tool in today's corporate world (Xu and Babaian, 2021; Whig, 2021). Historically, businesses operated

without the deep insights into customer behaviour that we take for granted today. In the past, companies often relied on intuition, limited data, and manual processes to make decisions about their products, services, and marketing strategies. This approach, though well-intentioned, was often hit-or-miss, resulting in inefficiencies and missed opportunities. However, the advent of predictive analytics, powered by AI, has revolutionized this landscape. Predictive analytics leverages advanced algorithms and machine learning to analyse vast datasets, uncover hidden patterns, and make accurate predictions about future customer behaviour (Castelluccio, 2017). These predictions empower businesses to proactively address customer needs, personalize experiences, and make data-driven decisions that drive growth. Let us delve into how predictive analytics is transforming various aspects of customer-centric business practices (Bharadiya, 2022).

### **5.1 Understanding Customer Behaviour**

One of the primary benefits of predictive analytics is its ability to understand customer behaviour at a granular level. By analysing historical data, AI models can identify patterns in customer interactions, such as online browsing behaviour, purchase history, and feedback. This level of insight enables businesses to anticipate what customers want before they even express it. For example, an e-commerce platform can use predictive analytics to recommend products tailored to a customer's preferences and past purchases. This not only enhances the shopping experience but also increases the likelihood of making a sale. Similarly, predictive analytics can help identify customers at risk of churning, allowing businesses to intervene with retention strategies before it's too late.

### **5.2 Personalization at Scale**

Personalization is a cornerstone of effective customer engagement. Predictive analytics enables businesses to personalize interactions with customers on a large scale. Whether it's tailoring marketing messages, product recommendations, or user interfaces, AI-driven personalization ensures that each customer feels valued and understood. In the realm of content recommendation, streaming services like Netflix and Spotify are prime examples. They analyse user behaviour and preferences to suggest movies, shows, or songs that align with individual tastes. This not only keeps customers engaged but also leads to longer subscription durations and increased customer loyalty.

### **5.3 Marketing Optimization**

Marketing is a critical element of customer engagement, and predictive analytics plays a pivotal role in optimizing marketing efforts. AI can segment customers based on their behaviour,

demographics, and preferences, allowing businesses to target specific groups with highly relevant campaigns (Han et al., 2021).

For instance, a retail brand can use predictive analytics to identify customers who are likely to respond positively to a seasonal sale, thus maximizing the impact of their marketing budget. Additionally, AI can analyse campaign performance in real-time, enabling rapid adjustments to strategies for improved outcomes. While predictive analytics holds immense promise, it also raises challenges and ethical considerations. One of the foremost concerns is data privacy. Collecting and analysing vast amounts of customer data requires stringent measures to safeguard sensitive information and comply with data protection regulations. Moreover, there is a risk of over-reliance on AI predictions, leading to a detachment from human intuition and judgment. It is essential for businesses to strike a balance between data-driven decision-making and human expertise. Looking ahead, the future of customer-centric AI is promising. Emerging technologies such as augmented reality (AR), virtual reality (VR), and natural language processing (NLP) are poised to take customer engagement to new heights. These technologies will enable more immersive and interactive customer experiences, further enhancing the bond between businesses and their customers.

## **6.Automation and Customer Support: Transforming the Customer Experience**

In the age of rapid technological advancement, customer support has seen a significant transformation. Automation, driven by Artificial Intelligence (AI) and other innovative technologies, has emerged as a powerful force in reshaping how businesses engage with their customers. This essay delves into the role of automation in customer support, exploring its benefits, challenges, and the evolving landscape of customer service. Customer support has come a long way from the days of phone hotlines and email inquiries. Traditional support models were often characterized by long waiting times, repetitive queries, and the potential for human errors. These limitations hindered businesses from providing seamless and efficient customer service. The advent of automation, fueled by AI and machine learning, marked a turning point in the customer support journey. Automation introduced the concept of chatbots, virtual assistants, and self-service portals, revolutionizing how businesses interact with their customers.

### **6.1 Chatbots and Virtual Assistants**

One of the most noticeable manifestations of automation in customer support is the rise of chatbots and virtual assistants. These AI-powered tools can handle a wide range of customer inquiries in real-time, providing quick and accurate responses. Chatbots are available 24/7,

offering customers the convenience of immediate assistance, regardless of the time of day or night. They can handle routine tasks such as answering frequently asked questions, troubleshooting common issues, and even guiding users through processes step by step.

## **6.2 Self-Service Portals**

Automation has empowered businesses to create self-service portals and knowledge bases that customers can access to find answers to their questions. These portals are filled with informative articles, tutorials, and FAQs, allowing customers to resolve their issues independently. This approach not only reduces the workload on customer support agents but also empowers customers to take control of their own support journey.

## **6.3 Predictive Analytics**

Automation also incorporates predictive analytics, which can analyse customer data to anticipate needs and issues. For example, predictive analytics can identify customers who may be at risk of churning, allowing businesses to proactively reach out with retention strategies. It can also predict trends in customer inquiries, enabling companies to allocate resources more effectively.

## **6.4 Personalization**

AI-driven automation can personalize customer interactions by analysing customer data and tailoring responses accordingly. For instance, a chatbot can greet a customer by name and recommend products or solutions based on their past interactions or purchase history. This level of personalization creates a more engaging and satisfying customer experience.

## **7. Harnessing Data-Driven Insights**

In today's digital age, data has become the lifeblood of organizations across industries. It flows incessantly from countless sources, offering a treasure trove of insights waiting to be unlocked. The ability to harness these data-driven insights is no longer a luxury but a necessity for organizations striving to remain competitive and relevant. This essay delves into the profound impact of data-driven insights on decision-making, with a focus on the power of data in customer engagement, the pivotal role of AI in extracting these insights, and the transformative potential they hold for making informed decisions. Data-driven insights have revolutionized the way businesses engage with their customers. In the past, customer interactions were often based on intuition and broad demographics. Today, data allows for hyper-personalization, ensuring that each customer interaction is tailored to their unique preferences and needs. Customer engagement now relies on a deep understanding of individual behaviours, preferences, and historical interactions. Organizations leverage data to create detailed customer profiles, tracking every touchpoint across online and offline channels. This wealth of data

enables businesses to anticipate customer needs, provide timely solutions, and offer personalized experiences that resonate. For instance, e-commerce platforms use data to recommend products based on past purchases and browsing history, while streaming services curate content playlists tailored to individual viewing habits. In the realm of customer support, data-driven insights empower chatbots to provide relevant answers to inquiries, resolving issues more efficiently than ever before. As businesses continue to accumulate vast amounts of customer data, the potential for enhancing customer engagement through data-driven insights only grows. The ability to deliver relevant content, personalized recommendations, and timely support fosters stronger customer relationships and enhances overall satisfaction.

### **7.1 AI's Role in Extracting Insights**

The sheer volume and complexity of data generated daily have made it humanly impossible to extract meaningful insights manually. This is where Artificial Intelligence (AI) steps in as a critical enabler of data-driven decision-making. AI algorithms, particularly machine learning and deep learning models, can analyse massive datasets with speed and accuracy beyond human capabilities. They can identify patterns, trends, and correlations that might go unnoticed by human analysts. AI-driven analytics can transform raw data into actionable insights, revealing hidden opportunities and potential threats. In customer engagement, AI plays a central role in understanding and predicting customer behaviour. It can segment customers into homogeneous groups, allowing for highly targeted marketing campaigns. AI-driven recommendation engines, like those used by Netflix and Amazon, analyse user behaviour to suggest products or content, driving higher engagement and sales. Furthermore, AI is pivotal in sentiment analysis, extracting emotional nuances from text and speech data. This capability is invaluable for gauging customer satisfaction and identifying potential issues that require immediate attention. AI-powered chatbots and virtual assistants have also become adept at understanding and responding to customer inquiries, providing personalized support in real-time (Soni et al., 2019).

### **7.2 Making Informed Decisions with Data-Driven Insights**

The true power of data-driven insights lies in their ability to inform decision-making across all facets of an organization. From strategic planning to day-to-day operations, data empowers leaders to make informed choices grounded in evidence rather than intuition. Strategic decisions benefit from data-driven insights by aligning with market trends and customer preferences. Organizations can identify emerging opportunities and threats, allowing for agile

adjustments to business strategies (Finlay, 2021). Data helps in setting measurable objectives and key performance indicators (KPIs) to track progress and evaluate success. Operational decisions, too, are enhanced through data. Supply chain optimization, for instance, relies on data-driven insights to streamline processes, reduce costs, and minimize waste. Human resources departments use data to make informed decisions about talent acquisition, employee retention, and workforce management. Financial decisions, including budget allocation and investment choices, are also guided by data-driven insights (Wang et al., 2022). Organizations use financial data analysis to determine the return on investment (ROI) for various initiatives and allocate resources accordingly. Moreover, data-driven insights are instrumental in risk management. By analysing historical data and predictive models, organizations can anticipate and mitigate potential risks, whether they are related to cybersecurity, market volatility, or compliance issues.

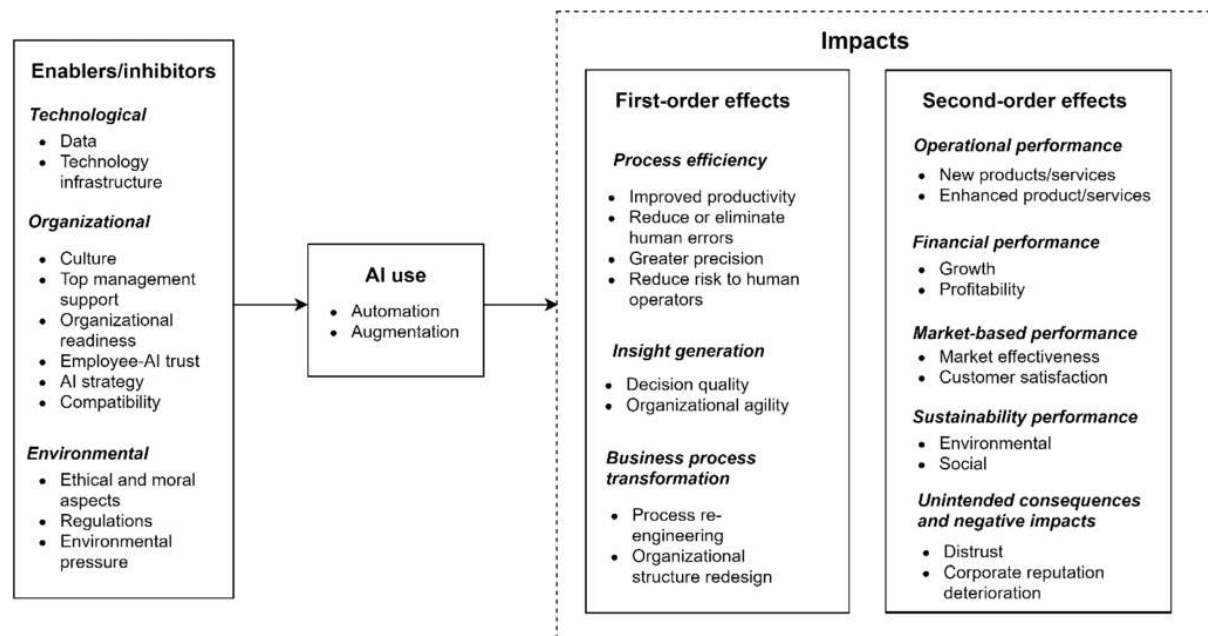


Figure 1. Organizational framework with AI business value (extracted from Enholm et al., 2021)

## 8. Sentiment Analysis and Customer Feedback: Fostering Customer-Centric Excellence

In the contemporary business landscape, understanding customer sentiment has emerged as a pivotal factor in achieving customer-centric excellence. The ability to gauge and interpret customer sentiment is not only important; it is transformative (Nguyen et al., 2022). This essay explores the significance of understanding customer sentiment, the role of AI-enabled sentiment analysis tools, and how organizations can improve customer relations through feedback analysis. Understanding customer sentiment is akin to having a direct window into the minds and hearts of customers. It transcends basic customer feedback and delves deep into the emotions, opinions, and attitudes that underlie customer interactions. Customer-centric



organizations prioritize customer experiences. To truly align products, services, and support with customer needs, businesses must comprehend not just what customers say but how they feel. Positive sentiment signals satisfaction, while negative sentiment points to areas of concern. In a fiercely competitive market, the ability to respond swiftly to customer sentiment can be a game-changer. It enables organizations to adapt to changing customer preferences, resolve issues promptly, and differentiate themselves from competitors. Customer sentiment is an invaluable source of feedback for product and service improvement. It provides insights into what works and what does not, driving innovation and ensuring offerings are aligned with customer expectations. Negative sentiment can be a precursor to crises. Detecting and addressing it early can prevent issues from escalating into full-blown crises that damage reputation and customer trust.

### **8.1 AI-Enabled Sentiment Analysis Tools**

The volume of customer data available today is staggering. Manual analysis of this data is impractical and time-consuming. This is where AI-enabled sentiment analysis tools come into play, revolutionizing how organizations extract meaningful insights from customer feedback.

### **8.2 Natural Language Processing (NLP)**

NLP, a subset of AI, enables machines to understand and interpret human language. Sentiment analysis tools use NLP algorithms to process text data, identifying sentiment-laden words, phrases, and contextual cues.

### **8.3 Machine Learning Models**

Machine learning models are employed to train sentiment analysis tools. These models learn from vast datasets to classify text into categories such as positive, negative, or neutral sentiment. Over time, they become increasingly accurate in discerning nuanced sentiment.

### **8.4 Social Media Analysis**

AI-driven sentiment analysis tools extend their reach to social media platforms, where customer sentiments are freely expressed. They monitor mentions, comments, and hashtags to gauge public opinion, helping organizations stay attuned to emerging trends and concerns.

### **8.5 Real-Time Analysis**

AI-driven sentiment analysis is not confined to retrospective analysis. It operates in real-time, allowing organizations to respond to customer sentiment as it unfolds. This capability is particularly crucial for crisis management and immediate issue resolution.

### **8.6 Proactive Issue Resolution**

Sentiment analysis tools can detect early signs of dissatisfaction. By proactively reaching out to customers who express negative sentiment, organizations can address issues before they escalate, showcasing their commitment to customer satisfaction.

### **8.7 Personalized Engagement**

Understanding customer sentiment enables organizations to personalize interactions. They can tailor marketing messages, offers, and support to align with each customer's emotional state and preferences, fostering a stronger connection.

### **8.8 Feedback Loop Closure**

Sentiment analysis closes the feedback loop. By acknowledging and addressing customer concerns, organizations demonstrate that they listen and care. This fosters trust and customer loyalty.

### **8.9 Data-Driven Decision-Making**

Sentiment analysis complements data-driven decision-making. It informs strategies, product development, and service enhancements, ensuring that every organizational decision is rooted in customer insights.

## **9. Cost Reduction and Efficiency Gains through AI**

In today's rapidly evolving business landscape, the quest for cost reduction and operational efficiency is an ongoing imperative. Organizations are under constant pressure to do more with less, optimize their resources, and remain competitive. One transformative solution at their disposal is Artificial Intelligence (AI). This essay explores how AI optimizes business operations, cost reduction strategies it facilitates, and the importance of ROI analysis and cost-benefit assessment in realizing sustainable success. AI empowers organizations to implement a range of cost reduction strategies:

### **9.1 Labor Cost Reduction through Automation**

One of the primary ways AI can drive cost reduction is through automation. By automating repetitive and rule-based tasks, organizations can significantly reduce labour costs. This not only results in lower operational expenses but also frees up employees to focus on more strategic, value-added activities that can contribute to the organization's growth and innovation. AI-driven automation can encompass a wide range of functions, from data entry and processing to customer support and even decision-making processes, allowing businesses to optimize their workforce allocation and reduce the overall labour burden.

### **9.2 Inventory Management Optimization**

AI plays a pivotal role in transforming inventory management practices. AI-driven demand forecasting and inventory optimization strategies enable organizations to maintain optimal

stock levels. This minimizes storage costs and mitigates the risks associated with overstocking or understocking products. By accurately predicting customer demand and supply chain fluctuations, businesses can streamline their inventory management, reducing carrying costs and improving capital utilization.

### **9.3 Maintenance and Downtime Reduction**

For industries reliant on machinery and equipment, AI-powered predictive maintenance is a game-changer. Predictive maintenance leverages machine learning algorithms to monitor the health of equipment and predict when maintenance is required. This proactive approach minimizes downtime due to unexpected breakdowns and significantly reduces maintenance costs. By performing maintenance only, when necessary, organizations optimize resource allocation and extend the lifespan of their assets.

### **9.4 Energy Efficiency and Sustainability**

AI-driven systems can contribute to energy efficiency, a critical concern for organizations striving to reduce operating expenses and align with sustainability goals. AI algorithms can optimize energy consumption by analysing real-time data and adjusting systems for maximum efficiency. This results in reduced utility bills and a smaller carbon footprint. Moreover, meeting energy efficiency targets can help organizations comply with regulatory requirements and demonstrate a commitment to environmental responsibility.

### **9.5 Customer Acquisition and Retention**

AI-powered customer engagement strategies not only improve customer satisfaction but also contribute to cost reduction. By offering personalized recommendations, delivering timely responses, and addressing customer concerns proactively, AI-enhanced customer engagement reduces customer churn. This, in turn, minimizes the need for costly customer acquisition efforts. Retaining existing customers is often more cost-effective than acquiring new ones, making AI-driven customer retention strategies a valuable asset in the quest for cost reduction.

## **10. Future Trends in Customer-Centric AI: Navigating the Path Ahead**

In the ever-evolving landscape of customer engagement, the integration of Artificial Intelligence (AI) has been a transformative force. Looking ahead, we anticipate a dynamic future where AI continues to reshape how businesses interact with their customers. This essay explores emerging technologies in customer engagement, predictions for AI's evolution, and the imperative of preparing for the future. The future of customer-centric AI is closely tied to the development and deployment of emerging technologies. Several trends stand out:

## **10.1 Conversational AI**

Conversational AI, which includes advanced chatbots and virtual assistants, is set to become even more human-like in its interactions. Natural Language Processing (NLP) advancements will enable AI systems to understand context, nuances, and emotions in customer conversations, making interactions feel more personalized and genuine.

## **10.2 Augmented Reality (AR) and Virtual Reality (VR)**

AR and VR technologies will be leveraged to create immersive customer experiences. Customers can virtually explore products, try them before purchase, or engage with brands in virtual environments. For example, furniture retailers may use AR to visualize how a sofa fits into a customer's living room.

## **10.3 Predictive Analytics and Machine Learning**

The capabilities of predictive analytics and machine learning will expand. AI will not only predict customer behaviour but also proactively identify potential issues and suggest solutions before customers even realize they have a problem.

## **10.4 Hyper-Personalization AI**

It will continue to drive hyper-personalization. Businesses will use AI algorithms to deliver tailored content, product recommendations, and marketing messages. The goal is to make every customer feel like they are the centre of attention.

## **10.5 Voice Commerce**

Voice-activated AI systems, such as Amazon's Alexa and Apple's Siri, will enable voice commerce to gain traction. Customers will shop, make reservations, and access services using voice commands, prompting businesses to optimize for voice search and transactions.

## **11. Predictions for AI's Evolution**

Looking forward, several predictions can be made about AI's evolution in the context of customer engagement:

### **11.1 AI-Powered Sales and Service Assistants**

AI-driven assistants will become integral to sales and customer service teams. They will assist salespeople with product recommendations and guide customer service agents by providing real-time information and solutions during interactions.

### **11.2 Autonomous Customer Service**

AI will continue to automate customer service, enabling chatbots and virtual assistants to handle increasingly complex inquiries and tasks. Human intervention will be reserved for exceptional situations.

### **11.3 Enhanced Sentiment Analysis**

AI's ability to understand and respond to customer emotions will advance further. Organizations will use sentiment analysis to gauge customer satisfaction, predict churn, and adjust strategies accordingly.

### **11.4 AI-Enhanced Content Creation**

AI will play a more significant role in content creation. It will help generate personalized marketing content, emails, and even news articles, ensuring that every piece of content resonates with the intended audience.

### **11.5 Ethical AI Governance**

As AI's influence grows, there will be a greater emphasis on ethical AI governance. Organizations will adopt frameworks and policies to ensure responsible AI usage, safeguarding customer privacy and promoting fairness.

## **12.Suggestion**

This research paper has comprehensively explored the transformative impact of customer-centric AI on business practices, focusing on predictive analytics, automation in customer support, data-driven insights, and sentiment analysis. The integration of AI technologies is reshaping the business landscape, making it imperative for organizations to prioritize customer-centricity. To enhance the depth and breadth of this research, future studies could consider the following avenues:

### **12.1. Ethical Considerations**

Investigate the ethical implications of AI-driven customer-centricity, including issues related to data privacy, algorithmic bias, and the responsible use of AI. Understanding and addressing these ethical concerns is essential for building and maintaining customer trust.

### **12.2 Industry-Specific Applications**

Explore how customer-centric AI is being implemented across various industries, including healthcare, finance, retail, and manufacturing. Each sector may have unique challenges and opportunities in adopting AI for customer engagement.

### **12.3 Human-AI Collaboration**

Investigate the role of human-AI collaboration in customer-centric practices. How can businesses strike a balance between automation and the human touch to create seamless and empathetic customer experiences?

### **12.4 Long-Term Impact**

Assess the long-term effects of customer-centric AI on customer loyalty, brand reputation, and competitive advantage. Are businesses that embrace these technologies more resilient in the face of market fluctuations?

### 13. Conclusion

In conclusion, the integration of customer-centric AI technologies is reshaping the way businesses engage with customers, driving personalization, efficiency, and enhanced customer experiences. This research has demonstrated that AI-powered predictive analytics, automation in customer support, data-driven insights, and sentiment analysis are pivotal tools for fostering customer-centric excellence. The digital age has elevated customer expectations, making customer-centricity a strategic imperative for organizations across industries. By harnessing AI-driven insights, businesses can not only meet but exceed customer expectations. They can anticipate customer needs, provide hyper-personalized interactions, optimize marketing strategies, and improve decision-making processes. However, it is crucial for businesses to tread carefully, considering the ethical implications of AI implementation, ensuring data privacy, and striking the right balance between automation and the human touch. As customer-centric AI continues to evolve, its impact will be profound and far-reaching. Organizations that embrace these technologies and prioritize customer-centricity will not only survive but thrive in the competitive landscape. They will build stronger customer relationships, foster trust, and drive long-term success. In the dynamic business environment of the digital era, customer-centric AI is indeed revolutionizing the way organizations engage with their most asset to their customers.

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# EXPLORING CHAT GPT TO IMPROVING CRITICAL THINKING SKILLS: NEW TREND IN HIGHER EDUCATION

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## ABSTRACT

**Introduction/Main Objectives:** This study aims to examine (1) the effect of the application of ChatGPT on critical thinking skills (2) the influence of gender in moderating the application of ChatGPT on critical thinking skills.

**Background Problems:** The development of digital technology, especially Artificial Intelligence at this time has grown very rapidly and penetrated into learning technology. One of them is the development of Chat GPT which began to be widely used by college students and affected the critical thinking skills of college students **Novelty:** Research on the influence of ChatGPT in Indonesia is still limited so this research adds novelty to ChatGPT research in the world of education .

**Research Methods:** This research uses quantitative research approach method. The population of this study was students in Yogyakarta. While the sampling method uses purposive sampling. The data collection technique is a questionnaire. Data instruments use validity sheets, observation sheets, and documentation. The analysis techniques used are Normality Test, Multikolinearity Test, Heteroscedasidity Test, Linearity Test, and Moderated Regression Analysis (MRA) test

**Finding/Results:** The results showed that the use of ChatGPT had a significant positive effect on students' critical thinking. While the moderation variable, namely gender, shows the results that gender variables cannot be used to moderate the influence on this study **Conclusion:** The use of ChatGPT has several challenges such as academic ethics issues so to increase the benefits of ChatGPT in student critical thinking, academics need to create new learning models to overcome these challenges.

**Keywords:** ChatGPT, Critical Thinking, AI, Education Technology, Education

## INTRODUCTION

Technology is important for its existence in today's life. Almost in all sectors of life using technology. Because the role of technology is very helpful in carrying out activities, including in the field of education. The presence of technology in the world of education provides easy access to learning (Schlosser et al, 2022), innovative learning (Isma et al., 2022), and obtaining information quickly (Mutia & Cahyani., 2021).

One of the emerging technologies in the field of education is the use of GPT (*Generative Pre-trained Transformer*) chat media. According to Pavlik (2023), Chat GPT is a variant of the GPT-3 artificial intelligence language model developed by *Open Artificial intelligence*. *Artificial intelligence* (AI) is a current technology that can imitate human activities such as how to learn, reason, and make decisions (Devianto & Dwiasnasti, 2020). Chat GPT (*Generative Pre-trained*) functions to interact in text-based conversations (Santhosh, R.;



Abinaya, M.; Anusuya, V.; Gowthami, D., 2023). This ChatGPT app was introduced by *OpenAI* in November 2022. Where this model is a solution with a combination of Reinforcement Learning Algorithms and human input of more than 150 billion parameters (Dowling & Lucey, 2023).

This GPT chat is specifically designed to generate human-like text in a conversational style, and began to be widely introduced in 2021. With this ability, Chat GPT can be applied in learning. The use of GPT Chat technology in learning has been widely researched and proven to provide services to academic students.

Zhai (2023) also suggests that Chat GPT can reply to questions on various exams, answer homework assignments, draft academic essays, and make contracts quickly. Meanwhile, according to Arwanto (2023), the level of speed provided by Chat GPT in providing answers is very fast and accurate based on the search words used.

In learning like this, Chat GPT is used as a virtual system that is useful in helping the student learning process in getting answers to questions about the subject matter (Iriyani, 2023). In addition, ChatGPT's capabilities are also able to facilitate adaptive learning that is tailored to the individual needs of learners through personalized feedback. Adaptive learning facilitates to acquire real-world experience based on the learner's experience of existing knowledge in an active learning environment, as supported by constructivist theory. As an extension of adaptive learning (Rasul, Nair, Kalendra, Robin, Santini, Ladeira, Sun, Day, rather, Heathcote, 2023)

However, the presence of Chat GPT provides a side of concern about the development of students' critical thinking skills. This is evidenced by the results of research by *the Trends in International Mathematics and Science Study* (TIMSS) which measures students' critical thinking skills through questions with high cognitive levels, illustrating that students' critical thinking skills in Indonesia are still low, in 2015 ranked 44 out of 49 countries (Rahayu & Dewi, 2022).

Even though the ability to think critically has an important role in global life in the 21st century (Beni et al., 2019). Critical thinking skills can help students' reasoning to solve problems (Jatmiko et al., 2018). At university, students must pass lectures with good grades and be able to solve all academic and personal problems (Andheska et al., 2020). In higher education, having critical thinking skills is very helpful for students and lecturers to process learning well (Demiral & Çepni, 2018; Kaya et al., 2018).

One of the factors that affect the ability to think critically indirectly is gender differences. Men and women, in addition to being physically different, are also different emotionally and intelligently. Research on thinking skills examined by gender has been conducted by several researchers, including research on Critical Thinking Skills of Students Based on Gender and knowledge groups of Universitas Brawijaya students (Marni, Aliman, Suyono, Roekhan, & Harsiati, 2020). The findings of the study concluded that there was no significant influence between critical thinking skills and gender. The results of another study put forward by Nasution, Al Muhdhar, Sari, & Balqis (2023), show that gender affects the critical thinking ability of Biology students of IAIN Jember and Tebing Tinggi High School on creative thinking skills and learning achievement.

Seeing the ability of GPT Chat which is proven to provide many benefits for students in the learning process, precisely (Rosenzweig-Ziff, 2023) revealed that the use of GPT chat does not support in building students' problem-solving and critical thinking skills as capital towards academic success. Therefore, this research has a high urgency considering the increasingly rapid development of technology. The ease of student access to information provided by Chat GPT is easily taken for granted without the process of understanding the content of information or what is often known as critical thinking skills.

Based on the phenomena described above, researchers are interested in further researching the Effect of ChatGPT Application on Critical Thinking Skills with Gender as a

Moderation Variable in Higher Education Students in Yogyakarta. The purpose of this study is to determine (1) the influence between the application of ChatGPT on critical thinking skills (2) the influence of gender in moderating the application of ChatGPT on critical thinking skills. The results of this study are expected to provide benefits for schools and teachers, especially to be able to recognize the level of students' critical thinking skills according to gender. It is hoped that these results can be used as consideration in choosing alternative educational technology in the learning process.

### **METHOD, DATA, AND ANALYSIS**

This research uses quantitative research approach method. Quantitative methods are methods that use numbers as a calculation benchmark to test a predetermined hypothesis (Sugiyono, 2019). The population of this study is university students in Yogyakarta. While the sampling method uses *purposive sampling* with the following criteria:

1. Used ChatGPT
2. Yogyakarta University Students

The main data in the preparation of this research was obtained through field research, namely data obtained directly from the first source (primary data). Researchers obtained data by sending questionnaire sheets in the form of *google forms* directly or through intermediaries to university students in Yogyakarta who had used Chat GPT. The source of data in this study is each score from the research variable indicator (linkert scale) obtained from filling out questionnaires that have been distributed to respondents.

### **GPT Chat Implementation**

In this process, a questionnaire design was carried out taken from the study (Rahayu, Sri, Wiranti, Yuyun, & Anggi, 2022) which refers to the TAM model and readjustments to the needs of the researchers. The indicators used in measuring the application of ChatGPT in learning are as follows:

No	Statement
<b><i>Perceived ease to use</i></b>	
1.	The features in GPT Chat are easy to understand
2.	Features in GPT Chat are easy to learn
3.	Features in GPT Chat are easy to use
4.	Features in Chat GPT can be used by all people
<b><i>Preceived Usefulness</i></b>	
1.	The use of Chat GPT can increase the effectiveness and efficiency of time both in learning and completing academic assignments
2.	The use of GPT Chat can increase my productivity both in learning and completing academic assignments
3.	The use of GPT Chat can increase my creativity both in learning and completing academic assignments
4.	The use of GPT Chat can improve the quality of my answers both in learning and completing academic assignments
5.	The information provided by GPT Chat is always up to date
6.	GPT Chat provides responses that are relevant to the user's wishes
<b><i>Attitude Towards Using</i></b>	
1.	I find it fun to use GPT Chat both in learning and completing academic assignments
2.	I feel satisfied when using GPT Chat both in learning and completing academic assignments

## Critical Thinking Skills

In this process statement indicators are designed and modified from the critical thinking ability indicators of Ennis (2009), Kuswana and Johnson (Normadhita, 2018) and readjusted to the needs of researchers. The indicators used in critical thinking skills are as follows:

No	Statement	
	Positive Statements	Negative Statements
<i>Able to formulate the main issues</i>		
1.	When learning, I can analyze the main problems regarding the material studied	When learning, I I am confused in understanding the material being studied
2.	When learning, I can reveal existing facts about the material being studied	When studying, I cannot reveal facts about the material being studied
<i>Ability to ask</i>		
1.	I always ask until I get the material information I want	I didn't ask lecturers or friends, even though I didn't understand the material being studied
2.	I can analyze the questions according to the material studied	I find it difficult to make questions when I want to ask
<i>Ability to answer questions</i>		
1.	I will try to give the right response when the lecturer asks	I immediately answered the questions asked by the lecturer, although I have not analyzed the purpose of the questions given during the study
<i>Ability to analyze arguments/opinions</i>		
1.	I discussed the material with my friend to find the best solution	Without discussing, I easily accepted the information of the material studied
2.	After discussing with friends, I can distinguish between right and wrong opinions	I find it difficult to tell my friends about right and wrong opinions
<i>Ability to choose logical, relevant, and accurate arguments</i>		
1.	I can choose a suitable, relevant and systematic reason for the whole problem of the material being studied	I immediately chose the existing opinion without going through the selection first
<i>Problem solving ability</i>		
1.	I use various references to discuss the material being studied	I like to answer questions with many answer choices
2.	I feel satisfied if I continue to try to find answers to problems in the material being studied	I leave out questions that are difficult to work on
3.	Both in practice and experimentally I can understand the learning instructions easily	In practical activities, I find it difficult to understand the learning instructions given
<i>Ability to evaluate and assess the results of observations</i>		
1.	Before sending academic assignments, I always check the results of my academic assignments	I immediately handed in the academic assignments, without checking them back

<i>Ability to reveal the facts needed in solving a problem</i>		
1.	I try to find information about the material to be studied before the lecture starts	I didn't look for information about relevant material before the lecture started
2.	I tried to find other and appropriate references related to the material	I only rely on existing book references without looking for other references regarding the material studied
<i>Ability to indentify bias/prejudice based on multiple points of view</i>		
1.	I look for alternative answers, when the answer to the problem in the material being studied does not have enough theoretical strength and prove correct	I just look for answers without collecting alternative answers for problem solving in learning or solving academic assignments
<i>Ability to ascertain the impact of the selected statement as a decision</i>		
1.	I consider the overall situation and conditions regarding the answers to the material being studied	I do not consider the overall situation and conditions regarding the answers to the material being studied
<i>Ability to draw conclusions</i>		
1.	I can determine my own conclusions based on the experiments I did	With the help of friends or lecturers, I can complete the lecture material studied
2.	I try to be assertive when making learning conclusions based on circumstances	I did not pay attention to the situation and conditions when conducting the learning conclusion

## RESULT AND DISCUSSION

This study used a sample of university students in Yogyakarta who had used ChatGPT. Based on Hair et al. (2017) if a population is not known with certainty, then a good sample is between 5-10 times the number of question items. In this study using 30 question items so that the number of good samples used is at least 150 samples. However to reduce bias, this study used 161 samples with respondent characteristics according to the following table:

**Table1. Respondent criteria**

<b>Sample Selection Criteria</b>	<b>Total</b>
Respondents in the observation period	199
Respondents who did not use ChatGPT	(35)
Respondents who are not university students in Yogyakarta	(3)
Total research sample	161

Source: data processed, 2023

Based on the collected samples, 47% of respondents were students of Universitas Negeri Yogyakarta and 40% were students of Universitas Gadjah Mada. While the rest came from UIN Sunan Kalijaga (6%), Universitas Islam Indonesia (1%), AMIKOM Yogyakarta (1%), Poltekkes Kemenkes Yogyakarta (1%), Universitas PGRI Yogyakarta (1%), Institut Teknologi Nasional Yogyakarta (1%), Universitas Ahmad Dahlan (1%), Institut Seni Indonesia Yogyakarta (1%), and Universitas Pembangunan Nasional Yogyakarta (1%). The respondents collected in the study were 57% women while 43% were men.

Before testing the hypothesis using the moderated regression analysis (MRA) method, this study tested variables with classical assumption tests. The tests used are normality, multicollinearity, heterokedasticity, and linearity tests.

### A. Normality Test

The normality test used is Kolmogrov-Smirnov. Asymp value. Sig (2 tailed) in this study is 0.089 ( $>0.05$ ) so that it can be concluded that the data in the study are normally distributed.

**Table 2. Normality test result**

	Unstandardized Residual
N	161
Asymp. Sig (2-tailed)	0,089

Sumber: data diolah, 2023

### B. Multicollinearity Test

The multicollinearity test is used to measure the relationship between independent variables and moderation variables. In this study, both independent and moderation variables had a tolerance value of 1,000 ( $>0.100$ ) and VIF 1,000 ( $<10.00$ ) so that it concluded that there were no symptoms of multicollinearity.

**Table 3. Result of multicollinearity**

Variable	Tolerance	VIF
Penggunaan ChatGPT	1,000	1,000
Gender	1,000	1,000

### C. Heterokedasticity Test

The heterokedasticity test in this study uses a park test that takes into account the inequality of residual variance between variables. The results showed that the significance value of the two variables was 0.718 and 0.667 which means that the data did not occur symptoms of heterokedasticity because the significance value was  $>0.05$ .

**Table 4. Result of multicollinearity**

Variable	Tolerance	VIF
Penggunaan ChatGPT	1,000	1,000
Gender	1,000	1,000

### D. Linearity Test

The linearity test is used to determine the relationship between the variables used. The results show the value of deviation from linearity from this study is 0.106 ( $>0.05$ ) and the significance value of linearity is 0.000 ( $<0.05$ ) so that it can be seen that there is a significant linear relationship between the independent variable and the dependent variable in this study.

**Table 5. Linearity test result**

	Sig (5%)
Linearity	0,000
Deviation from linearity	0,106

### E. Discussion

Students are a group that is very active in using the internet. Based on the 2023 internet penetration rate report in Indonesia released by the Indonesian Internet Service Providers Association, student profiles show that they are the largest internet users in Indonesia with a penetration rate of 98.88%. Therefore, students are expected to be able to think critically about the various information received. The quality of a nation's human resources, especially students who rely on education, greatly determines the progress of the nation. Education

allows students to learn well and reach their full potential. To improve students' critical thinking skills, innovation is needed in the world of education, especially in learning methods. The use of information and communication technology can improve students' learning achievement and cognitive ability.

Based on the results of the study, it is shown that the use of ChatGPT can have a positive and significant effect on the critical thinking of students in Yogyakarta. This is in accordance with research conducted by Abdelghani et al., (2022) and MacNeil et al., (2022). The study shows that the use of ChatGPT in academics can increase students' curiosity and can improve students' thinking. The opportunity to use ChatGPT to be developed into interactive learning can open up opportunities for students to learn independently according to their own interests and this can foster students' critical thinking (Dennick, 2016; Rudolph et al., 2023).

Rasul et al. (2023) explained that ChatGPT can expand students' knowledge and can improve students' critical thinking & problem-solving. However, this use has challenges, namely regarding academic ethics, integrity, information bias, and difficulties in assessing students (Rasul et al., 2023). This was also conveyed in Zhai's (2022) research which showed that the use of ChatGPT requires ethical supervision because it makes it easier for users to commit ethical violations in education. So academics can use ChatGPT to improve students' critical thinking but also have to consider the challenges, especially regarding academic ethics.

Supposedly, the use of ChatGPT in students must go hand in hand with critical thinking to be able to select the information received. This is supported by Nadia Fairuza, a researcher at *the Center of Indonesian Policy Studies (CIPS)*, revealing that the use of ChatGPT must be accompanied by adequate mastery of critical thinking skills.

Some respondents said that ChatPT makes all work easier. The ease that is felt has caused students to rely on this AI platform. The sense of effectiveness felt brings the feeling of accepting all the information that exists. So that in the era of rapid technological development, it is necessary to have the ability to think critically to be able to filter the information received.

This is a challenge in using ChatGPT for students that needs to be the attention of academics because most of the problems in ChatGPT are ethical issues. The benefits of ChatGPT for students that can improve students' critical thinking need to be used as best as possible. This can be done by creating learning and assessment models that are difficult to duplicate.

## CONCLUSION

Technology in the academic environment has a rapid development. In today's era, AI technology is starting to be known, namely ChatGPT. This study was conducted to determine the effect of using ChatGPT on critical thinking of students in Yogyakarta. In addition, this study also uses moderation variables, namely gender, to find out whether gender variables can moderate the influence of ChatGPT on students' critical thinking.

This study used 161 samples from Yogyakarta students. Based on the results of the study, it shows that the use of ChatGPT among Yogyakarta students can improve students' critical thinking. The relationship is positive, which means that if students add the intensity of using ChatGPT, it can increase students' critical thinking.

The challenges of using ChatGPT in students need to be a concern for academics because most of the problems in ChatGPT are ethical issues. The benefits of ChatGPT for students who can improve the critical thinking of students need to be utilized as well as possible. This can be done by creating learning and assessment models that are difficult to duplicate.

This study only made observations in the Yogyakarta region so that in future studies it is expected to add regional samples to increase the generalization of research results. In addition, this study also only focuses on university students so it is hoped that further researchers can add sample groups such as upper secondary students because the use of ChatGPT has begun to expand among students who are not from universities.

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# E-BILLING SYSTEM AND SELF-ASSESSMENT SYSTEM ON TAXPAYER COMPLIANCE WITH ELECTRONIC UNDERSTANDING AS A MODERATING

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## ABSTRACT

This study aims to prove that the e-billing and self-assessment system affect taxpayer compliance with electronic understanding as a moderating variable at KPP Pratama Bantul. This modern development has an effect on the tax payment system and how taxpayers' attitudes deal with it. The rapid advancement of technology must be balanced with an understanding of electronic media. This study uses primary data by distributing questionnaires to individual taxpayers at KPP Pratama Bantul. Data analysis techniques used T test and Moderated Regression Analysis (MRA). Based on the results of this study, it shows that the application of e-billing has no effect on taxpayer compliance and the self-assessment system has an effect on taxpayer compliance, and electronic understanding as a moderating variable is able to moderate the application of e-billing and the self-assessment system on taxpayer compliance. The modernization of the system requires taxpayers to understand electronic media so that taxpayer compliance will increase.

**Keywords:** e-billing, self-assessment system, taxpayer compliance, electronic understanding

## INTRODUCTION

The development of an increasingly advanced era has made many activities that were once manual now online or carried out remotely using supporting tools. One of which is in tax administration activities that used to report taxes and pay taxes must come to the Tax Office or bank, but now can be done through the DGT online. Taxes themselves according to the Directorate General of Taxes, "Taxes are mandatory contributions to the state owed by individuals or entities that are compelling based on law by not getting direct rewards and are used for state purposes for the greatest prosperity of the people". The contribution of taxes can be felt directly or indirectly in our daily activities. Tax has become the largest state budget revenue in Indonesia. According to Fadhilatunisa et al., (2022) tax enforcement is one type of fiscal policy that allows the government to finance public programs. This situation requires the government to continue to make updates regarding policies in taxation. One method of modernizing the tax system is the Directorate General of Taxes' attempt to increase tax revenue from taxpayers by making improvements to the tax system (Nurchamid, 2018). According to Suyanto & Setiawan (2017) modernization of tax administration brings many fundamental changes ranging from organizational restructuring to human resource development and the use of information technology in tax administration.

The technology utilization such as e-billing can streamline the tax payment process for taxpayers and potentially boost the government's tax revenue. Sri Mulyani Indrawati, Minister of Finance, emphasized that the directorate general of taxes ("DGT") can improve the quality of services to provide convenience for the public in paying taxes. However, it is crucial to ensure that taxpayers have the necessary resources and education to understand and run the e-tax system. This is especially important for individuals who may not be familiar with technology or have limited access to it. The government and tax authorities should provide adequate support and guidance to ensure that all taxpayers can fulfill their tax obligations and understand the benefits of using the electronic tax system. Taxpayer compliance is the attitude of a taxpayer who is realized by his compliance and awareness of his responsibility to decide for himself when and where to report and pay his taxes based on the applicable tax laws and regulations (Fadhilatunisa et al., 2022). The failure to pay taxes to the state, this will hamper the receipt of state revenue. Of course, paying taxes can maximize state revenue. The greater the revenue received by the state, of course, there will be many public facilities that the government can provide Director General of Taxe (2012). One of the efforts of the Directorate General of Taxes in increasing taxpayer compliance is by facilitating all taxation processes, both in calculation and reporting. The system presented by the Directorate General of Taxes is expected to make it easier for taxpayers to report their taxes so that later it will have an impact on state revenue.

The realization of electronic systems in the field of taxation aims to simplify the process of payment and reporting of taxpayers. In Indonesia, tax uses a self-assessment system that requires taxpayers to register, deposit and pay their taxes independently. To effectively implement the self-assessment system, it is important for the public to have a clear understanding of the general provisions and tax procedures law, including reporting procedures, tax sanctions, and the Income Tax Law that protects different types of income. Despite efforts to improve taxpayer compliance through the self-assessment system, not all potential taxpayers have been fully engaged. There are still many people who lack awareness of the importance of fulfilling their tax obligations, both for personal interests and as responsible corporate citizens. As a consequence, the existence of a self-assessment system provides an opportunity for tax fraud. Until now, most of the Indonesian population is still unfamiliar with the intricacies of taxation. The complexity of managing tax-related matters independently can confuse taxpayers and hinder their understanding of the system. While the advent of the electronic age has brought convenience and practicality, some people still struggle to understand the use of electronic devices, particularly in the context of taxation. The lack of understanding of the electronic-based self-assessment system among taxpayers contributes to the lack of target compliance.

This study refers to several studies conducted by previous researchers who have conducted tests related to factors that can affect taxpayer compliance. Research conducted by Sukiyaningsih (2020), sari (2021) and Anwar & Simanjuntak (2021) has conducted research and proven that the application of e-billing has an effect on taxpayer compliance. However, in contrast to research conducted by Nurchamid, (2018) has conducted research and proven that the application of e-billing has no effect on taxpayer compliance. Based on the results of previous studies, even with the same variables, it still happens differently or inconsistently. This research is also in line with research conducted by Anjanni (2019), (Putri & Pharamitha, (2018) and Setiawan, (2017) proving that the implementation of the self-assessment system has an effect on taxpayer compliance. However, it is different from the research conducted by

Nurlatifah & Nisa, (2019) who have conducted research and proven that the implementation of the self-assessment system has no effect on taxpayer compliance.

The gap in analysis in previous studies has aroused the interest of researchers who aim to identify the differences between the findings of researchers and previous studies. In an attempt to bridge this gap, the researcher has incorporated electronic understanding variables into this study. Specifically, it focuses on examining the impact of e-billing and self-assessment systems on taxpayer compliance. The researcher selected the e-billing and self-assessment system variables due to their potential to improve taxpayer compliance and contribute to favorable outcomes in terms of state tax revenue. Effective system implementation is essential to address these issues and ensure satisfactory results.

## **LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

### **The Technology Acceptance Model**

Technology Acceptance Model (TAM) first introduced by Davis (1989) is a model that explains the relationship between individual acceptance of the use of information technology. The theory adopted and developed from the theory of Reasoned Action TRA which explains a person's behavior through their intentions. The objective of this TAM theory is to explain the causal relationship between the benefits of an information system and its ease of use.

TAM is characterized by understanding the relationship between humans and technology through perceived usefulness and perceived ease of use. According to Aviana (2019) is the use of computers by individuals who are influenced by two factors, namely (perceived usefulness) which is the use of information systems that will improve one's performance and (perceived easy of use) which is using information systems to facilitate one's performance. Perceived usefulness and perceived ease of use in TAM are the most important constructs for predicting information system acceptance (Cheong & Park, 2005). This theory suggests that administrative reform will provide benefits and convenience for taxpayers when reporting, calculating and paying so as to increase individual taxpayer compliance.

### **Theory of Planned Behavior (TPB)**

Theory of Planned Behavior (TPB) behavioral theory introduced by Azjen (1991) is a theory designed to predict and explain people's behavior in specific contexts. According to Amrullah, (2021) Theory of planned Behavior (TPB) is used to examine individual behavior as mandatory which is influenced by intention. This theory explains that the intention of an individual taxpayer in performing tax obligations, good in reporting, calculating and paying these taxes. Understanding of taxation, accounting and information technology will increase taxpayer compliance. Taxpayers can easily fulfill their tax obligations have a sense of confidence and hope that all taxes that taxpayers deposit with the state are able to achieve the same prosperity for all categories of society(Amrullah, 2021).

### **E-Billing**

E-billing is a form of a digital administration system to be more efficient, economical and fast which is intended to improve taxpayer compliance (Arifin & Syafii, 2019). Based on the regulation of the Director General of Taxes Number PER 26 / PJ / 2014 Article 1 number 1, the electronic tax payment system is part of the electronic state revenue system administered by the Directorate General of Taxes biller and implements a billing system. Article 1 number 2, billing system is an electronic payment method using the Billing Code and article 1 number 5. Taxpayers will benefit from the implementation of an electronic tax payment system. According to the Directorate General of Taxes in the Billing System Usage Guide (2013). The taxpayer only takes a note containing the billing code to make tax payment transactions to be shown to the teller or entered as a tax payment code at an ATM or internet banking machine.

## **Self-Assessment System**

This system is a tax collection that gives authority, trust, responsibility to taxpayers to calculate, calculate, pay and report the amount of tax to be paid themselves Putri & Pharamitha, (2018). According to (Suyati & Rozikin, 2021) the self-assessment system is implemented because the assessment system is implemented because the old taxation system is considered to be no longer in accordance with the level of socio-economic level of society Indonesia. This system is expected to increase taxpayer compliance. In order for this system to run well, the taxpayer must be able to be responsible for the tax owed.

### **The effect of e-billing on individual taxpayer compliance**

Research by Anwar & Simanjuntak (2021), Sari (2021) and Sukiyaningsih (2020) has conducted research and proven that the application of e-billing has an effect on taxpayer compliance. However, in contrast to research conducted by Nurchamid (2018), they have conducted research and proven that the application of e-billing has no effect on taxpayer compliance.

The purpose of this TAM model is to explain individual attitudes to technology use by describing the level of use of the technology. If the use of e-billing increases, individual income taxpayer compliance will also increase because the use of e-billing is much easier and more flexible. Therefore, the first hypothesis is:

H1: E-biling has a positive effect on individual taxpayer compliance at KPP Pratama Bantul

### **The effect of the self-assessment system on the level of compliance of individual taxpayers**

The self-assessment system will increase taxpayer compliance if it is implemented properly and correctly. This is in accordance with research conducted by Anjanni (2019), Putri & Pharamitha (2018) and Suyanto & Setiawan (2017) which prove that the implementation of the self-assessment system has an effect on taxpayer compliance. However, it is different from the research conducted by (Nurlatifah & Nisa, 2019) who have conducted research and proven that the implementation of the self-assessment system has no effect on taxpayer compliance.

Theory of Planned Behavior (TPB) explains that action intentions can lead to actions taken by individuals or personal taxpayers. This theory relates to the self-assessment system variable. According to Mulyanto, n.d.(2020) taxpayers who are aware of the importance of insight into taxes, will fill in and report all data and income obtained honestly and voluntarily which is useful for helping to organize state development. Hence, the second hypothesis is:

H2: Self-assessment system has a positive effect on individual taxpayer compliance at KPP Pratama Bantul.

### **The influence of electronic understanding moderates e-billing on individual taxpayer compliance**

The electronic tax billing system is a payment system provided by the General Tax Bureau. Understanding the use of electronics/technology is an inseparable part of human civilization because it has an important role in meeting the needs of everyday life. The existence of technology or electronics will make it easier for the human work system to do its job.

This is in accordance with the TAM theory model put forward by Davis (1989) which is perceived usefulness and perceived ease of use. The electronic tax payment system provides efficiency in terms of costs when viewed with the benefits obtained in the long term, in terms of time and human resources there is a reduction in the burden of administrative work so as to save the use of time and human resources. Therefore, the third hypothesis is:

H3: Electronic understanding can moderate (strengthen) the effect of e-billing system implementation on individual taxpayer compliance at KPP Pratama Bantul.

### **The influence of electronic understanding moderates the self-assessment system on individual taxpayer compliance**

The development of the times that is increasingly rapid makes the use of technology or electronics increasingly diverse to facilitate taxpayers to carry out their obligations as

taxpayers, reforms are carried out in various aspects of tax administration activities. Based on Theory of Planned Behavior (TPB) a theory of behavior introduced by (Azjen, 1991). The theory is based on the belief that a person is able to carry out an activity in accordance with that person's behavior. This relates to the self-assessment system which bears trust in taxpayers being able to calculate, pay and report themselves. This improvement requires an understanding of the use of electronics in the world of taxation, because with the understanding of taxpayers in conducting tax administration, taxpayer compliance will increase. Thus, the fourth hypothesis is:

H4: Understanding electronics can moderate (strengthen) the effect of the implementation of the self-assessment system on the compliance of individual taxpayers at KPP Pratama Bantul.

## RESEARCH METHODS

This type of research is quantitative research. As for the data source, the primary data obtained by distributing questionnaires to individual taxpayers at KPP Pratama Bantul. The population of this study were all taxpayers in Bantul Regency, while the sample used was individual taxpayers who came to KPP Pratama Bantul on December 23, 2022 to January 12, 2023 and who were willing to answer the questionnaire totaling 110 individual taxpayers. The data analysis technique in this study uses data quality test, descriptive statistical test, classical assumption test, multiple liner regression test, Moderated Regression Analysis (MRA) test and hypothesis testing.

## RESULTS AND DISCUSSION

### Result

This survey was conducted by distributing questionnaires to individual taxpayers at KPP Pratama Bantul, 60 respondents filled in via google form and 50 people filled in directly on the paper provided by the researcher. However, the data that can be analyzed in this study are 109 respondents.

#### *Variable Descriptive Test Results*

The descriptive test results are carried out on the variables that have been examined in the study, namely the self-assessment system, e-billing, understanding of electronic media and taxpayer compliance. The following are the results of the descriptive variable test:

**Table 1 Descriptive statistical test results of variables**

	N	Mean	Std. Deviation
System <i>e-billing</i>	109	24,78	2,816
<i>Self-assessment</i> system	109	18,78	2,536
taxpayer compliance	109	24,05	3,155
electronic understanding	109	24,83	3,029

Source: Output Results SPSS 25, 2023

#### *Data Quality Test Results*

This research conducts a data quality test to see the consistency and accuracy of the data used, with this test more precise and reliable data will be obtained. To carry out this test, it is carried out through the validity test and reliability test.

#### *Validity test*

Validity is to find out how well a measurement test measures the object it is supposed to measure. An item must have a correlation (r) with the total score for each variable  $\geq 0.50$ . If the item has a calculated  $r < 0.50$  then the item is declared valid, and conversely if the item has a calculated  $r > 0.50$  then the item is declared valid. This is in accordance with the results of this research which shows that the validity results are valid. It is shown that the calculated r value is greater than 0.50 so that the test results are valid.

#### *Reliability Test*

Item reliability is measured by looking at the Alpha-Cronbach value. If the alpha value is  $> 0.7$ , the reliability level is met (sufficient reliability), but if the alpha value  $< 0.5$ , the reliability is low and the item should not be used. This is in line with the results of this research which states that reliability shows reliability because the alpha value is  $> 0.7$ .

### **Classical Assumption Test Results**

This classic assumption test is a prerequisite that must be met before using analysis to test the hypothesis (Sugiyono dan Susanto, 2015).

**Table 2 classical assumption test results**

No	Test	Results	Information
1.	Normality Test	Sig 0,182	Normally distributed
2.	Multicollinearity Test	VIF $> 0,10$	No sign of Multicollinearity
3.	Heteroscedasticity Test	Sig $> 0,50$	No sign of Heteroscedasticity

Source: Output Results SPSS 25, 2023

The table in the above indicates the results of data normality, the sig value in the table shows a value of 0.182 which is greater than 0.05. Then the data is concluded that the regression model in this study shows normal distribution. The table above can also conclude that this study does not occur symptoms of multicollinearity. This can be seen from the Variance Inflation Factor (VIF) value which is more than 0.70. The last table shows that this study also does not occur symptoms of heteroscedasticity in the regression model. This can be seen from the significant value which is more than 0.50.

### **Hypothesis Test Results**

#### *Multiple Liner Regression Test Results*

This multiple liner regression test is used to predict the state of the ups and downs of the dependent variable on the independent variable, this test is also to formulate the relationship between the dependent variable and the independent variable.

**Table 3 multiple linear regression analysis test results**

Model	Unstandardized Coefficients	
	B	Std. Error
1 (Constant)	7,598	2,233
<i>e-billing</i>	,044	,087
<i>Self-assessment system</i>	,817	,097

Source: Output Results SPSS 25, 2023

Based on the test results above, the following equation can be constructed:

$$Y = 7.598 + 0.044X_1 + 0.817X_2 + e$$

1. Constant ( $\alpha$ ) = 7.598

The positive constant value ( $\alpha$ ) means that if the e-billing ( $X_1$ ) and self-assessment system ( $X_2$ ) variables have a significant value of 0.001, the taxpayer compliance ( $Y$ ) is 7.598.

2.  $\beta_1 = 0,044$

This means that e-billing has a unidirectional relationship with taxpayer compliance ( $Y$ ). So every increase in e-billing ( $X_1$ ), taxpayer compliance ( $Y$ ) will increase by 0.044, assuming that the variables of the self-assessment system and electronic understanding are fixed (no change).

3.  $\beta_2 = 0.817$

This can be interpreted that the self-assessment system ( $X_2$ ) has a direction in line with taxpayer compliance ( $Y$ ). So every increase in the self-assessment system ( $X_2$ ), taxpayer compliance ( $Y$ ) will increase by 0.817 with the assumption that e-billing ( $X_1$ ) and electronic understanding ( $Z$ ) remain (no change).

#### *Moderated Regression Analysis (MRA) Test Results*

This test is used to determine the results of the relationship between moderating variables which will strengthen or weaken the independent and dependent variables in a study.

**Table 4 Moderated Regression Analysis (MRA) Test Results**

Model	Result
E-billing * electronic understanding	0,003
Self Assessment system* electronic understanding	0,006

Source: Output Results SPSS 25, 2023

Based on the results of the table above, it can be concluded that electronic understanding can moderate (strengthen) the effect of the e-billing system and self-assessment system on individual taxpayer compliance at KPP Pratama Bantul. This can be seen from the significance value for the e-billing and self-assessment system less than 0.05.

#### *Hypothesis Test Results*

**Table 5 Hypothesis Test Results**

No	Hypothesis Test	Result
1.	Test Coefficient of Determination ( $R^2$ )	R Square: 0,454
2.	F test	F: 43,995
3.	T test	Sig System e-billing: 0,613 Sig Self-assessment system: 0,000

Source: Output Results SPSS 25, 2023

1. Test Coefficient of Determination ( $R^2$ )

The coefficient of determination test is used to determine the ability of how far the independent variable explains changes in the variation of the dependent variable. Based on the table above, it can be concluded that the e-billing and self-assessment system has

an influence of 45.4% on taxpayer compliance, while 54.6% is influenced by other variables not examined in this study.

## 2. F test

This F test test is used to determine whether all independent variables have a significant effect on the dependent variable. Based on the table above, it can be concluded that all independent variables have an effect on the dependent variable. This can be explained by looking at the sig value in the table, which is  $0.00 < 0.05$  and the calculated F value of  $43.995 > 3.08$ , so it is in accordance with the F test criteria.

## 3. T test

This T test is used to determine the significant effect of one independent variable on the dependent variable. The tables above can be concluded that:

- a. Based on the table above, it can be seen that the e-billing (X1) variable does not have a significant effect on individual taxpayer compliance (Y). This can be seen from the sig value of  $0.613 > 0.05$  and the t value of  $0.508 < 1.982$ , so it can be concluded that H1 is rejected.
- b. Based on the table above, it can be seen that the self-assessment system (X2) variable has a significant effect on individual taxpayer compliance (Y). This can be seen from the sig value of  $0.00 < 0.05$  and t count  $8.439 > 1.982$ , so it can be concluded that H2 is accepted.

## Discussion

1. The Effect of the E-Billing System on Individual Taxpayer Compliance at KPP Pratama Bantul. Based on the t test results in the table above, it can be concluded that the application of the e-billing system has no significant effect on individual taxpayer compliance. This can be seen from the results of the Sig value  $0.613 > 0.05$  and t count  $0.508 < t$  table  $1.9823$ . This means that H1 is rejected and H0 is accepted.

This shows that the researcher's initial hypothesis (H1) that the application of e-billing has a positive impact on taxpayer compliance at KPP Pratama Bantul is not supported. Although the electronic payment system has no impact on taxpayer tax compliance, it shows that the simplicity and efficiency of the electronic payment system has not been well received by the public. The system created by the government aims to make it easier for citizens to pay taxes anytime, anywhere, even if individual taxpayers abuse it.

This study continues several previous studies, especially by Nurchamid (2018) and Mulyawan (2022) who conducted research and showed that the use of e-billing does not affect taxpayer tax compliance in line. However, this study is supported by several studies, especially by Anwar & Simanjuntak (2021), Sari (2021) and Sukiyarningsih (2020) which show that the application of e-invoicing has an impact on taxpayer compliance is not consistent.

2. The Effect of Self-assessment System on Individual Taxpayer Compliance at KPP Pratama Bantul.

Based on the results of the t test, it can be concluded that the self-assessment system has a significant effect on individual taxpayer compliance. This can be seen by looking at the results of the sig value of  $0.00 < 0.05$  and the calculated t value of  $8.439 < t$  table  $1.9823$ , meaning that H2 is accepted and H0 is rejected. This shows that the second hypothesis (H2) of the researcher which states that the implementation of the



self-assessment system has a positive effect on taxpayer compliance at KPP Pratama Bantul is supported by this research.

A tax system that authorizes taxpayers to determine the amount of tax payable themselves (Mardiasmo 2016). The success of this system is determined by the compliance of taxpayers to fulfill their tax obligations Sukiyaningsih (2020). This tax collection system is carried out by taxpayers themselves from calculating, reporting and paying which makes the responsibility of a taxpayer must be fulfilled.

This research is in line with several previous studies. Previous research that is in line with this research is research conducted by Anjanni (2019) Putri & Pharamitha (2018) and suyanto & Setiawan (2017) has proven that the implementation of the self-assessment system affects taxpayer compliance. However, this research is not in line with several studies, such as research conducted by (Nurlatifah & Nisa, 2019) has conducted research and proven that the implementation of the self-assessment system has no effect on taxpayer compliance.

### 3. Electronic Understanding Moderates (Strengthens) the E-Billing System on Individual Taxpayer Compliance at KPP Pratama Bantul.

Based on the results of the Moderated Regression Analysis (MRA) test, it can be concluded that understanding electronic media strengthens the relationship between the e-billing system and individual taxpayer compliance. This can be seen by looking at the results of the sig value of  $0.003 < 0.05$ , meaning that H3 is accepted and H0 is rejected. This shows that the third hypothesis (H3) of the researcher which states that electronic understanding can moderate (strengthen) the effect of implementing the e-billing system on taxpayer compliance at KPP Pratama Bantul.

This study proves that individual taxpayers who have a good understanding of electronic media in using the e-billing system will increase individual taxpayer compliance at KPP Pratama Bantul. Understanding of electronic media will make it easier for taxpayers to use the e-billing system, namely an online tax payment system that can be done anytime and anywhere using only electronic media and the internet. The system designed by the government is used to make it easier for taxpayers to pay tax debts which are expected to increase taxpayer compliance itself, supported by taxpayers who have an understanding of electronic media.

This is consistent with the theory put forward by Davis, namely the Technology Acceptance Model (TAM) theory which explains that the ease of technology will be accepted by its users, so that If taxpayers have a good understanding of electronic media, it will be easier to run the e-billing system and make taxpayers compliant in making tax payments.

### 4. Electronic Understanding Moderates (Strengthens) Self-assessment System on Individual Taxpayer Compliance at KPP Pratama Bantul.

Based on the results of the Moderated Regression Analysis (MRA) test, it can be concluded that understanding electronic media strengthens the relationship between the implementation of the self-assessment system on individual taxpayer compliance. This can be seen by looking at the results of the sig value of  $0.006 < 0.05$ , meaning that H4 is accepted and H0 is rejected. This shows that the fourth hypothesis (H4) of researchers which states that electronic understanding can moderate (strengthen) the

effect of the implementation of the self-assessment system on taxpayer compliance at KPP Pratama Bantul.

A good understanding of electronic media by taxpayers will increase the implementation of the self-assessment system, so that individual taxpayer compliance will be better implemented. The implementation of this self-assessment system requires taxpayers to do everything themselves from calculating, reporting and paying, so that the existence of taxpayer electronic understanding will facilitate these things by being done online. It can be interpreted that taxpayers who understand electronic media well will automatically increase taxpayer compliance because the self-assessment system has been implemented in accordance with tax regulations.

This is consistent with the Theory of Planned Behavior (TPB) theory of behavior introduced by Azjen and the Technology Acceptance Model (TAM) theory proposed by Fred Davis. Theory of Planned Behavior (TPB) put forward by Azjen explains human behavior which is influenced by intentions and for the Technology Acceptance Model (TAM) theory put forward by Fred Davis explains that the benefits and ease of technology will improve one's performance. Based on these two theories, it can be concluded that a person's intention by utilizing technological convenience will increase a person's performance, so it can be interpreted that the implementation of the self-assessment system will run better if taxpayers have the intention and understanding of electronic media to increase taxpayer compliance.

## CONCLUSION

On the basis of the results of processing research data obtained from individual taxpayers at KPP Pratama Bantul, the following can be concluded:

1. The application of the e-billing system does not affect the compliance of individual taxpayers at KPP Pratama Bantul.
2. The implementation of the self-assessment system has a positive effect on compliance of individual taxpayers at KPP Pratama Bantul.
3. Electronic understanding can moderate (strengthen) the effect of the e-billing system on individual taxpayer compliance at KPP Pratama Bantul.
4. Electronic understanding can moderate (strengthen) the effect of the self-assessment system on individual taxpayer compliance at KPP Pratama Bantul.

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Suyati, E. S., & Rozikin, A. Z. (2021). The Influence of Motivation and Self-Efficacy Towards The Students' Entrepreneurship Interest in Muhammadiyah University of Palangkaraya. *Jurnal Economia*, 17(1), 91–100. <https://doi.org/10.21831/economia.v17i1.33123>

# INFLUENCE OF SELF-MOTIVATION, SELF-EFFICACY, AND PROGRAM KAMPUS MERDEKA FOR ORGANIZATIONAL INTEREST STUDENT FACULTY OF ECONOMICS AND BUSINESS YOGYAKARTA STATE UNIVERSITY ON CAMPUS

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## ABSTRACT

This study aims to analyze the influence of Self-Motivation, Self-Efficacy, and Program Kampus Merdeka on Student Organization Interest of the Faculty of Economics and Business, Yogyakarta State University. This research is a causal associative research with a quantitative approach. The technique used in data collection is by questionnaire. The population of this study is active students of the Faculty of Economics and Business class of 2020 and 2021, where the sample used in this study was 101 respondents. In analyzing the influence of Self-Motivation, Self-Efficacy, and Program Kampus Merdeka on Student Organization Interest, Faculty of Economics and Business, Yogyakarta State University uses multiple linear regression analysis techniques. The results of data processing showed that the variables of Self-Motivation, Self-Efficacy, and Program Kampus Merdeka simultaneously had a significant positive effect on Student Organization Interest.

**Keywords:** Student Organization Interest, Self Motivation, Self-Efficacy, Program Kampus Merdeka

## INTRODUCTION

Along with the development of technology and the increasingly rapid flow of globalization, each country is required to compete by highlighting the advantages of their respective resources. On the other hand, globalization presents an increasingly sharp level of competition in the labor market. Higher education as an educational institution that plays an important role in efforts to develop human resources (HR), has a tough challenge to produce graduates who are competent and able to compete in the free market. Based on data from the Central Statistics Agency (BPS), the number of open unemployed with the last level of university education in 2022 reached 884,769 people. This makes university graduates among the top five graduates after elementary school graduates. Higher education is expected to be able to develop the talents and interests of students through the development of student activities that can support the improvement of student quality.

A student organization can train leadership, train time management, expand networks or networking, hone social skills, and train problem solving skills. But of these many benefits, it does not make all students interested in participating in organizational activities on campus. This is indicated by the decreasing number of data on organizational administrators and/or SMEs. Based on data obtained by researchers, one of the SMEs in the Faculty of Economics and Business UNY has decreased the number of registrants in 2023, from 54 administrators in 2022, now only 35 administrators. Not only that, there are still other organizations in the Faculty of Economics and Business that have decreased interest.

The decline in student enthusiasm in organizing is allegedly due to several things, including because many college assignments have even piled up, organizational activities also seem less attractive, some also do not want to be burdened anymore with campus organization activities (Sapitri, 2023). In addition, the emergence of the Kemendikbudristek program related to an independent campus with various benefits offered can be one of the factors that cause students to be reluctant to organize and choose independent campus activities. Based on the description above, the researcher is interested in conducting a research entitled "The Influence of Self-Motivation, Self-Efficacy, and Program Kampus Merdeka for Organizational Interest Student Faculty of Economics and Business, Yogyakarta State University On Campus".

## **METHOD, DATA, AND ANALYSIS**

### **A. Types of Research**

The type of research we use is causal associative research. Causal associative research aims to analyze the causal relationship between independent variables and dependent variables (Anggraeni, 2022). The approach used in this study is a quantitative approach. According to (Sugiyono, 2013) quantitative research methods are research methods based on positivism, used to examine certain populations or samples, data collection using research instruments, quantitative or statistical data analysis with the aim of testing hypotheses that have been set.

### **B. Research Variables**

There are two types of variables used, namely one dependent variable (dependent variable), three independent variables (independent variable)

#### **1. Dependent Variables**

According to (Sugiyono, 2013), the dependent variable is a variable that is influenced or which is a result due to the existence of an independent variable. The dependent variable in this study is Student Organization Interest. Interest itself is a desire, passion or interest in something.

#### **2. Independent Variables**

Independent variables according to (Sugiyono, 2013) are variables that influence or cause changes or the emergence of dependent variables. In this study, the independent variables are Self-Motivation, Self-Efficacy and Program Kampus Merdeka.

### **C. Research Procedure**

This research was carried out in several stages, namely as follows:

#### **1. Preparatory Stage**

The preparatory stage is the first step in conducting research. This stage begins with compiling a proposal in which contains a research design, at this stage the researcher is directed and guided by the supervisor.

## 2. Implementation Stage

At the implementation stage, researchers began to distribute online and offline questionnaires to get answers from respondents to the questions contained in the questionnaire. Online questionnaires in the form of google forms are distributed through social media and offline questionnaires are distributed directly to students of the Faculty of Economics and Business UNY.

## 3. Reporting Stage

In this stage, researchers process and analyze the results of respondents' answers. At this stage, researchers also make conclusions on the results of data analysis that has been done.

### **D. Data Collection and Analysis Techniques**

The data collection technique used in this study is by questionnaire which distributed online to students of the Faculty of Economics and Business UNY batch 2020 and 2021. Meanwhile, the data analysis technique used in this study is to use multiple regression analysis by first conducting an analysis prerequisite test and hypothesis test as follows:

1. Analysis Prerequisite Test, which consists of:
  - a. Normality Test
  - b. Linearity Test
  - c. Multicollinearity Test
  - d. Heteroscedasticity Test
2. Test the Hypothesis
  - e. Simple Linear Regression Analysis
  - f. Multiple Linear Regression Analysis

## **RESULT AND DISCUSSION**

The learning and teaching process is not only carried out in the classroom but also outside the classroom. The activities also vary, can be through extracurricular activities, competition participation, and school or campus organizations. By participating in these activities, a student in this case students will get additional knowledge beyond the lessons he gets at school as a result of formal learning. The other benefits that students will get from participating in organizations are being able to train the spirit of leadership, train time management, expand networks or networking, hone social skills, and train problem solving skills (Destya, 2015). For this reason, the university accommodates students to gain experience and in relation to channeling student interests and talents. However, in practice, the container provided by this university has not been maximized properly. It is evident from the decline in active participation of students in the activities of this organization. This is certainly influenced by several factors, both internal and external. Thus, this study aims to determine the relationship between self-motivation, self-efficacy, and campus teaching programs with student interest in participating in organizations.

Linguistically, interest means a high inclination of the heart towards something. Poerwanto (2010) revealed that interest has a great influence on a person's activities because with interest he will do something he is interested in. On the contrary, without interest a person is impossible to do something. and, according to Saladin in (Darmadi, 2017) said interest

isattention that contains elements of feelings. The feeling here can be interpreted as a feeling oflike or dislike. In its development, interest will affect a person's attitude or behavior which thenalso affects motivation or goals in his life. Meanwhile, organization is a form of fellowshipbetween two or more people who work together and are formally bound in order to achieve apredetermined goal in a bond that contains a person or several people called superiors and aperson or group of people called subordinates (Siagian, 2008). In addition, Ardi (2011)revealed that organizations are a group of people in the work structure who have theirrespective authority and responsibility to bring the group or organization to achieve commongoals. Thus, it can be concluded that organizational interest is a person's interest in followingor being part of an organization so as to encourage him to be able to take further action on it. Motivation comes from the word motive which can be interpreted as the driving force thatexists within a person to carry out certain activities in order to achieve a goal (Masni, 2015).Meanwhile, according to Barelson and Steiner (1964) define motivation as a state in a personthat pushes, activates or moves, and that directs or channels behavior toward a goal. Thismotivation will then affect how someone views a problem and how to solve the problem. Thehigher a person's motivation to solve a problem or do an activity, the more maximum effort ismade to solve these things. As Mc Clellan suggests there are 3 motivations that determinehuman behavior, namely: 1) Achievement motivation, which is the motive that moves someone to excel shows an increase towards standard exelence; 2) Affiliation motivation, which is amotive that causes a person to have a desire to be with others, have warm affectionaterelationships with others, or always join groups with others; 3) Power motivation, which is amotive that encourages behavior in such a way that affects others.

Self-efficacy is one of the most influential aspects of self-knowledge in everyday human life. Furthermore, Bandura defines self-efficacy as an individual's beliefs regarding his or her ability to perform a task or action necessary to achieve a particular outcome. Self-efficacy is generally related to self-esteem because both are aspects of self-esteem related to one's success or failure as a human being. The indicators of self-efficacy include: confident that they can perform certain tasks where individuals themselves set targets for what must be completed, confident that they can motivate themselves to take the necessary actions in completing tasks, confident that individuals are able to try hard, persistent, and diligently in order to complete tasks using all the resources they have, confident that they are able to withstand obstacles and difficulties that arise and Able to rise from failure, and confident that they can solve problems in various situations or conditions.

Kampus Merdeka Program is a policy launched by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) in 2020. Furthermore, this program is part ofthe Merdeka Belajar policy which aims to improve the competence of graduates, both soft skillsand hard skills to be more ready and relevant to the needs of the times, as well as prepare graduates as future leaders of the nation who are superior and have personality (Detik.com, 2022). In addition, this program also provides opportunities for students to be able to hone their abilities according to their respective interests and talents. In its implementation, there are several activities offered by Kampus Merdeka Program, namely certified internships, independent studies, teaching campuses, Indonesian International Student Mobility Awards (IISMA), independent student exchanges, and village building (thematic KKN). By going directly into the field, students have the opportunity to gain experience to apply the knowledge they already have in the real world which then has a major influence on student career readiness. In addition, there are many other benefits that will be obtained by participating in



these independent campus programs, including: practical activities in the field will be converted into credits, exploration of knowledge and abilities in the field for more than one semester, learning to expand networks outside the study program or home campus, and gaining knowledge directly from quality and leading partners.

In a study conducted by January (2022), it was found that self-efficacy, self-motivation and time management, partially, had a significant positive effect on students' interest in organizing. Another research conducted by Niken (2018) revealed that students join organizations because they have interests and feel that organizational activities are beneficial to them. Awareness of the benefits obtained when participating in organizations is what encourages students to display maximum effort when participating in student organizations, both structural and extracurricular. The results of these studies can strengthen the results of this study which explains that there is a positive and significant influence of Self-Motivation, Self-Efficacy, and Kampus Merdeka Program on Organizational Interest.

#### Collinearity Diagnostics<sup>a</sup>

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Motivasi Diri	Efikasi Diri	Program Kampus Merdeka
1	1	3.980	1.000	.00	.00	.00	.00
	2	.012	17.919	.87	.10	.01	.03
	3	.004	31.430	.06	.84	.06	.55
	4	.003	33.922	.07	.06	.94	.42

a. Dependent Variable: Minat Berorganisasi

#### Residuals Statistics<sup>a</sup>

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	16.7931	25.5307	21.5446	1.73357	101
Residual	-10.75233	4.49874	.00000	2.64674	101
Std. Predicted Value	-2.741	2.299	.000	1.000	101
Std. Residual	-4.001	1.674	.000	.985	101

a. Dependent Variable: Minat Berorganisasi

Based on the quantitative analysis conducted, self-motivation as variable X1 has a positive and significant effect on student organizational interest as variable Y of 0.370. Meanwhile, the variable X2 also has a positive and significant influence on student organization interest, namely the value of the regression coefficient  $r$  of 0.466. In line with this, Kampus Merdeka Program as a variable X3 has a positive and significant influence on student organization interest, namely the regression coefficient  $r = 0.526$ . Meanwhile, based on the results of the double regression analysis conducted, the double regression coefficient  $R$  has a value of 0.548. This means that the magnitude of the influence of Self-Motivation, Self-Efficacy, and Kampus Merdeka Program together on Organizational Interest is 0.548. The magnitude of the coefficient of determination  $R^2 = 0.300$ , meaning that 30% of organizational interest is influenced by Self-Motivation, Self-Efficacy, and Kampus Merdeka Program

together, the remaining 70% is influenced by other factors that were not studied in this study. Based on the SPSS output, it can be seen that  $F = 13.871$  with  $\text{Sig.} = 0.000$ . Since  $\text{Sig.} = 0.000 < 0.05$ ,  $H_0$  is rejected. So it can be concluded that at the significance level of 0.05 there is a positive and significant influence of Self-Motivation, Self-Efficacy, and Kampus Merdeka Program together on Organizational Interest.

## CONCLUSION

Campus organizations are held in order to support students to be able to develop their interests and talents and hone various soft skills and hard skills needed to support their careers in the future. In practice, there are many factors that influence students' interest in participating in campus organizations. In this study, it was found that Self-Motivation, Self-Efficacy, and Kampus Merdeka Program together had a positive and significant effect on student organizational interest. For this reason, improvements are needed both from students and from the organizers of the organization in order to attract more student interest to be able to participate in various organizational activities offered so that the purpose of holding this organization will be achieved. More broadly, universities can be a place to produce college graduates who are skilled and have a variety of competencies needed in society and the world of work.

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## LOCAL SKILL BASED ENTREPRENEURSHIP EDUCATION MODEL

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### ABSTRACT

**Introduction/Main Objectives:** The objective of this study is to develop a model-based entrepreneurship education curriculum for middle school students who drop out of school or do not continue their education.

**Background Problems:** Students from disadvantaged backgrounds are treated differently from their mainstream peers and experience social marginalisation. This then changes their ambition to become an entrepreneur. The purpose of this study is to look at the elements that influence the intention of underprivileged students to choose entrepreneurship education as a practical course. The study also looks at whether students' intentions to become entrepreneurs are enhanced by entrepreneurship education.

**Novelty:** Since this is one of the few studies focusing on the entrepreneurial intentions of socially excluded students, it presents a chance to expand the scope of entrepreneurship education while showcasing a collectivist culture and giving underprivileged students a purpose-based connection to entrepreneurship education. The results also imply that underprivileged students have a great desire to learn about entrepreneurship, which makes entrepreneurship education appear like a viable option and shows promise for expansion and penetration.

**Research Methods:** This study employs research and development techniques with the following major phases: preliminary study, preparation of design and product models, expert analytical tests, operational tests, validation tests through preliminary experiments, and dissemination of results. Using quantitative descriptive techniques and the t test (paired sample t test), the data were analysed.

**Finding/Results:** The resulting model includes five elements: objectives, planning, organizing, implementation, and evaluation. The operational and preliminary test results demonstrate this. This model has a significant impact on the development of vocational skills in students from disadvantaged communities who drop out of school or do not continue their education.

**Conclusion:** The implementation of entrepreneurship education for children who have dropped out of school or have not continued their studies in marginalized communities is still not optimal and even tends to be conventional. There must be a product model produced which consists of five main components, namely, objectives, planning, organizing, implementing and assessing related to entrepreneurship education.

**Keywords:** local skill, entrepreneurship, Education Model

## INTRODUCTION

There are many reasons for not attending or dropping out of school. Both internal and external factors are taken into consideration. Internal factors, like children's abilities, school interests, and perceptions about school and child expectations; external factors, like as socioeconomics, family integrity, Parents' opinions on children, expectations for children, community culture, and infrastructure education; and internal and external interactions. Low access to education in the community is cited as a cause of numerous social problems, including unemployment, poverty, and the export of demeaning migrant labourers. As a result of unemployment, there is national and social conflict manifested in numerous forms of violence.

Upon further review, the issue of education in such marginalized communities is not only influenced by economic and geographical factors but also by other factors. Due to the low quality and relevance of education provided in their environment, children's potential, requirements, and interests are not being met. Whereas Government Regulations to National Education Standards firmly mandate the significance of developing relevant education requirements for children based on their local potential. The issue is that educational institutions, particularly non-formal ones, have not been able to develop education pertinent to addressing these issues, such as entrepreneurship education. Existing entrepreneurship education only touches on the concept of entrepreneurship and lack of utilization of surrounding resources as substance (Sarooghi et al., 2019); (Noyes, 2018), identified a number of local skills pertinent to the establishment of entrepreneurial competency or skill.

Less contextual content pertinent to children's requirements and quality. It is believed that low learning is the cause. Otache et al, discovered the inefficacy of entrepreneurship education. This finding is consistent with the theory underlying reconstruction, which posits that social issues that necessitate entrepreneurship education are interconnected with societal problems (Otache, 2019). This theory emerged as a result of pragmatic thought and Marxism, which views reality as a social construction created by the individual for the global social environment (Omoniyi & Osakinle, 2011). Omoniyi, et al (2011) states unequivocally that society and the environment are the result of human activity, making them a source of knowledge for social problem-solving, which gave rise to a significant tradition in the field of psychology with Vygotsky's theory of social constructivism (Byrne et al., 2014; Faberman & Mazumder, 2012). Based on this notion, both the child and his knowledge are viewed as having the new ideas he acquired must be capable of identifying and resolving social problems, such as unemployment caused by limited access to education. Therefore, the purpose of Entrepreneurship education is to improve children's living conditions. Educational institutions investigate societal potential in accordance with this potential, then incorporate it as part of the instructional material relates to issues and beliefs.

This study is essential for initiating innovation based on social reconstruction theory, which is expected to increase children's sensitivity to social problems. This concept is becoming increasingly relevant as a result of research conducted in Indonesia, such as that conducted by (Pebrianto & Puspitowati, 2022), which has not yet referred to the fundamental causes of school dropout or used social reconstruction as a context. The emphasis is less on potential and more on theory. This investigation was conducted with the intent of developing a model for skill-based entrepreneurship education. Effective local specialties for the development of vocational skills in secondary school-aged students from marginalized communities who drop out or do not continue their education.

## **METHOD, DATA, AND ANALYSIS**

### **Method**

This study uses the research and development method described by Borg and Gall (Gall et al., 2007) by doing the following: alterations in accordance with existing conditions. The principal phases are as follows: (1) preliminary study, consisting of preparation and requirements analysis; (2) design model and prototype preparation modelling products collaboratively; (3) analytical testing FGD specialists in conjunction with businesspeople; (4) independently conducted operational testing accompanied by repeated or cyclical product enhancements model; (5) Validation test using the model pre-experiment; and (6) dissemination of results. The location of research and development is the people of Bandung district taken by purposive sampling with the criteria of representing poor or slum areas or communities as well as conflict-prone areas.

Furthermore, performance appraisal is used to measure the level of proficiency of children's vocational education, both before (pretest) and after the model test (post-test). Validation test results by educational research and evaluation experts indicate that the entire instrument has an average score of 4.3 in this very category good/decent. To test the reliability of the instrument by comparing the results of the assessment of vocational skills by two assessors. Results of the correlation test between two people assessors of the vocational skills of citizens learn to show the value of the correlation coefficient. high (cycle 1 correlation coefficient of 0.888, cycle 2 of 0.652, and pre-experimental of 0.768), which means that the instrument reliable. Furthermore, the data were analysed using quantitative descriptive techniques and t test (paired sample t test).

### **Data**

Data collection uses methods interviews, FGD (Focus Group Discussion), document review, observation, questionnaires, and tests vocational skills performance. Interview and FGD using internal instruments form of an interview guide and an FGD guide to collect data on problems and needs and test the analytical truth of the material substance together with craftsmen and business actors. Observation using observation and guidance instruments on activities during the operational test process and pre-experiment. Questionnaires and assessments performance is used in the operational test and model validation tests. This questionnaire was adapted from the developed instrument.

### **Analysis**

Furthermore, performance appraisal is used to measure the level of proficiency of children's vocational education, both before (pretest) and after the model test (post-test). Validation test results by educational research and evaluation experts indicate that the entire instrument has an average score of 4.3 in this very category good/decent. To test the reliability of the instrument by comparing the results of the assessment of vocational skills by two assessors. Results of the correlation test between two people assessors of the vocational skills of citizens learn to show the value of the correlation coefficient. high (cycle 1 correlation coefficient of 0.888, cycle 2 of 0.652, and pre-experimental of 0.768), which means that the instrument reliable. Furthermore, the data were analysed using quantitative descriptive techniques and t test (paired sample t test).

## RESULT AND DISCUSSION

### Description Of the Entrepreneurship Education Model Based Typical Local Skill

Some important points from research results and development as follows: (1) Results preliminary studies found that the implementation of entrepreneurship education was carried out for children who had dropped out of school or not. Continuing studies in marginalized communities not optimal, even tending to be conventional. This is indicated by the lack of standards content, does not have learning tools, not based on residents' needs, and so on. (2) The results of the needs analysis determine the skill of producing souvenirs and silver handicrafts as a substance for development model. Apart from necessity, it is also because of power very strong support, such as availability competent tutors and craftsmen, available and adequate materials and tools, industry and business support, and others. (3) Using study groups as a learning forum child who drop out of school and/or do not continue their studies.

This is based on the fact that learning platforms are very effective, especially in categorized areas marginal with all infrastructure limitations. (4) Based on the results of the needs analysis, the learning outcome, as the main output of model development, is that children have skills work (vocational) in producing leather handicrafts. These skills include basic skills and product skills. Specifically, production skills include production leather handicrafts. (5) The main components developed include aspects of objectives, planning, organizing, implementation, and assessment (full description) can be observed in Table 1.

**Table 1. Description of the Typical Local Skill-Based Entrepreneurship Education Model**

No	Component	Explanation
1	Main Object	The objective formulation includes skills in producing leather handicrafts, a goal formulation was developed. The all formulations of objectives children's skills or vocational skills.
2	Planning	Using study groups where one study group consists of four to five children. Criteria participant: Children who drop out of school and do not continue their studies aged 13–18 years in marginalized communities. In addition, it is also based on the results of an analysis of the problems and needs of the children in question. Tutors were recruited from local residents. The criteria used include a minimum education level of junior high school or its equivalent, being an entrepreneur, and being physically and mentally healthy. Guidelines the lessons prepared include a syllabus, lesson plans, learning schedule, tools, and assessment instruments. All of these devices refer to the main objectives set previously.
3	Organizing	Because the focus is on skills, the organization of the material also tends to be procedural. The procedural approach reflects each stage in which the material is composed systematically and sequentially according to the basic competencies and indicators in the syllabus. There are two main materials divided into two learning or practical activities. Material main point one is related to the practice of using tools and materials; the second is related to the practice of producing leather handicrafts. The entire content of the material is packaged sequentially and systematically and priorities practical activities. Distribution task executor consists of implementing teams with a clear division of tasks. The structure consists of a person in charge,

		a tutor, learning residents, and monitoring and evaluation. Responsibilities are carried out by researchers together with the management of community learning activities institutions, nearby school elements, and local environmental officials.
4	Implementation	Debriefing is carried out for the elements involved, especially tutors. Provision is given regarding the substance and mechanism of the model implemented, including the duties of each executor. Procedure learning carried out through three main stages, namely initial activities, core activities, and final activity. Its implementation is carried out in a participatory and dialogic manner using active, cooperative learning and hands-on practice so that children feel happy learning to facilitate the achievement of key competencies in the form of vocational skills. The time allocation is 20% for theory and module review and 80% for practical activities. Assessment uses a performance assessment sheet. The main focus of the assessment is the participant's skills in producing leather handicrafts. For operational test cycle 1, there are four assessment items related to ability use of tools and materials. In cycle 2, there are eight assessment items related to skills in making leather handicrafts. Next, test the effectiveness of the model. In the experimental test, there are nine assessment items related to production skills. The assessment was carried out by two assessors from the research element with the aim of obtaining the reliability of the instruments used.

Table 2. Summary of Operational Test Results

Variable	Cycle	N	Avera S	Val	D	Si		
Vocational Skills Skinal	I	<i>P-te</i>	2	4	6.	-14.	1	.0
		<i>Pote</i>	2	7	12.			
	I	<i>P-te</i>	2	4	4.	-18.	1	.0
		<i>Pote</i>	2	8	7.			

Table 3. Summary of Pre-Experiment Test Results

Variable	Group	N	Aver	Sd.	Value t	Df	Sig.
Vocational Skills	Pre-test	20	56.55	4.33	-34.56	19	.000
	Post-test	20	86.96	3.37			

## Test Results

Based on the data analysis results in Table 2, it can be concluded that both cycles 1 and 2 show differences significant vocational skills between before and after learning is carried out. The vocational skills of post-learning children are higher. This difference can be understood because the learning process is emphasized in the process of joint activities, interactions, and collaboration combined with activities practice. This practical activity becomes a means to help children acquire skills, vocational assistance, and guidance. The final trial was a pre-experimental test using a one-group pretest and post-test design. In experimental tests, all



assessment items are developed based on indicators of vocational skills in making leather crafts. On a test in this experiment, nine assessment items were obtained based on the stages of craft-making skills. The summary of the experimental test results is shown in Table 3.

Based on the data in Table 3, there are significant differences in vocational skills between before and after implementation treatment, where vocational skills after treatment are much better or higher. Achievements cannot be separated from entrepreneurship learning content that is tailored to the problems, potential surroundings, and children's needs as the theory of social reconstruction. The task of educational institutions is to study this potential and then develop it internally entrepreneurship learning content. Besides that, the entrepreneurial learning process priorities joint activities, interaction, and cooperation combined with practical activities. This process has been proven to be effective in assisting in the acquisition of vocational skills child. Thus, the skills-based entrepreneurship education model is uniquely local provide a significant influence on formation of children's drops out of school aged 13–18 years in marginalized communities.

### **Study of the Generated Model**

The research results as presented in the introductory section, found that internal factors and external factors as the cause of children dropping out of school or not continuing their studies (Byrne et al., 2014; Sarooghi et al., 2019). Besides that, the most crucial problems encountered directly by the child are problems economics, did not pass or did not go to class, no have a uniform, embarrassed because they are big, told to quit their parents, moved without asking transfer letter. These findings further confirm that the problem of education in marginalized communities are not just a problem economic and geographical, but because of the low relevance of the education being carried out with the child's environment, needs, and interests.

The resulting model was born to answer these problems by using social reconstruction theory as a backup. This theory puts child and his knowledge and concepts acquired must be able to identify and solve social problems in where the child is (Kitsantas et al., 2009; Omoniyi & Osakinle, 2011; Solesvik, 2013) Social problems caused by children who not and or dropping out of school is a real problem, according to views social reconstruction theory that these conditions can be completed through a flexible process according to the conditions encountered. The test results, both at the operational test and experimental test stages, show there is a significant difference in proficiency in children's vocational skills before and after being given treatment. Can be concluded that locally specific skill-based entrepreneurship education models exert influence which is significant for the formation of vocational skills of children who are not and or drop out of school aged 13-18 years in the community marginal. Judging from the response of tutors and children also showed strong support for these findings.

The resulting local skills-based entrepreneurial education model cannot be separated from the theoretical building of reconstruction social. Several principles were implemented, as models were developed based on real problems faced by children (weak skills, unemployment, poverty), content and material content are developed based on the potential around the child, learning is carried out interactively, dialogically, participatively, and collaboratively. These results sharpen several previous findings, such as Faberman's findings (2012) and Badillo (2013) who show that education is reconstruction-based social development is an alternative to educational development in the face of changes and social problems in several countries (Badillo-Amador & Vila, 2013; Faberman & Mazumder, 2012).

The implication is that society and policy makers must provide education with this alternative, especially in communities that are classified as marginalized. Some of the advantages of this model are as follows: First, the model is developed based on the potential and needs of the child. Utilization of local potential around children is capital main and most

important part in the educational process. Of course, not all local potential relevant to entrepreneurship education, because entrepreneurship is innovative, act under uncertainty and introduce products to the market, determine locations, and forming and utilizing resources, and managing businesses to compete to win market share (Law & Seng, 2012; Mbatha et al., 2019) to achieve profits (Hutson et al., 2023). Thus, local potential used are those that are relevant in forming entrepreneurial competencies including children's vocational skills. In addition to potential, needs are also considered in the development of this model. The reason is because of necessity is an important part of human life as in Maslow's theory (Garavan et al., 2002) and human success in life is many influenced by their competence in meeting needs, and humans will do so various efforts on an ongoing basis to achieve his needs.

Second, learning outcomes are the main outcome. The development of this model is directed at developing children's skills in producing local crafts and skills. Low vocational skills, which have implications for the emergence of other social problems, are an urgent and actual problem faced by children who drop out of school or do not continue studies on marginalized communities. This is the problem, according to reconstruction theory social challenges faced by children currently, so there needs to be a solution through entrepreneurship-based education typical local skills. This is emphasized by Russo (2017), who argues that social reconstruction places students' awareness in recognizing social problems along with the solution (Russo, 2017). Third, this model uses a container study groups, not formal classes like in formal and non-formal educational institutions formal. Study groups are chosen to make it easier for children to learn from each other, share information, exchange information, and collaborate to help each other and learn independently freely without any pressure. Collaboration, practice, interaction is key to learning social reconstruction orientation (Sarooghi et al., 2019; Sumarno et al., 2023) calls it a social construction process.

Fourth, the model components are focused on aspects that come into direct contact with entrepreneurship learning, such as goals learning, syllabus, teaching materials (modules), learning procedures, and supporting devices other. Emphasis on this aspect because the core of education lies in the learning process, especially the quality of learning. This matter also in line with some research results earlier that showed that the quality high learning produces learning outcomes of higher quality (Apriana et al., 2019; Sumarno et al., 2023). Therefore, Malikov, et al (2020) suggests the importance of learning relevant and real-life-based (Malikov et al., 2020). Fifth, the impact of the model. One of the criteria for a model in the work of Sarooghi et al. (2009) is that there are main and accompanying impacts. The results of operational and experimental tests show that the model developed has a significant impact on the formation of children's vocational skills (Sarooghi et al., 2019). Besides that, the accompanying impact on the formation of children's social skills although in some aspects, the model it has its advantages, but it also has some limitations (Xie, 2016).

The limitations include the indicators used in each stage and component. The model is still not complete, so it is necessary identified through follow-up studies or studies other. In addition, the resulting model is not comprehensive because of its complexity encountered in research, especially on the subject study. Hence, theories and models produced, it is still possible to do revision, modification, and improvisation which is enriching, clarifying, and confirm the research results.

## CONCLUSION

Based on the explanation above, you can conclude several things, as follows: (1) Implementation of entrepreneurship education for children who drop out of school or do not continue studies in marginalized communities are not yet optimal even tends to be conventional. (2) Model the resulting product consists of five main components: namely, goals,

planning, organizing, implementation, and assessment. (3) Analytical test results learning technologists, linguists, and the results of the FGD on substantive truth with craftsmen are in the very good category. The operational test results of the model show that there are significant differences in vocational skills between before and after implementation learning. In cycle 1, the t count was -14.18 with a probability value of 0.000. Next, in cycle 2, the value is obtained. The count is -18.41 with a probability value of 0.000. Pre-experimental test results too show a count value of -34.56 with probability value of 0.000. (4) Good tutors and children (citizens) learn to respond which is very positive about the resulting model.

Suggestion based on the research results and conclusions above, things like following: (1) for policy makers municipal, district, and provincial education as well Ministry of Education and Culture National), can utilize this model as an alternative to overcome problems faced with dropping out of school or not continuing studies in marginalized communities. This model provides an alternative educational relevance that suits the problems, needs, and potential of the surrounding area children, so it is expected to reduce problems of unemployment, poverty, and other social problems. (2) For institutions non-formal education, this model can be references, guidelines, and examples in developing entrepreneurship education or other skills education. (3) for researchers, Otherwise, it is advisable to do research further on a wider scale, such as expansion of the subject, different methods, and materials different local skills, the impact of the model is not only limited to skills vocational, but rather other aspects of skills in entrepreneurship learning.

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# THE EFFECT OF DEBT TO EQUITY RATIO ON PROFIT GROWTH THROUGH CURRENT RATIO AT PT DIAMOND FOOD INDONESIA TBK

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## ABSTRACT

The sample used from the company is quantitative data in the form of financial statements in the form of balance sheets and income statements from 2017 to 2022. The methods used in this study are Associative Method. The approach employed is a systematic examination and description of the situation through the collection of data derived from factual information shown in the financial statements of PT Diamond Food Indonesia Tbk. This research uses the methods of Simple Linear Regression Analysis, Simple Correlation Analysis, Coefficient of Determination Analysis and Path Analysis to determine the influence between variables.

The condition of Profit Growth at PT Diamond Food Indonesia, every year always changes, the average amount of Profit Growth for six years is 10.4%. The Debt to Equity ratio of PT Diamond Food Indonesia has exhibited annual fluctuations, with an average ratio of 39% over a six-year period. Similarly, the Current Ratio has also experienced yearly variations, with an average ratio of 290% over the same period. A simple correlation analysis reveals a highly significant negative relationship between the debt to equity ratio and the current ratio (-0.90). Furthermore, the Current Ratio demonstrates a weak negative impact on Profit Growth (-0.19), while the debt to equity ratio exhibits a weak positive influence on profit growth through the mediating variable of the current ratio (0.177).

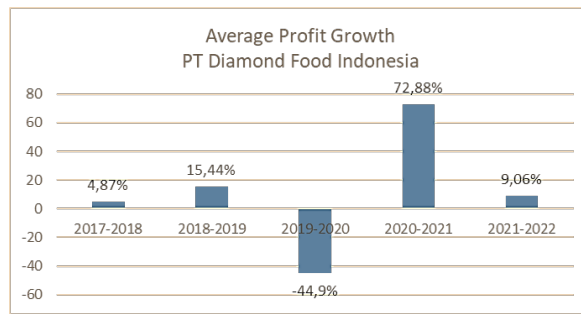
**Keywords:** Debt to Equity Ratio, Current Ratio, Profit Growth

## INTRODUCTION

Positive profit growth indicates that the company has a good financial system. Companies that have positive profits will have greater assets, so they can provide deeper opportunities to gain profitability. Profit growth is an increase in profits obtained by the company. To predict profit growth can be done by analyzing its financial ratios.

The Food and Beverage Sub-sector Company is one that has experienced an increase both in terms of company revenue and the number of investors. Especially what will be discussed in this study is from a Food and Beverage company in Indonesia, namely PT Diamond Food Indonesia Tbk (DMND) which is a food and beverage sub-sector company that is actively listed on the Indonesia Stock Exchange (IDX).

PT Diamond Food Indonesia Tbk (DMND), the company began commercial operations since 2016 and became an integrated platform provider for food and beverage production and distribution, both Diamond Group's brands and international principal brands to all regions in Indonesia. These products include dairy, confectionery, meat and seafood, fruits, vegetables and derivatives, groceries and bakery.



**Figure 1. 1 Graph of Average Profit Growth of PT Diamond Food Indonesia**

Based on the graph, it is evident that PT Diamond Food Indonesia Tbk consistently exhibits a positive year-on-year (YoY) average profit growth. Notably, there is a significant surge in profit growth from 2020 to 2021, following a considerable decline in profit growth from 2019 to 2020. This decline can be attributed to the onset of the COVID-19 pandemic, which resulted in various restrictions and reduced consumer demand. Consequently, production levels were affected, leading to a decrease in profit growth. However, as the pandemic subsided, profit growth resumed its positive trajectory.

Every company wants the profit obtained to increase every period because it signifies the progress of the company. To be able to make profits rise, the company must be able to be larger and reach a wider market share. Profit growth is the increase in company profits from each period, the better the company's performance, the profit growth will also increase. The factors that affect profit growth are the ratio of capital to debt and the ability to manage current assets by the company. Such as when the company owes to increase capital with the aim of increasing production and increasing profits as well as current asset management so that the company's finances remain stable.

Based on the explanation of the phenomenon and description that has been explained earlier, researchers are interested in conducting research to determine the performance of the company PT Diamond Food Indonesia based on the variables of the last 6 years of financial statements. In this study, researchers used solvency ratio measures in the form of Debt to Equity Ratio and liquidity ratio in the form of Current Ratio to measure the effect on profit growth.

### 1. Profit Growth

According to Keown et al., (2018: 136) Profit growth is an increase in company profits compared to previous period profits. Indicators of profit growth according to Hery (2019) are Profit after tax for a certain period and Profit after tax for the previous period. According to Hanafi et al., (2016) in (Melinda, T. P, 2019), the factors that affect profit growth are Company Size, Company Age, Leverage Rate, Sales Rate, Past Profit Changes.

### 2. Debt to Equity Ratio

According to Kasmir (2019: 156) Debt to Equity ratio is a debt ratio used to measure the ratio between total debt and total equity. Indicators of debt to equity ratio according to Kasmir (2019) are total debt and total equity.

### 3. Current Ratio

According to Herry (2018) Current ratio is a ratio used to measure a company's ability to meet its short-term obligations that are soon due using total available current assets. Indicators of current ratio according to Puspasari et al., (2017) are: Current Assets and Current Debt.

## RESULT AND DISCUSSION

This study uses quantitative research methods and associative approaches. According to Sugiyono (2019: 65) Associative research is research that aims to determine the effect of the relationship between two or more variables.

The population used in this study is financial statements in the form of income statements, and balance sheet statements of PT Diamond Food Indonesia Tbk, The samples used in this study are financial statements in the form of income statements, and balance sheets of PT Diamond Food Indonesia for 6 years from 2017 to 2022 and consist of Profit Growth, Debt to Equity Ratio and Current Ratio. The reason for this sampling is due to the limited data obtained.

Based on data processing results, it is known that the equation of current ratio ( $X_2$ ) to profit growth (Y) is :

$$= 320.336 + (-0.748)$$

The constant value is 320.336 This means that if there is a change in the verifiable Current ratio or  $( ) = 0$ , then the profit growth at PT Diamond Food Indonesia is 320.336. The value of the regression coefficient of the current ratio is -0.748. This means that if the current ratio variable is 1, assuming a constant of 320.336, then profit growth at PT Diamond Food Indonesia is reduced by 0.748. This shows that the greater the current ratio, the profit growth will decrease or negatively affect the current ratio to profit growth.

### A Simple Correlation Analysis

According to the findings presented Based on data processing results, there exists a strong negative correlation of -0.906 between the Debt to Equity Ratio and the Current Ratio. This indicates that the relationship between these two variables is highly significant and inversely related. This means that if the debt to equity ratio increases, the current ratio decreases.

Based on data processing results, the correlation between Current Ratio to Profit Growth of -0.196 is obtained which means that the correlation of Current Ratio to Profit Growth is Very Weak with the direction of Negative Relationship (opposite). This mean if the current ratio increases then what happens is that profit growth decreases, and vice versa if the Current Ratio decreases then the Profit Growth increases, due to other factors.

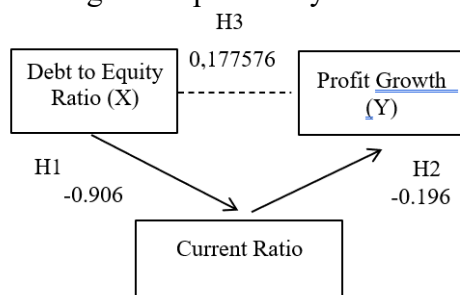
### Test t

Based on data processing results, it is known that the significance value of Variable X1 against X2 is  $0.013 < 0.05$ , then H0 is accepted and H1 is rejected. This means that there is a significant influence of Debt to Equity Ratio on Current Ratio, and it is known that the significance value of Variable X2 to Y is  $0.710 > 0.05$ , then H0 is rejected and H1 is accepted. This means that there is no significant influence of Current Ratio on Profit Growth.

### Path Analysis

Known from the table above, the results of the calculation of standardized coefficients beta which can be interpreted as the effect of Debt to Equity Ratio to Current Ratio of -0.906. And the effect of Current Ratio on Profit Growth of -0.196. So to find out the indirect effect of the Current Ratio on Profit Growth, namely:  $-0.906 \times -0.196 = 0.177576$ . It can be seen the path analysis as follows:

The diagram in path analysis can be described as follows:.



## Figure 4. 2 Path Analysis Diagram

### Determination Coefficient Analysis

Based on data processing results, it can be inferred that the Debt to Equity Ratio accounts for 82% of the Current Ratio, with the remaining 18% attributed to other factors. It can be concluded that the Current Ratio contributes to Profit Growth of 0.038 or 3.8%, while the remaining 96.2% is contributed by other factors that are not studied by researchers.

#### a) Influence of Debt to Equity Ratio on Current Ratio

Based on the table above, a Sig. value of 0.013 is obtained with a significant level of 5% or 0.05. Because the sig value of  $0.013 < 0.05$ , the  $H_0$  is accepted and  $H_1$  is rejected, which means that the partial Debt to Equity Ratio has a significant effect on the Current Ratio with a negative relationship direction. This means that if the value of the debt to equity ratio is high, the current ratio decreases. The better the company uses its source of funds either from debt or capital for company operations, the more the company's ability to earn profits and vice versa if the value of the debt to equity ratio is low, the value of the current ratio also increases.

This research is in line with the results of previous research conducted by Ryando (2021), the results of the study show that the debt to equity ratio is thought to have an effect on the current ratio. It can be proven from the results of research in the partial test (t test), which resulted in a Sig. value of 0.004 which has the understanding that the debt to equity ratio has an influence on the current ratio at PT Tambang Bukit Asam, Tbk for the period 2010 - 2017.

#### b) Influence of Current Ratio on Profit Growth

Based on the table above, a Sig. value of 0.706 is obtained with a significant level of 5% or 0.05. Because the sig value of  $0.706 > 0.05$  then  $H_0$  rejected and  $H_1$  is accepted which means that partially the Current Ratio has no effect and is not significant on Profit Growth with a negative relationship direction. This means that if the current ratio value is high, profit growth will decrease. Due to another factor, namely the less optimal use of current assets that remain the same, the company earned a small profit in 2019-2020.

This research is in line with the results of previous research conducted by Visilia (2019), the results of the study show that the current ratio is thought to have no effect on profit growth. It can be proven from the results of research in the partial test (t test), which resulted in a Sig. value of 0.1787 which has the understanding that the current ratio does not affect profit growth in hotel, restaurant and tourism sub-sector companies listed on the Indonesia Stock Exchange 2013-2017.

#### c) The Effect of Debt to Equity Ratio on Profit Growth through Current Ratio

It is known that the results of a simple regression calculation of standardized coefficients beta Debt to Equity Ratio to Current Ratio of -0.906. And the effect of Current Ratio on Profit Growth of -0.196. So to find out the indirect effect of the Debt to Equity Ratio on Profit Growth, it is multiplied, and the result is known to be 0.177576. For the influence of these three variables, it is known that  $H_1$  is -0.906,  $H_2$  is -0.196 and  $H_3$  is 0.177576. The coefficient of determination, which measures the proportion of variance in profit growth explained by the debt to equity ratio through the current ratio, is calculated to be 13%. This implies that the debt to equity ratio contributes 13% to profit growth, while the remaining 87% is impacted by other factors. The results of this study are in line with research conducted with the title "The Effect of Current Ratio and Debt to Equity Ratio on Profit Growth in Property and Real Estate Companies Listed on the Indonesia Stock Exchange for the 2010-2014 Period." by (Sihombing 2018).

The results of the processing of the above research can be explained that directly the Debt to equity ratio (X) does not have a significant effect on the variable Profit Growth (Y). This result means that the higher or lower the value of the Debt to equity ratio owned by the company cannot affect the company's profit growth. However, these results are different from the



influence carried out indirectly, namely through the intervening variable Current Ratio. The indirect effect of Debt to equity ratio through Current Ratio has a positive influence on profit growth. It can be concluded that high or low debt to equity ratio through Current Ratio (M) can affect the company's profit growth.

### **conclusion**

Based on the results of research and analysis that has been carried out by researchers during research and discussion of the Effect of Debt to Equity Ratio, the researchers can draw the following conclusions :

1. Based on the calculation and discussion above, the Debt to Equity Ratio directly has a significant effect on the Current Ratio of PT Diamond Food Indonesia for six years from 2017 to 2022.
2. Based on the calculation and discussion above, directly the Current Ratio does not have a significant effect on Profit Growth at PT Diamond Food Indonesia for six years from 2017 to 2022.
3. Based on calculations and discussions, the Debt to Equity Ratio to Profit Growth through Current Ratio as an intervening variable has an indirect influence on PT Diamond Food Indonesia for six years from 2017 to 2022. Then it can be concluded that the real relationship is indirect.

In addition to some of the conclusions drawn by the author above, there are also suggestions from researchers :

1. From this research, it is expected to pay more attention to other factors besides debt to capital, current assets issued for production activities and company operations so that they can generate optimal profits.
2. For academics, this research is anticipated to serve as a point of comparison for other parties who will do research, as well as to bring fresh perspectives for readers and serve as a guide and input for other researchers to improve future research.
3. For further researchers, it is expected to be able to add and further develop variables, objects and criteria and also samples for research so that the results are better and expand the research results obtained.

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## **The Effect of E-wallets on the Consumptive Behavior of Students of the Faculty of Economics and Business, Yogyakarta State University**

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### **ABSTRACT**

This study aims to determine how the effect of e-wallets on the consumptive behavior of students of the Faculty Economics and Business, Yogyakarta State University. The era of the industrial revolution 4.0 has encouraged the development of technology to become more sophisticated and modern, one of which is a smartphone that is utilized as a payment transaction tool such as an e-wallet. E-wallet users from year to year continue to increase. This can be proven by a report from East Ventures (EV) entitled Digital Competitiveness Index 2023: Equitable Digital Nation, which states that e-wallets are the most widely used payment method in Indonesia. It is noted that e-wallets lead with a percentage of 81% compared to other payment methods. This article discusses several novelty issues in research on the influence of e-wallets on consumptive behavior. In some previous studies, it was stated that e-wallets have an effect on a person's consumptive behavior. However, based on the research we have done, it has provided something new, namely that the use of e-wallets does not have a significant effect on a person's consumptive behavior. This research was conducted with a quantitative technical approach through correlational research. The research population consisted of 2.185 active students in the Faculty of Economics and Business class of 2020, 2021, and 2022. The sampling technique used incidental sampling. Collecting data using a questionnaire distributed in Faculty of Economics and Business. The questionnaire results were processed using IBM Statistics 21 and carried out analysis prerequisite test by normality test and linearity test. The analysis using simple linear regression and descriptive statistic analysis. The results show that

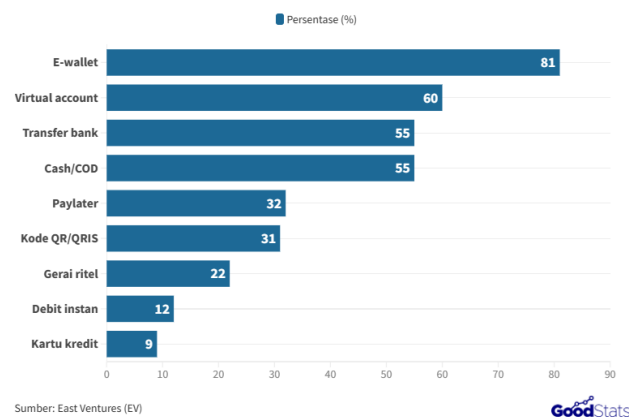
the variable of using e-wallet (X) does not have a significant correlation on the variable consumptive behavior (Y) of students Faculty Economic and Business. So, it can be concluded that e-wallets have no significant influence on the consumptive behavior of students at the Faculty of Economics and Business, Yogyakarta State University.

**Keywords:** e-wallet, consumptive behavior, quantitative approach, university student

## INTRODUCTION

The development of the industrial revolution 4.0 era has encouraged the development of technology in Indonesia that is increasingly sophisticated and modern, one of which is a smartphone that is used as a new payment transaction tool or mobile payment such as an e-wallet. The use of e-wallets continues to experience developments in facilitating online and offline transactions that only use QR codes. The use of this e-wallet provides various conveniences with the latest technology that can be accessed by all groups. Based on data provided by Bank Indonesia (BI) on the LifePal website (2019), there are 38 e-wallets that have obtained an official license. Along with the proliferation of electronic money, e-wallet transactions in Indonesia reached USD 1.5 billion, equivalent to IDR 21 trillion, and will likely continue to increase to IDR 355 trillion by 2023. In addition, according to the East Ventures (EV) report titled Digital Competitiveness Index 2023: Equitable Digital Nation cited in GoodStats, e-wallets are the most widely used payment method in Indonesia, with a percentage of 81% in 2022. The following is a graph that shows that e-wallets are one of the most widely used payment methods in Indonesia.

### The Most Used Payment Methods in Indonesia by 2022



Source: <https://goodstats.id/>

Competition between electronic money or digital wallet providers in Indonesia is getting tighter, along with the increasing digital transactions of the community over the past few years. Based on a survey conducted by Populix (2022) entitled "Customer Preference Towards Banking and E-Wallet Apps" involving 1,000 respondents aged 18–55 years in a number of major cities in Indonesia, there are several e-wallets that are most widely used by Indonesians. The following are the results of a survey conducted by Populix:

**Table 1. Most Used E-Wallet Survey Results**

No	List of <i>E-Wallet</i>	Survey Result
1.	GoPay	88%
2	Dana	83%
3.	OVO	79%
4.	Shopee Pay	76%
5.	LinkAja	30%
6.	i.saku	7%
7.	OCTO Mobile	5%
8.	DOKU	4%
9.	Sakuku	3%
10.	JakeOne Mobile	2%

Source: <https://info.populix.co/report/digital-banking-survey/>

An electronic wallet (e-wallet) itself, according to the explanation contained in Bank Indonesia Regulation Number 18/40/PBI/2016 concerning the Implementation of Payment Transaction Processing, Article 1, point 7 is defined as an electronic service used to store payment instrument data, including payment instruments accompanied by cards and/or electronic money, which can also accommodate funds, to make payments. (Bank Indonesia, 2016). An e-wallet allows users to store a certain amount of money in an application. The stored money can be used to make payment transactions both online and offline. The steps to use an e-wallet can be done in just a few steps and can even use a QR code. The indicators of e-wallet usage use the Technology Acceptance Model (TAM) theory, namely the technology acceptance model that will be used by users. According to Davis et al. (in Rahmawati & Yuliana, 2020) the factors that determine technology users willingness to use and accept developing technology are perceived ease of use, perceived usefulness, and perceived risk.

#### 1. Perceived ease of use

Perceived ease of use means the extent to which the use of technology can be easily understood. The developer of the e-wallet application system strives in such a way that the e-wallet can be operated easily, so that it does not make it difficult for users to operate it and the e-wallet can be well received.

#### 2. Perceived Benefits

Users believe that the technology used can improve their performance. Users also believe that the technology brings many benefits. For example, e-wallets make transactions easier, and their features support user needs. Users feel the benefits of using e-wallets, so they will use them more often in transactions.

#### 3. Perceived Risk/Security

Security risks and privacy factors can affect user perception. Security means the power to protect user information or data from crimes such as fraud and theft. Security is also intended to prevent service constraints in transactions that can cause losses to users.

Insana and Johan (2021) stated that the use of electronic money affects student consumption behavior. This is directly proportional to the research conducted (Dewi et al., 2021) which states that the use of e-money affects consumptive behavior. Lifestyle has a close relationship with consumptive behavior. Based on Melina and Wulandari's opinion in (Rismayanti, 2020), lifestyle is a factor causing consumptive behavior because humans spend their money more often to buy something they want than needs.

Consumptive behavior is the habit of purchasing goods that aim not to meet needs but to fulfill desires repeatedly, thus making excessive use of money. This behavior is formed by lifestyle and supported by the mass production of goods (Lestarina et al., in Mujahidin and

Astuti, 2020). Consumptive behavior is often associated with a tendency to overspend as humans are willing to sacrifice various things in order to have something they want (Lubis & Sutirman, 2022). The purchase of goods based on this consumptive behavior is less calculated or unplanned, but only based on pleasure. Meanwhile, according to Dwi Astuti in Mujahidin and Astuti (2020), consumptive behavior is defined as the activity of using products with different brands before the use of the previous product has not reached its end of life or completion.

According to Sumartono and Djabar (in Wahyuni, 2019), indicators of consumptive behavior are:

1. Buying products because of the lure of gifts.  
The reason someone buys an item is because of an attractive gift offered by the seller.
2. Buying products because the packaging is attractive.  
Consumers are very easily persuaded to buy products that are neatly wrapped and decorated with attractive packaging. This means that the motivation to buy the product is only because the product is neatly wrapped and attractive.
3. Buying products to maintain self-appearance and prestige  
In general, consumers have distinctive characteristics in dressing, grooming, hairstyles, and so on, with the aim of always looking attractive to others. In other words, consumers spend more money to support their appearance.
4. Buying products on price considerations (not on the basis of their benefits or usefulness)  
Consumers buy goods without considering the function and usefulness of the goods they buy. Consumers also tend to behave in a way that is signalled by the existence of a luxurious life, so they tend to use everything that is considered the most luxurious.
5. Buying products just to maintain status symbols.  
Consumers are financially able to make purchases in terms of clothing, makeup, hairstyles, and so on so that it can support exclusive properties with expensive goods and give the impression of coming from a higher social class. Buying a product can provide a status symbol to look cooler in the eyes of others.
6. Wearing a product because of the element of conformity to the model that advertises.  
Consumers tend to imitate the behavior of idolized figures by using everything that their idol figures can wear. Consumers also tend to use and try the products offered if they idolize the public figure of the product.
7. The emergence of the judgment that buying products at high prices will lead to high self-confidence  
Consumers are strongly encouraged to try a product because they believe what the advertisement says, namely that it can foster self-confidence in them.
8. Trying more than two similar products (different brands)  
Consumers will tend to use the same type of product from another brand before using it, even though the product has not been used up.

## **METHOD, DATA, AND ANALYSIS**

This research is correlational research using a quantitative approach. Correlational research aims to find whether there is a relationship between the independent or independent variable (X) and the dependent or dependent variable (Y). In this study, correlation was chosen to examine the effect of using e-wallets on the consumptive behavior of students at the Faculty of Economics and Business, UNY.

The population of this research is all students of class 2020, 2021, 2022 Faculty of Economics and Business, Yogyakarta State University, totaling 2,185 people. The research sample is students from the Faculty of Economics and Business who use e-wallets. In this

research, researchers used a sample of 241 respondents with an error rate of 10%, where the determination of the sample size was based on the Isaac and Michael formula (Sugiyono, 2015). Sampling in this study using incidental sampling, namely the technique of determining samples based on incidentals. Anyone who happens to meet the researcher and is suitable as a data source can be used as a sample (Sugiyono, 2015).

Research data is in the form of primary data obtained by distributing questionnaires to respondents. Questionnaires were sent to students of the Faculty of Economics and Business who use e-wallet as a means of payment. The survey was conducted using the online media Google Form. After that, the questionnaire results were processed using IBM Statistics 21 and carried out analysis prerequisite tests by normality tests, linearity test, then simple linear regression test.

## RESULT AND DISCUSSION

### 1. Test Research Instruments

#### Validity Test Result

##### a. E-Wallet Variable

**Table 2. Validity Test Result E-Wallet Variable**

Item	$r_{\text{calculated}}$	$r_{\text{table}}$	Description
1	0,470	0,3494	Valid
2	0.639	0,3494	Valid
3	0.194	0,3494	Invalid
4	0.508	0,3494	Valid
5	0.498	0,3494	Valid
6	0.748	0,3494	Valid
7	0.715	0,3494	Valid
8	0.538	0,3494	Valid
9	0.760	0,3494	Valid
10	0.620	0,3494	Valid

##### b. Consumptive Behavior Variable

**Table 3. Validity Test Result Consumptive Behavior Variable**

Item	$r_{\text{calculated}}$	$r_{\text{table}}$	Description
1	0,142	0,3494	Invalid
2	0,117	0,3494	Invalid
3	0.016	0,3494	Invalid
4	0.504	0,3494	Valid
5	0.215	0,3494	Invalid
6	0.548	0,3494	Valid
7	0.432	0,3494	Valid
8	0.468	0,3494	Valid
9	0.761	0,3494	Valid
10	0.645	0,3494	Valid
11	0,803	0,3494	Valid
12	0,630	0,3494	Valid
13	0,678	0,3494	Valid
14	0,670	0,3494	Valid
15	0,745	0,3494	Valid
16	0,581	0,3494	Valid

17	0,638	0,3494	Valid
18	0,671	0,3494	Valid
19	0,575	0,3494	Valid
20	0,637	0,3494	Valid
21	0,640	0,3494	Valid
22	0,625	0,3494	Valid
23	0,571	0,3494	Valid
24	0,637	0,3494	Valid
25	0,589	0,3494	Valid
26	0,207	0,3494	Invalid
27	0,663	0,3494	Valid
28	0,676	0,3494	Valid
29	0,679	0,3494	Valid

The table above shows the results of validity test using Pearson Product Moment Correlation to 32 respondents. The Pearson Product Moment test is carried out by comparing the r calculated with the r table where DF 32 has a probability of 0.05, namely 0.3494. The results of the validity test showed that 9 questions for variable X and 24 questions for variable Y were declared valid, and there were 6 questions that were invalid and were not involved in the research.

### Reliability test

**Table 4. Reliability Test Result**

Variable	Cut-off	Cronbach Alpha	Description
Use of digital wallet	0,60	0.746	Reliable
Consumptive behavior	0,60	0.921	Reliable

The table above shows the results of reliability test using Cronbach Alpha method  $> 0.6$  against 39 statements. The reliability test results show that the statement of e-wallet variable (X) is 0.746 and consumptive behavior variable (Y) is 0.921, so that both variables are reliable and can be analyzed further.

## 2. Descriptive Statistic Analysis

**Table 5. Result of Descriptive Statistic Analysis**

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
Use of Electronic Wallet (X)	116	27	45	36.97	4.258
Consumptive Behavior (Y)	116	26	120	62.33	17.354
Valid N (listwise)	116				



**Table 6. Frequency Distribution**

No	Category	Interval	Use of E-Wallet (X)		Consumptive Behavior (Y)	
			Frequenc y	Percenta ge	Frequenc y	Percenta ge
1	Very high	$M + 1,5 SD < X$	9	8%	8	7%
2	High	$M + 0,5 SD < X \leq M + 1,5 SD$	28	24%	28	24%
3	Medium	$M - 0,5 SD < X \leq M + 0,5 SD$	47	41%	42	36%
4	Low	$M - 1,5 SD < X \leq M - 0,5 SD$	25	22%	33	28%
5	Very low	$X < M - 1,5 SD$	7	6%	5	4%

Based on Table 6, it can be seen that of the 116 respondents, most of the students in the Faculty of Economics and Business, namely 47 out of 116 people, or 41% of the total sample, have a level of tendency to use e-wallets in the "medium" category. In fact, there are 28 people, or 24% of Faculty of Economics and Business students, who are at the level of tendency to use e-wallets in the "high" category. In addition, there are 25 people, or 22% of Economics and Business students, who are at the level of tendency to use e-wallets in the "low" category. 9 people, or 8% of students, have a "very high" level of e-wallet usage, and there are 7 people, or 6% of students, who have a tendency to use e-wallets in the "very low" category. Thus, it can be said that the variable use of e-wallets is included in the "medium" category. This means that students tend to use e-wallets not too often or too rarely. Students can take advantage of the convenience and speed of transactions offered by e-wallets, but not too often so that they do not indicate excessive consumptive behavior.

Based on Table 6, it can be seen that of the 116 respondents, most of the students in the Faculty of Economics and Business, namely 42 out of 116 people, or 36% of the total sample, have a level of tendency to become consumptive in the "medium" category. In fact, there are 33 people, or 28% of Economics and Business students, who are at the level of tendency to have consumptive behavior in the "low" category. In addition, there are 28 people, or 24% of Faculty of Economics and Business students, who are at the level of tendency to consumptive in "high" category. There are 8 people, or 7% of Economics and Business students have a "very high" level of consumptive, and there are 5 people, or 4% of students, who have a tendency to become consumptive in the "very low" category. Thus, it can be said that the variable use consumptive behavior is included in the "medium" category. This means that students tend to have consumptive behavior not too extremely.

### 3. Analysis Prerequisite Test

## Normality Test

**Table 7. Result of Normality Test**  
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		116
Normal Parameters <sup>a,b</sup>	Mean	.0000000
	Std. Deviation	17.23844714
Most Extreme Differences	Absolute	.074
	Positive	.074
	Negative	-.035
Kolmogorov-Smirnov Z		.794
Asymp. Sig. (2-tailed)		.553

a. Test distribution is Normal.

b. Calculated from data.

The normality test aims to test whether, in the regression model, the residual value has a normal distribution or not. According to the table above, it can be concluded that the significant test from Kolmogorov Smirnov with Asymp. Sig (2 Tailed) is 0.553. It is concluded from these results that the research data with Kolmogorov Smirnov  $0.553 > 0.05$ , so this research data is normally distributed.

## Linearity Test

**Table 8. Result of Linearity Test**  
ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Consumptive Behavior (Y) * Use of Electronic Wallet (X)	Between Groups	(Combined)	3193.754	18	177.431	.547	.927
		Linearity	459.685	1	459.685	1.418	.237
		Deviation from Linearity	2734.069	17	160.828	.496	.949
	Within Groups	31439.798	97	324.122			
	Total	34633.552	115				

Linearity test was conducted to determine the relationship between dependent and independent variables. If Sig. Deviation from linearity value is more than 0.05, then there is a linear relationship between the independent and dependent variable. Conversely, if Sig. Deviation from linearity value is less than 0.05, then there is no linear relationship between the independent and dependent variable. The value is from the SPSS calculation result in ANOVA table. ANOVA table above shows the results of linearity test that we have done. Sig. Deviation from linearity value is 0.496. That results of linearity test is more than significance value 0.05, so there is a linear relationship between our dependent and independent variable. In this research we use the usage of e-wallet as a independent variable and consumptive behavior as a dependent value. So, it can be concluded that e-wallet usage and consumptive behavior have a linear relationship.

## 4. Simple Linear Regression Test

**Table 9. Result of Coefficient of Determination Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.115 <sup>a</sup>	.013	.005	17.314

a. Predictors: (Constant), Use of Electronic Wallet (X)

**Table 10. Anova Table ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	459.685	1	459.685	1.533	.218 <sup>b</sup>
	Residual	34173.867	114	299.771		
	Total	34633.552	115			

a. Dependent Variable: Consumptive Behavior (Y)

b. Predictors: (Constant), Use of Electronic Wallet (X)

**Table 11. Result of Simple Linear Regression Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
		(Constant)	44.966	14.112		
1	Use of Electronic Wallet (X)	.470	.379	.115	1.238	.218

a. Dependent Variable: Consumptive Behavior (Y)

Table 9. displays the value of R which is symbolic of the value of the correlation coefficient. The regression results above show a correlation value of 0.115. From the Model Summary table, it can be interpreted that the relationship between the two research variables is in the weak category. Through this table also obtained the value of R Square or coefficient of determination of 0.013 or 1.3% which can be interpreted that the variable of using e-wallets (X) only affects 1.3% of student consumptive behavior (Y). That is, the variable use of e-wallets does not have a large or insignificant influence on student consumptive behavior (Y). Meanwhile, 98.7% is influenced by other factors outside the X variable. This shows that the use of e-wallets is not the main factor in students' consumptive behavior.

From the results of the research obtained, it shows that e-wallets do not have a significant effect on the consumptive behavior of FEB UNY students batch 2020, 2021, 2022. This is evidenced by the results of a simple linear regression test on the Anova table which explains that the sig value is  $0.218 > 0.05$ . That is, the use of electronic money does not have a significant impact on the variables of student consumptive behavior. Based on table 11, it can be seen that the regression equation model is  $Y = 44.966 + 0.470X$ . There is a positive relationship between the two variables, where an increase in variable X will result in an increase in Y with a magnitude of 0.470. Even so, the results of the regression test proved that there was no significant influence between the two variables.

The following are the results of data processing from the collection of answers given by respondents that are in line with the results of the regression test

a. Variable Use of E-Wallet

**Table 12. Results of Data Processing about E-Wallet by Respondents**

Indicator	Question	Answer choice	Amount	Percentage
<b>Perception of ease</b>	E-wallet makes it very easy for me to make online transactions	Strongly Disagree	0	0%
		Disagree	0	0%
		Neutral	1	0.86%
		Agree	23	19.83%
		Strongly Agree	92	79.31%
<b>Perception of benefits</b>	I can make transactions faster by using e-wallet	Strongly Disagree	0	0%
		Disagree	2	1.72%
		Neutral	4	3.45%
		Agree	56	48.28%
		Strongly Agree	54	46.55%
<b>Perception of risk/security</b>	I believe that transactions with e-wallets can be guaranteed to be safe	Strongly Disagree	1	0.86%
		Disagree	8	6.90%
		Neutral	31	26.72%
		Agree	59	50.86%
		Strongly Agree	17	14.66%

The results of our survey on the e-wallet variable which was answered by 116 respondents produced data as in the table above. This variable has three indicators, all of them are represented by one question each. For the first indicator, perceptions of ease, which is represented by the statement that e-wallet makes it very easy to make online transactions, it received a statement that strongly agreed with 79.31% or 92 respondents, 23 respondents or 19.83% agreed, and 1 respondent or 0.86% neutral. No one strongly disagreed or just disagreed with the statement of the indicator. It can be concluded that e-wallets make online transactions easier with 79.31% of respondent strongly agreeing.

Next for the second indicator, perceptions of benefits, with the statement that e-wallet can make transactions faster. It received a statement that strongly agreed with 46.55% or 54 respondents, 56 respondents or 48.28% agreed, and 4 respondent or 3.45% neutral, also 2 respondents or 1.72% disagreed. No one strongly disagreed with the statement of the indicator. So, the respondents agree that it can be concluded that e-wallets make transactions faster with 48.28% of respondents agreeing.

The third statement that represent the third indicator states that transactions with e-wallets are guaranteed to be secure. It received a statement that strongly agreed with 14.66% or 17 respondents, 59 respondents or 50.86% agreed, and 31 respondent or 26.72% neutral. Also 8 respondents or 6.90% disagreed, 1 respondent or 0.86% strongly disagreed. The respondents agree that that transactions with e-wallets are guaranteed to be secure with 50.86% of respondents agreeing.

Of these three indicators, overall, respondents have a high tendency to use e-wallets. This is proven by their respond to the statement.

b. Variable Consumptive Behavior

**Table 13. Results of Data Processing about Consumptive Behavior by Respondents**

Indicator	Question	Answer choice	Amount	Percentage
<b>Buying products because of the lure of prizes</b>	The number of cashback offers using E-Wallet increases my desire to shop for goods that are not urgent needs	Strongly Disagree	STS	6,9%
		Disagree	TS	12,9%
		Neutral	N	23,3%
		Agree	S	31,9%
		Strongly Agree	SS	25%
<b>Buying products because of attractive packaging</b>	When buying a product, the first thing I look at is the shape and design of the product packaging before considering its benefits and usability.	Strongly Disagree	18	15,5%
		Disagree	42	36,2%
		Neutral	21	18,1%
		Agree	25	21,6%
		Strongly Agree	10	8,6%
<b>Buying products to maintain personal appearance and prestige</b>	I spend more money on my appearance than on my basic needs (food, college supplies, etc.).	Strongly Disagree	21	18,1%
		Disagree	45	38,8%
		Neutral	24	20,7%
		Agree	18	15,5%
		Strongly Agree	8	6,9%
<b>Buying products on price considerations (not on the basis of their benefits or usefulness)</b>	I always have the desire to try luxury products even though I may not use them.	Strongly Disagree	45	38,8%
		Disagree	28	24,1%
		Neutral	28	24,1%
		Agree	11	9,5%
		Strongly Agree	4	3,4%
<b>Buying products just to maintain a status symbol</b>	I want to buy branded products to be seen by others and feel assured of transaction security even though the nominal is large	Strongly Disagree	36	31%
		Disagree	52	44,8%
		Neutral	16	13,8%
		Agree	10	8,6%
		Strongly Agree	2	1,7%
<b>Wearing the product because of the element of conformity to the advertised model</b>	I use products with the same brand as my favorite artist	Strongly Disagree	43	37,1%
		Disagree	40	34,5%
		Neutral	20	17,2%
		Agree	11	9,5%
		Strongly Agree	1	0,9%
<b>The emergence of the judgment that buyers of high-priced products will cause high self-confidence</b>	I can buy products advertised in the media quickly using E-Wallet to increase self-confidence	Strongly Disagree	12	10,3%
		Disagree	34	29,3%
		Neutral	39	33,6%
		Agree	26	22,4%
		Strongly Agree	5	4,3%
<b>Trying more than two similar products (different brands)</b>	I am happy to try various products from various brands even though they have the same function without difficulty because E-Wallet is easy to use	Strongly Disagree	12	10,3%
		Disagree	39	33,6%
		Neutral	37	31,9%
		Agree	18	15,5%
		Strongly Agree	10	8,6%

Based on the table above, the statistical results of the questionnaire answered by 116 respondents, especially the consumer behavior variable, which consists of various indicators per question, In the statement "the large number of cashback offers using E-Wallet increases my desire to shop for goods that are not urgently needed," as many as 8 respondents or 6.9% said they strongly disagreed, 15 respondents or 12.9% said they disagreed, 27 respondents or 23, 3% said they were neutral, 37 respondents or 31.9% said they agreed, and 29 respondents or 25% said they strongly agreed. It can be concluded from the indicator "Buying products because of the lure of gifts" that the large number of cashback offers for using E-Wallets increases the desire to shop for goods that are not urgently needed, with 31.9% agreeing.

After that, there was a statement, "When buying a product, the first thing I look at is the shape and design of the product packaging before considering its benefits and uses. 18 respondents, or 15.5%, said they strongly disagreed, 42 respondents, or 36.2%, disagreed, 21 respondents, or 18.1%, said they were neutral, 25 respondents, or 21.6%, said they agreed, and 10 respondents, or 8.6%, said they strongly agreed. It can be concluded from the indicator "Buy a product because the packaging is attractive" that someone who buys a product because the packaging is attractive stated that they disagreed at 36.2%.

Furthermore, in the statement "I spend more money to support my appearance than for basic needs (food, college supplies, etc.)," as many as 21 respondents, or 18.1%, said they strongly disagreed, 45 respondents, or 38.8%, said they did not agree, 24 respondents, or 20.7%, said they were neutral, 18 respondents, or 15.5%, said they agreed, and 8 respondents, or 6.9%, said they strongly agreed. It can be concluded that the indicator "buying products to maintain one's appearance and prestige" stated that 38.8% disagreed.

Next, in the statement "I always have the desire to try luxury products even though I don't necessarily use them," as many as 45 respondents, or 38.8%, said they strongly disagreed, 28 respondents, or 24.1%, said they disagreed, 28 respondents, or 24.1%, said they were neutral, 11 respondents, or 9.5%, said they agreed, and 4 respondents, or 3.4%, said they strongly agreed. It can be concluded from the indicator "buying a product based on price considerations (not based on its benefits or usefulness)" that someone has the desire to try a luxury product, although not necessarily used, and that they strongly disagreed at 38.8%.

Apart from that, there was the statement, "I want to buy branded products so that other people will look at me and feel assured of the security of the transaction even though the nominal value is large." As many as 36 respondents, or 31%, said they strongly disagreed, 52 respondents, or 44.8%, said they disagreed, 16 respondents, or 13.8%, said they were neutral, 10 respondents, or 8.6%, said they agreed, and 2 respondents, or 1.7%, said they strongly agreed. It can be concluded with the indicator "Buying products just to maintain a status symbol" that someone buys branded products so that other people will look at them and feel assured of the security of the transaction, even though 44.8% of them disagreed with a large amount.

Furthermore, in the statement "I use products from the same brand as my favorite artist," as many as 43 respondents, or 37.1%, said they strongly disagreed, 40 respondents, or 34.5%, said they disagreed, 20 respondents, or 17.2%, said they agreed, and 1 respondent, or 0.9%, said they strongly agreed. It can be concluded that the indicator "using the product because of an element of conformity to the model that advertises" states that 37.1% strongly disagree.

In the statement "I can buy products advertised in the media quickly using E-Wallet to increase my self-confidence, there is an assessment that buying products at high prices will create high self-confidence", as many as 12 respondents, or 10.3%, stated that they strongly

disagreed, 34 respondents, or 29.3%, said they disagreed, 39 respondents, or 33.6%, said they were neutral, 26 respondents, or 22.4%, said they agreed, and 5 respondents, or 4.3%, said they strongly agreed. It can be concluded from the indicator "The emergence of an assessment that buyers of expensive products will create a high sense of self-confidence" that someone does not necessarily like buying goods advertised in the media just because it increases their self-confidence, where 33.6% of respondents stated they were neutral regarding this matter.

For the statement "I enjoy trying various products from various brands even though they have the same function without difficulty because E-Wallet is easy to use", as many as 12 respondents, or 10.35%, said they strongly disagreed, 39 respondents, or 33.6%, disagreed, 37 respondents, or 31.9%, were neutral, 18 respondents, or 15.5%, agreed, and 10 respondents, or 8.6%, strongly agreed. It can be concluded from the indicator "Tried more than two similar products (different brands)" that respondents are not happy trying various products from various brands even though they have the same function without difficulty because E-Wallets are easy to use, with 33.6% of respondents disagreeing. Seven of these eight indicators can be said to indicate that respondents have a low level of consumer behavior. This is proven by their responses to the various statements given.

From the data processing results of respondents' answers, it can be concluded that e-wallets and consumer behavior have an opposite relationship. Respondents have a high tendency to use e-wallets. Meanwhile, respondents tended not to have indications of high consumer behavior. So in this research, it was found that high e-wallet use is not in line with high consumer behavior.

Based on the results of the analysis above, it can be concluded that the use of e-wallets does not have a significant influence on student consumptive behavior. This is in line with the results of research conducted by Afifah and Yudiantoro (2022) and Mengga, Batara, and Rimpung (2023) which found the same research results, namely that there was no significant influence between the use of electronic money and students' consumptive behavior. The factors that cause this, as stated in the research, are that students have been able to reduce unnecessary purchases and have been able to balance needs with existing costs. It was also stated that self-control is one of the factors that makes students able to control their actions by distinguishing between needs and desires so that they are able to minimize expenses and avoid consumptive behavior.

With no significant influence between the two variables, this indicates that the use of e-wallets does not have a strong relationship or influence on the consumptive behavior of students of the Faculty of Economics and Business. This finding may change the thinking of previous researchers that not all research on the use of e-wallets has an effect on consumptive behavior. That way, the findings of this research are contrary to the findings (Insana & Johan, 2021) and (Dewi et al., 2021) which state that the use of e-wallets has an effect on consumptive behavior.

## CONCLUSION

Based on the results of research, analysis, and discussion, it can be concluded that the variable of using electronic money (X) does not have a significant effect on the variable of consumptive behavior (Y) of students of the Faculty of Economics and Business UNY batch of 2020, 2021, 2022. Descriptive statistical analysis resulted in findings that e-wallet usage variables (X) and consumptive behavior variables (Y) were both in the "moderate" category. Although e-wallets facilitate and speed up transactions, this does not have a significant effect on student behavior. Students tend to have moderate, balanced and not too extreme levels of e-wallet use and consumptive behavior. In calculating the coefficient of determination, the correlation between the two research variables is in the weak category. The sig value is greater

than 0.05, which is 0.218. The simple linear regression test also proved that there was no significant correlation between the use of electronic money and the consumptive behavior of students. In line with the results of analysis and regression tests, moderate use of e-wallets did not significantly affect consumptive behavior. The independent variable X only has a contribution of 1.3% to variable Y and the other 98.7% is influenced by other factors outside the X variable. ini it could mean that there are other factors that may contribute to influencing student consumptive behavior. Thus, the use of e-wallets does not have a major influence or is not the main factor that influences the consumptive behavior of students of the Faculty of Economics and Business UNY class of 2020, 2021, 2022.

## LIMITATION

This study involved 116 respondents as a sample from several study programs in one faculty at UNY. Future research may consider ways to attract more categories of respondents to obtain greater population and sample coverage. In addition, there are other variables that have not been studied that might influence consumptive behavior. Other variables not studied in this study have the potential to provide different research results. There are also limitations beyond the control of researchers such as dishonesty or lack of accuracy of respondents in answering questionnaires that allow the answers given to be biased and affect the accuracy of research results. Therefore, survey methods that use Google Forms can be complemented by in-depth interview methods to achieve better results.

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# THE EFFECT OF TOTAL QUALITY MANAGEMENT ON COMPANY PERFORMANCE: LITERATURE REVIEW

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## ABSTRACT

This study aims to explore the influence of Total Quality Management (TQM) on the performance company through a study of comprehensive literature. TQM is approach management focused on improvement quality in a way comprehensive with involves all member organizations in the process of repair sustainable. Through analysis of various studies and articles, research Identifies How the application of TQM principles, such as customer focus, improvement sustainability, and engagement of employees, yes influence various aspects performance company, including productivity, efficiency operations, and satisfaction with customers. Study results This shows that implementation of TQM consistently and effectively can have an impact significant positive to the performance company. However, the success of The implementation of TQM is strongly influenced by factors like commitment management, culture organization, and adequate training. Thus, research concludes that TQM is an important management strategy For increasing the performance company, providing the right strategy and support from all over element organization. Company performance is related to the company's ongoing control system. Performance can be measured by looking at the knowledge, skills, and professionalism of employees as members of a company. Company performance is something produced by a company within a certain period concerning standard standards. With continuous improvement, companies not only focus on overcoming existing problems but also proactively look for ways to improve all operational aspects on an ongoing basis

Keywords: Total Quality Management (TQM)\_1, Company Performance\_2, Continuous Improvement\_3.

## INTRODUCTION

In an era of globalization and increasingly fierce competition, companies around the world are faced with the challenge of improving performance and maintaining competitive advantage. One management strategy that has been proven effective in achieving this goal is the implementation of Total Quality Management (TQM)(Wijethunga and Kuruwitaarachchi 2023). TQM is a holistic approach to management that focuses on improving quality in all aspects of an organization through the participation of all company members, with the ultimate goal of achieving sustainable customer satisfaction (Albloushi et al. 2023).

Total Quality Management is not a new concept and has been developing since the 1950s and 1960s with contributions from pioneers such as W. Edwards Deming, Joseph Juran, and Kaoru Ishikawa (Hudnurkar et al. 2023). Emphasizes the importance of quality in every stage of the production and service process as the key to increasing organizational efficiency and effectiveness. Implementing TQM involves a series of principles and practices, including customer focus, continuous improvement, total involvement of all employees, as well as data-based decision-making (Araújo et al. 2019).

Previous studies and research have shown that implementing TQM can bring significant benefits to companies, such as improving product and service quality, reducing operational costs, and increasing customer satisfaction (Jabbar, Mahmood, and Maryam 2020). However, the influence of TQM on company performance is not always uniform and can vary depending on various factors, such as the type of industry, organizational culture, and the way TQM is implemented (Kuzaiman et al. 2018). There is also research that examines the effect of total quality management (TQM) practices on the financial performance of ISO 9001:2008 certified manufacturing companies in Ethiopia with the mediating role of operational performance (Adem and Viridi 2024). To investigate the relationship between total quality management (TQM) and the innovation performance of small and medium enterprises (SMEs) through empirical testing. It also seeks to determine whether the relationship between TQM and SME innovation is mediated by organizational culture (OC)(Saleh, Zaid, and Omar 2024).

As technology develops and market dynamics change, there is an urgent need to understand how TQM can continue to make a positive contribution to company performance (Jamalludin et al. 2021). Therefore, this research aims to examine existing literature regarding the effects of TQM on company performance. By conducting a comprehensive literature review, this research seeks to identify patterns, key findings, and gaps in existing knowledge, as well as provide deeper insight into how TQM can be implemented effectively to improve company performance in various sectors. Organizations around the world have recognized TQM (Total Quality Management) as a means of business progress (Fonseca and Domingues 2018). Many companies around the world have built their competitiveness by following TQM principles (Jabbar et al. 2020). Many tools/models for quality management and business excellence are used in private and public organizations, each of which brings benefits but also has various weaknesses when applied in practice (Jamalludin et al. 2021). In an era of globalization and increasingly fierce competition, companies around the world are faced with the challenge of improving performance and maintaining competitive advantage. One management strategy that has been proven effective in achieving this goal is the implementation of Total Quality Management (TQM)(Wijethunga and Kuruwitaarachchi 2023). TQM is a holistic approach to management that focuses on improving quality in all aspects of an organization through the participation of all company members, with the ultimate goal of achieving sustainable customer satisfaction (Albloushi et al. 2023).

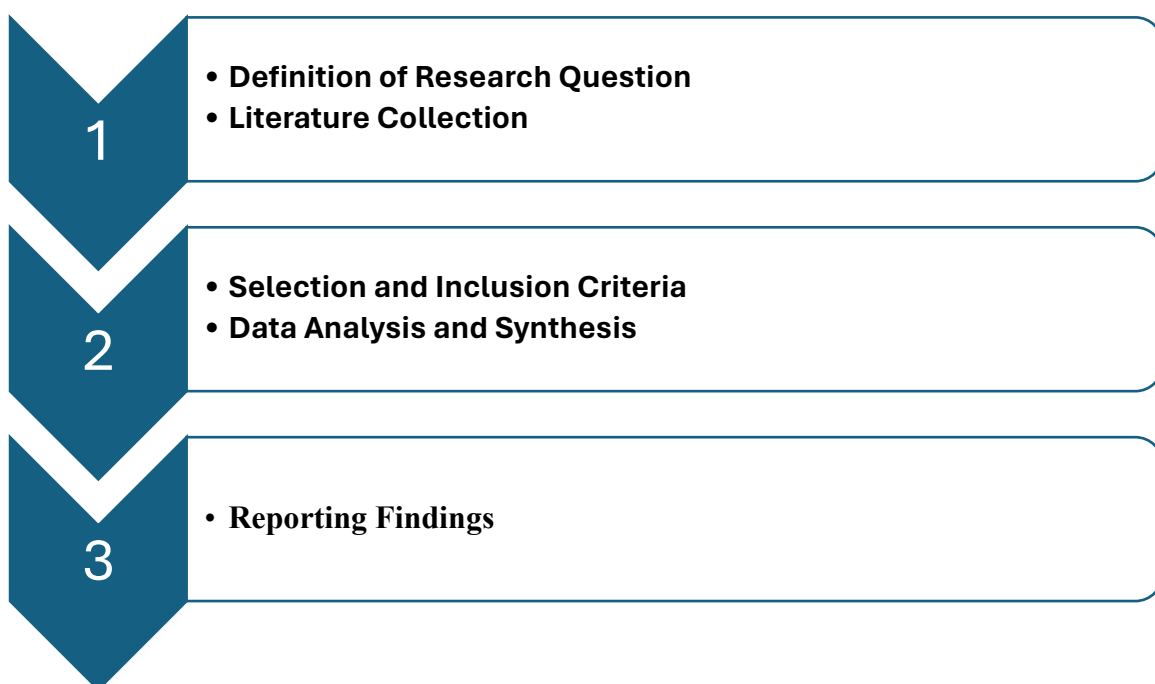
Total Quality Management is not a new concept and has been developing since the 1950s and 1960s with contributions from pioneers such as W. Edwards Deming, Joseph Juran, and Kaoru Ishikawa (Hudnurkar et al. 2023). Emphasizes the importance of quality in every stage of the production and service process There is also research exploring how Industry 4.0 (I40) technologies support employee engagement in total quality management (TQM) practices that are gentle on organizational performance (Margherita and Braccini 2024). Although scholars have examined the impact of certain total quality management (TQM) aspects on innovation performance (INP), empirical evidence on how TQM aspects, as a combined construct, influence innovation performance is still scarce. In addition, empirical evidence regarding the mechanisms through which TQM influences innovative behavior (INB) and, subsequently, INP is still limited. Researchers have requested that future research look at the boundary conditions that support the implementation of TQM activities in business. (Ahinful, Opoku Mensah, Koomson, Cobblah, et al. 2024). This report further explores the context-contingent influence of four external factors [government regulation (GOV), market dynamism (MKD), competitive

intensity (CMP), and technological turbulence (TUR)] on the TQM-INB relationship.(Ahinful, Opoku Mensah, Koomson, Nyarko, et al. 2024)

Thus, the results of this literature review are expected to provide a significant contribution to academics and practitioners in understanding and optimizing the implementation of TQM (Wijethunga and Kuruwitaarachchi 2023), as well as helping companies in designing better quality management strategies to achieve sustainable competitive advantage, of course through continuous improvement as well (Mahbub 2017). It was also found that the research carried out was the formulation of strategic planning for implementing TQM, the formulation of operational planning, the implementation of quality management, and quality control systems in private universities, in addition to manufacturing (Sutanto, Widodo, and Bidayati 2018). By analyzing the development of innovation-oriented social capital (SC). The relationship between high-performance work systems (HPWS) and total quality management (TQM). Philosophy is considered in this paper as an enabling factor that allows companies to accumulate SC oriented towards developing innovation capabilities radical and incremental (Sutanto et al. 2018).

## METHODS, DATA, AND ANALYSIS

This research uses a literature review method to examine the effect of Total Quality Management (TQM) on company performance. A literature review is a systematic approach to collecting, analyzing, and synthesizing existing research to gain a deeper understanding of a particular topic (Albloushi et al. 2023). This method is suitable for this research because it allows researchers to identify patterns, key findings, and gaps in existing knowledge regarding the influence of TQM on company performance. The literature review method can be seen in Figure 1.1



In Figure 1.1, the research question in focus is "How does Total Quality Management affect company performance in various industrial sectors?" These questions are expected to help in determining the scope and direction of the literature review. Followed by a literature search conducted through academic databases such as Google Scholar, JSTOR, ScienceDirect, and ProQuest, with keywords used in the search including "Total Quality Management," "TQM," "company performance," "organizational performance," and "quality improvement." The literature taken includes journal articles, books, conferences, and dissertations that are relevant to the research topic.

Only literature published within a certain time frame (for example, 2000-2023) and in English and Indonesian is included. The selected literature should explicitly discuss the relationship between TQM and company performance. Studies must include empirical data or in-depth theoretical analysis. Each piece of literature collected was critically evaluated to assess the methodological quality and relevance of the findings.

Referring to the search above, data will be found to be analyzed. Data from various studies are organized based on major themes, such as TQM approaches, company performance metrics, and moderating factors that influence the relationship between TQM and company performance. Synthesis is carried out to identify general patterns, differences, and gaps in existing research. Then the reporting of findings from the literature review is presented in the form of a systematic narrative, with an emphasis on how TQM (Jamalludin et al. 2021), influences various aspects of company performance, such as product quality, operational efficiency, customer satisfaction, and financial profits. explore and interpret the relationships between total quality management (TQM) practices. And organizational performance measures to improve the performance of healthcare companies. In India, companies are aware of TQM practices and their benefits, but the level of awareness varies between companies and staff. This study investigated the effectiveness of quality awareness in meeting quality performance in hospitals in India (Puthanveetil et al. 2021).

By using a literature review method, this research can provide a comprehensive picture of the effects of TQM on company performance, identify best practices, as well as offer guidance for companies that want to implement TQM to improve their performance, the moderating role of business networks (BN) on the relationship between quality management total (TQM), export market orientation (EMO) and corporate export performance (CEP) of Pakistani furniture industry. It then investigates the relationship that exists between Total Quality Management (TQM) and Sustainability, consistent with the Triple Bottom Line (TBL) approach (Silvestri et al. 2024).

## **RESULTS AND DISCUSSION**

This research uses a literature review method to explore the effect of Total Quality Management (TQM) on company performance in various industrial sectors. The data analyzed consists of various published academic studies, covering the period between 2000 to 2023. Data was collected from several major academic databases, including Google Scholar, JSTOR, ScienceDirect, and ProQuest, with a focus on journal articles, books, conferences, and dissertations relevant to the research topic. In data collection, specific keywords such as "Total Quality Management," "TQM," "company performance," "organizational performance," and

"quality improvement" were used to ensure comprehensive and relevant literature coverage. From the search results, a large amount of literature was obtained which was then filtered based on the following inclusion criteria:

1. Relevance: Only studies that explicitly addressed the relationship between TQM and firm performance were included.
2. Language: Literature published in English and Indonesian.
3. Period: Studies published between 2000 and 2023.
4. Methodological Quality: Studies that have strong methodology and high validity.

Each selected study was evaluated to assess its contribution to the understanding of the relationship between TQM and corporate performance. This analysis involves Common Pattern Identification which identifies general trends and findings in the literature, such as improved product and service quality, reduced operational costs, and increased customer satisfaction as a result of implementing TQM. There are also discrepancies and gaps in identifying differences in research findings and gaps in existing knowledge, such as variations in the effects of TQM across industries or a lack of empirical studies in some contexts. And finally, you can develop practical implications from the findings to help companies design and implement effective TQM strategies.

The findings from the literature review are presented narratively, with a focus on the impact of TQM on various aspects of company performance.

Some key findings include:

1. Product and Service Quality: Studies show that implementing TQM significantly improves product and service quality, which in turn increases customer satisfaction and loyalty.
2. Operational Efficiency: Implementing TQM helps companies identify and eliminate waste, thereby increasing operational efficiency and reducing costs.
3. Financial Performance: Although results vary, many studies show that TQM can improve a company's financial performance by increasing productivity and reducing quality costs.
4. Employee Satisfaction: TQM that involves employees in the quality improvement process can increase employee motivation and satisfaction, which contributes to better organizational performance.

Table 1. Aspects of Company Performance

No	Information	%
1	<b>Product and Service Quality</b>	8.2
2	<b>Operational Efficiency</b>	3.2
3	<b>Financial Performance</b>	1.4
4	<b>Employee Satisfaction</b>	1.2

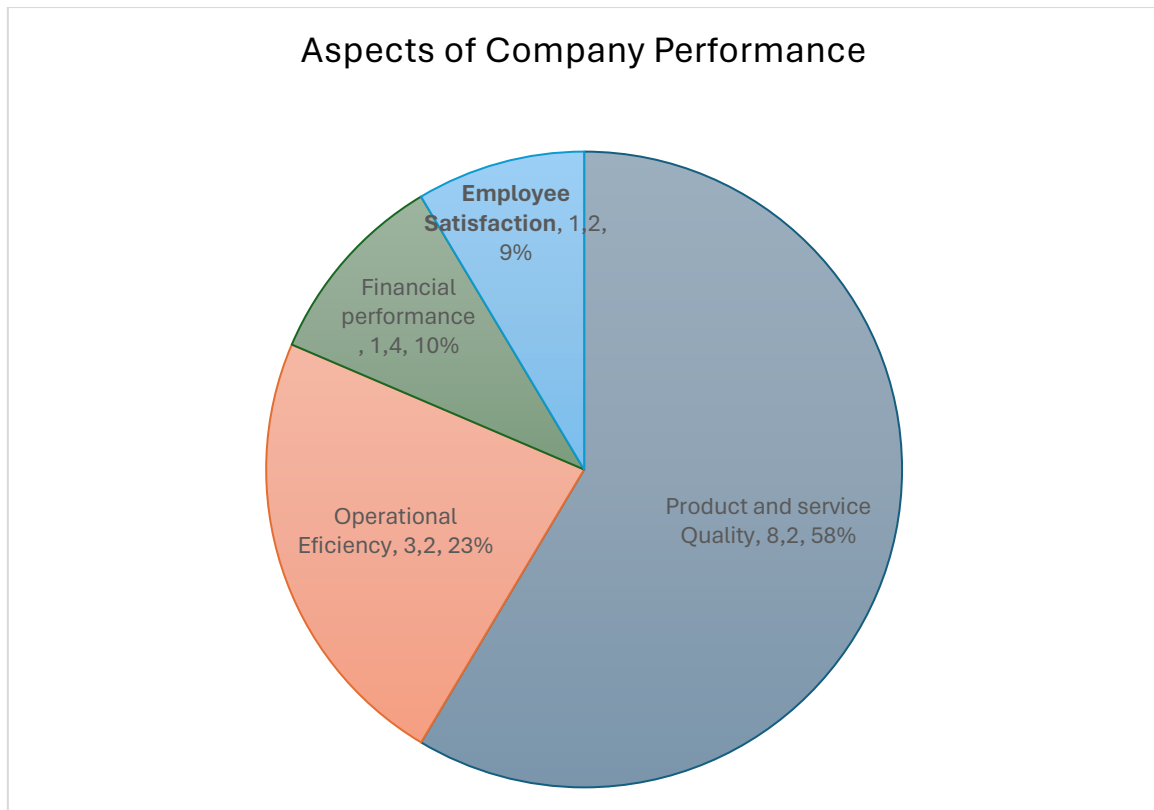


Figure 2.1. the impact of TQM on various aspects of company performance.

## CONCLUSION

Overall, this literature review confirms that TQM has great potential to improve company performance in various aspects. However, the success of TQM implementation is highly dependent on management commitment, employee involvement, and a systematic approach in implementing TQM principles. Companies that successfully implement TQM well tend to see improvements in product quality, operational efficiency, financial performance, and employee satisfaction, all of which contribute to sustainable competitive advantage.

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# THE IMPACT OF PRODUCTION COSTS AND OPERATING COSTS ON NET PROFIT ON RICE MILLING INDUSTRY PB SRI MULYA

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## ABSTRACT

The net profit in the PB Sri Mulya rice milling industry for 6 semesters in 2020-2022 which was used as research fluctuated every year. This study aims to determine the effect of production costs and operating costs on net profit at PB Sri Mulya. The samples used were financial statements in the form of income and balance sheets in the PB Sri Mulya rice milling industry for 6 semesters in 2020-2022. In this study using quantitative approaches and associative methods. This research utilizes quantitative data in the form of financial statements, including the income statement and balance sheet, obtained from the rice milling firm PB Sri Mulya. Data analysis techniques used are descriptive statistics in the form of mean and standard deviation and associative analysis in the form of multiple linear regression analysis, single correlation analysis, t test, F test, and coefficient of determination. Data analysis in this study was processed using SPSS 25 application to calculate data analysis. The results of this study reveal that partially production costs have a significant effect on net profit at PB Sri Mulya for 6 semesters in 2020-2022, partially operating costs have a significant effect on net profit at PB Sri Mulya for 6 semesters in 2020-2022, and production costs and operating costs together have a significant effect on net profit at PB Sri Mulya for 6 semesters in 2020-2022

**Keywords:** Production Costs, Operating Costs, and Net Profit

## Introduction

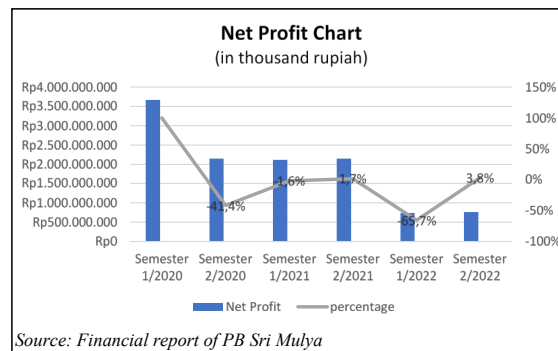
Indonesia is an agrarian country, where the main source of livelihood for its people is agriculture. This is motivated by Indonesia's geographical location in the tropics so that the weather, soil and other natural resources in almost all parts of Indonesia provide good opportunities for developing the agricultural sector.

Rice is a commodity that has strategic value in terms of economic, environmental, social and political aspects. As part of food supply security, the stability of rice supply and price is an important factor to ensure food security as one of the national development priorities.

Rice milling is a place for processing and marketing rice, which is an important link in the national rice supply chain. The rice milling industry contributes to the supply of rice, both quantitatively and qualitatively to support national food security. According to data from the Central Statistics Agency (BPS), Indonesia produced 54,415,294 tons of milled dry grain (MDG) in 2021. West Java Province is the largest rice-producing province in Indonesia in 2021, producing 9,113,573 tons of rice. The regions in West Java that provide the most significant contributions in terms of numbers are Indramayu, Karawang, and Subang.

PB Sri Mulya is a trading business in the field of rice milling, rice packaging and rice distribution within the Indramayu Regency region . PB Sri Mulya partners well with surrounding farmers as evidenced by the large amount of raw materials obtained from the rice crop of farmers in Indramayu Regency.

In general, the bottom line of every company is to get maximum profit. The objectives of one company with another are not necessarily the same, but in general the establishment of a company aims to achieve large profits, because the benchmark in seeing the success of a company can be seen from the size of the company's profits. To get maximum profit, the company must manage the income source system in the form of economic resources to produce output.



**Figure 1. 1 Net Profit Chart for the Period 2020-2022**

Seeing the phenomenon of the financial statements of the PB Sri Mulya Rice Milling Industry, there is a movement in net profit that goes up and down per semester. The graph shown above illustrates the fluctuating nature of PB Sri Mulya's net profit every semester from 2020 to 2022, with both gains and falls seen in each semester. In the first semester of 2020 it was IDR 3.672.032.000. In semester 2 of 2020, it decreased by 41.4% or IDR 1.521.440.000. In semester 1 of 2021, it decreased by 1.6% or IDR 35.010.000. In the second semester of 2021, it increased by 1.7% or IDR 35.010.000. In the first semester of 2022, it decreased by 65.7% or IDR 1.413.632.400. Furthermore, in the second semester of 2022, it increased by 3.8% or IDR 27.814.800.

Net profit is the difference between the revenue earned from sales and the costs incurred by the company. In order for the company to obtain maximum profit, the company needs to pay attention to factors that can affect the company's net profit. Among the factors that impact the rise and fall of net income according to (Mulyadi 2014, 303) in (Purwanto, 2021) are costs, selling prices, and sales volume.

Based on research conducted by (Maryana, D., & Samania, A, 2021), (Fathony, A. A., & Wulandari, Y, 2020) and (Rohmat, R., & Suhono, S, 2021) which states that together production costs and operating costs affect net profit.

This attracted researchers to conduct research on the PB Sri Mulya Rice Milling Industry, for 6 semesters in 2020-2022. With the research title "The Effect of Production Costs and Operating Costs on Net Income"

## Net Profit

According to Hery (2019: 43) Net income is profit before income tax which is deducted by income tax. Indicators of net profit according to Hery (2019: 43) are net profit before tax and income tax. According to Mulyadi (2014: 303) in (Purwanto, 2021), the factors that affect net profit are Cost, Selling Price, and Sales Volume.

## **Production Costs**

According to Mulyadi (2018: 14) Production costs are costs incurred to process raw materials into finished products that are ready for sale. Indicators of production costs according to Mulyadi (2018: 14) are direct costs and indirect costs.

## **Operating Expenses**

According to Jumingan (2019: 32) Operating Expenses are costs incurred in connection with the sale or marketing of goods or services and the implementation of administrative and general functions of the company concerned. Indicators of operating costs according to Jumingan (2019: 32-33) are: (1) Selling Expenses or Marketing Expenses (*selling expenses*), (2) General and Administrative Expenses (*general and administrative expend*).

## **METHOD, DATA, AND ANALYSIS**

This study uses quantitative research methods and associative approaches. According to Sugiyono (2019: 65) Associative research is research that aims to determine the effect of the relationship between two or more variables.

The population used in this study are financial reports in the form of income statements, and balance sheet reports of the PB Sri Mulya Rice Milling Industry from the beginning of its establishment until now. The sample used in this research is the financial statements in the form of income statements, and balance sheet reports of the PB Sri Mulya Rice Milling Industry for 6 semesters in 2020-2022 and consists of Production Costs, Operating Costs, and Net Income. The reason for this sampling is due to the limited data obtained.

The type of data used in this study is quantitative data and primary data sources. According to Sugiyono (2022: 137) Primary sources are data sources that directly provide data to data collectors. Data collection techniques, primary data sources obtained directly through interviews with business owners of the PB Sri Mulya Rice Milling Industry.

The data analysis technique used in this study is to use associative analysis consisting of multiple linear regression analysis and single correlation analysis. Followed by hypothesis testing which consists of t test and F test. Next, we will continue with the analysis of the coefficient of determination. In order to perform data analysis procedures, the SPSS version 25 program is used for calculation purposes.

## **RESULT AND DISCUSSION**

### **Analysis of Multiple Linear Regression**

The following are the results of the calculation of multiple linear regression analysis using spss 25 :

**Table 4. 1 Multiple Linear Regression Result**

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-3841525.974	399922.451		-9.606	.002
1 Production Costs	-.805	.000	-5.367	-10049.564	.000
Operating Costs	22.204	.002	5.066	9485.738	.000

a. Dependent Variable: Net Profit

Based on the table data above, it is known that the equation of production costs ( $X_1$ ) operating costs ( $X_2$ ) to net profit ( $Y$ ) is :

$$Y = -3841525,974 - 0,805X_1 + 22,204X_2$$

The constant value is -Rp. 3841525,974. This means that if there is no change in the production cost and operating cost variables = 0, then the net profit in the PB Sri Mulya Rice Milling Industry is -Rp. 3841525,974.

The production cost regression coefficient value is -0.805. This means that if the production cost variable increases by Rp.1, assuming a constant of -Rp. 3841525,974, then the net profit in the PB Sri Mulya Rice Milling Industry decreases by -Rp. 0.805. This shows that the greater the production cost, the net profit will decrease or have a negative effect between production costs on net profit.

While the regression coefficient value of operating costs is 22.204. This means that if the operational cost variable increases by Rp.1, assuming a constant of -Rp. 3841525,974, then the net profit in the PB Sri Mulya Rice Milling Industry increases by Rp. 22,204. This shows that the greater the operational costs, the net profit value will increase or have a positive effect between operational costs and net profit.

### A Single Correlation Analysis

The following are the results of calculating a single correlation analysis using spss 25 :

**Table 4. 2 Single Correlation Results**

Correlations				
		Net Profit	Production Costs	Operating Costs
Net Profit	Pearson Correlation	1	-.386	-.211
	Sig. (2-tailed)		.450	.688
	N	6	6	6
Production Costs	Pearson Correlation	-.386	1	.983**
	Sig. (2-tailed)	.450		.000
	N	6	6	6
Operating Costs	Pearson Correlation	-.211	.983**	1
	Sig. (2-tailed)	.688	.000	
	N	6	6	6

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Based on the table above, the correlation between Production Costs and Net Profit is -0.386, which means that the correlation between Production Costs and Net Profit is Low with a Negative Relationship direction (opposite). While the correlation result between Operating Costs to Net Profit is -0.211 which means that the correlation of Operating Costs to Net Profit is Low with the direction of a Negative Relationship (opposite).

### Test t

The following are the results of calculating test t using spss 25 :

**Table 4. 3 Test t Results**

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-3841525.974	399922.451		-9.606	.002
1 Production Costs	-.805	.000	-5.367	-10049.564	.000
Operating Costs	22.204	.002	5.066	9485.738	.000

a. Dependent Variable: Net Profit

Based on the table above, the Sig. Production costs are 0.000 with a significant level of 5% or 0.05. Because the sig value is  $0.000 < 0.05$ , it is rejected and accepted, which means that partially Production Costs have a significant effect on Net Income.

While the Sig value. Operating costs of 0.000 with a significant level of 5% or 0.05. Because the sig value is  $0.000 < 0.05$ , it is rejected and accepted, which means that partially Operating Costs have a significant effect on Net Income.

### Test F

The following are the results of calculating test F using spss 25 :

**Table 4. 4 Test F Result**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5947515267653324	2	2973757633826662	52857552.	.000 <sup>b</sup>
		800.000		400.000	576	
	Residual	168779530393.005	3	56259843464.335		
	Total	5947515436432855	5			
		000.000				

a. Dependent Variable: Net Profit

b. Predictors: (Constant), Production Costs , Operating Costs

Based on the table above, the Sig value is obtained. 0.000 with a significant level of 5% or 0.05. Because the Sig value is  $0.000 < 0.05$ , it is rejected and accepted, which means that Production Costs and Operating Costs together or simultaneously have a significant effect on Net Income.

## Determination Coefficient Analysis

The following are the results of calculating Determination Coefficient Analysis using spss 25 :

**Table 4. 5 Determination Coefficient Results  
Production Cost to Net Profit**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.386 <sup>a</sup>	.149	-.064	1124968540.312

a. Predictors: (Constant), Production Costs

Based on the aforementioned data, it can be inferred that Production Costs account for a Net Income of 0.149 or 14.9%, with the remainder 85.1% being attributed to other variables as determined by the researchers.

**Table 4. 6 Results of the Coefficient of Determination  
Operating Costs to Net Profit**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.211 <sup>a</sup>	.045	-.194	1191835919.311

a. Predictors: (Constant), Operating Costs

Based on the aforementioned data, it can be inferred that Operating Costs account for a Net Income of 0.045 or 4.5%, with the rest 95.5% being attributed to other variables as determined by researchers.

**Table 4. 7 Results of the Coefficient of Determination of  
Production Costs and Operating Costs to Net Profit**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.999 <sup>a</sup>	0.999	0.999	237191.575

a. Predictors: (Constant), Biaya Operasional, Biaya Produksi

Based on the aforementioned table, it can be inferred that the components of Production Costs and Operating Costs together account for a substantial proportion of the Net Income, namely 99.9%. The residual 0.1% is attributed to unexplored aspects that were not included in the researcher's analysis.

## Discussion

### a) Impact of Production Costs on Net Profit

From this study obtained the results of the Sig value. 0.000. Because the sig value of 0.000 < 0.050, it is  $H_0$  rejected and  $H_a$  accepted, which means that partially Production Cost has a significant effect on Net Profit at PB Sri Mulya for 6 semesters in 2020-2022. This means that if production costs are reduced, the resulting net profit will also increase. The better the company uses its funds to save on production costs, the more the company's ability to earn net profit increases and vice versa, if production costs are increased, the resulting net profit will also decrease.

This research is in line with the results of previous research conducted by Ulumiyah, k (2022) the results showed that production costs are thought to have an effect on net profit. It can be proven from the research results in the partial test (t test), namely the resulting Sig. value of 0.011 which means that costs have an impact on net income in various industrial sector manufacturing companies listed on the Indonesia Stock Exchange (IDX) for the 2015-2019 period.

This research is also in line with the theory of Mulyadi's expert opinion (2013: 121) in (Indriyani. I., et al 2022), which states that if production costs are reduced, the possibility that occurs is that the level of net profit will increase. If net income increases, future budgets will also increase.

#### b) Impact of Operating Costs on Net Profit

From this study obtained the results of the Sig value. 0,000. Because the sig value of  $0.000 < 0.05$ , it is  $H_0$  rejected and  $H_a$  accepted, which means that partially Operating Costs have a significant effect on Net Profit at PB Sri Mulya for 6 semesters in 2020-2022. This means that if the company can reduce operating costs, the net profit generated by the company will increase and vice versa if the company cannot reduce operating costs, the net profit generated by the company will decrease.

This research is in line with the results of previous research conducted by Suzan, L., & Ayunina, H. Q. (2022) the results showed that operating costs amounted to 1.079589 and the Prob value (t-statistic) of operating costs was 0.000, this value is smaller or below the significance level of 0.05 or 5%, it can be concluded that it is rejected and accepted, which means that operating costs have a partially significant positive effect on net profit.

This research is also in line with the theory of expert opinion Jopie Jusuf (2016: 35) in (Aisah, A. S., & Susetyo, D. P., 2021), stating that if the company can reduce operating costs, the company will be able to increase net profit, and vice versa, if there is a waste of costs (such as excessive use of office equipment) it will result in decreased profits.

#### c) Impact of Production Costs and on Operating Costs Net Profit

From this study, the calculation results obtained Sig. 0.000 with a significant level of 5% or 0.05. Because the Sig value is  $0.000 < 0.05$ , it is rejected and accepted, which means that Production Costs and Operating Costs together or simultaneously have a significant effect on Net Income at PB Sri Mulya for 6 semesters in 2020-2022. This means that if production costs and operating costs are getting bigger, it will result in a decrease in net profit. Likewise, vice versa, if production costs and operational costs are getting smaller, it will result in an increase in net profit earned by the company.

The results showed that production costs and operating costs have a considerable impact on net profit, because companies in achieving their goals require cost sacrifices. Production costs are directly related to the company's net profit as well as the company's operational costs that support in achieving the goal of obtaining a large net profit, both of which play a direct role in the process of direct raw material costs, labor costs, selling and administrative costs. To achieve this goal, the company must be able to manage the costs incurred effectively and efficiently so that the company's goal of generating a large net profit can be achieved.

This research is in line with the results of previous research conducted by Purwanto, T (2022), the results showed a value of = 62.229 with a value of = 3.32, so that  $>$  from 62, 2293  $<$  3.32). The results of the above calculations also show that the sig value = 0, 000  $<$  0, 05, so it can be concluded that production and operational costs have a positive and simultaneous impact on net profit.

## Conclusion

Based on the findings derived from extensive research and analysis conducted by scholars, pertaining to the examination and discourse on the impact of production costs and operating costs on net income within the rice milling sector of PB Sri Mulya, over a span of six academic semesters from 2020 to 2022, the researchers are able to formulate the subsequent conclusions:

- 1) The aforementioned estimates and discussion indicate that Production Costs have a substantial impact on the Net Profit of PB Sri Mulya throughout the six semesters spanning from 2020 to 2022.
- 2) Based on the aforementioned figures and subsequent discussion, it can be concluded that the Operating Costs have a substantial impact on the Net Income of PB Sri Mulya during a span of six semesters from 2020 to 2022.
- 3) Based on the aforementioned estimates and discussions, it can be concluded that the combined influence of Production Costs and Operating Costs on the Net Income of PB Sri Mulya over the six semesters spanning from 2020 to 2022 is of notable significance

In addition to some of the conclusions drawn by the author above, there are also suggestions from researchers :

- 1) For the company of this research, it is hoped that it will pay more attention to the costs incurred for the production and operational activities of the company so that it can generate optimal profits.
- 2) For academics, this research is expected to be a comparison material for other parties who will conduct research and also to add new insights for readers and can be used as a reference and input for similar researchers in order to perfect further research.
- 3) For further researchers, it is hoped that they can discuss and examine and add other factors that can affect net income that the researchers did not examine.

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# THE IMPLEMENTATION OF ONLINE LEARNING ASSESSMENT AT AUTOMATION AND OFFICE MANAGEMENT PROGRAM VOCATIONAL HIGH SCHOOL IN CENTRAL JAVA

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## **ABSTRACT**

Learning assessment is an essential aspect of the learning process. Learning assessment is used to see whether learning has been successful. The learning assessment process must also be carried out online in online learning. On the other hand, many studies states that teachers' abilities in the Vocational High School of Automation and Office Management Program (AOMP) are low in technology, communication and information. Therefore, this research aims to see whether teachers' low ability to use technology, information and communication impacts online learning assessment. This research uses an ex post facto design with descriptive methods. The population of this study were AOMP VHS in Central Java. The sample in the research used a purposive sample where the researcher determined that two teachers from different vocational schools represented each district/city. This research's data collection technique and instrument is a questionnaire with seven items on a Likert scale. Data analysis uses descriptive analysis. The results and conclusions of this research are 1) online learning assessment at AOMP VHS in Central Java. has been carried out well by teachers, 2) the learning assessment instruments used by AOMP VHS teachers in Central Java to assess knowledge aspects are multiple-choice tests, essays and interviews while assessing skills aspects are performance, performance and portfolio assessments. 3) AOMP VHS teachers in Central Java use online learning assessment tools such as Google Form, Quizizz, Kahoot and School LMS.

**Keywords:** online assessment, online learning, vocational high school, automation and office management program

## **INTRODUCTION**

Distance learning has become a new trend during COVID-19 and even after COVID-19, whether in flipped, hybrid or fully online classes on an enormous scale (Chen & Deng, 2021; Korkut et al., 2015; Ou et al., 2019). Even though at the beginning, the distance learning policy

due to COVID-19 was emergency learning, which made maximum use of technology, information and communication as a medium for delivering learning material and for communicating between educators and students so that the learning process could continue (Diningrat et al., 2020). Therefore, it can be interpreted that distance learning is simply learning that uses technology, information and communication to achieve learning goals effectively (Cronje, 2020; Mayer, 2014).

Researchers agree that distance learning effectively increases student involvement in the learning process. Distance learning can also increase motivation and learning outcomes and increase students' understanding of the learning process (Barbara et al., 2013; Cronje, 2020; Herliandry et al., 2020; Mulyanti et al., 2020). However, in reality, the success of distance learning is influenced by the information and communication technology used during the learning process (Andrianto Pangondian et al., 2019). Therefore, selecting and using information technology is very important to ensure success in distance learning.

In the context of implementing online learning, the use of technology is utilized by educators to overcome the limitations of face-to-face learning or as a complement to face-to-face learning. By utilizing technology, education can be creative to make the learning process enjoyable (Parikesit et al., 2021). According to Atsani (2020a); and Gordon & Vos (2001a) in the distance learning process, there are three important components, namely learning models, learning strategies and learning media and these three components are interrelated to create a new learning environment for students.

Therefore, the teacher's ability to use technology is one of the important competencies in the online learning process. Teachers have an important role in helping the success of education by becoming facilitators for students in mastering complex skills and knowledge (Béteille & Evans, 2021; Lortie, 1975). Competent teachers will influence students' achievements in the learning process in terms of cognitive, affective and psychomotor, this is proven by the results of research from Ali et al. (2020); and Abbey et al. (2009) which proves that the higher the quality of the teacher in the learning process, the higher the student achievement.

Mastery of technology is one of the competencies that a teacher must have. Mastery of technology is included in teacher pedagogical competence following law number 14 of 2005 concerning professional teachers. This competency requires teachers to master technology in the learning process and constantly update their skills in developing information technology to support the work of information teachers in this era of information technology (Eka Tuah et al., 2021; Wagiran et al., 2019; D. S. Wahyuni et al., 2020; D.S. Wahyuni & Sugihartini, 2021). However, in reality, based on data from teacher competency test results, it can be seen that the

average score for the pedagogical ability of Indonesian teachers is 50.43, while the professional aspect is 55.45, and the average result for both is 54.05 (Ministry of Education and Culture, 2019). This indicates that the teacher's ability to use technology has not met expectations. These results align with research on teacher competence in developing and utilizing learning media by Dwihartanti et al. (2021), which states that the ability of vocational school teachers to master ICT for learning media is still low. Teacher quality significantly influences student achievement (Ali et al., 2020; Nunnery et al., 2009).

To see whether the learning objectives have been achieved, efforts are needed to photograph the results of the learning that has been carried out. The hope is that by taking pictures of learning outcomes, we can determine which aspects of the domain have been achieved and which elements of the environment have not been completed. Therefore, collecting data about these achievements is needed to determine whether the learning objectives can be achieved and whether domains have been successfully executed. According to Mardapi (2016), all methods that can be used to collect data about students' achievements in the learning process are called learning assessments.

The concept of learning assessment at the educational level will be very different due to differences in learning objectives. In vocational school learning, the emphasis is more on mastering skills than knowledge; this is in line with the opinion of Prosser & Quigly (1950), which states that learning in vocational schools must be designed with the demands of the world of work. So, assessments in vocational schools contain more complete aspects, namely knowledge, attitudes and skills (Rosmawati & Meilani, 2019). This is explained in the implementation of the K13 curriculum that the essential competency aspects of the Office Automation and Management Skills Vocational School (OTKP) consist of basic competency knowledge, attitudes and skills.

The implementation of learning, both dare and offline, must still assess student achievement because it is a big part of learning evaluation. In the assessment concept (Chittenden, 1991), it is stated that the purpose of the assessment process is:

1. Tracking assessment should be able to track and track students' progress in the learning process.
2. Checking up, the assessment must be able to check the achievement of student's abilities in the learning process
3. Finding out, The assessment must be able to search, find, and detect errors that cause weaknesses in the learning process.
4. Concluding, the results must make conclusions about students' competency achievements in the assessment process.

Therefore, under any circumstances, the learning assessment process must continue to be carried out to ensure that students achieve the learning objectives set. Apart from that, formative and summative assessments are carried out as educators' responsibility towards stakeholders regarding implementing the learning process (Adinda et al., 2021).

In distance learning, the assessment aspect is an important part; selecting appropriate learning assessment techniques will make the learning process effective in seeing students achieve learning objectives (Gaytan & McEwen, 2007). Online assessment, a small part of the online learning process, requires the use of technology to carry it out; even though it is only a tiny amount, assessment is one of the focuses that need to be considered in the online learning process (Kearns, 2012). However, in implementing teachers' abilities to utilize information and communication technology in learning courage, researchers believe that assessing courage will challenge teachers. This was stated by (Petrova et al., 2020), who noted that a online assessment process is a challenge for students and teachers. Teachers must know how to do this and the assessment form.

With conditions like these, the author believes that the assessment process in online learning has become a problem for teachers because online learning in recent years during COVID-19 and post-Covid-19 is something that has never happened before, resulting in teachers lacking preparation for online learning (Children , 2020; Arlinwibowo et al., 2020; Diningrat et al., 2020; Rusmiati et al., 2020). The following condition regarding teacher competence in the use of technology and communication is still low, so the author assumes that the assessment process in dare learning will not be effective because it is based on the results of previous research, including by Dwihartanti et al. (2021); Effiyanti & Sagala (2018); Eka Tuah et al. (2021); Sudirman et al. (2017); S. Wahyuni (2019) who stated the same conclusion that the competence in using ICT by teachers, especially in the field of AOMP, is still limited. Furthermore, assessment in vocational education has different characteristics from assessment at other levels; evaluation in vocational education involves three complete aspects emphasising skill mastery. Therefore, in assessing courage, teachers must be able to facilitate the assessment of skill aspects well to ensure that vocational school graduates have skills that align with the future demands of the world of work (Prosser & Quigly, 1950). Therefore, researchers are interested in knowing whether the courage assessment process carried out by teachers in AOMP VHS competency in Central Java is to the requirements of the K-13 curriculum and the concept of learning in vocational education.

## METHOD, DATA, AND ANALYSIS

This research uses an ex post facto design with descriptive methods. The illustrative method was chosen considering that this research aims to reveal existing facts and will be described qualitatively or quantitatively, not to solve a problem or test a theory.

The population of this study consisted of AOMP VHS teachers in Central Java Province. The sample was selected using a random area sampling technique. Central Java Province consists of 29 districts and six cities. Two regional samples will be taken from each community and city, so the target sample for this research is 71 AOMP VHS teachers in Central Java province. Data collection techniques and instruments use a questionnaire with a Likert scale (1 to 5) to measure research variables using the following indicators.

**Table 1. Research Instrument**

No	Indicator	Item
1	Suitability of instruments to learning objectives	1, 2, 3
2	Suitability of the instrument to the aspect being assessed	4
3	Ease of accessing assessment instruments	5, 6, 7

The researchers tested the questionnaire on 28 AOMP VHS teachers to test the validity. The following are the results of the validity test of the research instrument using SPSS 25 software.

		Correlations						
		Item1	item2	item3	item4	item5	item6	item7
item1	Pearson Correlation	1	,739**	,758**	,759**	,724**	,679**	,606**
	Sig. (2-tailed)		,000	,000	,000	,000	,000	,001
	N	28	28	28	28	28	28	28
item2	Pearson Correlation	,739**	1	,675**	,769**	,681**	,563**	,800**
	Sig. (2-tailed)	,000		,000	,000	,000	,002	,000
	N	28	28	28	28	28	28	28
item3	Pearson Correlation	,758**	,675**	1	,720**	,674**	,590**	,567**
	Sig. (2-tailed)	,000	,000		,000	,000	,001	,002
	N	28	28	28	28	28	28	28
item4	Pearson Correlation	,759**	,769**	,720**	1	,514**	,450*	,592**
	Sig. (2-tailed)	,000	,000	,000		,005	,016	,001
	N	28	28	28	28	28	28	28
item5	Pearson Correlation	,724**	,681**	,674**	,514**	1	,942**	,761**
	Sig. (2-tailed)	,000	,000	,000	,005		,000	,000
	N	28	28	28	28	28	28	28
item6	Pearson Correlation	,679**	,563**	,590**	,450*	,942**	1	,665**
	Sig. (2-tailed)	,000	,002	,001	,016	,000		,000
	N	28	28	28	28	28	28	28
item7	Pearson Correlation	,606**	,800**	,567**	,592**	,761**	,665**	1
	Sig. (2-tailed)	,001	,000	,002	,001	,000	,000	
	N	28	28	28	28	28	28	28

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Figure 1. Research Instrument Validity Test Results**

Based on the test results, it can be seen that all sig. (2-tailed) > 0.005, while all items in the r table for N 28 are 0.3061. Based on the test results, the coefficient value  $r > 0.3061$  was obtained, which means that all research instruments developed were valid so that the research process could be continued to the next test, namely the reliability test. The reliability test results using SPSS 25 software obtained a mark of 0.864, which shows it is solid. Therefore, research activities can be continued to the data collection stage.

Reliability Statistics	
Cronbach's Alpha	N of Items
,864	7

**Figure 2. Reliability Test Output**

Data analysis will be carried out using qualitative and quantitative descriptive analysis techniques. Analysis of data about teacher strategies and barriers will use qualitative

descriptive study. Qualitative descriptive analysis will follow the Miles and Huberman model, consisting of data reduction, data presentation, and conclusion/verification stages.

## RESULT AND DISCUSSION

The research results will be presented in 3 namely assessment learning in online learning, online learning assessment instruments and online learning assessment tools used at VHS AOMP in Central Java.

### Online learning assessment at AOMP Vocational High School in Central Java

Learning assessment is one of the most critical aspects of the learning process. During the pandemic, offline assessment activities changed to bold and utilized various aggressive instruments. Therefore, teachers must be able to select and develop assessment instruments that best suit the conditions of online learning. The implementation of assessments by VHS AOMP teachers in the online learning process is presented in table 2.

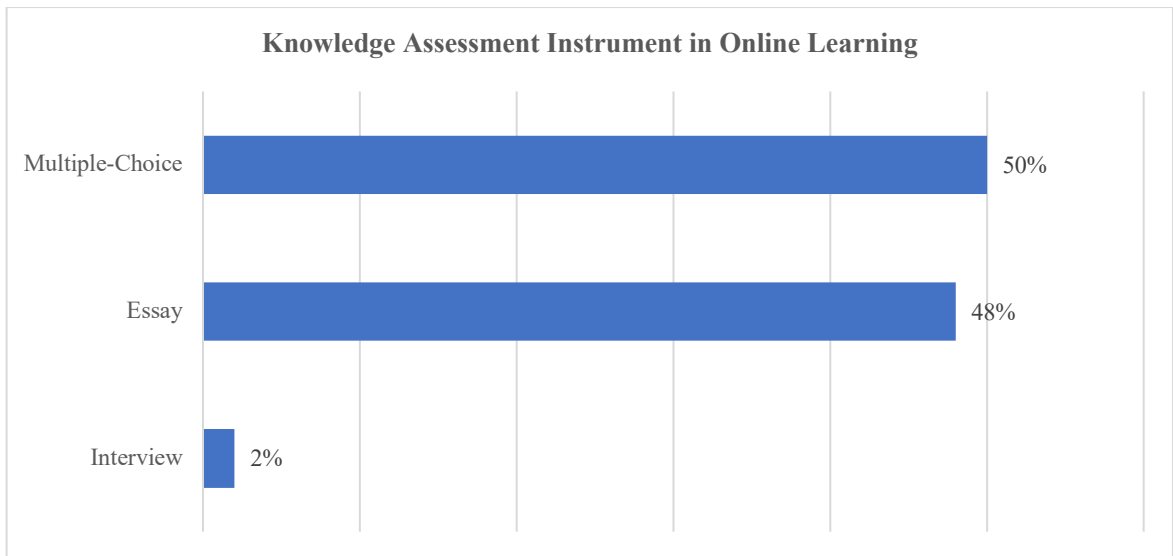
**Table 2. Online learning assessment at AOMP Vocational High School in Central Java**

Scale	Interval	F	%
Excelent	$X > 50,4$	18	25,35%
Good	$40,8 < X \leq 50,4$	43	60,56%
Fair	$31,2 < X \leq 40,8$	9	12,68%
Poor	$21,6 < X \leq 31,2$	1	1,41%
Bad	$< X 21,6$	0	-
	Total	71	100%

The data in the table above shows that the learning assessments carried out by VHS AOMP teachers in Central Java in dare learning activities were mainly in the excellent category, namely 43 people or 60.59%, 18 people or 25.35% in the outstanding class. The fair type was nine people or 12.68%, and the not good category was one person or 1.41%. It can be concluded that the learning assessment carried out by AOMP VHS teachers in Central Java in dare learning activities is in a suitable category.

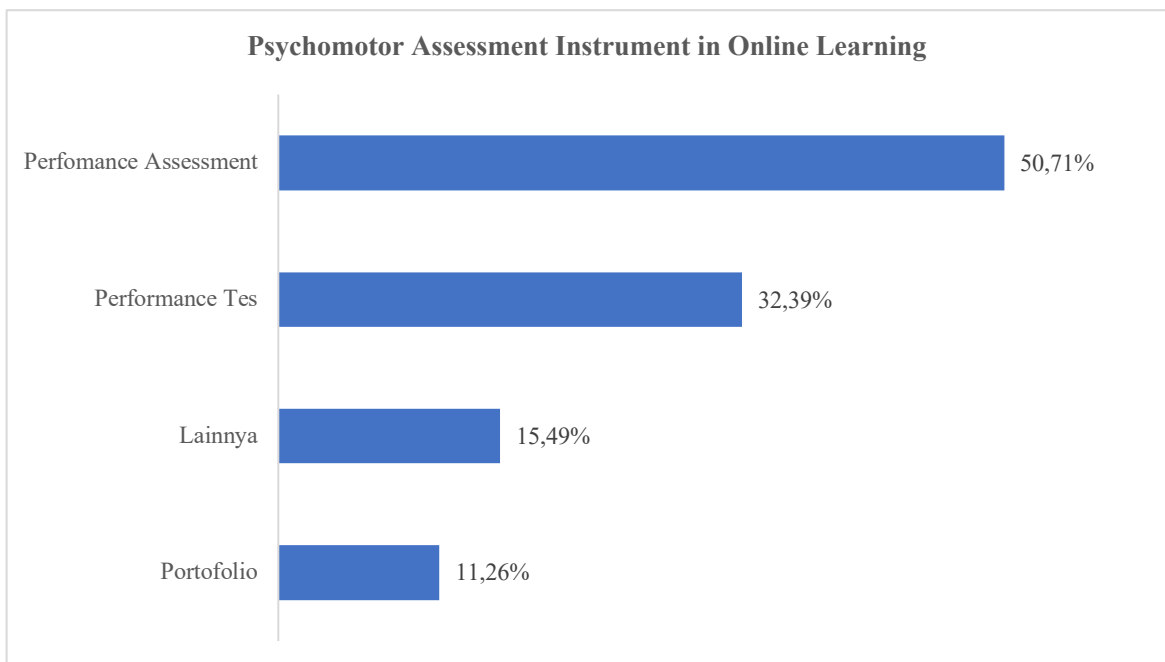
The online learning assessment consists of assessing knowledge and skills. Researchers also obtained data from respondents regarding the knowledge and skills assessment instruments used by AOMP VHS teachers in online learning. The knowledge assessment instrument AOMP VHS teachers use to implement online learning is presented in Figure





**Figure 3. Knowledge Assessment Instrument in Online Learning at AOMP VHS in Central Java**

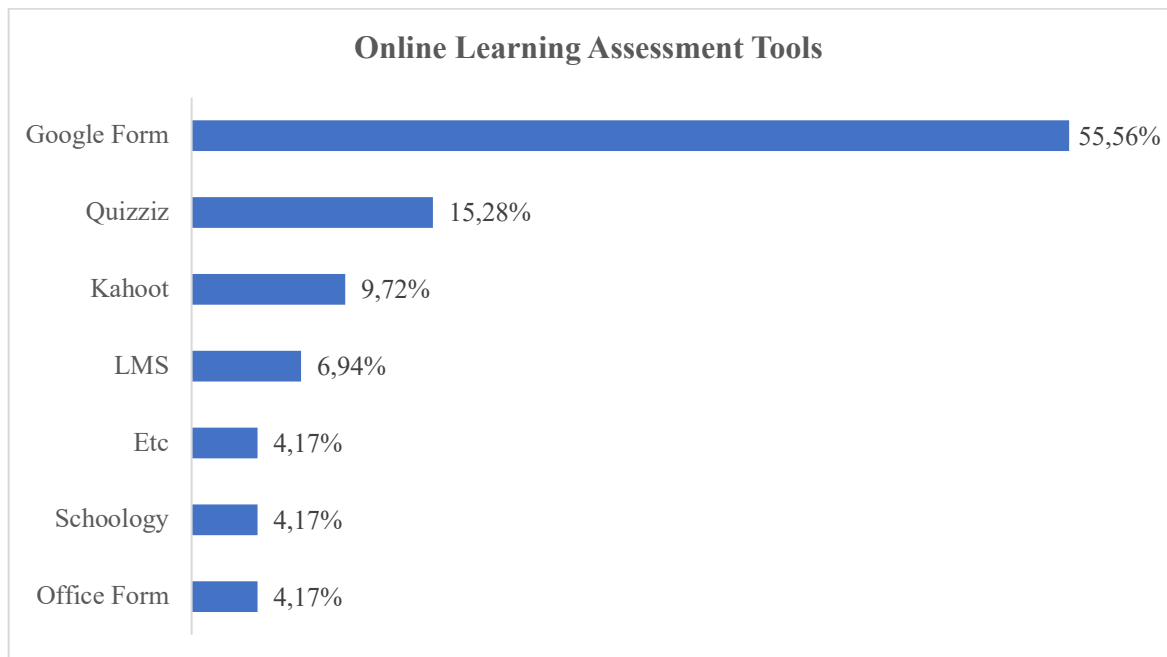
Based on the data in Figure 3, it can be seen that there are only three types of knowledge assessment instruments used by teachers: multiple-choice tests at 50%, essay tests at 48% and interviews at 2%. Meanwhile, the skills assessment instrument in online learning is presented in Figure 4.



**Figure 4. Psychomotor Assessment Instrument in Online Learning at AOMP VHS in Central Java**

### **Online learning assessment tools at AOMP VHS in Central Java**

In implementing the online learning assessment, the teachers at AOMP VHS Central Java have utilized various features. The features used by AOMP VHS teachers in carrying out online learning assessments, especially the knowledge aspect, are



**Figure 5. Online Learning Assessment Tools at AOMP VHS in Central Java**

Based on the image above, it can be seen that the assessment features in online learning that are most widely used by AOMP VHS teachers in Central Java are Google Form, namely 55.56%, QuizZiz 15.28%, Kahoot 9.72%, LMS features 15.28%. 6.94%, features in Schoology and office forms as much as 4.17% and others as much as 4.17%.

## Discussion

### Online learning assessment at AOMP VHS in Central Java

Implementing the K13 curriculum, especially in the assessment process, emphasizes using authentic assessment. The demand for using accurate estimates in vocational schools is very high because vocational school graduates must have knowledge, skills and behaviour in solving problems in the professional world. With these demands, in the distance learning process, the authentic assessment process is less than optimal for measuring skill aspects due to various obstacles in the field.

In the distance learning process, the Ministry of Education and Culture (2020) has guided that the learning assessment consists of formative and summative assessments. Assessment activities must be carried out by learning objectives and provide opportunities for students to reflect. Based on the research results, the distance learning assessment process carried out by

Central Java OTKP Vocational School teachers has been carried out well. The results of this research are in line with several findings (Kuswanto, 2020).

The assessment activities carried out by the Central Java AOMP VHS teachers are by the learning objectives, according to the aspects to be measured, and students can access the instruments efficiently. Learning assessment instruments to measure knowledge aspects, both formative and summative assessments, use objective tests, essays and interviews, while to measure skills, use performance tests, performance assignments and portfolios. This refutes the findings of Dwihartanti et al. (2021), Effiyanti & Sagala (2018), Eka Tuah et al. (2021), Sudirman et al. (2017), S. Wahyuni (2019) stated that teachers' ability to utilize technology in the learning process is low. In the online learning process, assessment must also use various technologies in the form of online assessment tools.

### **Online Learning Assessment Tools at VHS AOMP in Central Java**

In the concept of dare learning assessment, many tools are used to carry out checks. Many devices can be used in online learning; several previous studies have found many tools in online learning assessment that have been used by teachers, including the Digital School application, teachers also use the WhatsApp application, Google Form or Google Classroom, and Email (Herlambang & Yulia, 2022; Lumban Gaol et al., 2021; Mulatsih, 2020).

The research results found that the most widely used online assessment tools were Google Form, Quizizz and Kahoot. Using Google Forms as a medium for learning assessment has been widely studied. Some results regarding the effectiveness of Google Forms in online learning assessment conducted by Nofitasari & Ahsani (2020), Santoso (2019), and Septiawan (2020) stated that using Google Forms is very easy, simple and effective in the learning assessment process, especially if done bravely. Apart from that, the use of Google Forms is also favoured by Generation Z, who, on average, occupy high school and senior levels. Not only is it used for assessment at the upper level of education, Google Form can also be used easily at the basic level of education (Assalaamy & Aziz (2021); Nofitasari & Ahsan (2020), Sruyanovika (2020). This result contradicts Chaiyo & Nokham (2017) and Lestari (2019), who said that students prefer using Kahoot and Quizizz as learning assessment media because they are more interactive and have many effects than Google Forms.

The second online learning assessment tool that teachers widely use is Quizizz and Kahoot. As stated by Lestari (2019); Chaiyo & Nokham (2017); and Wahyudi et al. (2020) obtained results that the use of quizizz and Kahoot was better than Google Forms. One of the factors that make Quizizz and Kahoot more attractive than Google Forms is that there are visuals and effects displayed, there are live scores, they are designed like games and they are not monotonous. Kuo, CL, & Chuang, Y.H. (2018); Kalleney, N. (2020) stated that the characteristics of Kahoot as a game-based online quiz platform are very popular with Generation Z and can create a positive environment, produce student satisfaction in formative assessments, can motivate students in the

process of carrying out evaluations and students agree and allows the use of Kahoot in distance learning assessments.

## CONCLUSION

Based on the results and discussions that have been carried out, it is concluded that 1) the online learning assessment at AOMP VHS in Central Java has been carried out well by teachers, 2) the online learning assessment instrument used by teacher of AOMP VHS in Central Java to assess knowledge aspects such as multiple-choice, essays test and interviews, while assessing skills, are performance assessments, performance and portfolio. 3) The online learning assessment tools at AOMP VHS in Central Java utilized are Google Form, Quizizz, Kahoot and School LMS. Therefore, it is necessary to examine more deeply whether the process of assessing online learning is actually carried out by the teacher himself or carried out by a team from the vocational school because the initial picture of the teacher's ability to master information and communication technology in learning is limited.

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# THE INFLUENCE OF IMPLEMENTATION TAX AUDITS AND COLLECTION TAX ARREARS ON TAX REVENUE AT KPP PRATAMA KEDIRI

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## ABSTRACT

The government is trying to increase tax revenue from year to year. Obstacles in increasing the realization of taxes that are still often encountered are tax arrears. The implementation of tax audits and collection of tax arrears is expected to have an impact on the efforts of the government and the Director General of Taxes to increase tax revenues. This research aims to determine the magnitude of the influence of the implementation of tax audits and collection of tax arrears on tax revenues at KPP Pratama Kediri. The sampling technique in this study used a purposive sampling method. The samples taken were Business Entity Taxpayers who had been audited and billed a total of 90 respondents using slovin. Data was obtained through a questionnaire. The results of this research show that partially the implementation of tax audits has a positive and significant effect on tax revenues. Collection of tax arrears partially has a positive and significant effect on tax revenues. Simultaneously carrying out tax audits and collecting tax arrears has a significant positive effect on tax revenues at KPP Pratama Kediri. The correlation between carrying out tax audits and collecting tax arrears directly affects tax revenues by 0.427 or 42.7%.

**Keywords:** Tax Audits, Tax Collections, Tax Revenue

## INTRODUCTION

Obstacles in increasing tax realization that are still often encountered are tax arrears. Some of the causes include the low level of awareness and concern of taxpayers, or other causes such as unfavorable financial conditions so that taxpayers try to pay their tax obligations less than they should. This will affect tax revenue. With the implementation of tax audits and collection of tax arrears, it is expected to affect the efforts of the government and the Director General of Taxes in increasing tax revenue.

The Directorate General of Taxes conducts tax audits on taxpayers who meet the criteria for inspection. Tax audits are carried out by the Directorate General of Taxes through the implementing unit, namely the tax inspector function, both in service offices, regional offices, and head offices. Testing with tax audits on taxpayer compliance in carrying out their tax obligations needs to be carried out for taxpayers who are felt to have committed irregularities

in their calculations. With the audit, it is expected that the level of compliance of taxpayers in carrying out their tax obligations can increase, so that it can have an impact on increasing tax revenue.

Active and passive tax collection to every taxpayer who is delinquent in paying their taxes is another way that the government does in an effort to increase tax revenue. Tax collection is carried out because there are taxpayers who do not pay off their tax arrears, so action is needed in the form of tax collection that has binding and coercive legal force. The purpose of holding regulations on Tax Collection is that it is expected that Tax Collection activities can be carried out properly and as a reference for the fiscus to collect taxpayers who have tax arrears, so that they are motivated to pay their tax obligations so that it is expected to increase tax revenue.

Tax revenue is useful for increasing the independence of government financing. Various policies have been made by the government to increase tax revenue. The cooperation between fiscus and taxpayers is needed in increasing tax revenue in the future. Tax revenues are used by the government to carry out national development for the benefit of the people such as the construction of public facilities, finance other sectors such as health and education and to fund the State Budget (APBN). In the Press Conference for the Realization of the 2022 State Budget, Finance Minister Sri Mulyani Indrawati said that tax revenue managed to reach Rp. 1,717.8 trillion or 115.6% based on the target of Presidential Regulation 98/2022, which is an increase of 34.3% from the 2021 tax increase of 19.3%.

In an effort to increase government revenues in the tax sector, the Directorate General of Taxes is assisted by the Tax Service Office. One of them is KPP Pratama Kediri. Researchers see that there are more and more businesses in Kediri City, especially business entities that still do not understand the importance of the level of tax revenue realization for the state and the important role of carrying out tax audits and collecting tax arrears in the effectiveness of implementing tax laws and regulations which are expected to increase tax revenue at KPP Pratama Kediri. This study aims to determine the magnitude of the effect of the implementation of tax audits and collection of tax arrears on tax revenue at the Kediri Pratama Tax Service Office.

## **METHOD, DATA, AND ANALYSIS**

### **Data Source, Population, Sample**

The type of research used by researchers in this study is quantitative research. The source of the data used is primary data taken with questionnaires distributed directly to taxpayer respondents in KPP Pratama Kediri. The population in this study is Business Entity Taxpayers who have been examined and billed in 2022, which is 718 Taxpayers. The sample taken from this study uses the Slovin formula with an error rate of 10%, which is obtained at 87.77 or rounded to 90 respondents Business Entity Taxpayers consisting of Trade Business Entity Taxpayers and Service Business Entity Taxpayers with special considerations that have been determined by the researcher, namely Business Entity Taxpayers who have been examined and billed with a Reprimand Letter, Notice of Tax Collection, Notice of Tax Assessment, Distress Warrant, and Business Entity Taxpayers who are late in reporting the Annual Corporate Tax Return. The questionnaire distribution process was carried out directly by researchers to respondents at KPP Pratama Kediri.

### **Data Analysis Methods**

In this study, researchers used multiple linear regression analysis using IBM SPSS version 25 program. Tests include descriptive statistical tests, validity, reliability, classical assumption tests (normality, multicollinearity, heteroscedasticity, autocorrelation), multiple



linear regression analysis tests, hypothesis tests (t test, F test, and coefficient of determination ( $R^2$ )).

## RESULT AND DISCUSSION

### A. Descriptive Analysis

#### 1) Respondent Characteristics

Based on business entity type the respondents in this study were 48 respondents or 53% with the type of service business entity and as many as 42 respondents or 47% with the type of trading business entity. Based on Structural Position respondents with structural positions as administration 40 respondents or 44%, 26 respondents or 29% as accounting, 9 respondents or 10% as owners and 15 respondents or 17% others. Others include directors, tax consultants, secretaries, and treasurers. Based on gender, respondents in this study were 25 respondents or 28% with male sex and 65 respondents or 72% with female gender.

**Table 1. Statistic Descriptive Test**

Variable	N	Min	Max	Mean	Std. Deviation
Implementation of Tax Audit (X1)	90	23,00	35,00	29,07	2,76
Collection of Tax Arrears (X2)	90	21,00	35,00	28,73	3,05
Tax Revenue (Y)	90	26,00	40,00	33,38	2,91

Source : Processed Data. (2023)

The table above shows that (N) or the number of respondents is as many as 90. The variable of conducting tax audits has a minimum answer value of 23 and a maximum value of 35 and a total average answer value of 29.0667 and has a standard deviation of 2.75518. The tax arrears collection has a minimum value of respondents' answers of 21 and a maximum value of 35 and a total average value of 28.7333 answers and has a standard deviation of 3.04941. The tax revenue variable has a minimum value of 26 and a maximum value of 40 with a total average answer value of 33.3778 and has a standard deviation of 2.90516.

### Statistics Analysis

#### Data Quality Test

##### Validity Test

All statement items to be declared valid because  $r \text{ count} > r \text{ table}$ . All statement items are at a significance level below 0.05, so it can be concluded that the research statement is valid, so no data is discarded.

##### Reliabilitas Test

All statement items are at a significance level below 0.05, so it can be concluded that the research statement is valid, so no data is discarded. Reliability Test All statement items show that Cronbach's Alpha value  $> 0.60$  on each variable, indicating that all statement instruments used are reliable.

#### Classical Assumption Test

#### Table 2. Normality Test

**Asymp. Sig.2 tailed**

200<sup>c,d</sup>

Source : Processed Data. (2023)

The results of the Kolmogorov-Smirnov method normality test, show that the residual value of the Asymp Sig. (2-tailed) value of 200 is greater than the significance level set at 0.05 so that the data are normally distributed.

**Table 3. Multicollinearity Test**

Independent Variable	Collinearity Statistics	
	Tolerance	VIF
PPP	0,825	1.212
PTP	0,825	1.212

Source : Processed Data. (2023)

The Tolerance value of both variables is 0.825 which means greater than 0.10 and the VIF value is 1.212 which means  $\leq 10.00$ . Then it can be concluded that the data do not occur symptoms of multicollinearity.

**Table 4. Heteroscedasticity Test**

Spearman's rho	Implementation of Tax Audit	Collection of Tax Arrears
Sig. 2 tailed	0,898	0,817

Source : Processed Data. (2023)

The Sig. value of both variables is greater than 0.05, so it can be concluded that there is no heteroscedasticity.

**Table 5. Autocorrelation Test**

R	Durbin-Watson
One Sample K-S	2.264

Source : Processed Data. (2023)

The Durbin Watson (dW) value of 2.264 is greater than the upper bound (dU) of 1.7026 and less than (4-dU) of 2.2974. So it can be concluded  $dU \leq dW \leq 4-dU = 1.7026 \leq 2.264 \leq 2.2974$  that there are no problems or symptoms of autocorrelation.

## Hypothesis Test

**Table 6. Recapitulation Multiple Linear Regression Analysis Tests**

Variable	Regresi ( $\beta$ )	t count	Sig.t	Description
Implementation of Tax Audit (X1)	0,313	3.323	0,001	H1 accepted
Collection of Tax Arrears (X2)	0,449	5.268	0,000	H2 accepted

Constant ( $\alpha$ )	11,39 0	
Correlation Value (R)	0,653	
F count	32.37 5	
Significance F	0,000	H3 accepted
Value of Coefficient Determination ( $R^2$ )	0,427	
Y	Tax Revenue	

Source : Processed Data. (2023)

(a) The first hypothesis test (H1) implementation of tax audit (X1)

Implementation of Tax Audit (X1) it is known that the value of Sig. for the effect of X1 on Y is  $0.001 < 0.05$  and the calculated t value is  $3.323 > t$  table 1.98761. So it can be concluded that H0 is rejected, and H1 is accepted. This means that there is a significant influence of the variable (X1) on (Y). This shows that partially the variable of tax audit implementation has a positive and significant effect on tax revenue. With this, it can be interpreted that the higher the implementation of tax audits, it will increase tax revenue.

(b) The second hypothesis test (H2) collection of tax arrears (X2)

It is known that the value of Sig. for the effect of X2 on Y is  $0.000 < 0.05$  and the calculated t value is  $5.268 > t$  table 1.98761. So it can be concluded that H0 is rejected, and H2 is accepted. This means that there is a significant influence of the variable (X2) on (Y). This shows that partially the variable collection of tax arrears has a positive and significant effect on tax revenue. With this, it can be interpreted that the higher the collection of tax arrears is carried out, it will increase tax revenue.

(c) The third hypothesis test (H3) implementation of tax audit (X1) and collection of tax arrears (X2) on tax revenue.

Based on the Comparison of Calculated F value with F table, it is known that the calculated F value is 32.375. Because the value of F count  $32.375 > F$  table 3.10. So as the basis for decision making in the F test can be concluded that it is concluded that H0 is rejected and H3 is accepted. This means that together the variables of tax audit implementation (X1) and collection of tax arrears (X2) affect tax revenue (Y).

Therefore, it can be concluded that the implementation of tax audit (X1) and collection of tax arrears (X2) together have a positive and significant influence on tax revenue (Y). If several things such as the submission of Annual Returns, compliance with fulfilling tax obligations, information related to the purpose of the audit, and guidance and counseling related to tax audits are carried out, it will increase the amount of tax revenue.

In addition, the collection of tax arrears to taxpayers of trade and service business entities that have tax arrears by providing Reprimand Letters, Tax Assessment Letters, Tax Bills, Forced Letters is carried out properly, it can have a positive impact on the level of tax revenue so that it will increase. Based on this, it can be concluded that H3 is accepted, meaning that the effect of conducting tax audits (X1) and collecting tax arrears (X2) together has a positive and significant effect on KPP Pratama Kediri tax revenue.

(d) Coefficient of Determination ( $R^2$ )

R Square value of 0.427. This value comes from the stratification of the value of the correlation coefficient (R), which is  $0.653 \times 0.653 = 0.427$ . It is known that the value of the Coefficient of determination is 0.427 or 42.7%. This means that the correlation between the variable of conducting tax audits (X1) and collecting tax arrears (X2) directly affects the dependent variable of tax revenue (Y) by 42.7%. While the remaining 48.3% is influenced by other variables outside this regression equation.

## Interpretation

### 1) The Effect of Tax Audit on Tax Revenue

Based on testing, this study obtained the results that the implementation of tax audits had a significant positive effect on tax revenue. This means that the higher the tax audit carried out by the Kediri Primary Tax Service Office, the more tax revenue will increase. This means that if the higher the implementation of tax audits carried out, it will increase the amount of tax revenue. The results of this study show that tax audits with the issuance a Notice of Tax Assessment (SKP) can build taxpayer compliance to carry out their tax obligations which has an impact on increasing state revenue from the tax sector.

Based on the facts in the field, tax audits are caused by Business Entity Taxpayers who have unpaid tax debts in the previous year and underpayments. The existence of tax debts or tax arrears makes Business Entity Taxpayers subject to a Tax Assessment Letter containing financial information of a company to describe the company's performance and state the calculation of taxes owed. With the implementation of this tax audit, the sanctions given to Business Entity Taxpayers are expected to have a deterrent effect so as to increase compliance and compliance in tax payments.

The results of this study are in line with research conducted by Sari (2021) stating that the implementation of tax audits partially has a significant positive effect on tax revenue. The results of this study are not in line with Rahman's (2018) research which states that tax audits on Corporate Taxpayer Income Tax Returns do not have a significant effect on Corporate Income Tax revenue at KPP Pratama Makassar Utara in Makassar City. The large correlation of tax audits on corporate income tax returns to corporate income tax revenue shows that tax audits on the examined corporate income tax returns do not have a major influence on corporate income tax revenue.

### 2) The effect of collecting tax arrears on tax revenue.

Based on the results of this study, the collection of tax arrears has a significant positive effect on tax revenue. This means that the higher the collection of tax arrears carried out by the Kediri primary tax service office, the more tax revenue will increase. This proves that the partial collection of tax arrears has a significant positive effect on tax revenue. The results of the hypothesis test (H2) shown in table 4.16, the calculated t value in the tax arrears collection variable (X2) is  $5.268 > t \text{ table } 1.98761$  with a significance level of 0.000. Because the calculated t value of 5.268 is greater than the table t of 1.98761 and the significance level of 0.000 is less than the probability of significance  $\alpha = 0.05$ . So hypothesis 2 (H2) is accepted, meaning that the higher the collection of tax arrears carried out, it will increase the amount of tax revenue.

Based on the results of this study, it can be concluded that there are tax arrears collection activities by issuing Reprimand Letters and Notice of Tax Collection (STP) Business Entity Taxpayers can obey and comply in paying their tax arrears, if taxpayers still do not want to pay taxes, they will be subject to Forced Letters and confiscations of their goods. This shows that the collection of tax arrears affects tax revenue. The existence of this tax collection can provide compliance in paying taxes and to increase the success rate of tax collection.

The results of this study are in line with Sundari and Sinaga's (2020) research which states that tax collection by forced letter has a significant effect on the disbursement of tax arrears at KPP Pratama Bandung Cibeunying. In research that has been done, it shows that tax collection causes the amount of tax owed to increase and can have an impact on tax revenue. The results of this study are not in line with research conducted by Rahmanita and Nurcahyani (2022) which shows that the partial and simultaneous effectiveness of tax collection through reprimands and forced letters has no effect on tax revenue growth.

### 3) The Effect of Tax Audit and Collection of Tax Arrears on Tax Revenue

Based on the results of the study, it is proven that the implementation of tax audits and collection of tax arrears simultaneously together have a positive effect on tax revenue. The

implementation of tax audits and collection of tax arrears simultaneously have a positive and significant effect on tax revenue at KPP Pratama Kediri. This shows that the issuance a Notice of Tax Assessment (SKP) and Notice of Tax Collection (STP) and/or Reprimand Letter can increase taxpayer awareness of their tax obligations so as to increase tax revenue. This is explained in the variables of the implementation of tax audits and collection of tax arrears that have a partial effect on tax revenue. Simultaneously, the implementation of tax audits and collection of tax arrears affect tax revenue.

This research is supported by research conducted by Lobinsen and Tobing (2019) the variables of the effectiveness of tax audits and the effectiveness of tax collection by forced mail have a significant effect simultaneously on tax audit variables. The results of this study are contrary to research conducted by Ilmiha (2019) which shows that tax audits and collections do not have a significant positive effect on tax revenue at Kantor Pelayanan Pajak Pratama Medan Polonia.

## CONCLUSION

Based on the findings of the research and discussion of hypotheses regarding the effect of implementation of tax audits and collection of tax arrears on tax revenue were obtained:

1. The implementation of partial tax audits has a positive and significant effect on tax revenue at KPP Pratama Kediri.
2. The partial collection of tax arrears has a positive and significant effect on tax revenue at KPP Pratama Kediri.
3. The implementation of tax audits and collection of tax arrears simultaneously together have a positive and significant effect on tax revenue at KPP Pratama Kediri.

The suggestions that the researcher conveys for future research are as follows :

1. For future researchers :
  - a. Expand the scope of research by examining other factors that can affect tax revenue.
  - b. Expanding respondents by adding research samples for example all Corporate Taxpayers include Joint Operations, Foreign Company Representative Offices, Treasurers, Activity Organizers..
  - c. Add further data collection methods using observation and interviews.
2. For KPP Pratama Kediri

It is recommended for KPP Pratama Kediri to continue to supervise and provide socialization to Taxpayers, especially Business Entity Taxpayers who have problems related to their tax arrears or indications of Taxpayer fraud in minimizing their income. It is expected that some problems related to the implementation of tax audits and collection of tax arrears can be minimized.

3. For Taxpayers

It is recommended that Taxpayers, especially Business Entity Taxpayers, not to commit fraud aimed at avoiding their tax obligations, namely by paying taxes on time / before maturity. With the Self Assessment System, taxpayers are expected to be more active in calculating, depositing and self-reporting the amount of tax owed to the fiscus.

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# THE INFLUENCE OF LEARNING READINESS AND THE USE OF WHATSAPP SOCIAL MEDIA IN LEARNING ACTIVITIES ON STUDENT LEARNING MOTIVATION

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## ABSTRACT

This research aims to determine the effect of: (1) the influence of learning readiness on the learning motivation; (2) the influence of the use of Whatsapp social media in learning activities on the learning motivation; (3) the influence of learning readiness and the use of Whatsapp social media in learning activities on the learning motivation of XI grade student Automation and Office Governance of SMK Muhammadiyah 2 Klaten Utara. The research was ex post facto research with quantitative approach. The subject of this research was all of XI grade students of Automation and Office Governance at SMK Muhammadiyah 2 Klaten Utara, which amounts to 56 students. The technique of collecting data used questionnaire and documentation. The result of this research show that: (1) there is positive and significance influence of learning readiness on learning motivation in amount 60.20% with significance value in amount  $0,000 < 0,05$ ; (2) there is positive and significance influence of the use of Whatsapp social media in learning activities on learning motivation in amount 33.3% with significance value in amount  $0,000 < 0,05$ ; (3) there is positive and significance influence of both learning readiness and the use of Whatsapp social media in learning activities on learning motivation in amount 65.20% with significance value in amount  $0,000 < 0,05$ .

**Keywords:** keyword\_1, keyword\_2, keyword\_3, keyword\_4, keyword\_5

## INTRODUCTION

The emergence of the Covid-19 outbreak has resulted in changes in habits in various aspects of life, including teaching and learning activities in schools. Teaching and learning activities in schools are carried out online which require cooperation between the government, teachers, and students so that the goal of realizing student achievement.

The implementation of online learning is carried out at all levels of the education unit. Despite teaching and learning activities taking place online, students are expected to remain motivated to learn so that learning objectives can be achieved. According Julhadi (2020) "learning motivation is a driving force that encourages and gives direction to students to carry out learning actions in accordance with predetermined goals". Learning motivation is an essential factor to encourage students to be enthusiastic about participating in the learning process.

One level of education that is affected by online learning is Vocational High School (VHS). VHS is one of the formal education organizations at the upper secondary level and one of its majors is Automation and Office Management Program (AOMP). VHSs are spread throughout Indonesia, one of which is in Klaten, namely SMK Muhammadiyah 2 Klaten Utara. Based on the results of initial observations with unstructured interviews and pre-survey questionnaires, mainly for class XI found problems that need to be researched.

The first problem is the inability of some students to exceed the minimum passing criteria in automation of staffing governance subjects. It is known that 36 out of 56 (64.3%) students did not pass the KKM for the civil service subject in the Mid-Semester Exam. Personnel subjects are included in C3 (skill) which consists of 19 Basic Competencies with a total of 454

Lesson Hours. Therefore, students need to understand staffing governance material because it is applied in the workplace, especially those related to human resources management.

The second problem, based on observations during face-to-face learning, there are indications that students are not yet motivated in the learning process. Students seem unmotivated and passive in responding to the teacher's questions. In class, it was seen that the teacher occasionally asked about material related to staff administration, but only 19% of students gave a response. On the other hand, about 38% of students sitting in the back row seemed to be busy alone chatting or playing on smartphones secretly. This condition is reinforced by the teacher's statement that passive students are not only in face-to-face learning but also occur during learning using WhatsApp where according to the teacher's statement only 10 to 15 students actively respond in the group, while other students do not respond.

The third problem, as many as 54% of students admit to giving up quickly when experiencing difficulties in studying automation of staffing governance. 68% of students find it difficult to understand the material independently without the teacher's explanation directly in the classroom. On the other hand, the teacher said that every time the teacher asked about staffing material that was deemed unclear on WhatsApp, only 32% of students actively asked.

The fourth problem, students are not on time in collecting assignments. Facts on the ground show that 32% of students are still often late in sending assignments. According to the teacher, students have difficulty getting a stable signal to send assignments on WhatsApp, there are also 3 students who do not have smartphones so that they are constrained in participating in learning through WhatsApp.

In addition, another problem was found, namely, students seemed less ready to learn, especially in the automation of staffing governance subjects. Based on observation, it is known that about 54% of students are not physically ready because they look lethargic and sleepy. When confirmed by the teacher, students admitted that they were tired and sleepy because on the previous day students had difficulty resting at night after doing more and more assignments during online learning. The learning needs of students in the automation of staffing governance subjects have not yet been seen.

When face-to-face learning, 46% of students do not bring books and worksheets. Based on the teacher's narrative, learning resources for the automation of staffing governance subjects come from teachers and books borrowed from schools' libraries. Based on the pre-survey questionnaire, it is also known that 33% of students rarely look for staffing materials from other sources, either from books or journals on the internet. In addition to not being ready for students to prepare study materials, students are often late in filling out attendance. During online learning, students were given attendance time starting at 07.30 AM - 12.30 PM as a way to see the seriousness of students in learning automation of staffing governance.

Online learning at SMK Muhammadiyah 2 Klaten Utara is known to be dominant using the WhatsApp platform. WhatsApp is an instant chat application using internet quota that helps users to communicate, share photos, videos, documents, and voice, to send locations either through private or group messages (Anwar & Riadi, 2017). Based on the survey results from the Ministry of Education and Culture, it is known that the social media Whatsapp is the most widely used media when learning online with a national percentage of 86.6% (Kementrian Pendidikan dan Kebudayaan, 2020).

Differences were found in several research results, especially WhatsApp in the learning process. Pahril (2020) and Karomah (2015) in their findings suggest that Whatsapp is effectively used as a supplementary media and learning discussion, exchanging opinions, to assisting in completing assignments at the high school and college levels. While other findings actually show contradictory results that WhatsApp is considered ineffective when used in learning because there are many obstacles such as not all students being able to understand the material optimally without a direct explanation and the teacher is difficulty seeing the



seriousness of students when learning process (Wahyuni, 2018).

Another finding by Yensy (2020) shows that WhatsApp is quite effective in improving student learning outcomes. On the other hand, the findings of Fatullah & Ramdani (2019); Lutfi Rohmawati (2021) showed that WhatsApp is not effective in improving achievement and learning outcomes because students are not familiar with online learning and lack of use of features available on WhatsApp.

Other findings by Zahra et al. (2020) got the results that Whatsapp is the most widely used application as a learning medium and students also have good learning readiness by using Whatsapp. However, Alfarisyi & Mahardika (2021) in their research showed that there were still some students who felt they were not ready to participate in online learning.

According to the background of the problem above, it can be identified the problems that arise, including the inability of some students to achieve the Minimum Criteria for Completeness on automation of staffing governance, and students not being encouraged to learn marked by the passive attitude of students in learning. Students have not been motivated to learn and are marked quick to give up when having learning difficulties, students who are not yet disciplined in collecting assignments, students who look lethargic and sleepy, students who do not have the preparation to bring study materials in the form of companion books/journals/other learning resources, students are often late for online attendance, some students have difficulty getting a stable signal, there are students who do not have a smartphone to access WhatsApp, there are differences in the results of the previous investigation.

To facilitate this research, the formulation of the problem is translated into several research questions as follows:

1. How does learning readiness affect student motivation through online learning in class XI Automation and Office Management Program at SMK Muhammadiyah 2 Klaten Utara?
2. How does the use of WhatsApp social media affect the learning motivation through in class XI students in Automation and Office Management Program at SMK Muhammadiyah 2 Klaten Utara?
3. How do learning readiness and the use of WhatsApp social media together affect the learning motivation through in class XI students in Automation and Office Management Program at SMK Muhammadiyah 2 Klaten Utara?

This research was carried out with the hope of contributing to the education field mainly in vocational high schools regarding learning readiness, the use of WhatsApp social media in learning activities, and student motivation to learn. This research is also expected to be a source of knowledge for educators, readers, and writers and be used as study material in further research. Through this research, it is hoped that it will be useful for teachers to further optimize the use of WhatsApp as a learning medium so as to encourage the creation of interesting learning. For students, this research provides new knowledge for students to be more aware of the importance of learning readiness as the first step in starting learning and the benefits of using Whatsapp social media in learning so that students can be more motivated in learning.

## **METHOD, DATA, AND ANALYSIS**

The type of research was ex-post facto with a quantitative approach. Ex-post facto research is research in which the independent variable or the independent variable has been treated and might not be carried out at the time of the research. The research was conducted at SMK Muhammadiyah 2 Klaten Utara, Central Java Province. The research used 2 (two) types

of variables, namely independent and dependent variables. Independent variables were learning readiness (X1) and the use of Whatsapp social media in learning activities (X2). And, the dependent variable is learning motivation (Y).

The subjects of the study were all students of class XI, Competence in AOMP at SMK Muhammadiyah 2 Klaten Utara which consisted of 2 (two) class groups with a total of 56 students. The data collection techniques were questionnaires and documentation. The type of questionnaire was a closed questionnaire where respondents simply fill out the questionnaire by ticking the alternative answers following the state of the research subject. While documentation is a technique of data collection by taking the available data at the school. The data were the learning outcomes in the form of Mid-Semester Assessment scores in personnel subjects.

The validity test used SPSS version 21. First, for the learning readiness questionnaire, of the 24 statement items, 4 statements were invalid. Second, the variable using Whatsapp social media in learning activities of 25 statements, 3 statements were invalid. And, The variable of learning motivation variable of 27 statements, 6 statements were invalid. The invalid statements were removed from the questionnaire, while the valid statements are retained because they represented each indicator.

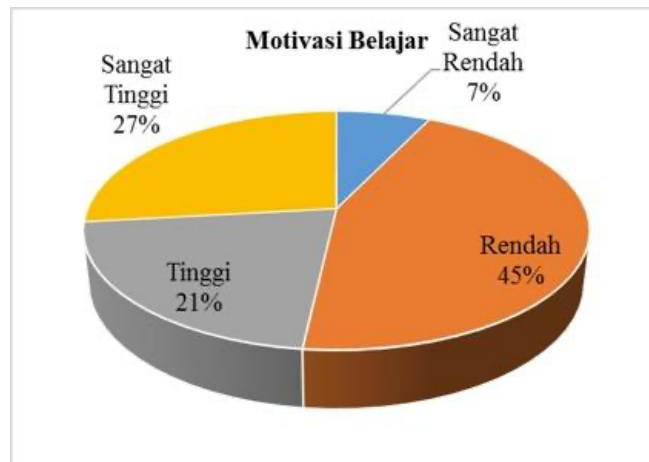
The reliability test using SPSS version 21, showed that the variables of learning readiness and the use of Whatsapp social media in learning activities were in the Cronbach Alpha coefficient interval of 0.800-1,000. This means that this research instrument was in the very high category and reliable. The data analysis technique was descriptive analysis consisting of the calculation of the mean, mode, median, and standard deviation. After that, it is presented in the frequency distribution table. The analysis prerequisite test used the normality test and linearity test. Hypothesis tests were simple regression analysis and multiple regression, as well as relative contribution and effective contribution.

## **RESULT AND DISCUSSION**

It presented the results of data analysis on the variables of learning readiness and the use of Whatsapp social media in learning activities on students' learning motivation.

### **Student Learning Motivation (Y)**

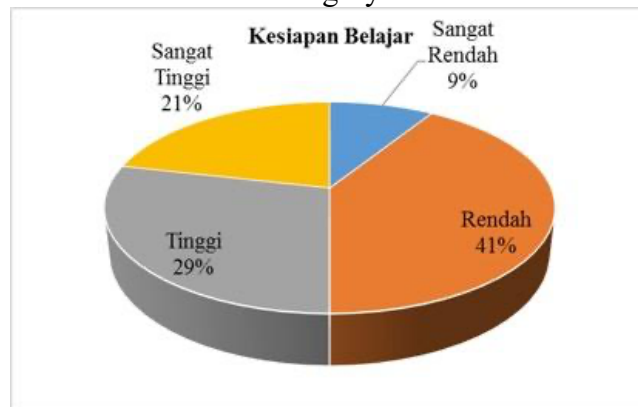
The results of descriptive analysis of student learning motivation variable data on the subjects of personnel showed that the minimum score was 37, the highest score was 78, the mean was 55.71, the median was 52.00, and the standard deviation was 10.944. Furthermore, the ideal mean value and ideal standard deviation are used to determine the trend of students' learning motivation. Based on the calculation results, the trend of the learning motivation variable was in a low category. Based on the figure, the trend of learning motivation was in the low category of 25 students (44.64%).



**Figure 1. Pie Chart of Learning Motivation Trends**

### **Learning Readiness (X1)**

Based on the data that has been calculated using SPSS version 21, the minimum score was 38, the highest score was 77, the mean was 53.18, the median was 51.50, and the standard deviation was 9.029. Furthermore, the score of the mean idea and the ideal standard deviation were used to determine the trend of the learning readiness variable. Figure 2 is a pie chart of the calculation results of the trend of the learning readiness variable. Based on figure 2, the trend of learning readiness was in the low category of 41%.



**Figure 2. Pie Chart of Learning Readiness Trends**

### **The Use of Whatsapp Social Media in Learning Activities (X2)**

Based on the data that has been calculated using SPSS version 21, the lowest score was 39 and the highest score was 86. While the mean value was 55.95, the median was 53.50, and the standard deviation was 10.978. Next, using the ideal mean value and ideal standard deviation used to determine the trend of the variable using Whatsapp social media in learning. The distribution of the variable trend of using Whatsapp in learning activities was in the low category of 41%.



Figure 3. Pie Chart of the Trend of Using Whatsapp in Learning

### Linearity Test

Linearity test used to find out the linearity relationship of each variable. The criteria for decisions- making with linearity tests are:

- If Deviation from linearity  $> 0.05$ , then it has a linear relationship.
- If Deviation from linearity  $< 0.05$ , then there is no linear relationship.

The results of the linearity test using SPSS version 21 is presented in table 4:

Table 1. Summary of Linearity Test Results

Variable	Sig.	Conclusion
X1 to Y	0,754	Linear
X2 to Y	0,071	Linear

Based on calculations using SPSS version 21, it interpreted that:

- Value of Sig. in the Deviation from linearity of 0.754  $> 0.05$ , it concluded that the variable of learning readiness and learning motivation has a linear relationship.*
- Value of Sig. in the Deviation from linearity of 0.071  $> 0.05$ , it concluded that the variable of using Whatsapp social media in learning activities and learning motivation has a linear relationship.*

### Effective Contribution (SE) and Relative Contribution (SR)

Based on the analysis of multiple linear regression, it showed the score of the size of the effective contribution and the relative contribution of each independent variable to the dependent variable. The results of the Effective Contribution and Relative Contribution test are:

Table 2. Summary of SE and SR Calculation

N o.	Variabel	Sumbangan Efektif	Sumbangan Relatif
1.	X1	50,4%	77,2%
2.	X2	14,8%	22,8%
<b>Total</b>		<b>65,2%</b>	<b>100%</b>

Based on table 5, learning readiness provides a Relative Contribution (SR) of 77.2% and the variable using Whatsapp social media in learning activities provides a Relative

Contribution (SR) of 22.8% to learning motivation. Meanwhile, for the Effective Contribution (SE), learning readiness contributed 50.4%, and using Whatsapp social media in learning activities contributed 33.3%. By the results of these calculations, the two independent variables together have an effective contribution of 65.2%, while 34.8% is the variable under study.

## Discussion

### The Effect of Learning Readiness on Learning Motivation

In the finding, there is a positive and significant influence between the variables of Learning Readiness on Learning Motivation in the Subjects of Personnel in Class XI of OTKP Expertise Competencies at SMK Muhammadiyah 2 Klaten Utara which is indicated by the correlation coefficient value ( $r^2$ ) of 0.602 with a Sig value. 0.000. The value of determination ( $r^2$ ) of 0.602 indicates the variable of learning readiness to learning motivation is 60.2%, while 39.8% is influenced by factors or variables other than learning readiness. The significance with the t-test obtained a value of  $t_{count} > t_{table}$  ( $9,037 > 2,005$ ) with a significance of  $0.000 < 0.05$ . This shows that there is a positive and significant influence between the variables of learning readiness on learning motivation in Class XI of automation of staffing governance AOMP at SMK Muhammadiyah 2 Klaten Utara.

The learning process accompanied by good student learning readiness is expected to encourage students to devote more attention to learning activities. So, in the end, it could increase learning motivation. The finding is in line with previous research by Listiani (2015); Christian (2018); Sasmita (2013); Yulikasari & Pramusinto (2016); Sari & Trisnawati (2021) concluded that learning readiness affects learning motivation at the level of junior high school, senior high school, vocational, and higher education units because students who have learning readiness in terms of physical, material, psychological readiness, knowledge also have better motivation to learn. These findings follow the opinion by Mulyani (2013) that students who have good and mature learning readiness can actively participate in learning, easy to learn and understand the material in-depth, and concentrate on participating in learning. Therefore, students' readiness is important to continue to be improved so that automatically students will be more motivated in learning. As the output, it also has an impact on the achievement of learning outcomes. In contrast, if students are not ready to accept learning, students will be difficult, unwilling to learn, and give up (Sutiah, 2016). The results of this study contradict the findings by Lestari et al. (2019) which state that learning readiness does not affect learning motivation, but learning motivation affects learning readiness because if learning motivation is high, students will be encouraged to do something as a form of learning readiness.

The study proved that the level of learning readiness affects the level of student motivation. If students' learning readiness is low, their learning motivation will decrease. In contrast, if the learning readiness is high, the learning motivation will increase. Online learning, especially at the Vocational High School level, needs to be followed by a good learning readiness following the characteristics of Vocational Schools that demand learning outputs. It is not only mastery of knowledge but also skills. If students have high learning readiness, students have a good starting point because they are ready to receive lessons. Then, they motivate students to actively participate in learning. In the end, students can understand the material and master the practice according to their expertise and competence. Learning readiness can be improved by several alternatives, such as creating a conducive learning atmosphere using learning media following the students' needs, using appropriate learning methods and strategies, and providing pre-learning that encourages students to read the material before learning activities take place (Wijaya & Windayani, 2020).

### **The effect of using Whatsapp social media on students' learning motivation**

The finding indicated that there is a positive and significant influence between the variables of the using Whatsapp social media in learning activities on learning motivation in the automation of staffing governance Subjects in Class XI AOMP expertise Competence at SMK Muhammadiyah 2 Klaten Utara. It is indicated by a correlation coefficient value ( $r^2$ ) of 0.333 with the value Sig. 0.000. The value of determination ( $r^2$ ) of 0.333 indicates the variable of learning readiness on learning motivation is 33.3%, while 66.7% is influenced by factors or variables other than using Whatsapp social media in learning activities. Significance with the t-test obtained a value of  $t\text{-count} > t\text{-table}$  ( $5,192 > 2,005$ ) with a significance of  $0.000 < 0.05$ . This shows that there is a positive and significant influence between the variables of using Whatsapp Social Media in Learning Activities in Class XI in Automation of staffing Governance AOMP at SMK Muhammadiyah 2 Klaten Utara.

Based on the finding, using Whatsapp social media in online learning activities affects learning motivation. The finding is also in line with previous research by Zahroh (2021); Kamila (2019); Indaryani & Suliworo (2018); Sahid (2020) that using Whatsapp has a positive effect on learning motivation at the elementary, junior, and senior high school / vocational high school and higher education. Thus, internet-based Whatsapp has a positive impact as a learning medium at various levels of education units, especially in the context of increasing learning motivation.

The frequency of the trend in using WhatsApp in learning activities is low. It means that Whatsapp in learning has problems so students are less enthusiastic about participating in learning. Based on the questionnaire, most students sometimes feel bored and tired learning using Whatsapp because the activities are too monotonous which leads them to lazy to study. In addition, many students sometimes have difficulty accessing Whatsapp because of signals that do not support or do not have an internet quota so they cannot follow the lesson optimally. Students stated that sometimes they feel disturbed when all material files or assignments sent via Whatsapp make the Smartphone's storage memory full and the app cannot be opened and have to delete or move files to other storage.

Although several obstacles arise, many students admit that Whatsapp is the most comfortable medium for learning compared to other applications as they are familiar with the app. The study contradicts the previous research by Aenilah et al. (2021); Endah & Romadhiyana(2021); Fatullah & Ramdani (2019); Khasanah et al. (2021) that WhatsApp does not affect motivation and learning outcomes because students are not familiar with online learning, and using Whatsapp feature in learning is considered insufficient results in the learning process not running optimally. And, Whatsapp does not have task and assessment features so all messages are stacked in groups.

Using Whatsapp in learning has been proven to provide benefits and positive effects for students even though find several obstacles. Whatsapp media is not completely unaffected by learning, especially students' motivation. Learning using Whatsapp will be more interesting and interactive if collaborated with several other media applications such as Google Meetings, using the Google Drive feature, or providing online interactive quizzes using applications such as Quizizz or Kahoot. Teachers can also take advantage of the Voice note feature to explain the material. In addition, to avoid students getting bored and tired, the teacher can provide material in video, photo, PowerPoint, or pdf format and knowledge assessment using google forms or quizzes. And, while the practice can be through videos and sent to Whatsapp groups or video calls personally or in small groups (Hasanah, 2021). Thus, Whatsapp has the potential as a learning medium to increase motivation and learning outcomes, especially for VHS students.

## **The effect of learning readiness and Using Whatsapp social media on students' learning motivation**

The finding indicates that there is a positive and significant influence between the variables of learning readiness and using Whatsapp social media in learning activities on learning motivation in the automation of staffing governance Subjects Class XI of AOMP at SMK Muhammadiyah 2 Klaten Utara. Based on the results of the F-test with the help of SPSS version 21, the F-count value was 49,754 with a Sig value. 0.000. Thus, it stated that the two independent variables, namely learning readiness and using Whatsapp social media in learning activities significantly affect the learning motivation variable. Based on the calculation of the value of  $r$  of 0.808 and  $r^2$  of 0.652, the regression model for learning readiness variables and using Whatsapp social media in learning activities can explain learning motivation by 65.2%, while 34.8% is influenced by other factors that have not been studied by researchers.

Learning activities need to be accompanied and followed by learning readiness that makes individuals ready to learn and provide responses during online learning. With the condition, students are ready to accept learning, easy to participate in a series of learning activities, and can provide appropriate responses. In the end, students achieved the desired results or goals optimally. However, if students study with low learning readiness conditions, learning motivation also decreases so that the results or goals become less than optimal.

Besides the factors of learning readiness, using learning media need also to be used during online learning. Whatsapp social media has the potential to use as a learning medium because it is equipped with quite complete features as an intermediary medium for communicating and delivering lesson information. It is proven that during online learning, the students of class XI AOMP using Whatsapp provide many benefits such as being a place for discussion for students and making it easier to ask the teacher, as a forum for sending files and accessing materials anywhere and anytime via smartphones or personal computers, sending assignments to be a place of attendance. It is proven that this third research question provides information that learning readiness and using Whatsapp media in learning activities have a positive and significant influence on learning motivation, especially for class XI AOMP at SMK Muhammadiyah 2 Klaten Utara.

## **CONCLUSION**

Based on data processing and discussion of research results, it can be concluded that:

1. Readiness to learn has a positive and significant effect on the learning motivation of student class XI in the subject of automation of personnel governance at SMK Muhammadiyah 2 Klaten Utara. The variable of learning readiness has a significant contribution to the motivation to learn by 60.2%.
2. The use of Whatsapp social media in online learning activities has a positive and significant effect on the learning motivation of student class XI in the subject of automation of personnel governance at SMK Muhammadiyah 2 Klaten Utara. The variable of using Whatsapp social media in learning activities has a contribution effect to learning motivation of 33.3%.
3. Learning readiness and the use of Whatsapp media in online learning activities simultaneously have a positive and significant effect on the learning motivation of student class XI in the subject automation of personnel governance at SMK Muhammadiyah 2 Klaten Utara. Variables of learning readiness and the use of Whatsapp media in learning activities have an influential contribution to learning motivation of 65.2%.

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# **The Influence of Motivation and Work Discipline On The Work Effectiveness of Indramayu Department of Transportation**

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## **ABSTRACT**

This study aims to determine whether there is influence of motivation and work discipline on the work effectiveness of employees at the Indramayu Department of Transportation.

The research method uses quantitative methods. The population of this study were employees at the Indramayu Department of Transportation. The sampling technique used a random sample, the sample in this study consisted of 90 employees

The results of this study indicate that the motivational variable has a significant value of 0.012. By using a significance level of 0.05, the significance value of motivation is  $0.012 > 0.05$ , which means that  $H_0$  is accepted and  $H_a$  is rejected. It can be concluded that motivation not partially influences employee work effectiveness. the work discipline Variable has a significant value of 8,416 which is greater than the significant level of  $0.002 < 0,05$  then  $H_0$  is rejected and  $H_a$  is accepted. It can be concluded that work discipline partially has a positive and significant effect on work effectiveness. Based on the results of the test  $f_{count} > f_{table}$  ( $4.459 > 1.095$ ), with a significant level  $0,000 < 0,05$  then  $H_0$  is rejected or  $H_a$  is accepted, meaning that simultaneously the third hypothesis is that motivation and work discipline simultaneously affect employee effectiveness.

**Keywords:** *Work Effectiveness, Motivation, Work Discipline*

## **INTRODUCTION**

Human resources is a process of dealing in various employee scope issues and improving the quality of the organization. So that human resources are required to be constantly able to develop themselves proactively and be able to optimize and manage their resources. The Indramayu Department of Transportation is a government agency that functions as the executor of the transportation sector. One of the duties of the Department of Transportation in the field of transportation is to test the feasibility of motor vehicles, and conduct motor vehicle inspection that are required by motorized vehicles are yellow plate public transportation and motorized

vehicles that transport goods. From the results of interviews with the head of the general subdivision and the secretary that the Work Effectiveness at the Department of Transportation is still not optimal in carrying out its work and is still less responsible with the tasks given so that it cannot be completed on time and according to the desired target. Every organization to achieve goals in accordance with the vision and mission of the agency requires the effectiveness of employees who can work optimally in terms of completing their duties and responsibilities in carrying out the company's operational activities with a set time. Therefore, the effectiveness of employee work plays an important role in achieving planning goals at the agency. In improving work effectiveness, employees of the Department of Transportation must pay attention to work effectiveness factors. According to Siagian (2001: 34) in Hartati's research, M Sawir, M. Aldrian Akbar, Ahmad Jusmin (2020: 11) stated that the factors that affect work effectiveness are: Skills, Motivation, Work Discipline, Work Environment and Climate, Management.

Work effectiveness is a fairly important measure in organizations. This is because work effectiveness can affect the completion of work on time, optimal balance, etc., or approach to achieving human labor capability goals. Employee work effectiveness is a measure of the achievement of a task or goal. Other studies have also presented the same results in different contexts that have been widely done, such as Siagian in the research of Utari Wulandari et al. (2019: 2), Manurung et al. (2018: 72), and Sutarto in Muhsin's research (2019: 25).

Work effectiveness is a person's attitude or general condition that is positive towards his or her organizational life and things that are reviewed in terms of processes, numbers, formats, time provisions, conformity to procedures, needs, and provisions set in the organization. (Utari Wulandari et al., 2019:2) Understanding work effectiveness is the utilization of resources, facilities, and infrastructure in a certain amount that is consciously determined in advance to produce a number of goods for the services of the activities it runs. So it can be concluded that work effectiveness shows success in terms of achieving or not achieving the targets set; if the results of activities are closer to the target, it means higher effectiveness.

Motivation is something that affects human behavior. It is also called a driver of wants, needs, or supporters that can make a person enthusiastic and motivated to fulfill one's own impulses so that they can act in certain ways that will lead to optimal direction. Motivation serves as an encouragement or mobilizer for employees to want to work diligently for the creation of organizational goals or agency goals. Other studies have also presented the same results in different contexts that have been widely done, such as Hasibuan (2008: 56), Risky Nur Adha, Nurul Qomariah, Achmad Hasan Hafidzi (2019: 92), Sastrohadiwiryo (2013: 119), Abdul Rachman Saleh Research (2018: 32), and Saputra (2019: 81).

Sastrohadiwiryo (2018) Motivation can be interpreted as a psychiatric state and human mental attitude that provides energy, encourages activities (moves), and leads or channels behavior towards achieving needs that provide satisfaction or reduce imbalances. It can be concluded that motivation is a movement closer to a definite goal, as giving or producing in behavior that can provide knowledge for employees.

Researchers use work discipline; this variable is a factor in work effectiveness. According to Sastrohadiwiryo (2002: 84) in the journal Putri Bella (2019:8), work discipline is an attitude of respect, respect, obedience, and obedience to applicable regulations, both written and unwritten, and being able to carry them out and not avoid receiving sanctions if he violates the duties and authorities given to him.

Based on the understanding of work discipline according to the experts above, it can be concluded that work discipline is an attitude and behavior that is thus created through a process of a series that shows the values of compliance that should be done, that must be done, that can be done, that should be done.

### *The Influence of Motivation on Work Effectiveness*

Work motivation is something that can raise enthusiasm and work motivation, as stated by Scientific et al. (2016), In the research of Dita Fariska, Kusuma Chandra Kirana, and Didik Subiyanto (2022: 85), motivation can also be interpreted as a pressure that exists in the person who directs and regulates his actions. These results indicate that work motivation partly has a substantial influence (positive value) on employee work effectiveness.

*The Influence of Work Discipline on Work Effectiveness*

Based on research by Garaika and Margahana (2019:52), discipline is the most vital operational feature of human resource management because the higher the work discipline, the better the overall performance achieved. Without proper work discipline, it is difficult for a group to obtain the most satisfactory effect. Work discipline has a tremendous impact on worker effectiveness. One element that is sufficient to determine worker effectiveness is discipline. Proper discipline has a tremendous and large impact on worker effectiveness, where the area here is close to the area at each arrival and return time, the use of precise operating times is accurate, and discipline is closer to obligations as workers, which are supported by the use of statistical analysis.

*The Influence of Work Motivation and Discipline Simultaneously on Work Effectiveness*

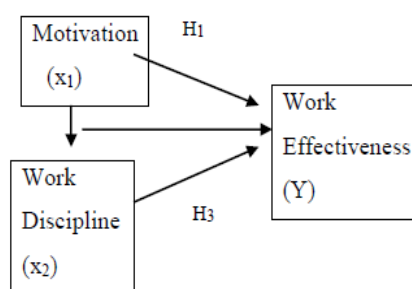
This is in line with the opinion of T. Hani Handoko (2012: 7), that effectiveness is "The ability to choose the right goals or the right equipment to achieve the goals that have been set", while Sondang P. Siagian (2004: 151) provides a definition of effectiveness as completing work on time."

According to Mulyadi, Nur Laila, and Hasana (2020:76), there is an influence between motivation and work discipline simultaneously on employee work effectiveness. And this is reinforced by the research results of Yolanda Octavia (2019:92): there is a positive and significant influence between motivation and work discipline simultaneously. simultaneous impact on employee work effectiveness.

Based on several arguments above, the author suspects that there is an influence of work motivation and discipline on employee work effectiveness. Siagian (2019): Work effectiveness is the utilization of resources, facilities, and infrastructure in a certain amount that is consciously determined beforehand to produce a certain amount of goods for the services of the activities carried out."

Sastrohadiwiryo (2018) Motivation can be defined as a human's mental state and mental attitude that provide energy, encourage activities (moves), and direct or channel behavior towards achieving needs that provide satisfaction or reduce imbalance. Sastrohadiwiryo (2019) Work discipline is an attitude of respect, appreciation, obedience, and obedience to applicable regulations, both written and unwritten, and being able to carry them out and not avoiding receiving sanctions if he violates the duties and authority given to her.

Figure 1. Hypothesis



Hypothesis in this research :

- H1 : There is an influence of motivation on work effectiveness.  
H2 : There is an influence of Work Discipline on Work Effectiveness.  
H3 : There is an influence of Work Motivation and Discipline on Work Effectiveness

## METHOD, DATA, AND ANALYSIS

Researchers used associative descriptive-quantitative research methods. to find out the relationship between two or more variables in the sample to be tested without making changes.

### *Population and sample*

In this study, the population of Indramayu Department of Transportation employees was 90. Sampling uses a random sampling technique, which means that sample members are taken randomly from the population.

Researchers used three data collection techniques, namely observation methods, such as direct observation of daily organizational activities. The interview method provides direct communication with employees at the organization where the research is conducted, relating to the problem being researched. and questionnaires by giving a set of questions or written statements to the respondent to answer.

### *Data Analysis Technique*

Data analysis techniques use primary and secondary data with the analysis methods of normality test, homogeneity, simple and multiple linear regression, T test, F test, and coefficient of determination. By using validity and reliability tests in Microsoft Excel and SPSS 25 so that readers can understand how to operate them.

## RESULT AND DISCUSSION

### *Descriptive Analysis*

Summary of Respondents' Answers to Work Effectiveness

Table 1. Work Effectiveness Indicators

No	Work effectiveness indicators	Score	Total
a	Predetermined time standards	206	459
b		253	
a	The results of the work achieved	226	473
b		247	
a	Costs incurred are according to plan	223	450
b		227	
<b>Total</b>			<b>1.382</b>

Based on the table above, the total score of respondents' assessments on the work effectiveness variable is 1,382, which is stated on a scale range of 2,020–2,404, including in the "disagree" category. The percentage of the head's assessment is:

$$\frac{1.382}{2.404} \times 100 \% = 57,01\%$$

It can be seen that the description of work effectiveness at the Indramayu Department of Transportation is 56.01%, which is included in the "disagree" category.

Recapitulation of Motivation: Respondents' Answers to Work Effectiveness

Table 3. Recapitulation of Motivation: Respondents' Answers to Work Effectiveness

Item No.	Motivation Indicator	Score	Total Score
a	Performance	201	398
b		197	
a	Award	222	443
b		221	
a	Challenge	235	467
b		232	
a	Responsibility	217	442
b		225	
a	Development	221	475
b		254	
a	Involvement	214	439
b		225	
a	Opportunity	221	429
b		208	
<b>Total</b>			
<b>3.093</b>			

Based on the table above, the total score of respondents' overall assessment of the motivation variable is 3,093, which is stated on a scale range of 4,708–5,604, including in the "disagree" category. The percentage of the head's assessment is:

$$\frac{3.093}{5.604} \times 100\% = 55,02\%$$

It can be seen that the description of motivation in the Indramayu Department of Transportation of 55.02% is included in the "disagree" category.

Recapitulation of Work Discipline: Respondents' Answers to Work Effectiveness

Table 4. Recapitulation of Work Discipline: Respondents' Answers to Work Effectiveness

Item No.	Motivation Indicator	Score	Total Score
A	Frequency of Attendance	219	467
b		248	
A	Level of Alertness	245	538
b		293	
A	Adherence to Work Standards	289	558
b		269	
A	Compliance with Work Regulations	283	550
b		267	
A	Work Ethics	330	588
b		258	
<b>Total</b>			<b>2.701</b>

Based on the table above, the total score of respondents' assessments on the work discipline variable is 2,701, which is stated on a scale range of 3,364–4,003, including in the "agree" category. The percentage of the head's assessment is:

$$\frac{2.701}{4.003} \times 100\% = 67,48\%$$

It can be seen that the description of work discipline at the Indramayu Department of Transportation is 67.48% included in the "agree" category.

*Associative Analysis*

Tests of Normality

Table 4. Tests of Normality

**Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Work Effectiveness	,121	80	,006	,962	80	,017
Motivation	,073	80	,200*	,971	80	,069
Work Discipline	,088	80	,200*	,977	80	,169

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on table 4 above, it can be seen that the significant value for work effectiveness is 0.017, for motivation it is 0.069, and for work discipline it is 0.169. Because the significant value for all variables is greater than 0.05, it can be concluded that the data on the variable's motivation, work discipline, and work effectiveness are normally distributed.

Homogeneity Tests

Motivation on work effectiveness

Table 5. Homogeneity of Motivation on Work Effectiveness

		Levene Statistic	df1	df2	Sig.
Work Effectiveness	Based on Mean	1,223	21	41	,283
	Based on Median	,369	21	41	,992
	Based on Median and with adjusted df	,369	21	21,334	,987
	Based on trimmed mean	1,104	21	41	,381

From the results above, it can be seen that the significance is 0.381. Because the significance is greater than 0.05, it can be concluded that motivation towards work effectiveness has the same or homogeneous variance.

Work discipline on work effectiveness

Table 6. Homogeneity of Work Discipline on Work Effectiveness

Work Effectiveness	Based on Mean	2,313	20	48	,009
	Based on Median	1,576	20	48	,099
	Based on Median and with adjusted df	1,576	20	26,750	,135
	Based on trimmed mean	2,228	20	48	,012

From the results above, it can be seen that the significance is 0.012; because the significance is greater than 0.05, it can be concluded that work discipline and work effectiveness have the same or homogeneous variance.

### Simple Linear Regression Analysis of Motivation (X1) on Work Effectiveness (Y)

Table 7. Simple Linear Regression Analysis of Motivation (X1) on Work Effectiveness (Y)

		Coefficients <sup>a</sup>		Standardized		
		Unstandardized Coefficients		Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	17,470	1,927		9,066	,000
	Motivation	,015	,046	,034	,334	,000

a. Dependent Variable: Work Effectiveness

The constant is 17.470, meaning that if the motivation (X) value is 0, then the work effectiveness (Y) value is positive, namely 17.470.

The regression coefficient for the motivation variable (X) is 0.015. This means that if motivation increases, work effectiveness (Y) will increase. The coefficient is positive, meaning that there is a positive relationship between motivation and work effectiveness. The higher the motivation, the higher the work effectiveness.

### Simple Linear Regression Analysis of Work Discipline (X2) on Work Effectiveness (Y)

Table 7. Simple Linear Regression Analysis of Work Discipline (X2) on Work Effectiveness (Y)

		Coefficients <sup>a</sup>		Standardized		
		Unstandardized Coefficients		Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	16,459	1,738		9,469	,000
	Work Discipline	,050	,050	,100	,997	,000

The constant is 16.459, meaning that if work discipline (X) has a value of 0, then work effectiveness (Y) has a positive value, namely 16.459.

The regression coefficient for the work discipline variable (X) is 0.050. This means that if work discipline increases, work effectiveness (Y) will increase. The coefficient is positive, meaning that there is a positive relationship between work discipline and work effectiveness. The higher the work discipline, the greater the work effectiveness.

### Multiple Linear Regression Analysis

Table 8. Multiple Linear Regression Results

#### Coefficients<sup>a</sup>



Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error			
1	(Constant)	20,137	2,959		6,806	,000
	Motivation	,011	,049	,025	,218	,828
	Work Discipline	,094	,074	,145	1,283	,203

a. Dependent Variable: Work Effectiveness

Based on the table above, it can be seen that the regression equation for work discipline on work effectiveness is  $Y = 20.137 + 0.094 X_2$ . The constant value is 20.137, meaning that if there is a change in the variable ( $X_2$  value = 0), then work discipline at the Indramayu Department of Transportation is 20.137.

The work discipline coefficient value ( $X_2$ ) is 0.094, meaning that if the price variable  $X_1$  increases by (units), then work effectiveness at the Indramayu Department of Transportation increases by 0.094 units. This shows that the work discipline variables provided have a positive effect on performance.

## Statistical Hypothesis

### T-Tests

Table 9. Results of the T-Test

Model	Coefficients <sup>a</sup>		Standardized Coefficients	T	Sig.
	Unstandardized Coefficients				
	B	Std. Error			
(Constant)	22,126	2,629		8,416	,000
Work Discipline	,004	,052	,008	,081	,002
Motivation	,117	,042	,293	2,803	,012

a. Dependent Variable: Work Effectiveness

### Results of the Motivation T-Test on Work Effectiveness

Based on the table above, a motivational significance value of 0.012 is obtained. By using a significance level of 0.05, the motivation significance value is  $0.012 > 0.05$  and the tcount value is  $8.416 > t_{table} 1.664$ , which means  $H_0$  is rejected and  $H_a$  is accepted. This means that motivation has an influence on work effectiveness.

### Results of the Work Discipline T-Test on Work Effectiveness

Based on the table above, the significance value obtained is 0.002. With a significance value of 0.05, the significance value for work discipline is  $0.002 < 0.05$  and the tcount value is 8.416

> 1.664, which means Ho is rejected and Ha is accepted. This means that there is a significant influence of work discipline on work effectiveness.

## F-Tests

Table 10. Results of F-Test

ANOVA <sup>a</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	313,171	2	156,586	4,459	,000 <sup>b</sup>
	Residual	3406,189	97	35,115		
	Total	3719,360	99			

Based on the table above, it can be seen that the significance value of motivation and work discipline on work effectiveness is 0.000, and the calculated F is 4.459 with an f table of 1.95. meaning the significance value is  $0.000 < 0.05$  and the F count is  $4.459 > F$  table 1.95. This proves that Ho is rejected and Ha is accepted. So there is an influence of motivation and work discipline together on work effectiveness.

### *Analysis of the Coefficient of Determination*

Table 11. Coefficient of Determination Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,290 <sup>a</sup>	,084	,065	5,926

a. Predictors: (Constant), Motivation, Work Discipline

Based on the table above, the table figure  $R^2$  (R square) is 0.084, or 84%. This indicates that the percentage contribution of the independent variable (motivation and work discipline) to the dependent variable (work effectiveness) is 84%.

## DISCUSSION

### The Influence of Motivation (X1) on Work Effectiveness (Y)

Based on the results of statistical tests, it shows that the motivation variable has a  $t_{count} > t_{table}$  value of  $8.416 > 1.664$ , which is greater than the significance level of 0.012. By using a significance level of 0.05, the motivation significance value is  $0.012 > 0.05$ , which means Ho is accepted and Ha is rejected. It can be concluded that motivation partially influences employee work effectiveness; this means that the more positive the value produced, the higher the motivation. The results of this research are also in line with the results of previous research conducted by Muhammad Nur Hudawi (2020). The results of his research state that motivation does not have a positive and significant effect on work effectiveness.

### The Influence of Work Discipline (X2) on Work Effectiveness (Y)

Based on the results of statistical tests, it shows that the work discipline variable has a value of  $t_{count} > t_{table}$  of  $8.416 > 1.664$ , which is greater than the significance level of  $0.002 < 0.05$ , so Ho is rejected and Ha is accepted. It can be concluded that work discipline partially has a

positive and significant effect on work effectiveness. This means that the better the work discipline, the better the work effectiveness will be. This shows clearly that work discipline can increase employee effectiveness. The results of this research are also in line with the results of previous research conducted by Zaman Zaini and Rida Agustian (2019), which found that work discipline had a positive and significant effect on work effectiveness.

#### The Influence of Motivation (X1) and Work Discipline (X2) on Work Effectiveness (Y)

Based on the test results  $F_{count} > F_{table}$  ( $4.459 > 1.095$ ) with a significance level of  $0.000 < 0.05$ , then  $H_0$  is rejected or  $H_a$  is accepted, meaning that, simultaneously, the third hypothesis: Motivation and work discipline together influence employee work effectiveness. The results of this research are in line with the results of previous research conducted by Octavia (Y. 2019), which found that there was a simultaneous influence between the variables work motivation and work discipline on employee work effectiveness.

### CONCLUSION

Based on the results of research conducted by the author as well as theories, opinions, and previous research that have been put forward regarding the influence of work motivation and discipline on work effectiveness, the researcher can conclude that:

- 1) Respondent responses Work effectiveness at the Indramayu Department of Transportation is 57.01%. This is included in moderate calcification.
- 2) Respondents' responses to the motivation variable at the Indramayu Department of Transportation were worth 55.02%. This is included in the medium classification.
- 3) Respondent responses to the work discipline variable at the Indramayu Department of Transportation were worth 67.48%. This is included in the high classification.
- 4) Based on the t test calculations, the researcher concluded that there is a significant influence between motivation and the work effectiveness of employees at the Indramayu Department of Transportation, as evidenced by the obtained t value of 8.416 and the t table value of 1.664. So if the t value is greater than the t table value ( $8.416 > 1.664$ ) and a significant value of  $0.012 > 0.05$ ,
- 5) Based on the results of the t test calculations, the researchers concluded that there is a significant influence of work discipline on the work effectiveness of employees at the Indramayu Department of Transportation. This is proven by obtaining a calculated t value of 8.416 and a t table value of 1.664. So if the calculated t value is less than the t table value ( $8.416 > 1.664$ ) and the significant value is  $0.002 < 0.05$ .
- 6) Based on the results of the ANNOVA statistical test calculations, the researcher concluded that there was a joint influence between the independent variables motivation and work discipline on the dependent variable employee work effectiveness at the Indramayu Department of Transportation. This is proven by obtaining an  $f_{count}$  value of 4.459 and a  $f_{table}$  value of 1.095, so if the  $f_{count}$  value is less than the  $f_{table}$  value ( $4.459 > 1.095$ ) and the significant value is  $0.000 < 0.05$ .

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# THE INFLUENCE OF NET PROFIT MARGIN, LOAN TO DEPOSITE RATIO, AUDIT COMMITTEE, AND DEBT TO EQUITY RATIO ON BANK HEALTH

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## ABSTRACT

This study aims to examine the effect of Net Profit Margin (NPM), Loan to Deposit Ratio (LDR), Audit Committee, and Debt to Equity Ratio (DER) on bank health (case study of commercial banks listed on the Indonesia Stock Exchange for the period 2019-2022). Along with the rapid growth of commercial banks lately motivates the author to conduct research on bank health analysis. All changes and challenges globally require banks, including commercial banks, to be more flexible in providing services, in addition to the stability of the financial services sector in Indonesia being able to affect the resilience and economy of the country. This study uses secondary data and uses purposive sampling method to obtain research samples. The data analysis method in the study was multiple linear regression analysis. This study uses a sample of commercial banks that have been listed on the Indonesia Stock Exchange for the period 2019-2022. The number of samples processed was 16 banking entities with a research period from 2019-2022. The results showed that the management aspect assessed through the Net Profit Margin (NPM) variable had no effect on bank health. The liquidity aspect assessed through the Loan to Deposit Ratio (LDR) has no effect on bank health. The aspect of good corporate governance through the Audit Committee variable has a positive effect on bank health, and the solvency aspect assessed through the Debt to Equity Ratio (DER) variable has no effect on bank health. Hopefully, this research has the opportunity to become a guide and reference for researchers, especially about bank health to be used as a research motivation from several variables used.

**Keywords:** Bank Health, *Net Profit Margin*, *Loan to Deposit Ratio*, *Audit Committee*, *Debt to Equity Ratio*

## INTRODUCTION

Banks are financial intermediary institutions that collect funds from the public and channel them back to the public in the form of credit. The role of banking is one of the determining factors for the economic development of a country, because banking is a financial institution that functions as an intermediary tool as a collector of funds and channeling funds to the public or parties who need funds. All changes and challenges globally, banks are now becoming more flexible in the services provided, not just as a place to store money for parties with excess and (*surplus funds*) and as a source of funds for those who need funds (*deficit*

*funds*) (Wiyono et al., 2022). Good company performance will have a positive effect on customer and public trust in banks.

Bank health assessment is important to assess how the health condition of the bank itself, whether it is in a healthy condition or not. Banks are not only fund collectors but also agents of development, agents of services, and agents of trust. Bank health assessment is carried out in the form of quantitative and qualitative assessments based on the condition or performance of banks such as capital, asset quality, management, profitability, liquidity, and sensitivity to market risk.

The Board of Commissioners Meeting (RDK) of the Financial Services Authority assesses the stability of the financial services sector in a maintained condition from year to year with the intermediation of the financial services sector continuing to grow positively. The assessment of the financial services sector can be seen through the Financial Services Authority's data. growth in deposits. Solvency ratio of the financial services sector is quite solid. Third Party Funds (DPK) in 2019 grew 6.29% yoy to IDR 5,904 trillion, in 2020 grew 11.55% yoy to IDR 6,635 trillion, in 2021 grew 10.48% yoy to IDR 7,330 trillion and in 2022 grew 8.78% yoy to IDR 7,947 trillion. This was mainly driven by an increase in savings, current accounts and deposits in line with the distribution of funds from the government.

Bank health regulations implemented by Bank Indonesia cover various aspects of bank activities, ranging from fund raising to fund distribution. In accordance with Bank Indonesia No. 6/23/DNPN/ May 31 and Bank Indonesia Regulation No. 6/10/PBI/2004 dated April 12, 2004 concerning the system for assessing the health level of commercial banks, banks are required to assess the health level of banks on a quarterly basis for the positions of March, June, September and December (Kosim et al.,2021).

Based on this description, bank health is still an interesting topic to study in order to find out the factors that affect bank health in banks listed on the IDX. The difference between this study and previous research is that this study replaces and adds different independent variables, namely NPM (*Net Profit Margin*), LDR (*Loan to Deposit Ratio*), KA (Audit Committee) and *Debt to Equity Ratio* (DER) and the dependent variable using the population of all commercial banks listed on the Indonesia Stock Exchange for period 4, namely 2019-2022.

This research is important because the results of this study can contribute to several parties who need and to find out that the health or financial condition of banks is one of the important factors that must be considered by banks, especially conventional commercial banks and the high public interest in entrusting banks as fund guarantee service companies, coupled with the direction of government policies to support the acceleration of national economic recovery, policy synergies are needed, especially between financial authorities.

## **HYPOTHESIS DEVELOPMENT**

The NPM (*Net Profit Margin*) ratio assesses the company's performance in converting revenue into net profit and operating profit. Bank health assessment focuses on operational management, risk management, and banking compliance which have an impact on achieving bank profits and this has an impact on achieving bank profits as reflected in the NPM (*Net Profit Margin*) ratio (Ida & Esti, 2017).

Signaling theory explains that investors utilize financial statement information offered to outsiders to measure investment opportunities in the company. Investors will believe that the bank can manage and pay its obligations in the future. Investors will receive positive signals (good news) by reviewing the financial data presented by the company in the financial statements. This encourages banking companies to increase the increase in the NPM (*Net Profit Margin*) ratio every year to get high net interest income. The increase in the NPM (*Net Profit Margin*) ratio shows that the profit earned by the bank has increased to be higher, the more efficient the bank's operations. The results of (Akbar, 2020) describe that *Net Profit Margin*

(NPM) leads positively (good condition) and has a meaningful impact on bank health in accordance with the results of research by (Jati, 2020) dan (Octafilia & Wijaya, 2019) which summarize that *Net Profit Margin* (NPM) has a positive impact (quite healthy) on bank health. **H1 = Net Profit Margin (NPM) has a positive effect on bank health.**

LDR (*Loan to Deposit Ratio*) is the proportion of the value of loans prepared by banks to non-bank external sources of funds such as savings, current accounts and deposits. LDR (*Loan to Deposit Ratio*) is used to evaluate the competence of banks by paying off deposit disbursements using credit as a source of liquidity (Gustisyaf, 2017).

According to signaling theory, one of the approaches applied by companies to protect investors' interests by giving good signals to parties not part of the entity by releasing comprehensive financial data. One of the main elements of investors and other stakeholders about banks is the ability of banks to carry out responsibilities that should be fulfilled immediately when the due time arrives. This illustrates that the lower the LDR (*Loan to Deposit Ratio*) ratio, the financial institution has sufficient liquidity to pay off its obligations to customers (Jati, 2020). The greater the level of bank liquidity, the healthier the bank's condition (Octafilia & Wijaya, 2019).

The results of (Jati, 2020) menjabarkan bahwa LDR (*Loan to Deposite Ratio*) describe that LDR (*Loan to Deposit Ratio*) has a positive direction (quite healthy) and is significant to bank health. As found from research (Octafilia & Wijaya, 2019) and (Wiyono *et al.*, 2022) which revealed that LDR (*Loan to Deposit Ratio*) has a positive effect on bank health.

**H2 = Loan to Deposit Ratio (LDR) has a positive effect on bank health.**

The Audit Committee is an organized group that has an obligation to the Board of Directors to assist in the effectiveness of oversight of financial reporting, internal and external control systems, and to assist the Board of Directors in carrying out its duties and functions. In its capacity, the Audit Committee is responsible for opening and maintaining communication between the Audit Committee and the Board of Commissioners, the Board of Directors, the internal audit unit, independent accountants and financial managers. The audit committee helps the board of commissioners oversee the financial reporting process by management to improve the credibility of financial statements (Baskoro, 2016).

According to agency theory, providing a good assessment of the results and employment contracts between principals (*stakeholders*) and agents (*management*) allows them to delegate decision-making authority to agents (Aprianingsih & Yushita, 2016) Management is responsible for managing the company and optimizing stakeholder income in return, the agent will be compensated according to the contract. Stakeholders will influence management choices as a principle, allowing management to make decisions that benefit stakeholders.

The Audit Committee generally has direct access to every control element in the company. So that a communication mechanism is needed between the Audit Committee and various parties, in other words, the smoother the communication will improve the performance of the company's control. The Audit Committee must work independently of management and free from all forms of negative influence. In terms of corporate governance, the Audit Committee's job is to ensure top management creates a good environment for good corporate governance, monitors compliance with the company's code of conduct, and understands all issues that can affect the company's performance both financially and non-financially (Baskoro, 2016). The results of research (Rahayu, 2018) suggest that the audit committee has a positive influence on bank health.

**H3 = Audit Committee (KA) has a positive effect on bank health.**

The level of bank health is determined by the solvency element, with the DER (*Debt to*

*Equity Ratio*) ratio calculating the level of capital owned by the bank to support its assets. DER (*Debt Equity Ratio*) describes the company's qualifications to fulfill all its responsibilities, including short and long term, and is calculated based on the amount of company assets applied to pay off debt in a structured manner (Purwanto *et al.*, 2018).

According to signaling theory, one of the company's strategies to retain investors is to provide thorough financial disclosure. This idea is used as a motivation to offer financial statement information to parties outside the company, and is used by investors to ascertain whether or not to invest in the company. This indicates that the higher the percentage, the more the company's dependence on third parties increases and the higher the debt burden the company has to bear. The higher the amount of funds obtained from external parties, the greater the opportunity for profit. When the debt ratio increases, the impact is a decrease in company profits because part of the profit is used to pay off loan interest (Purwanto *et al.*, 2018).

The results of research conducted (Ramadanti *et al.*, 2019) explain that the *Debt to Equity Ratio* (DER) has a positive and significant effect on bank health. Results in accordance with the analysis (Ihsan *et al.*, 2017) have a positive impact on bank health. However, these findings contradict research (Sochib, 2016) which concluded that *Debt to Equity Ratio* (DER) has no effect on bank health.

**H4 = *Debt to Equity Ratio* (DER) has a positive effect on bank health.**

## RESEARCH METHODS

### Data sources, population, and samples

Collecting data through documentation, which includes collecting, copying, reading, and assessing reports or papers related to research aspects sourced on the official website of the Indonesia Stock Exchange at [www.idx.co.id](http://www.idx.co.id). The method in this study uses secondary data. This research is descriptive quantitative. The population in the study was the annual financial statements of commercial banks listed on the Indonesia Stock Exchange for the 2019-2022 period. Sample withdrawal using purposive sampling technique as many as 16 banking entities. Sampling was carried out within a period of 4 years, namely 2019-2022, totaling 64 samples. The research method uses descriptive analysis, classical assumption test, multiple linear regression analysis, and hypothesis testing.

**Table 1. List of Banking Entities in the Study**

No	Name of Banking Entity
1	PT Bank Raya Indonesia Tbk
2	PT Bank Central Asia Tbk
3	PT Bank Negara Indonesia (Persero) Tbk
4	PT Bank Raya Indonesia (Persero) Tbk
5	PT Bank Tabungan Negara (Persero) Tbk
6	PT Bank Danamon Indonesia Tbk
7	PT Bank Mandiri (Persero) Tbk
8	PT Bank Bumi Arta Tbk
9	PT Bank Maybank Indonesia Tbk
10	PT Bank Permata Tbk
11	PT Bank Syariah Indonesia Tbk
12	PT Bank BTPN Tbk
13	PT Bank China Construction Bank Indonesia Tbk
14	PT Bank OCBC NISP Tbk
15	PT Bank Pan Indonesia
16	PT Bank Woori Saudara Indonesia 1906 Tbk



## RESULTS AND DISCUSSION

### RESULTS

#### Descriptive analysis

Descriptive statistics provide a view of the data from all variables used in the study collected to analyze the mean, standard deviation, maximum, and minimum. The following are the results of descriptive analysis of *Net Profit Margin*, *Loan to Deposit Ratio*, *Audit Committee*, and *Debt to Equity Ratio* data.

**Table 2. Descriptive Analysis Results**

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
NPM	64	.08	1.30	.7068	.19886
LDR	64	.63	8.90	1.0720	1.02354
KA	64	2	8	4.47	1.603
DER	64	1.67	16.08	5.1241	2.65301
Y	64	.75	1.55	1.2633	.16189
Valid N (listwise)	64				

Source: Data processing results, 2023

From the descriptive analysis results in the table above, it can be formulated as follows. First, the mean and standard deviation values of the NPM variable are 0.7068 and 0.19886. The standard deviation value which is smaller than the mean indicates that bank health variables tend to be similar. The minimum and maximum values of this variable are 0.08 and 1.30. Where one of the commercial banks with the lowest evaluation is Bank Permata, while the maximum evaluation is Bank Danamon Indonesia

Second, the mean and standard deviation values of the LDR variable are 1.0720 and 1.02354. The standard deviation value which is smaller than the mean indicates that the bank health variable tends to be homogeneous. The minimum and maximum values of this variable are 0.63 and 8.90. One of the commercial banks that has a minimum value is Bank Bumi Arta, while the commercial bank with the maximum value is Bank Mandiri (Persero).

Third, the mean and standard deviation values of the KA variable are 4.47 and 1.603. The standard deviation value which is smaller than the mean reflects that the bank health variable tends to be homogeneous. The minimum and maximum values of this variable are 2 and 8. One of the public banks that has a minimum value is Bank Bumi Arta and the commercial bank with the maximum value is Bank Rakyat Indonesia (Persero).

Fourth, the mean and standard deviation values of the DER variable are 5.1241 and 2.65301. The standard deviation value which is smaller than the mean reflects that the bank health variable is homogeneous. The minimum and maximum values of this variable are 1.67 and 16.08. One of the commercial banks that has the maximum value is Bank Bumi Arta, while the commercial bank with the maximum value is Bank Tabungan Negara.

Finally, the mean and standard deviation values of the Bank Health variable are 1.2633 and 0.16189. The standard deviation value which is smaller than the mean reflects that the bank health variable tends to be homogeneous. The minimum and maximum values and this variable are 0.75 and 1.55. One of the commercial banks that has a minimum value is Bank Permata, while the commercial bank with the maximum value is Bank Rakyat Indonesia (Persero).

### Classical Assumption Test

The normality test aims to test whether in the regression model, the dependent variable and the independent variable have a normal data distribution or not. In this study, the normality test was carried out by the Kolmogorov-Smirnov statistical test. The basis for decision making in this normality test is if the sig value.  $0.05 <$  the significance level, then the data distribution is said to be abnormal and if sig.  $0.05 >$  the significance level, then the data distribution is said to be normal (Nahar *et al.*, 2017). The normality results show Asymp. Sig is 0.090. This situation shows the test results  $> 0.050$ , so it can be assumed that the data distribution in this study is normally distributed.

**Table 2. Normality Test Results**

		Unstandardized Residual
N		64
Normal Parameters <sup>a,b</sup>	Mean	.0191760
	Std. Deviation	.07134079
Most Extreme Differences	Absolute	.116
	Positive	.093
	Negative	-.116
Test Statistic		.116
Asymp. Sig. (2-tailed)		.090 <sup>c</sup>

Source: Data processing results, 2023

Multicollinearity test is used in evaluating the effectiveness of the regression model to detect the relationship between independent variables. A good regression model should not have a correlation between the independent variables. The regression model can be seen from the tolerance value and its opposite, the Variance Inflation Factor (VIF). The commonly used cutoff value to indicate the presence of multicollinearity is a tolerance value  $< 0.10$  or equal to a VIF value  $> 10$  (Nahar *et al.*, 2017). The table below shows that there is no multicollinearity in the independent variables. The results show that the variables *Net Profit Margin*, *Loan to Deposit Ratio*, *Audite Committee*, and *Debt to Equity Ratio* have a tolerance value of  $> 10\%$ . While the VIF value in all independent variables *Net Profit Margin*, *Loan to Deposit Ratio*, *Audite Committee*, and *Debt to Equity Ratio* is  $< 10$ .

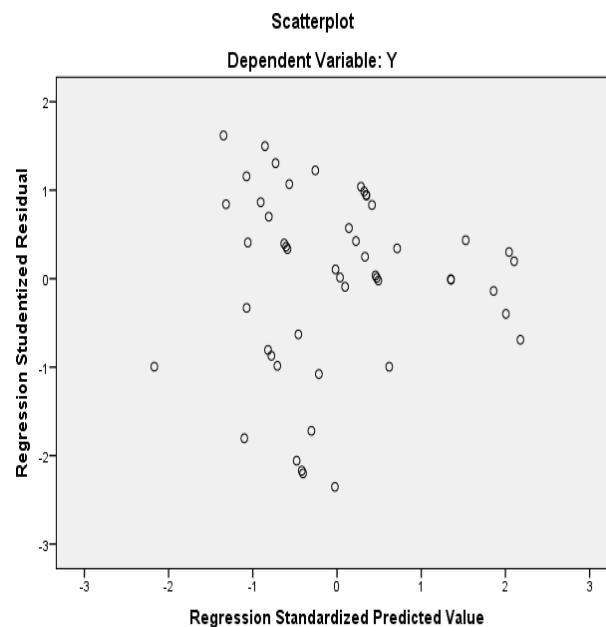
**Table 3. Multicollinearity Test Results**

Model		Collinearity Statistics	
		Tolerance	VIF
1	NPM	.886	1.128
	LDR	.928	1.077

KA	.939	1.065
DER	.934	1.071

Source: Data processing results, 2023

Heteroscedasticity test is utilized to assess the presence or absence of residual variation between observations. Heteroscedasticity does not occur in an adequate regression model. Heteroscedasticity testing can be done using the scatterplots graph, if the graph shows that the points spread randomly and are scattered above and below the number 0 of the Y axis, then there is no heteroscedastistas in the regression model. Based on the results of heteroscedasticity, it shows that the scatterplot graph does not show scattered dots, so it can be concluded that there are no symptoms of heteroscedasticity in the regression model, so this research can be used for further analysis.



**Picture 1. Scatterplot**

Autocorrelation test is applied to detect the presence/absence of deviations from classical assumptions in the form of correlation between the residuals of a number of observations with other observations in the regression model (Ida & Esti, 2017). The autocorrelation test in this study uses the durbin watson test value. There are criteria that must be achieved in DW in multiple regression models, namely whether the value of  $DL < DW < DU$ . The results show that the 5% significance level with a total sample of 64 and 4 variables ( $k = 4$ ), the DW table (a; k; n) shows that the conditions are met if the value of  $DL < DW < DU$ . The results show that DL is worth 1.4659 and DU is 1.7303. So that the Durbin-Watson value is 1.636 then  $DL < DW < DU$  is  $1.4659 < 1.636 < 1.7303$ . This shows that the DW value shows the absence of autocorrelation.

**Table 4. Autocorrelation Test**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin Watson
1	.863 <sup>a</sup>	.745	.722	.07032	1.636

Source: Data processing results, 2023

### Multiple Linear Regression Analysis

Multiple Linear Regression is used to observe the impact of several independent variables on one dependent variable. Based on the results of multiple linear regression analysis, the regression line equation can be seen using the beta coefficient. The following are the results of the calculation of multiple linear regression analysis.

$$Y = 0,989 + 0,185 (\text{Net Profit Margin}) + (-0,126) (\text{Loan to Deposit Ratio}) + 0,064 (\text{Komite Audit}) + 0,000 (\text{Debt to Equity Ratio}) + e$$

**Table 5. Multiple Linear Regression Analysis**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.989	.115		8.585	.000
	NPM	.185	.115	.128	1.605	.115
	LDR	-.126	.053	-.187	-2.391	.021
	KA	.064	.006	.840	10.806	.000
	DER	.000	.007	-.006	-.072	.943

Source: Data processing results, 2023

Based on the multiple linear regression model above, the following information is obtained:

1. The constant value of 0.989 shows the positive effect of the independent variables (*Net Profit Margin, Loan to Deposit Ratio, Auditee Committee, and Debt to Equity Ratio*).
2. The *Net Profit Margin* variable has a regression coefficient or slope (B) value of 0.185. This means that the *Net Profit Margin* variable has no effect on Bank Health.
3. The *Loan to Deposit Ratio* variable has a negative regression coefficient or slope (B) value of -0.126. This means that the *Loan to Deposit Ratio* has no effect on Bank Health.
4. The Audit Committee variable has a positive regression coefficient or slope (B) value of 0.064. This means that the Audit Committee variable in commercial banks increases by one unit, Y will increase by 6.4%, so it has an influence on Bank Health.
5. The *Debt to Equity Ratio* variable as the fourth independent variable has a regression coefficient or slope (B) value of 0.000. This means that the *Debt to Equity Ratio* has no influence on Bank Health.

### Hypothesis Test

T test to test the effect of the independent variable (independent) on the dependent variable (dependent) partially. If the significance value of  $0.05 < \text{the significance level } \alpha = 5\%$  then there is a significant influence. If the significance value of  $0.05 > \text{significance level } \alpha = 5\%$  then there is no significant effect.

The results show that first, the NPM variable has a significance value of  $0.115 > 0.05$  with a t value of  $1.605 < 1.669$  and B 0.185, it is explained that the NPM variable has a positive impact on the level of bank health and is not supported.

Second, the LDR variable with a significance value of  $0.021 < 0.05$  with a t value of  $-2.391 < 1.669$  and B -0.126. So it is concluded that the results of the second hypothesis LDR has a negative impact on bank health is not supported.

Third, the regression coefficient value of KA is  $0.00 < 0.05$  with a t value of  $10.806 > 1.669$  and B 0.064. The results of the second hypothesis state that the KA variable has a positive effect on bank health is supported.

Fourth, the DER variable has a significance value of  $0.943 > 0.05$  with a t value of  $-0.72 < 1.669$  and B 0.00. So it is concluded that the results of the fourth hypothesis DER has a positive impact on bank health is not supported.

**Table 6. T Test Results**

Model		Unstandardized Coefficients		Standardized Coefficient	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.989	.115		8.585	.000
	NPM	.185	.115	.128	1.605	.115
	LDR	-.126	.053	-.187	-2.391	.021
	KA	.064	.006	.840	10.806	.000
	DER	.000	.007	-.006	-.072	.943

Source: Data processing results, 2023

F test to determine whether the independent variable affects the dependent variable with a significant level of 5% ( $\alpha = 0.05$ ). The table provided indicates that the F count is 32.801 and the Sig. is 0.000. It can be seen that the sig. More than 0.05 ( $0.00 < 0.05$ ), so the correlation coefficient is statistically significant, in accordance with the regression model, and the variables *Net Profit Margin*, *Loan to Deposit Ratio*, *Audit Committee*, and *Debt to Equity Ratio* both have an influence on the level of banking health.

**Table 7. F Test Results**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Reg	.649	4	.162	32.801	.000 <sup>b</sup>
	Residual	.223	45	.005		
	Total	.871	49			

Source: Data processing results, 2023

The coefficient of determination describes the statistics applied to measure how much the independent variable contributes to the dependent variable in percentage form. The results show that the coefficient of determination (R<sup>2</sup>) of the adjusted R square weighing, which is worth 0.745 or 74.5%. This shows that the independent variables used in the regression model are able to explain their effect on the level of bank health by 74.5%, while the effect of 25.5% is explained by other factors not used in the regression model of this study.

**Table 8. Determination Coefficient Test Results**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	DW
1	.863 <sup>a</sup>	.745	.722	.07032	1.636

Source: Data processing results, 2023

## DISCUSSION

### The Effect of *Net Profit Margin* (NPM) on Bank Health

The results of hypothesis testing explain that the acquisition of the value of B: 0.185 and Sig: 0.115 on the *Net Profit Margin* variable can be concluded to have a positive influence on bank health is not supported. Banks utilize *Net Profit Margin* (NPM) to compare profits to the total money earned by banks and to test the financial health of banks. A decrease in NPM (*Net Profit Margin*) causes the number of sales to be there could be other costs that must be incurred. Management aspects relating to systems, procedures and management policies in managing good wealth do not necessarily have a low or high level of bank health. The results of this study are in accordance with the research conclusions (Wijaya *et.,al* 2018) and (Laksito *et.,al* 2012) which confirm that *Net Profit Margin* (NPM) has no impact on bank health..

### The Effect of *Loan to Deposit Ratio* (LDR) on Bank Health

Based on the results of the hypothesis, the acquisition of the value of B: -0.126 and Sig: 0.021 on the *Loan to Deposit Ratio* variable can be concluded to have a negative effect on bank health is not supported. LDR (*Loan to Deposit Ratio*) shows how well banks can manage deposit withdrawals, which depend on lending as the root of liquidity. More precisely, it measures the balance between lending to customers and the bank's commitment to immediately respond to withdrawal demands from depositors who have deposited their money in the bank to be utilized in lending. If the level of liquidity is insufficient, the bank will not be able to fulfill its obligations to customers. A high LDR level reflects a low level of liquidity. The results of this study are in line with the studies studied by (Wijaya *et.,al* 2018), dan (Wibowo *et al.,*2020) which reveal that the LDR (*Loan to Deposit Ratio*) has no impact on bank health.

### The Effect of *Audit Committee* on Bank Health

Based on the hypothesis test output, the acquisition of the B value: 0.064 and Sig: 0.000 on the *audit committee* variable, it can be concluded that the *Audit Committee* has a positive impact on health is supported. The *audit committee* means a structured body that is directly accountable to the board of commissioners. This body aims to provide support in carrying out

an effective supervisory function over financial reporting and internal and external control mechanisms. All of the company's control elements are often directly accessible to the audit committee. Therefore, a channel of communication between the Audit Committee and other stakeholders is required; put another way, improved communication would enhance the effectiveness of the company's supervision. The Audit Committee must function without interference from management and without any unfavorable influences. According to (Baskoro, 2016), the Audit Committee's responsibilities in terms of corporate governance include making sure top management fosters a positive environment for good corporate governance, keeping an eye on adherence to the company's code of conduct, and being aware of all matters that may have an impact on the company's performance in both financial and non-financial domains. Unfair supervision by Independent Directors, the Board of Directors and the Audit Committee can result in failure to implement effective entity governance because it can affect the bank's financial performance. The results of this study are in line with the results of (Rahayu, 2018) which state that the audit committee has a positive impact on bank health, and in line with (Aprianingsih & Yushita, 2016) research.

### **The Effect of *Debt to Equity Ratio* (DER) on Bank Health**

Based on the hypothesis, the acquisition of the value of B: 0.000 and Sig: 0.943 on the *Debt to Equity Ratio* variable, it can be concluded that the *Debt to Equity Ratio* has a positive impact on bank health is not supported. DER (*Debt to Equity Ratio*) reflects the company's capacity to carry out all its obligations, including short-term and long-term responsibilities, through the use of internal assets to pay debts as planned. The higher the company's dependence on third parties, the greater the debt burden the company needs to bear. Banking entities that have a smaller or larger DER value do not necessarily have a low or high level of bank health. The results of this study match the research of Sochib (2016) where the *Debt to Equity Ratio* (DER) has no effect on bank health. It's just not in line with the research findings (Ramadanti *et al.*, 2019) and (Ihsan *et al.*, 2017) suggest that *Debt to Equity Ratio* (DER) has a positive and significant impact on bank health.

## **CONCLUSION**

Based on the results of the analysis and hypothesis testing, it can be concluded that first *Net Profit Margin* has no impact on bank health. *Net Profit Margin* has no impact on bank health because banks lack the ability to generate income at the operational level and the management activities of a bank such as general management, risk and bank compliance do not necessarily have a low or high level of bank health. Second *Loan to Deposit Ratio* for liquidity risk has no effect on bank health. This means that the impact of insufficient liquidity to fulfill obligations to customers increases along with the increase in the LDR ratio. The bank is not or less able to show how far its ability to repay withdrawals made by depositors by relying on credit provided as a source. The third Audit Committee for Good Corporate Governance risk has a positive impact on bank health. This means that the better the management team manages the business, the better the business runs. This shows that the health of the bank will be maintained if it has a good governance framework. Fourth, *Debt to Equity Ratio* for solvency risk has no effect on bank soundness. Whatever solvency has been established does not affect the level of bank health because this ratio is less suitable for analyzing companies engaged in finance such as banking, insurance and investment companies.

The findings of this study can be used as a means of decision support for stakeholders, especially for investors to be used as an additional reference in determining their investment through profitability in commercial banks in Indonesia. Hopefully, this research has the opportunity to become a guide and reference for researchers, especially about bank health to be used as a research motivation from several variables used. This study is limited to focusing

on four variables, namely *Net Profit Margin*, *Loan to Deposit Ratio*, *Audit Committee*, and *Debt to Equity Ratio* and the number of samples consisting of 16 banking entities.

Future researchers use other financial ratios such as activity ratios, investment ratios or add research variables such as credit risk by conducting more complex, accurate tests and can use a longer time and the latest year, so that it can be used to provide the latest interest and images related to banking, as well as expand the research sample.

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# THE INFLUENCE OF ORGANIZATIONAL CULTURE AND WORK ETHIC ON EMPLOYEE PERFORMANCE AT PT TIRTA BENING MULIA

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## ABSTRACT

The objective of this research is to ascertain the extent to which organizational culture and work ethic impact employee performance at PT. Tirta Bening Mulia. The type of data used in this study is a questionnaire-shaped quantitative data. The methods used in this study are descriptive tests in the form of mean and standard deviation, statistical tests in the form of normality test, multicollinearity test heteroskedasticity Test, simple linear regression test and multiple linear regression, associative methods in the form of simple correlation analysis and multiple correlation, hypothesis test using F test to determine the effect simultaneously, and determinant coefficient analysis. Data analysis is processed using SPSS version 25.

The results showed that linear regression analysis of Organizational Culture and work ethic has a positive influence on employee performance. Partially organizational culture and work ethic affect employee performance. F test results obtained F table value of 3.143. Because F count > of F table then ( $42,473 > 3,143$ ), then  $H_0$  rejected, then the organizational culture and work ethic affect employee performance simultaneously.

**Keywords:** *Organizational Culture, Work Ethic, And Employee Performance*

## INTRODUCTION

Human resource management (HRM) is an overall process of handling various problems related to the scope, managers, and all workers who are responsible for all activities of an organization or company in order to achieve predetermined goals. High performance is an important role of human resources in achieving company goals and also improving employee performance, where human resources in the company are employees who work for the organization or company.

Employee performance is a facet that is attributed to specific human beings, since each employee has distinct qualifications and job capacities in relation to their assigned responsibilities. Management can measure employee performance based on the performance of performance of each employee. Therefore, organizations or companies need to pay attention to employee performance so that they can create high values and work ethic as well as enthusiastic motivation to achieve maximally which can contribute to a company.

It has been observed that PT Tirta Bening Mulia's employees do not perform well in completing their tasks, which may affect the efficiency and effectiveness of their work. Therefore, it is imperative to improve employee performance, which can be achieved through

performance indicators that encompass the quality of work results, such as accuracy and compliance with company standards, productivity in terms of quantity and efficiency in line with assigned tasks, job knowledge that encompasses acquired skills and task-related information, reliability in performing follow-up tasks assigned by the company, punctuality in attendance and compliance with rest periods, and independence in performing tasks independently or under supervision.

#### A. Employee Performance

According to Dessler (Muchlis & Emilda, 2023) "Employee performance is the work achieved by employees in carrying out the tasks assigned to them by the company or organization".

According to Dessler & Varrkey in (Setiadi et al., 2022), employee performance can be measured using the following indicators:

- 1) Quality of work
- 2) Productivity
- 3) Job knowledge
- 4) Reliability
- 5) Attendance
- 6) Independence

According to Wirawan (Muhammad Abu Wildan, et al, 2021), factors that affect employee performance, by : 1) Internal employee factors, factors obtained, such as knowledge, skills, work ethic, work experience, and work motivation. 2) Organizational internal environmental factors, these organizational internal environmental factors include vision, mission and organizational goals, organizational policies, technology, organizational strategies, management systems, compensation, leadership, organizational culture, and coworkers. 3) Organizational external environmental factors, these organizational external environmental factors include economic life, political life, social life, culture and religion of the community, and competitors.

#### B. Organizational Culture

According to (Sulaksono, 2019), "Organizational culture is the values that guide human resources in carrying out their obligations and behavior within the organization."

According to (Sulaksono, 2019), indicators that affect organizational culture include: 1) Innovative takes into account risk 2) Pay attention to every problem in detail.

- 3) Oriented to the results to be achieved.
- 4) Oriented to all employee interests.
- 5) Aggressive at work.
- 6) Maintaining and maintaining work stability

According to (Pandi Afandi 2018: 100), the factors that influence Organizational Culture, by :1. Leadership 2. Discipline of organizational relations 3. Communication

#### C. Work Ethic

According to Salamun (Wicaksono & Pembimbing, 2019), "Work ethic is an ethic or guide in work, meaning a guide to do a good job".

According to Salamun (Dolonseda & Watung, 2020), work ethic indicators are: 1) Hard work  
2) Discipline  
3) Honest

- 4) Responsibility
- 5) Diligent
- 6) Industrious

According to (Andriasan Sudarso, et al. 2021: 47-48), factors that influence Work Ethic, by: a. Religion b. Culture c. Social Politics d. Environmental Conditions. e. Education. f. Intrinsic motivation.

## METHOD, DATA, AND ANALYSIS

The research methods used are descriptive and associative methods using a quantitative approach. The associative method is a method to determine the effect between two or more variables in the sample to be tested. Descriptive method is a research method that provides a description and reveals a problem that occurs at the time of the research.

The research population consisted of a total of 79 personnel employed at PT Tirta Bening Mulia. However, 10 individuals from this group were excluded since they were used for the purpose of conducting validity and reliability tests in this study. The overall sample size to be used consists of 69 individuals.

## RESULT AND DISCUSSION

### A. Deskriptif Statistik Variabel

**Table 1**

**Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
Budaya Organisasi	69	37	60	46,22	5,396
Etos Kerja	69	36	60	46,39	6,392
Kinerja	69	36	60	48,06	5,731
Valid N (listwise)	69				

From the table, the average Employee Performance is 48,06 Organizational Culture 46,22 Work Ethic 46,39. The standard deviation of Employee Performance is 5,731 Organizational Culture is 5,396 Work Ethic is 6,392.

### B. Regression Analysis

**Table 2 Regression of Organizational Culture on Employee Performance**

		Coefficients <sup>a</sup>						
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	14,134	4,364		3,239	,002		
	Budaya Organisasi	,734	,094	,691	7,825	,000	1,000	1,000

a. Dependent Variable: Kinerja

From the table it can be conclusion that the equation of organizational culture ( $X_1$ ) on employee performance (Y) is  $Y = 14.134 + 0.734X_1$ . The constant value is 14.134. This means that if there is no change in the organizational culture variable or  $X_1 = 0$ , then the employee performance at PT Tirta Bening Mulia is 14.134.

The regression coefficient value of organizational culture is 0.734. This means that if the organizational culture variable increases by (one-unit) assuming a constant of 14.134, the coefficient value of employee performance increases by 0.734. This shows that the organizational culture that exists or is available at PT Tirta Bening Mulia has a positive effect on employee performance.

**Table 3 Regression of Work Ethic on Employee Performance**

		Coefficients <sup>a</sup>						
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	19,282	3,704		5,206	,000		
	Etos Kerja	,620	,079	,692	7,842	,000	1,000	1,000

a. Dependent Variable: Kinerja

From the table it can be conclusion that the equation for work ethic (X<sub>2</sub>) on employee performance (X<sub>2</sub>) is  $Y = 19.282 + 0.620X_2$ . The constant value is 19.282. This means that if there is no change in the work ethic variable or  $X_1 = 0$ , then the employee performance at PT Tirta Bening Mulia is 19.282.

The work ethic regression coefficient value is 0.620. This means that if the work ethic variable increases by (one-unit) assuming a constant of 19.282, the employee performance coefficient value increases by 0.620. This shows that the work ethic that exists or is available at PT Tirta Bening Mulia has a positive effect on employee performance.

**Table 4 Regression of Organizational Culture and Work Ethic on Employee Performance**

		Coefficients <sup>a</sup>						
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	11,160	4,107		2,717	,008		
	Budaya Organisasi	,431	,121	,406	3,565	,001	,512	1,955
	Etos Kerja	,366	,102	,408	3,588	,001	,512	1,955

a. Dependent Variable: Kinerja

The constant value is 11.160. This means that if there is a change in the value of the organizational culture variable (X<sub>1</sub>) and work ethic (X<sub>2</sub>) or the value of X<sub>1</sub> and X<sub>2</sub> = 0, the employee performance at PT. Tirta Bening Mulia is 11.160, the regression coefficient of the organizational culture variable (X<sub>1</sub>) is 0.431, which means that if the other independent variables remain and the organizational culture (X<sub>1</sub>) increases by (one-unit), the employee performance (Y) will increase by 0.431 decrease. This indicates that, while holding the other independent variables constant, a one-unit rise in organizational culture (X<sub>1</sub>) is associated with a 0.431 drop in employee performance (Y). The regression coefficient (X<sub>2</sub>) for work ethic, which is 0.366, indicates that when all other independent variables are held constant, a one-unit increase in the work ethic variable (X<sub>2</sub>) is associated with a 0.366 rise in employee performance (Y).. From the above independent variables used in this study, namely Organizational Culture and Work Ethic, they have a positive effect on employee performance at PT Tirta Bening Mulia.

*C. Correlation Analysis*

**Table 5 Correlation of Organizational Culture to Employee Performance**

		Correlations	
		Budaya Organisasi	Kinerja
Budaya Organisasi	Pearson Correlation	1	,691**
	Sig. (2-tailed)		,000
	N	69	69
Kinerja	Pearson Correlation	,691**	1
	Sig. (2-tailed)	,000	
	N	69	69

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From the table it can be conclusion that the relationship between organizational culture variables on employee performance is known to have a significance value or Sig (2-tailed) of

0.000. Because the Sig (2-tailed) value <0.05, it means that there is a significant relationship between the organizational culture variable and employee performance.

The correlation coefficient of organizational culture on employee performance is 0.691. Thus, the correlation coefficient of organizational culture on employee performance has a strong relationship.

**Table 6 Correlation of Work Ethic to Employee Performance**

		Etos Kerja	Kinerja
Etos Kerja	Pearson Correlation	1	,692**
	Sig. (2-tailed)		,000
	N	69	69
Kinerja	Pearson Correlation	,692**	1
	Sig. (2-tailed)	,000	
	N	69	69

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From the table it can be conclusion that the relationship between organizational culture variables on employee performance is known to have a significance value or Sig (2-tailed) of 0.000. Because the Sig (2-tailed) value <0.05, it means that there is a significant relationship between the work ethic variable and employee performance.

Based on the table above, the correlation result of work ethic on employee performance is 0.692. Thus, the correlation coefficient of organizational culture on employee performance has a strong relationship.

**Table 7  
Correlation of Organizational Culture and Work Ethic to Employee Performance**

		Budaya Organisasi	Etos Kerja	Kinerja	
Spearman's rho	Budaya Organisasi	Correlation Coefficient	1,000	,634**	,638**
		Sig. (2-tailed)	.	,000	,000
		N	69	69	69
Etos Kerja		Correlation Coefficient	,634**	1,000	,671**
		Sig. (2-tailed)	,000	.	,000
		N	69	69	69
Kinerja		Correlation Coefficient	,638**	,671**	1,000
		Sig. (2-tailed)	,000	,000	.
		N	69	69	69

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From the table it can be conclusion that the relationship between organizational culture and work ethic variables on employee performance is known to have a significance value or Sig (2-tailed) of 0.000. Because the Sig (2-tailed) value <0.05, it means that there is a significant relationship between organizational culture and work ethic variables on employee performance.

Based on the table above, the correlation coefficient of organizational culture (X1) is 0.638 and work ethic (X2) is 0.671. Thus, the correlation coefficient of organizational culture and work ethic on employee performance has a strong relationship.

D. Hypothesis Test

**Table 8 Test The Effect of Organizational Culture and Work Ethic on Employee Performance**

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1257,074	2	628,537	42,473	,000 <sup>b</sup>
	Residual	976,694	66	14,798		
	Total	2233,768	68			

a. Dependent Variable: Kinerja

b. Predictors: (Constant), Etos Kerja, Budaya Organisasi

The significant value of  $0.000 < 0.05$ , then  $H_0$  is rejected and  $H_a$  is accepted. This means that Organizational Culture and Work Ethic simultaneously affect Employee Performance.

E. Coefficient of Determination and Relative Contribution

**Table 9 Coefficient of Determination of Organizational Culture on Employee Performance**

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,691 <sup>a</sup>	,477	,470	4,174

a. Predictors: (Constant), Budaya Organisasi

b. Dependent Variable: Kinerja

From the table it can be conclusion that, it can be inferred that organizational culture has a significant impact on employee performance, accounting for about 47.7% of the observed variance. However, it is important to note that the remaining 52.3% of the variance is attributed to other variables that were not addressed in this study

**Table 10 Coefficient of Determination of Work Ethic on Employee Performance**

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,692 <sup>a</sup>	,479	,471	4,169

a. Predictors: (Constant), Etos Kerja

b. Dependent Variable: Kinerja

From the table it can be conclusion that, it can be inferred that organizational culture has a significant impact on employee performance, accounting for about 47.9% of the observed variance.

However, it is important to note that the remaining 52.1% of the variance is attributed to other variables. **Table 11**

**Coefficient of Determination of Organizational Culture and Work Ethic on Employee Performance**

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,750 <sup>a</sup>	,563	,550	3,847

a. Predictors: (Constant), Etos Kerja, Budaya Organisasi

b. Dependent Variable: Kinerja

From the table it can be conclusion that, it can be inferred that the regression model yields an adjusted R value of 0.750. Furthermore, it is evident that the coefficient of determination (R square) is 0.563. The findings of this research indicate that the combined effect of organizational culture and work ethic on employee performance at PT Tirta Bening Mulia is 0.563 or 56.3%. It is important to note that the remaining 43.7% of employee performance is attributed to other variables that were not evaluated in this particular study.

## CONCLUSION

Based on the findings of researchers investigating "The Influence of Organizational Culture and Work Ethic on Employee Performance at PT Tirta Bening Mulia," it can be inferred that the outcomes of the study align with existing theories, perspectives, and prior research. The following passage serves as the culmination of this study.

- 1) The organizational culture at PT Tirta Bening Mulia with the highest number of indicator scores given by employees is oriented towards all employee interests (item 1 and item 2), while the lowest indicator is
- 2) innovative taking into account risks (item 1 and item 2).
- 3) Work Ethic at PT Tirta Bening Mulia with the highest number of indicator scores given by the leadership, namely diligent (item 1 and item 2), while the lowest indicator is hard work (item 1 and item 2).
- 4) Performance at PT Tirta Bening Mulia with the highest number of indicator scores given by the leadership, namely independence (item 1 and item 2), while the lowest indicator is job knowledge (item 1 and item 2).
- 5) Organizational culture affects employee performance significantly with a level value of Sig. 0.001 <0.05 with a relative contribution of 47.7%.
- 6) Work Ethic affects employee performance significantly with a Sig level value. 0.001 <0.05 with a relative contribution of 47.9%.
- 7) Organizational Culture and Work Ethic affect employee performance significantly with a Sig level value. 0.008 <0.05 with a relative contribution of 56.3%.

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# THE INFULENCE OF OWN CAPITAL AND SALES ON NET PROFIT ON RICE MILLING INDUSTY PB. SRI MULYA

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## ABSTRACT

Indonesia is an agricultural country, where the main source of livelihood for its people is agriculture. Net Profit is the difference between the revenue earned from sales and the costs incurred by the company. Seeing the phenomenon of the rice mill industry's financial reports, there is a movement of net profit that fluctuates and falls per semester. Based on the graph above, it can be seen that PB Sri Mulya's net profit per semester in 2020-2022 has fluctuated (increased and decreased) in each semester.

In this study the method used is a quantitative approach and associative method. Own capital to net profit through sales has a not significant effect on PB Sri Mulya for 6 semesters in 2020-2022.

**Keywords:** Equity, Sales, and Net Profit

## INTRODUCTION

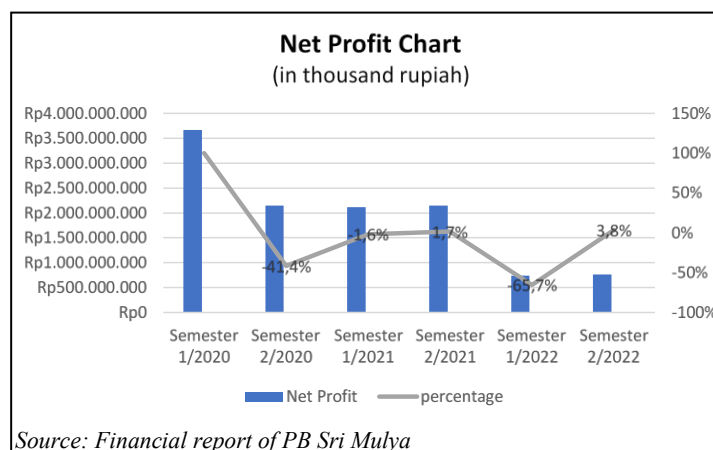
Indonesia is an agrarian country, where the main source of livelihood for its people is agriculture. This is motivated by Indonesia's geographical location in the tropics so that the weather, soil and other natural resources in almost all parts of Indonesia provide good opportunities for developing the agricultural sector.

Rice is a commodity that has strategic value in terms of economic, environmental, social and political aspects. As part of food supply security, the stability of rice supply and price is an important factor to ensure food security as one of the national development priorities.

Rice milling is a place for processing and marketing rice, which is an important link in the national rice supply chain. The rice milling industry contributes to the supply of rice, both quantitatively and qualitatively to support national food security. According to data from the Central Statistics Agency (BPS), Indonesia produced 54,415,294 tons of milled dry grain (MDG) in 2021. West Java Province is the largest rice-producing province in Indonesia in 2021, producing 9,113,573 tons of rice. Regions in West Java that contribute the largest number include Indramayu, Karawang, and Subang.

PB Sri Mulya is a trading business in the field of rice milling, rice packaging and rice distributors in the Indramayu Regency area. PB Sri Mulya partners well with surrounding farmers as evidenced by the large amount of raw materials obtained from the rice harvest of Indramayu Regency farmers.

In general, the bottom line of every company is to get maximum profit. The objectives of one company with another are not necessarily the same, but in general the establishment of a company aims to achieve large profits, because the benchmark in seeing the success of a company can be seen from the size of the company's profits. To get maximum profit, the company must manage the income source system in the form of economic resources to produce out output.



**Figure 1. 2 Net Profit Chart for the Period 2020-2022**

Seeing the phenomenon of the financial statements of the PB Sri Mulya Rice Milling Industry, there is a movement in net profit that goes up and down per semester. Based on the graph above, it can be seen that the condition of PB Sri Mulya's net profit per semester in 2020-2022 experienced fluctuations (increases and decreases) in each semester. In the first semester of 2020 it was IDR 3,672,032,000. In semester 2 of 2020, it decreased by 41.4% or Rp1,211,440,000. In semester 1 of 2021, it decreased by 1.6% or IDR35,010,000. In the second semester of 2021, it increased by 1.7% or IDR35,010,000. In the first semester of 2022, it decreased by 65.7% or IDR 1,413,632,400. Furthermore, in the second semester of 2022, it increased by 3.8% or IDR 27,814,800.

Net profit is the difference between the revenue earned from sales and the costs incurred by the company. In order for the company to obtain maximum profit, the company needs to pay attention to factors that can affect the company's net profit. Among the factors that influence the rise and fall of net income according to (Purwanto, 2021) are costs, selling prices, and sales volume. Based on research conducted by (Rohmat, R., & Suhono, S, 2021) which states that together production costs and operating costs affect net profit.

This attracted researchers to conduct research on the PB Sri Mulya Rice Milling Industry, for 6 semesters in 2020-2022. With the research title "The Effect of Production Costs and Operating Costs on Net Income"

## METHOD, DATA, AND ANALYSIS

This study uses quantitative research methods and associative approaches. According to Sugiyono (2019: 65) Associative research is research that aims to determine the effect of the relationship between two or more variables.

The population used in this study are financial reports in the form of income statements, and balance sheet reports of the PB Sri Mulya Rice Milling Industry from the beginning of its establishment until now. The sample used in this research is the financial statements in the form of income statements, and balance sheet reports of the PB Sri Mulya Rice Milling Industry for 6 semesters in 2020-2022 and consists of Production Costs, Operating Costs, and Net Income. The reason for this sampling is due to the limited data obtained.

The type of data used in this research is quantitative data and primary data sources. According to Sugiyono (2022:137) Primary sources are data sources that directly provide data to data collectors. Data collection techniques, primary data sources were obtained directly through interviews with the rice milling industry business owner PB Sri Mulya.

The data analysis technique used in this research is associative analysis consisting of simple and multiple linear regression analysis. Followed by the classic assumption test consisting of normality, multicollinearity and heteroscedasticity. Then proceed with analysis of the coefficient of determination. To calculate data analysis techniques using the SPSS version 24 application.

## RESULT AND DISCUSSION

### 1. Analysis of Simple Linear Regression

Based on data processing results, it is known that the regression equation for own capital ( $X_1$ ) on net profit ( $Y$ ) is  $Y = 198306477 + (-0, 349)X_1$  Each change is one unit of own capital. So, the increased Net Profit is -0.349. This means that if the own capital variable is  $X_1$ , the t count is -3.976 with a significant value of 0.016. By using a limit of 0.05, the significance value is smaller than the 5% level, which means that  $H_0$  is rejected and  $H_a$  is accepted. Therefore, Own Capital ( $X_1$ ) has an effect. This means that Own Capital ( $X_1$ ) has a significant effect on Net Profit ( $Y$ ).

Based on data processing results, it is known that the equation for sales ( $X_2$ ) to net profit ( $Y$ ) is:  $Y = 256590376 + (-0, 032)X_2$  Each change is one unit of sales. So, the increase in Net Profit is -0.032. This means that if the sales variable is  $X_2$ , the t count is -0.432 with a significant value of 0.688. By using a limit of 0.05, the significance value is greater than the 5% level, which means  $H_0$  is accepted and  $H_a$  is rejected. Therefore Sales ( $X_2$ ) have no effect. This means that sales ( $X_2$ ) do not have a significant effect on net profit ( $Y$ ).

### 2. Analysis of Multiple Linear Regression

Based on data processing results, it is known that the equation for own capital ( $X_1$ ) and sales ( $X_2$ ) to net profit ( $Y$ ) is:  $Y = 198650980 + (-0, 344)X_1 + (-0, 015)X_2$  Based on data, capital itself remains the same while sales change. then the value of net profit

increases, which means that if capital alone increases, net profit will increase, and if sales decrease, net profit will also decrease.

### 3. Classic Assumption Test

Based on data processing results, the A. Sig (2-tailed) value is 0.200 where  $0.200 > 0.05$ . So it can be concluded that the samples that have been taken and the data population are normally distributed.

Based on the results of the multicollinearity test in the table above, the values obtained are  $VIF X1 = 1.018$ ,  $VIF X2 = 1.018$ . Because the VIF value of all independent variables is  $< 10$ , from the table above it can be concluded that there are no symptoms of multicollinearity in the Own Capital and Sales variables.

Based on the image of the heteroscedasticity test results above, there is no clear pattern (irregular) and the points are scattered above and below zero (0) on the Y-axis. From the image above, it can be concluded that it is heteroscedasticity free so that the regression model can be used to predict Net Profit level based on independent variable input, namely Own Capital and Sales

### 4. Determination Coefficient Analysis

Based on data processing results, it can be concluded that Own Capital contributes to Net Profit of 0.798 or 79.8% while the remaining 20.2% is contributed by other factors not examined by researchers.

Based on data processing results, it can be concluded that Sales contribute to Net Profit by 0.045 or 4.5% while the remaining 95.5% is contributed by other factors not examined by researchers.

Based based on data processing results, it can be concluded that Own Capital and Sales contributed to Net Profit of 0.807 or 80.7% while the remaining 19.3% was contributed by other factors not examined by researchers.

### 5. Discussion

#### a) Influence of own capital on Net Profit

The influence of own capital and sales on Based on the table above, the Sig value is obtained. 0.016 with a significance level of 5% or 0.05. Because the sig value is  $0.016 < 0.05$ ,  $H_0$  is rejected and  $H_a$  is accepted, which means that partially Own Capital has a significant effect on Net Profit. This means that if your own capital is increased, the resulting net profit will also increase. The better a company uses its own capital, the greater the company's ability to earn net profits.

This research is in line with the results of previous research conducted by Gede Nogi, et al (2019). The research results show that capital itself has an effect on net profit. It can be proven from the results of research in partial tests, namely that it means that capital itself has an influence on net profit at UD Aneka Jaya Motor in Singaraja for the 2012-2014 period.

#### b) Influence of Sales on Net Profit

Based on the table above, the Sig value is obtained. 0.688 with a significance level of 5% or 0.05. Because the sig value is  $0.688 > 0.05$ ,  $H_0$  is accepted and  $H_a$  is rejected, which means that partially Sales have no effect and are not significant on Net Profit. This means that if sales change, the resulting net profit will also change. Due to other factors, namely rising raw material costs and market prices remaining the same, the company will earn a small profit after 2021.

This research is in line with the results of previous research conducted by Diana, et al (2020). The research results show that sales have no effect on net profit. It can be proven from the research results in a partial test which means that sales have no influence on net profit in manufacturing companies in the basic industrial and chemical sectors listed on the Indonesia Stock Exchange 2015-2019.

c) Influence of own capital and Sales on Net Profit

Based on data, capital itself remains the same while sales change. then the value of net profit increases, which means that if capital alone increases, net profit will increase, and if sales decrease, net profit will also decrease. This research is in line with the results of previous research conducted by Diana, et al (2021). The research results show that own capital and sales have no effect on net profit.

## CONCLUSION

Based on the results of research and analysis that has been carried out by researchers during research and discussion of Equity and Sales on Net Income in the Rice Milling Industry of PB Sri Mulya at PB Sri Mulya for 6 semesters in 2020-2022, the researchers can draw the following conclusions :

- 1) Based Own Capital influences Net Profit in the equation model  $Y = 198306477 + (-0, 349)X_1$ . The coefficient of determination is 79.8%. The implication is that if you want to increase profits, the company must increase its own capital so that the company's profits increase.
- 2) Based Sales have no effect on net profit with the equation model:  $Y = 256590376 + (-0, 032)X_2$ . Coefficient of determination 4.5%. The implication is that if you want to increase profits, the company must increase sales so that the company's profits increase
- 3) Own capital and sales have no effect on net profit with the equation model:  $Y = 3841525.974 + (-0, 344)X_1 + (-0, 015)$  capital and also sales so that company profits increase.

In addition to some of the conclusions drawn by the author above, there are also suggestions for PB. Sri Mulya Indramayu:

1. The influence of This research is expected to pay more attention to factors other than capital, sales spent on the company's production and operational activities so that it can produce optimal profits.
2. The influence From this research, it is hoped that readers will gain insight and gain something useful for readers, and this research is expected to be a comparison material for other parties who will conduct research and also to add new insight for readers and can be used as a reference and input for similar researchers in order to improve further research.
3. The influence It is hoped that this research will serve as comparative material for conducting other research and can also be used as a reference and input for similar researchers in order to improve further research.

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# THE INFLUENCE OF PRICE PERSEPTIONS AND PRODUCT VARIATION ON PURCHASE INTENTION

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## ABSTRACT

Every consumer tends to choose a store that provides a variety of products to meet their needs and the consumer's perception of the price offered by the store is also a consideration when making a purchase. Due to the fact that price often serves as a measure of value when it comes to the benefits of purchasing a product. This study aims to determine and analyze the effect of perceived price and product variety on purchase intention.

In this study, the method used is the associative method and quantitative approach. The sampling technique used is incidental sampling. The sample used in this study is 50 samples. In this study, data collection used a questionnaire (questionnaire). This study uses simple regression analysis techniques and multiple regression.

The results of this study indicate that price perceptions partially have no significant effect on purchase intention at Namira's Cake & Bakery. Product variations partially have a significant effect on purchase intention at the Namira's Cake & Bakery bakery, and simultaneously the perception of price and product variety together influence the purchase intention. Variations in purchase intention can be explained by variations in price perceptions and product variations. When consumers increasingly make the price given this bakery as a comparison with other stores, then the purchase intention will decrease. The results of this hypothesis test can be used as a reference for shop owners that the more variations in a product, the more consumers' interest in buying will increase.

**Keywords:** Perceived Price, Product Variation and Purchase Intention.

## INTRODUCTION

In this era, knowledge and the ability of individuals to make choices are so superior that they make changes in various sectors, including industrial, economic, political and cultural sectors. This is characterized by the number of new products to meet needs. Such as basic necessities products to side products.

This makes competition in the business world increasingly tight, so that many companies are competing to carry out various strategies in marketing their products. The strategy implemented by the company is also trying to reach market share so that consumers do not switch to competitors. The strategy used must also increase consumer purchase intention. This

growing interest will certainly attract consumers to make this product their choice (Afriyanti & Rahmidani, 2019).

From the observations made, one of the competitive businesses is a bakery, where this business is engaged in the production of bread which becomes ready-to-eat food when needed. Currently, bread products can be used as an opportunity for business people, one of which is in Indramayu. It's not surprising that in Indramayu many people are opening bakeries with fierce competition, one of which is Namira's Cake & Bakery.

With so many competitors, companies/store owners must implement good marketing strategies to achieve their main goals and remain at the top of the market. Every business will continue to strive to develop strategies that will strengthen its internal structure and create interest among consumers.

Consumer purchase intention is one of the process components in consuming attitudes. Once consumers are interested in buying, consumers will be motivated to make repeat purchases at the same place. In relation to the products that sellers offer, every company or small business continues to compete to attract consumer purchase intention (Siregar & Ovilyani, 2017).

In fact, based on observations, at Namira's Cake and Bakery, consumer interest in buying is still low. This is because the existing products are still not diverse and the prices given are still taken into consideration by consumers regarding similar products from other shops, so consumers' purchase intention is low.

Every consumer tends to choose a shop that provides a variety of products to meet their needs. Furthermore, consumers' perceptions of the prices offered by shops are also a consideration when making a purchase. Price perception is related to how consumers understand the price information they receive. Due to the fact that price often serves as a measure of value when taken into account with benefits from product purchases.

## METHOD, DATA, AND ANALYSIS

The research was conducted at Namira's Cake & Bakery. The time of the research was conducted in the period of December 2022-August 2023. In this research, the methods used are associative methods and descriptive statistics with a quantitative approach. Associative research is research that aims to determine the relationship between two or more variables (Sgiyono, 2019). This associative method aims to determine the influence of Price Perception and Product Variations for Mina Buy consumers at Namira's Cake & Shop Bakeries. Unclear population, researchers cannot learn everything about the population. Therefore, researchers will take samples from this population and the samples taken are expected to be representative. The sampling technique used was incidental sampling. Incidental sampling is a sampling technique based on chance, anyone who happens to meet the researcher will be used as a sample (Sugiyono, 2019)

## RESULT AND DISCUSSION

### A. Descriptive Analysis

**Table 6. Descriptive Analysis**

Descriptive Statistics			
	N	Mean	Std. Deviation
Consumer Buying (Y)	50	34.24	4.538



Price Perceptions (X1)	50	36.12	3.015
Product Variety (X2)	50	35.20	3.264

Source: Secondary data that has been processed

Results of analysis of the Purchase Interest (Y) variable using descriptive statistics, that is, it has an average value of 34.24 with a standard deviation of 4.538. Results analysis of the Price Perception variable (X1) using descriptive statistics, that is, it has an average value of 36.12 with a standard deviation of 3.015. Next, the results of the analysis of the Product Variation variable (X2) using descriptive statistics, which has an average value of 35.20 with deviation standard 3.264.

## B. Linearity Test

Table 7. Linearity Test of Price Perception on Purchase Intention

		Sum of Squares	df	Mean Square	F	Sig.
Purchase Intention * Price Perception	Between Groups	(Combined) 178.100	10	17.810	.836	.598
	Linearity	18.418	1	18.418	.864	.358
	Deviation from Linearity	159.682	9	17.742	.833	.591
	Within Groups	831.020	39	21.308		
Total		1009.120	49			

Source: primary data processed using SPSS version 24

The results of the linearity test of the regression of price perception on purchase intention have a sig value.  $0.591 > 0.05$ . This means that the regression equation for Price Perception on Purchase Intention is linear.

**Table 8. Linearity Test of Product Variations on Purchase Intention**

			Sum of Squares	df	Mean Square	F	Sig.
Purchase Intention * Product Variation	Between Groups	(Combined)	420.697	12	35.058	2.204	.033
		Linearity	298.293	1	298.293	18.757	.000
		Deviation from Linearity	122.404	11	11.128	.700	.730
	Within Groups		588.423	37	15.903		
	Total		1009.120	49			

Source: primary data processed using SPSS version 24

The results of the linearity test of the regression of price perception on purchase intention have a sig value.  $0.730 > 0.05$ . This means that the regression equation for product variations on purchase interest is linear.

Because the regression equations for price perception (X1) on purchase intention (Y) and product variety (X2) on purchase intention (Y) are both linear. So, the regression equation for price perception (X1) and product variety (X2) on purchase interest (Y) is linear.

### C. Hypothesis Test

**Table 9. The Influence of Price Perception on Purchase Intention Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	26.894	.586		3.447	.001
	Price Perception	.203	.110	.135	.945	.350

a. Dependent Variable: Purchase Intention

Source: primary data processed using SPSS version 24

Variable (X<sub>1</sub>) Price Perception is obtained significant value 0.350. Using a limit of 0.05, the significance value is greater than the 5% level, which means Ho is accepted. Therefore, This first hypothesis was not proven. This means that the perception of price (X<sub>1</sub>) does not have a significant effect on purchase intention (Y).

**Table 10. The Influence of Product Variation on Purchase Intention Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	7.631	5.954		1.282	.206
	Product Variation	.756	.168	.544	4.488	.000

a. Dependent Variable: Purchase Intention

Source: primary data processed using SPSS version 24

Variable (X<sub>2</sub>) Product variation obtained t. The count is 4.488 with a significant value of 0.000. Therefore, this second hypothesis is proven, which means that product variety (X<sub>2</sub>) has a significant effect on purchasing interest (Y).

**Table 11. Perception of Price and Product Variation on Purchase Intention ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	133.741	5	26.748	19.856	.000 <sup>b</sup>
	Residual	137.405	102	1.347		
	Total	271.145	107			

a. Dependent Variable: Purchase Intention

b. Predictors: (Constant), Price Perception, Product Variation

Source: primary data processed using SPSS version 24

Each change in Price Perception is one unit, while the Product Variation remains the same. So, the value of Buying Intention decreases, which means that if consumers' perception of prices increases, purchase intention will decrease, and if product variety increases, purchase intention will increase.

The aim of this research is to determine the influence of price perceptions and product variations on consumer purchases. Based on the research results, the discussion can be explained, among other things, as follows.

1. Based on the results of the partial test (t test), it shows that price perception has a significant value greater than the alpha significant level. This means that partial price perceptions do not have a positive effect on purchasing interest at the Namira's Cake & Bakery bakery.
2. Based on the results of the partial test (t test), it has been shown that variations the product has a significant value smaller than the alpha significant level. This means that product variations partially have a positive and significant effect on purchasing interest at the Namira's Cake & Bakery bakery.
3. Based on the results of the simultaneous test (f test), it has been shown that perceptions of price and product variety have a significant value smaller than the significant alpha level. that is, simultaneously the third hypothesis states that price perception and product variety jointly influence acceptance of purchase intention.

## CONCLUSION

Based on the discussion that has been described, it can be concluded as follows.

1. Partially, price perception has no effect on consumer purchase intention, with the regression equation:  $Y = 26.894 + 0.203X_1$ . For every change in price perception units, purchase intention increases by 0.203 units. Variations in purchase intention can occur explained by variations in price perception of 1.8%.
2. Partially, product variations influence consumer purchase intention, with the regression equation:  $Y = 7.631 + 0.576X_2$ . For every one unit change in product variation, purchasing interest increases by 0.576 units. Variations in purchasing interest can be explained by product variations of 29.6%.
3. Simultaneously, price perception and product variety jointly influence consumer purchase intention, with the regression equation:  $Y = 10.157 - 0.103X_1 + 0.790X_2$ . Each change in Price Perception is one unit, while the Product Variation remains the same. So, the value of Purchase intention decreases, which means that if prices increase, purchase intention will decrease, and if product variety increases, purchase intention will increase. Variations in purchasing interest can be explained by variations in price perceptions and product variations of 30%.

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# THE ROLE OF AI IN HIGHER EDUCATION: AN EXAMINATION OF THEIR IMPACT ON PERSONALIZED LEARNING AND TEACHER-STUDENT INTERACTIONS

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## ABSTRACT:

Artificial Intelligence (AI) is reshaping higher education, ushering in an era of personalized learning and transforming teacher-student interactions. This paper delves into AI's multifaceted role in higher education, exploring how it tailors educational experiences to individual learners and revolutionizes the quality of teacher-student engagement. AI leverages data analytics and machine learning to create adaptive learning systems, addressing the unique needs, preferences, and learning styles of each student. It enhances curriculum design, content delivery, and assessment methodologies, optimizing the learning process.

AI-driven tools reconsider teacher-student dynamics by automating administrative tasks, delivering prompt feedback, and facilitating real-time communication. This synergy empowers educators to focus on individualized guidance and mentorship. Yet, concerns over data privacy, equity, and the potential displacement of human educators underscore the need for ethical considerations. Through case studies and successful AI implementations, this paper offers practical insights and best practices for effectively harnessing AI's transformative potential. As AI evolves, understanding its implications becomes imperative for educators, administrators, and policymakers navigating the ever-evolving landscape of higher education.

## 1. INTRODUCTION:

In the ever-evolving landscape of higher education, the integration of Artificial Intelligence (AI) has emerged as a transformative force, heralding an era marked by personalized learning experiences and a profound redefinition of teacher-student interactions. The advent of AI technologies, fueled by data analytics and machine learning, has ushered in a new frontier where education is no longer a one-size-fits-all endeavour but a tailored, dynamic journey catering to the unique needs, preferences, and learning styles of each student. This paper embarks on a compelling exploration of AI's multifaceted role in higher education, unravelling its intricate web of applications, challenges, and opportunities. It embarks on a journey through the corridors of adaptive learning systems, where AI algorithms meticulously craft curricula, deliver content, and assess progress, all with the precision of a personal. Beyond the digital classroom, AI-driven tools have triggered a paradigm shift in the way teachers and students interact. Automation of routine administrative tasks, the delivery of instantaneous feedback, and the facilitation of real-time communication empower educators to allocate their expertise where it matters most-providing tailored guidance and mentorship to individual students. However, beneath this transformative veneer lie critical ethical and practical considerations. The paper delves into the ever-pressing concerns surrounding data privacy, equitable access to AI-powered education, and the potential displacement of human educators. It underscores the need for a balanced approach, where the promise of AI is realized while mitigating its associated challenges. AI continues to evolve and pass through educational institutions, understanding its implications becomes paramount for educators, administrators, and policymakers alike, as they navigate the uncharted waters of this exciting and dynamic educational revolution.

### 1.1 SCOPE:

**AI in Higher Education:** The paper explores the evolving landscape of Artificial Intelligence (AI) applications in higher education, considering its increasing prevalence and impact.

**Personalized Learning:** AI-driven personalized learning is a dynamic educational approach that tailors learning experiences to individual students' specific needs, preferences, and learning styles. This customization is made possible through the analysis of vast amounts of student data. AI algorithms can identify each student's strengths and weaknesses, their preferred learning methods (e.g., visual, auditory, kinesthetic), and their pace of learning. This information is then used to curate and deliver educational content in a way that is most effective

for that student. For instance, if a student learns best through visual aids, AI may prioritize video content or interactive simulations. This approach optimizes comprehension and retention, making learning more efficient and engaging.

**Teacher-Student Interactions:** AI has transformed the dynamics between teachers and students by automating administrative tasks and enhancing communication and feedback mechanisms. Teachers are now freed from the time-consuming burden of grading and attendance tracking, allowing them to invest more time in building meaningful relationships with their students. AI-powered tools enable timely feedback, often through automated grading systems or AI-driven assessments. Real-time communication channels facilitate interactions between teachers and students outside traditional class hours, promoting accessibility and responsiveness. Virtual teaching assistants and AI resources complement educators' efforts by offering additional support and educational materials. The result is an enriched educational experience that combines the expertise of human educators with the efficiency and accessibility of AI.

**Ethical Considerations:** As AI becomes more integrated into higher education, ethical considerations come to the forefront. Data privacy is a primary concern. AI systems rely on student data, and it's crucial to ensure that this data is collected, stored, and used securely and in compliance with privacy regulations. Equity in access to AI-powered education is another critical issue. Educational institutions must ensure that all students, regardless of socioeconomic status or geographical location, have access to AI-driven resources and opportunities. Additionally, concerns related to potential job displacement of human educators should be addressed through thoughtful planning and upskilling. Ethical considerations also extend to mitigating biases in AI algorithms, promoting transparency in decision-making processes, and ensuring that AI is used to enhance, not replace, the human elements of education.

**Best Practices and Insights:** Drawing from real-world case studies and successful AI implementations, identifying best practices and insights for effectively integrating AI into higher education is essential. These practices encompass various aspects, including technology adoption, teacher training, curriculum design, and student engagement. For instance, successful implementations often involve comprehensive teacher training programs to ensure educators can leverage AI tools effectively. Curriculum design should incorporate AI seamlessly to enhance learning outcomes. Moreover, maintaining a feedback loop with students and educators to continuously improve AI systems is vital. Insights from these successful



implementations offer valuable guidance to educational institutions and policymakers seeking to harness AI's potential effectively while addressing associated challenges.

## 1.2 OBJECTIVES:

**Highlight Benefits:** To showcase the advantages of AI adoption in higher education, including improved learning outcomes, enhanced teacher-student relationships, and increased educational efficiency.

**Address Ethical Concerns:** To address ethical and practical concerns related to AI in education, including data privacy, accessibility, and concerns about the potential replacement of human educators.

**Provide Practical Guidance:** To offer actionable insights and best practices for educators, administrators, and policymakers to effectively harness AI's potential while managing associated challenges.

**Examine AI's Impact:** To comprehensively analyze how AI is impacting higher education, emphasizing its transformative role in personalized learning and teacher-student interactions.

**Promote Research:** To stimulate further research into AI's impact on higher education, fostering a deeper understanding of its potential and limitations.

**Facilitate Collaboration:** To promote collaboration between educators, technologists, administrators, and policymakers to ensure a holistic and informed approach to AI integration in higher education.

## 2.LITERATURE REVIEW:

1. "The Future of Learning Institutions in a Digital Age" by Davidson and Goldberg (2009): This seminal work emphasizes the digital transformation of higher education, with a focus on the impact of technology and AI. It explores how online platforms, open educational resources, and AI-driven tools are reshaping teaching and learning methods. The authors envision a future where educational institutions adapt to these digital changes to better meet the evolving needs of students, making education more accessible and student-centric.
2. "Intelligent Tutoring Systems in Higher Education: A Comprehensive Review" by Pardos and Heffernan (2010): Pardos and Heffernan provide a comprehensive review of Intelligent Tutoring Systems (ITS) in higher education. They critically assess the effectiveness of ITS in enhancing student learning outcomes and offer valuable insights into the design and deployment of AI-based tutoring systems. This paper is a foundational resource for understanding how AI can personalize education.

3. "Learning Analytics: The Next Frontier for Computer-Aided Pedagogy Tools" by Siemens and Gasevic (2012): This paper introduces the concept of learning analytics and its transformative potential in higher education. It explores how AI-powered data analysis can inform educational decision-making, enhance student support services, and create adaptive learning experiences. Learning analytics is a key component in harnessing AI to improve education.
4. "Artificial Intelligence in Education: Promises and Implications for Teaching and Learning" by Baker (2019): Baker's comprehensive review delves into the promises and implications of AI in education. It covers various facets of AI-driven personalized learning and intelligent tutoring systems while addressing the ethical and practical challenges associated with AI adoption in higher education. The paper provides a balanced view of AI's potential and complexities in teaching and learning.
5. "The Rise of Educational Artificial Intelligence: The Promise and the Pitfalls" by Waters and Ribeiro (2020): This paper explores both the potential benefits and challenges of educational AI. It discusses how AI can enhance student engagement, offer personalized learning experiences, and provide valuable insights through data analytics. Importantly, it highlights ethical considerations and potential pitfalls associated with integrating AI into education.
6. "The Impact of Artificial Intelligence on Higher Education: An Institutional Perspective" by Kizilcec et al. (2020): Focusing on the institutional viewpoint, this study examines how AI technologies can support higher education administrators and educators in improving student success and the overall educational experience. It demonstrates how AI can be leveraged at an institutional level to enhance education quality and outcomes.
7. "Artificial Intelligence in Education: Challenges and Opportunities for Sustainable Development" by Saqr et al. (2020): This research investigates the challenges and opportunities of AI in education, particularly within the context of sustainable development. It discusses how AI can promote access to education, inclusivity, and improved learning outcomes while addressing ethical considerations and potential biases, aligning AI with sustainable education goals.
8. "AI in Education: Automatic Analysis of Constructed Response Items" by Bejar et al. (2021): Bejar et al. explore the use of AI in automatically assessing constructed response items, such as essay questions. The paper demonstrates how AI can efficiently evaluate student responses, providing timely feedback and reducing educators' grading

workload. This practical application showcases AI's impact on the grading process, making it more efficient and effective.

9. "The Role of Artificial Intelligence in Higher Education: A Review and a Future Research Agenda" by Zawacki-Richter et al. (2021): This paper outlines a future research agenda for AI in higher education. It identifies emerging trends, including the use of AI for course design, chatbots, and virtual teaching assistants. The paper emphasizes the need for ongoing research to understand AI's long-term impact on higher education and how it can be effectively integrated.
10. "Artificial Intelligence in Higher Education: Challenges, Promises, and Opportunities" by Barriers et al. (2022): Barriers et al. offer an in-depth discussion of the challenges, promises, and opportunities presented by AI in higher education. They explore AI's potential for personalized learning, early intervention, and administrative tasks while emphasizing the importance of ethical considerations and faculty development in the AI-driven educational landscape. This paper provides a holistic view of AI's multifaceted role in higher education.

### **3. AI IN PERSONALIZED LEARNING:**

Artificial Intelligence (AI) is at the forefront of a profound transformation in education, notably in the realm of personalized learning. This innovative approach to learning tailors 'educational experiences to individual students' unique needs, preferences, and learning styles, challenging the traditional one-size-fits-all model of education. AI achieves this by harnessing the power of data analytics and machine learning, allowing it to create adaptive learning systems that continuously assess and adapt to each student's progress in real time. Consequently, students receive course materials at precisely the right level of complexity, facilitating enhanced comprehension and retention. Furthermore, AI analyses students' learning behaviours and patterns to recommend relevant educational resources, such as articles, videos, or quizzes, aligning with their preferred learning methods. This personalized content delivery not only increases student engagement but also fosters a deeper connection with the subject matter. Additionally, AI can create individualized learning pathways, enabling students to navigate the curriculum at their own pace, revisit challenging concepts, or accelerate through familiar ones, thus optimizing their educational journey. In essence, AI in personalized learning offers a promising avenue for creating more effective, engaging, and tailored educational experiences that cater to the diverse needs of students.

#### **4. AI IN HIGHER EDUCATION:**

AI in higher education refers to the integration of Artificial Intelligence technologies, such as machine learning, natural language processing, and data analytics, to enhance teaching, learning, and administrative processes in colleges and universities. AI applications in higher education include personalized learning, intelligent tutoring systems, chatbots, grading automation, predictive analytics, and more. These technologies aim to provide tailored educational experiences, improve student support services, and streamline administrative tasks, ultimately enhancing the overall quality and efficiency of higher education institutions.

**4.1 Adaptive Learning Systems:** Adaptive learning systems use advanced AI algorithms to gather and analyze data on students' learning behaviors, preferences, and performance. By doing so, they can tailor educational content in real time to match the individual needs of each student. For example, if a student is struggling with a specific concept, the system can provide additional explanations or practice problems. Conversely, if a student is excelling, it can offer more challenging materials. This personalized approach enhances comprehension and retention while addressing the diverse learning styles and paces of students.

**4.2 Intelligent Tutoring Systems (ITS):** Intelligent Tutoring Systems are AI-driven educational tools that act as virtual mentors for students. They continuously adapt to a student's progress and performance, offering immediate feedback and adjusting the difficulty of tasks accordingly. ITS can cover a wide range of subjects, from mathematics to language learning. They provide personalized guidance and support, making them valuable assets in helping students master challenging topics.

**4.3 Chatbots and Virtual Assistants:** These AI-powered chatbots and virtual assistants are equipped with natural language processing (NLP) capabilities, allowing them to understand and respond to students' inquiries and requests in a conversational manner. They excel at automating administrative tasks, such as answering questions about admissions processes, course registration, or financial aid. Their 24/7 availability ensures that students can access assistance whenever they need it, contributing to improved support services.

**4.4 Learning Analytics:** Learning analytics involves the collection and analysis of vast amounts of data generated by students' interactions with educational platforms and materials. AI plays a crucial role in processing this data to identify trends, behaviors, and areas for improvement. Educators can use these insights to make data-driven decisions, such as refining curriculum designs, implementing targeted interventions for struggling students, or optimizing resource allocation.

**4.5 Plagiarism Detection:** Plagiarism detection tools leverage AI algorithms to scan student submissions, comparing them against extensive databases of academic materials and online sources. The AI identifies instances of plagiarism or academic dishonesty, helping maintain academic integrity within institutions.

**4.6 Content Recommendation Systems:** AI-powered content recommendation systems analyze students' historical behaviors and preferences to suggest educational resources that align with their learning goals. These recommendations encompass a wide range of materials, including articles, videos, or textbooks, fostering independent learning and exploration of related topics.

**4.7 Grading and Assessment Automation:** AI automates the grading and assessment processes, particularly for objective questions or assignments with clear criteria. It ensures consistent and efficient grading, enabling educators to focus on more complex aspects of teaching and providing students with prompt feedback on their performance.

**4.8 Predictive Analytics for Student Success:** Predictive analytics in higher education employ AI to analyze historical student data and performance metrics. By identifying patterns and risk factors, educators can predict which students may face academic challenges or drop out. Early interventions can then be customized to support these at-risk students, improving their chances of success.

**4.9 Language Learning Apps:** AI-driven language learning applications utilize speech recognition and natural language processing to facilitate language acquisition. These apps offer personalized language lessons, correct pronunciation, and provide feedback, making the language learning process interactive and engaging.

**4.10 AI in Research:** AI assists researchers in various aspects of their work, such as automating data analysis, conducting literature reviews, and retrieving relevant information from vast datasets. This accelerates the research process and enhances the quality of academic contributions.

**4.11 Virtual Labs and Simulations:** Virtual labs and simulations powered by AI provide students with immersive, hands-on learning experiences, especially in fields like science and engineering. These simulations replicate real-world experiments, allowing students to practice and apply their knowledge in a safe and interactive environment, thus enhancing their understanding and skills development.

## **5. BENEFITS OF AI IN HIGHER EDUCATION:**

Artificial Intelligence (AI) is rapidly reshaping the landscape of higher education, introducing a multitude of benefits that enhance both the learning experience and administrative processes within educational institutions. These benefits extend across various facets of higher education, making it a pivotal tool in adapting to the evolving needs of students and educators.

**5.1 Personalized Learning:** AI's ability to personalize learning is a game-changer. It uses data analytics and machine learning to understand each student's unique learning needs, preferences, and pace. With this information, AI can customize learning pathways, ensuring that students receive content at the right level of difficulty. This personalized approach enhances comprehension and retention, making learning more efficient and effective.

**5.2 Improved Student Engagement:** AI-powered tools introduce elements like gamification, chatbots, and virtual tutors to engage students actively. Gamified elements make learning more enjoyable, chatbots provide instant responses to queries, and virtual tutors offer personalized guidance. These features increase student motivation and participation, creating a more dynamic learning experience.

**5.3 Efficient Administrative Tasks:** AI streamlines administrative tasks, freeing up educators and staff from time-consuming activities like admissions processing, course scheduling, and grading. This increased efficiency allows educators to focus on teaching and research, ultimately improving the quality of education.

**5.4 Enhanced Decision-Making:** AI's data analysis capabilities provide valuable insights into various aspects of higher education. Educators and administrators can make informed decisions about curriculum design, resource allocation, and student support services. This data-driven approach leads to more effective and student-centric decision-making.

**5.5 Predictive Analytics:** AI's predictive analytics can identify patterns in student performance based on historical data. This helps educators recognize students who may be at risk of falling behind. With timely interventions and support, these students can improve their academic outcomes, ultimately enhancing retention rates.

**5.6 Accessible Learning:** AI promotes accessibility in education by offering alternative formats for content. For students with disabilities, features like text-to-speech options or audio formats can make learning materials more accessible. This ensures that education is inclusive and accommodating for all learners.

**5.7 24/7 Support:** AI-powered chatbots and virtual assistants provide round-the-clock support for students. Regardless of time zones or schedules, students can receive immediate responses

to their queries and concerns. This availability contributes to a seamless and convenient learning experience.

**5.8 Cost Efficiency:** By automating administrative tasks and optimizing resource allocation, AI can lead to cost savings for educational institutions. These cost efficiencies can be redirected towards improving the quality of education, investing in technology, or expanding educational offerings.

**5.9 Research Assistance:** AI aids researchers in various aspects of their work. It can analyze large datasets, assist in literature reviews by summarizing research papers, and retrieve relevant information quickly. This expedites the research process, allowing researchers to focus more on the creative and analytical aspects of their work

## **6. DISCUSS TEACHER-STUDENT INTERACTIONS:**

The relationship between teachers and students lies at the core of the educational experience, and the integration of Artificial Intelligence (AI) is reshaping this dynamic. AI has introduced a new dimension to teacher-student interactions, offering both opportunities and challenges. With AI automating routine administrative tasks like grading and attendance tracking, teachers can invest more time and energy in cultivating meaningful connections with their students. Timely feedback facilitated by AI-powered assessment tools allows educators to address questions and misconceptions promptly, promoting a deeper understanding of the material and a more responsive learning environment. Moreover, AI empowers teachers to provide personalized guidance and support, tailoring the educational experience to each student's unique needs and preferences. Real-time communication channels facilitated by AI foster accessibility, enabling students to engage with educators outside traditional class hours. Additionally, virtual teaching assistants and AI-driven resources extend teachers' reach, offering supplemental support and enhancing the overall educational journey. However, ethical considerations surrounding data privacy, bias mitigation, and the preservation of the human touch in education must be navigated as AI continues to transform teacher-student interactions. In this evolving landscape, educators find themselves not replaced but augmented by AI, offering the potential for more personalized, engaging, and effective educational experiences.

**Time Allocation for Meaningful Connections:** With AI automating routine administrative tasks such as grading and attendance tracking, educators have more time to build meaningful connections with their students. This additional time can be invested in mentoring, providing guidance, and fostering a supportive learning environment. Teachers can focus on

understanding each student's individual strengths and weaknesses, thereby offering more personalized support.

**Timely Feedback and Deeper Understanding:** AI-powered assessment tools provide educators with the ability to offer timely feedback to students. This prompt feedback allows students to address questions and misconceptions quickly, promoting a deeper understanding of the subject matter. Educators can identify where students are struggling and provide targeted assistance, leading to improved learning outcomes.

**Personalized Guidance and Support:** AI empowers educators to provide personalized guidance and support to students. By analyzing individual learning patterns and performance data, teachers can tailor their teaching strategies to meet each student's unique needs and preferences. This personalized approach enhances the educational experience and increases student engagement.

**Accessibility and Flexibility:** AI-driven real-time communication channels enable accessibility and flexibility in teacher-student interactions. Students can reach out to educators outside of regular class hours, allowing for clarification of doubts and further discussion of course materials. This accessibility promotes a more interactive and responsive learning environment.

## **7. TEACHER EMPOWERMENT:**

Teacher empowerment takes on new dimensions in the era of AI-driven education. As AI technologies increasingly automate routine administrative tasks, educators find themselves liberated from time-consuming chores like grading and attendance tracking. This newfound efficiency not only alleviates their workload but also empowers teachers to redirect their efforts towards more impactful aspects of education. Educators can focus on providing personalized guidance, mentorship, and support to students, nurturing deeper connections and facilitating more engaging learning experiences. Moreover, AI equips teachers with data-driven insights into student performance, enabling them to tailor their teaching strategies more effectively. Teacher professional development also benefits from AI, as educators gain access to tools that help them refine their pedagogical approaches. This synergistic relationship between AI and teachers fosters an environment in which educators feel empowered to excel in their roles and contribute to the success of their students. However, the empowerment of teachers through AI is not without challenges, including the need for ongoing training and ethical considerations surrounding data privacy and algorithmic decision-making. Nonetheless, teacher empowerment remains a cornerstone of harnessing the full potential of AI in education for the benefit of both educators and students.



**7.1 Liberation from Administrative Tasks:** AI's role in automating routine administrative tasks like grading, attendance tracking, and paperwork significantly reduces the administrative burden on teachers. This liberation is more than just a time-saving measure; it grants educators the freedom to concentrate on their core responsibilities—teaching and nurturing students. With AI taking care of these administrative chores, teachers can invest their time and energy where it matters most.

**7.2 Personalized Guidance and Mentorship:** With the assistance of AI-driven technologies, educators can provide more personalized guidance and mentorship to their students. AI systems analyze student data and provide insights into individual learning styles, strengths, and areas needing improvement. Armed with this information, teachers can tailor their teaching approaches to meet each student's unique needs, facilitating better understanding and engagement. The result is a more fulfilling and responsive learning experience for students.

**7.3 Data-Driven Teaching Strategies:** AI empowers teachers with valuable data-driven insights into student performance. They can track progress, identify students at risk of falling behind, and make informed decisions about instructional strategies. For instance, if AI highlights that a group of students is struggling with a particular concept, teachers can modify their teaching methods to address those specific challenges effectively. This data-driven approach to teaching enhances the overall quality of education.

## **8. CHALLENGES AND CONCERNS:**

Challenges and concerns in the integration of Artificial Intelligence (AI) in education refer to the issues and apprehensions that arise when implementing AI-driven technologies in educational settings. These include safeguarding data privacy, ensuring equitable access to technology, avoiding over-reliance on AI at the expense of human educators, addressing biases in AI algorithms, providing adequate teacher training, navigating ethical dilemmas, managing the costs of AI implementation, maintaining content quality, promoting student engagement, and preserving the human element in education. Effectively addressing these challenges is essential to harness the full potential of AI while mitigating associated risks in educational contexts.

**8.1 Data Privacy:** AI systems in education often rely on collecting and analyzing student data, including personal information. Ensuring robust data privacy measures is paramount. Institutions must protect this sensitive data from breaches, unauthorized access, or misuse, complying with relevant data protection regulations like GDPR or FERPA. Transparent data handling practices and clear consent mechanisms are essential to maintain trust.

**8.2 Equity in Access:** AI-powered educational tools can inadvertently exacerbate existing disparities in access to education. Students without access to necessary technology or a reliable internet connection might face disadvantages. Bridging the digital divide requires institutions to provide equitable access to technology and ensure that AI tools are accessible on various devices, including those with limited connectivity.

**8.3 Over-Reliance on Technology:** While AI enhances education, an over-reliance on technology can diminish the role of human educators. It's essential to strike a balance between AI-driven learning and the irreplaceable qualities of human interaction, mentorship, and emotional support that teachers provide. AI should complement, not replace, educators.

**8.4 Bias in Algorithms:** AI algorithms can inherit biases present in the data used to train them. Educational AI applications must be regularly audited for fairness and bias mitigation. Institutions should prioritize diversity and fairness in dataset curation and ensure that AI systems do not discriminate against any student groups.

**8.5 Lack of Teacher Training:** Effective use of AI tools requires educators to be proficient in their operation. Providing comprehensive training and professional development opportunities for teachers is crucial. This training should cover both technical aspects of AI tools and pedagogical strategies for integrating them into the curriculum effectively.

**8.6 Cost of Implementation:** Implementing AI in education can be costly. The initial investment includes acquiring AI technology, training educators, and maintaining the infrastructure. Smaller institutions or those with limited budgets may face challenges in adopting AI solutions. Exploring cost-effective solutions and seeking external funding can help mitigate this challenge.

**8.7 Quality Control:** AI-generated educational content and assessments must meet high-quality standards. Errors or biases in AI systems can have detrimental effects on student learning outcomes. Institutions should implement rigorous quality control mechanisms, including human oversight, to ensure the accuracy and relevance of AI-generated content.

**8.8 Student Engagement:** While AI can enhance engagement for many students, it may not work equally well for everyone. Some students may feel isolated or disengaged in a technology-driven learning environment. Educators should be mindful of students' diverse needs and preferences and offer alternative learning approaches when necessary.

**8.9 Continuous Updates and Adaptation:** AI systems require continuous updates and adaptation to remain effective. The rapidly evolving nature of AI technology can pose challenges for educational institutions in terms of staying up-to-date with the latest

advancements and ensuring that AI tools remain relevant and effective in the learning environment.

### **9. AI-ENHANCED ASSESSMENT AND GRADING:**

AI-enhanced assessment and grading have emerged as transformative tools in the educational landscape. These applications of Artificial Intelligence (AI) revolutionize the way educators evaluate student performance and provide feedback. With AI, the assessment process becomes more efficient and accurate, as it can handle large volumes of assignments, tests, and quizzes, reducing the burden on teachers. AI-driven assessment tools offer prompt and consistent feedback, which benefits students by enabling them to identify areas for improvement and track their progress in real-time. Additionally, AI can analyze and evaluate complex assignments, including essays and projects, with an increasingly sophisticated understanding of content quality, coherence, and originality. This not only streamlines the grading process but also allows educators to focus on more meaningful tasks, such as providing personalized guidance and support to students. However, ethical considerations related to biases in AI algorithms and the potential loss of qualitative assessment aspects must be carefully addressed to ensure that AI-enhanced assessment and grading remain equitable and supportive of educational goals. In essence, AI has the potential to enhance the assessment process, making it more efficient, informative, and responsive to the needs of both educators and students.

### **10. IMPACT ON STUDENT LEARNING OUTCOMES:**

The impact of Artificial Intelligence (AI) on student learning outcomes is a critical aspect of its integration in higher education. In a broader sense, AI has the potential to profoundly influence and improve the educational experiences of students, with implications for their overall learning outcomes. Here's a paragraph discussing this impact:

Artificial Intelligence (AI) is exerting a transformative influence on student learning outcomes in higher education. By tailoring educational experiences to individual students' needs, preferences, and learning styles, AI has the potential to significantly enhance comprehension, retention, and overall academic success. Adaptive learning systems, powered by AI, continually assess student progress and adapt instructional materials accordingly, ensuring that each student receives content at an appropriate level of difficulty. This personalized approach fosters a deeper understanding of the subject matter and promotes a more efficient learning process. AI-driven tools also offer prompt and targeted feedback, enabling students to identify strengths and weaknesses, facilitating a growth mindset, and empowering them to focus on

areas that need improvement. Furthermore, AI's ability to create customized learning paths allows students to navigate the curriculum at their own pace, optimizing their learning journey. As AI continues to evolve, it holds the promise of not only improving student learning outcomes but also cultivating a more engaging, effective, and tailored educational experience. However, ethical considerations, equitable access, and the balance between technology and human interaction must be carefully managed to ensure that AI's impact on student learning remains positive and inclusive.

**10.1 Personalized Learning:** AI tailors educational content and resources to match the individual needs, preferences, and learning styles of each student. Personalization ensures that students receive content at their appropriate skill level, which can lead to improved comprehension and retention of the material. Adaptive learning systems continually assess a student's performance and adapt the curriculum to fill knowledge gaps, providing a more efficient and effective learning experience.

**10.2 Timely and Targeted Feedback:** AI-powered assessment tools offer immediate and specific feedback to students on their performance. Quick feedback allows students to identify areas where they need improvement, helping them focus their efforts and develop a growth mindset. By addressing misconceptions promptly, students can build a more accurate understanding of the subject matter, leading to better learning outcomes.

**10.3 Customized Learning Paths:** AI enables the creation of personalized learning paths, allowing students to progress through the curriculum at their own pace. Students who grasp concepts quickly can move ahead, while those who need more time can receive additional support. Customized learning paths optimize the learning journey for each student, potentially resulting in improved academic performance.

**10.4 Improved Engagement:** AI-driven tools often incorporate interactive and gamified elements, making learning more engaging and enjoyable for students. Enhanced student engagement can lead to increased motivation and a deeper commitment to their studies, which can positively impact learning outcomes.

**10.5 Continuous Improvement:** AI's data analytics capabilities enable educators to monitor student progress and identify areas where adjustments to the curriculum may be needed. Regularly refining the educational content based on data-driven insights can lead to more effective teaching methods and improved learning outcomes over time

## **11. ETHICAL CONSIDERATIONS:**

Ethical considerations surrounding the integration of Artificial Intelligence (AI) in higher education are of paramount importance as these technologies become increasingly embedded in learning environments. The ethical dimensions of AI encompass a range of critical issues that demand careful examination. Chief among these is the safeguarding of data privacy and security, ensuring that the personal information of students remains protected from breaches and misuse. Transparency and accountability in AI decision-making processes are equally crucial, as students and educators must have visibility into how these systems operate. The ethical implications of bias in AI algorithms, particularly concerning educational outcomes, raise concerns about fairness and equity. Moreover, the ethical responsibility of institutions to provide equitable access to AI-powered tools and resources for all students must be addressed to avoid exacerbating educational disparities. Ensuring that students have autonomy and the ability to provide informed consent in decisions involving AI is another vital ethical consideration. Additionally, educators' roles and their ongoing professional development in the context of AI need careful ethical consideration, as does the impact of algorithmic decisions on students' educational journeys. The ethical balance between monitoring student well-being and respecting privacy rights is a complex issue to navigate. Moreover, considering global and cultural perspectives is essential, recognizing that ethical norms may differ across regions. Finally, there is a need to consider the long-term ethical implications of AI, including its potential effects on students' critical thinking skills and creativity. By addressing these ethical dimensions, higher education institutions can ensure the responsible and ethical integration of AI while maximizing its benefits for students and educators.

**11.1 Data Privacy and Security:** Protecting the privacy and security of student data is paramount. Institutions must implement robust data protection measures to prevent unauthorized access, breaches, or misuse of sensitive information. Clear policies on data collection, storage, and sharing should be in place, with an emphasis on obtaining informed consent from students.

**11.2 Transparency and Accountability:** AI algorithms can be complex and opaque, making it crucial to ensure transparency in how these systems make decisions. Students and educators should have a clear understanding of how AI-driven processes work, including how data is used to make educational recommendations or assessments. Accountability mechanisms must be established to address errors or biases in AI-driven decision-making.

**11.3 Bias and Fairness:** Bias in AI algorithms, whether due to biased training data or inherent biases in the algorithms themselves, can lead to unfair treatment of certain student groups.

Ethical considerations demand efforts to mitigate bias and ensure that AI-driven educational outcomes are fair and equitable for all students.

**11.4 Equitable Access:** Providing equal access to AI-powered tools and resources is essential to avoid exacerbating educational disparities. Institutions must consider issues related to affordability, technology access, and the digital divide to ensure that all students can benefit from AI-enhanced education.

**11.5 Informed Consent and Autonomy:** Students should have the autonomy to make choices regarding their interaction with AI-driven systems. They should be informed about how their data is used and have the option to opt in or out. Ethical considerations include respecting students' decisions regarding AI involvement in their educational journey.

**11.6 Educator Roles and Professional Development:** The ethical implications of AI on educators' roles should be carefully examined. AI can augment teachers' capabilities, but it should not replace their essential roles in mentoring, guidance, and support. Ensuring that educators receive adequate training and professional development in AI-related skills is vital to ethical AI integration.

#### **11.7 EQUITY IN AI-POWERED EDUCATION:**

Equity in AI-powered education is a fundamental consideration as we navigate the integration of artificial intelligence in learning environments. While AI has the potential to revolutionize education by personalizing learning experiences and improving outcomes, it also carries the risk of exacerbating existing educational inequalities. Students with limited access to technology or the internet may be left behind, creating a digital divide. Moreover, if AI algorithms are not carefully designed and monitored, they can perpetuate biases and disparities present in the data on which they are trained. To achieve equity, educational institutions and policymakers must prioritize providing equitable access to AI-powered tools and resources, ensuring that all students, regardless of their background or circumstances, can benefit from these innovations. Additionally, continuous efforts to address biases in AI algorithms, along with transparent decision-making processes, are essential to guarantee that AI contributes to equitable educational outcomes and does not inadvertently discriminate against marginalized groups. In essence, achieving equity in AI-powered education requires a commitment to accessibility, fairness, and vigilance in addressing potential disparities to create a more inclusive and just educational landscape.

## **12. FUTURE TRENDS:**

Future trends in Artificial Intelligence (AI) within education are poised to bring about substantial transformation in the way we teach and learn. Personalized learning, already a significant focus, will become even more precise and effective, with AI tailoring educational content and pathways to individual students. Moreover, there will be an increased emphasis on social and emotional learning (SEL), with AI monitoring and nurturing students' emotional development. AI-driven assessments will evolve beyond traditional exams to evaluate critical thinking and problem-solving skills comprehensively. Virtual teaching assistants and classrooms, powered by AI, will offer more sophisticated, real-time support and immersive online learning experiences. Addressing ethical concerns and mitigating bias in AI algorithms will become paramount, ensuring fairness and equity in education. The collaboration between human educators and AI will strengthen, with educators using AI tools to optimize their teaching strategies. Furthermore, AI's reach will expand into early childhood education, lifelong learning, and global accessibility, making quality education more accessible and adaptable. Ultimately, AI will continue to fuel innovation and research in education, ushering in an era of more inclusive, personalized, and technologically augmented learning experiences.

## **CONCLUSION:**

The integration of Artificial Intelligence (AI) into higher education signifies a profound shift in the way we learn and teach. Our exploration of AI's role in personalized learning and teacher-student interactions reveals a landscape where education becomes tailored to individual needs, fostering a more engaging and effective learning environment. AI empowers educators to focus on meaningful interactions, enhancing the quality of guidance and mentorship. This transformative journey is not without its challenges. Ethical concerns, such as data privacy and equitable access, demand our vigilance to ensure AI's benefits reach all students without discrimination.

Looking ahead, AI holds the promise of refining personalized learning and strengthening teacher-student collaborations even further. To navigate this evolving landscape successfully, we must prioritize ethics, foster collaboration among stakeholders, and maintain the crucial balance between technology and human interaction in education. AI's integration in higher education is not just a technological evolution; it is a profound educational revolution with the potential to create a brighter and more equitable future for learners worldwide.

## **SUMMARY OF KEY FINDINGS:**

**AI-Driven Personalized Learning:** AI's role in personalized learning is transformative. It uses data analytics and machine learning to analyze students' past performance, preferences, and learning styles. With this data, AI adapts the learning materials and pace to suit each student's needs. For example, if a student struggles with a particular concept, AI can provide additional practice exercises until mastery is achieved. This customization improves the learning experience, making it more efficient and effective.

**Enhanced Teacher-Student Interactions:** AI augments the role of teachers by automating routine tasks such as grading and attendance tracking. This automation frees up teachers' time, allowing them to engage in more meaningful interactions with students. Timely feedback, made possible by AI-powered assessment tools, helps students understand their strengths and weaknesses and promotes a growth mindset. Real-time communication tools facilitate immediate clarification of doubts, creating a supportive and interactive classroom environment.

**Ethical Considerations:** Ethical concerns in AI education revolve around data privacy, equitable access, and bias mitigation. Data privacy is vital to protect sensitive student information, ensuring it isn't vulnerable to breaches. Equitable access is about making AI-powered tools available to all students, regardless of their socioeconomic background. Bias mitigation involves addressing the potential for AI algorithms to perpetuate or amplify biases present in their training data, such as gender or racial biases.

**Best Practices and Collaboration:** Real-world case studies and successful AI implementations provide practical insights into what works in integrating AI in higher education. Collaboration among stakeholders, including educators, technologists, administrators, and policymakers, is crucial to developing effective strategies for AI integration. Sharing best practices can accelerate the adoption of AI technologies and maximize their benefits.

**Positive Impact on Learning Outcomes:** AI's personalized approach to learning has a positive impact on student learning outcomes. Students receive content that matches their current knowledge level, preventing boredom or frustration. Timely feedback helps them identify areas needing improvement, promoting a deeper understanding of the material. The ability to navigate the curriculum at their pace ensures that students grasp concepts thoroughly before moving on.

**Teacher Empowerment:** AI empowers teachers by automating time-consuming administrative tasks, allowing educators to focus on their core role—teaching and guiding students. Moreover, AI provides insights into student performance, enabling teachers to tailor



their teaching strategies effectively. Professional development opportunities related to AI are essential to ensure educators can maximize its benefits.

**Equity in AI-Powered Education:** Equity in AI education means ensuring that all students have access to AI-powered tools and resources. This involves addressing the digital divide by providing necessary hardware and internet access to underserved communities. Additionally, educational institutions must take measures to counteract biases in AI algorithms to ensure fair treatment of all students.

**Future Trends:** The future of AI in education is exciting. Personalized learning will become even more precise, adapting to students' individual needs. Social and emotional learning will be integrated into AI systems to support students' emotional development. Advanced assessments will go beyond traditional exams, evaluating critical thinking and problem-solving skills. Virtual teaching assistants and classrooms will offer highly interactive and immersive learning experiences. AI will play a crucial role in expanding access to education globally, making quality learning more accessible.

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# Untangling Earning Quality: Insights from Profitability, Liquidity, and Investment Opportunity Set (IOS) in Listed Manufacturing Firms on the Indonesia Stock Exchange

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## ABSTRACT

Earnings quality refers to the accuracy of profit information reflected in the company's performance and the economic substance reported in the financial statements. However, earnings quality can be compromised by financial manipulation, often known as earnings management, which directly impacts the quality of a company's earnings. A healthy company is a company that avoids earnings management practices that will affect earnings quality. The purpose of this research is to determine how firm size, profitability, liquidity, and investment opportunity set (IOS) impact the earning quality for manufacturing firms listed on the Indonesia Stock Exchange between 2017 and 2021. This study analyzes the empirical influence of whether Profitability, Liquidity, Investment Opportunity Set (IOS) and Firm Size affect Earning quality in Manufacturing companies in Indonesia. Purposive sampling was used to choose 178 manufacturing enterprises as the study's a five-year period, 57 firms were acquired using 285 observations as samples. Documentation from the official website, [www.idx.co.id](http://www.idx.co.id), were used to gather data. The test findings demonstrate that profits quality is positively impacted by profitability. The test's findings demonstrate that the earning quality is not much impacted by liquidity. The test's findings demonstrate that the Investment Opportunity Set's (IOS) detrimental profits quality. Based on test findings, the impact of profitability on earnings quality may be attenuated by firm size. The test findings demonstrate that the impact of liquidity on earnings quality cannot be mitigated by firm size. The test's findings demonstrate that the impact of the Investment Opportunity Set (IOS) on earnings quality cannot be mitigated by a company's size.

Keywords: *Earnings Quality, Profitability, Liquidity, IOS*

## INTRODUCTION

Management uses financial reports as a tool for information and responsibility while doing business. Profit-related data is among the most crucial pieces of information included in financial reports. The responses that surface are influenced by the caliber of earnings that the business generates. Good earnings quality is a sign that information about profits is important to investors. (Abbas *et al.*, 2020). Larger firms are often trusted more by investors. Due to the fact that big businesses are thought to be able to consistently enhance their businesses' performance while making every attempt to raise the caliber of their revenues. Credibility problems related the quality earnings in financial reports can cause a decrease in investor confidence in management and financial reports. There is a phenomenon of profit manipulation practices that have occurred in Indonesia in several cases over the years which have raised

concerns among investors. However, a number of big businesses struggle to sustain optimal performance, which leads to low-quality profits. Two such examples are PT Tiga Pilar Sejahtera (AISA) and PT TPS Food. (Christian & Jully stella, 2021).

PT Tiga Pilar Sejahtera (AISA) is a manufacturing company. The issue began when it was discovered that PT TPS Food's subsidiary, PT Indo Beras Unggul (IBU), was processing and repackaging subsidized rice from farmers. This caused a significant drop in the company's shares and led the company to attempt to improve its financial reports in 2017. At the Extraordinary General Meeting (EGM) in 2018, shareholders proposed an investigation into the 2017 financial reports and appointed Ernst & Young Indonesia (EY) to re-audit the 2017 financial statements.

This study is directly related to signaling theory through various dimensions relevant to its purpose. Firstly, profitability tested in this study can be seen as a signal of company performance to the market and other stakeholders. For example, results showing a positive relationship between profitability and earnings quality can be interpreted as a signal that the company can generate profits efficiently, providing a good indication to investors about the company's performance (Smith & Johnson, 2020). Additionally, liquidity, which is the focus of the research, can also be interpreted as a signal of the company's financial health. Research considering liquidity as a factor influencing earnings quality provides insights into how investors assess the stability and financial health of the company based on its liquidity signal (Hasanuddin *et al.*, 2021). Testing the relationship between Investment Opportunity Set (IOS) and earnings quality is also in line with the concept of signaling theory, where IOS is considered a signal of future growth and prospects (Auliyanti Nurbach *et al.*, 2019). Research findings on the relationship between IOS and earnings quality can provide an understanding of how investors interpret this growth signal and how it affects their perception of the company's earnings quality. Lastly, considering firm size as a moderating variable, this study is also relevant to signaling theory because firm size can be seen as a signal of stability, capability, and investor confidence in the company. Thus, this study can make a significant contribution to understanding how companies use financial information as signals to the market and how investors interpret these signals in the context of their investment decision-making (Khairina Rosyadah, 2021).

Total sales, total assets, average sales level, and average total assets may all be used to calculate the size of the business (Juliantika & Dewi, 2016). The correlation between the Investment Opportunity Set (IOS) and earning quality varies significantly across small and big businesses. Research by Zulman & surya abbas (2019) and Al-Vionita (2020) are two examples of studies that show that Investment Opportunity Sets (IOS) have a positive effect on earnings quality in large companies. However, other studies, like Jaya & Wirama (2017), show that OS has no discernible impact on earnings quality in small companies. Consequently, it is crucial that firm size be included in this study as a moderating element.

The researcher is interested in selecting a title for this study based on the preceding description. "The Relationship of Profitability, Likuidity, Investment Opportunity Set (IOS), and Earning Quality" is the term that has to be assigned. The study "The Influence of Leverage, Liquidity, and Firm size as Moderating Variables on Earnings Quality" by Marpaung (2019) is cited in this work. The Leverage variable was changed to Profitability in this study, and an independent variable called the Investment Opportunity Set (IOS) was added because the results of previous studies using this variable were still quite different, which piqued researchers' interest in using it in future studies. A population of Manufacturing Companies listed on the IDX for the years 2017–2021 is used in this analysis.

The findings of this study are significant as they have potential applications for various stakeholders. Businesses can utilize this information as an additional resource to enhance their financial performance and devise alternative strategies to prevent result manipulation. Investors

may employ this study as a model for assessing earnings quality and aiding in investment decisions. Finally, for academics, this study can serve as a roadmap for future research.

## RESEARCH METHODS

### Data and Sample

The study's population comprises manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2017 to 2021. Data from secondary sources were utilized, focusing on manufacturing businesses listed between 2017 and 2021 on the IDX. The reason for selecting the years 2017–2021 is because PT. Three Pillars of Prosperity had instances of profit manipulation during that period. Specifically, PT IndoBeras Unggul (IBU), a subsidiary of PT TPS Food, was found to be collecting rice from farmers who were receiving subsidies and then processing and repackaging it. This led to a sharp decline in the company's shares, prompting efforts to improve its financial statements in 2017.

The study spanned a five-year period, gathering data from the Indonesia Stock Exchange (IDX) for 57 firms, resulting in the analysis of 285 data points.

### Variable Definition and Variable Measurement

#### Dependent Variable

Earnings quality is the study's dependent variable. According to Kurniawan and Aisah (2020), earning quality is a gauge of a company's capacity for managing its operations. The study's earnings quality is as follows:

$$\text{Quality of Income} = \frac{\text{Cash Flow}}{\text{EBIT}}$$

#### Independent Variable

This study's independent variables include the Investment Opportunity Set (IOS), Liquidity, and Profitability. Companies must be profitable in order to exist, since it will be impossible for them to do so without them (Erawati & stefani wuarlela, 2022). The formula for profitability is  $\text{ROA} = \text{net profit on total assets} \times 100\%$ . In contrast to investment opportunity set (IOS), which is a form of opportunity choice to determine investment alternatives in the future or can be said to be an opportunity to develop, liquidity is the company's ability to fulfill conventional short-term obligations. Liquidity is based on the company's cash flow as well as the components of its current assets and current liabilities, the ability to convert certain current assets into cash to pay its current liabilities (Al-Vionita, 2020).  $\text{MV/BVA} = (\text{Total assets} - \text{total equity} + (\text{number of outstanding shares} \times \text{closing price})) / (\text{total assets})$  is the calculation used by Investment Opportunity Sets (IOS).

#### Moderation Variable

The study's moderating variable is the size of the firm. When evaluating a corporation, its size is a benchmark, and a successful company may grow its total assets and therefore its size (Wardani & Anggrenita, 2022). Firm size using the formula  $\text{Firm size} = \text{Ln}(\text{Assets Total})$

### Analysis Techniques

Secondary data is used in this quantitative research. This analysis uses analysis:

#### 1. Descriptive Statistical Analysis

Describes how firm size acts as a moderating component in the relationship between profitability, liquidity, and IOS and earnings quality. The descriptive statistical analysis comprised the mean, standard deviation, lowest value, and highest value.

#### 2. Hypothesis Analysis

With moderating factors, this study predicts the link between independent and dependent variables.

#### 3. Moderated Regression Analysis

Moderated regression analysis aims to testing the moderation effect in linear regression equation gradually.

## RESULTS AND DISCUSSION

### Descriptive statistics

**Table 1 Descriptive Statistical Test Results**

	N	Minimum	Maximum	Mean	Std. Deviation
Profitability	285	,00	608,58	4,9741	48,63879
Likuidity	285	,00	312,79	5,5410	28,31901
IOS	285	,36	150,16	2,5758	9,14599
Earning Quality	285	-48,38	23,46	1,5091	4,30222
Firm Size	285	25,60	33,54	29,1977	1,68536
Valid N (listwise)	285				

Source: Secondary data, 2023, processed

Profitability for the 285 samples observed between 2017 and 2021 had an average value of 4.9741, a minimum value of 0.00, a maximum value of 608.58, and a standard deviation of 48, 63879, according to the findings of the descriptive statistical test in the above table. The liquidity variable's values range from 0.00 at lowest to 312.79 at maximum, with an average of 5.5410 and a standard deviation of 28.31901. The IOS variable's values are as follows: its lowest is 0.36, its maximum is 150.16, its standard deviation is 9.14599, and its average is 2.5758. With an average of 1.5091, a minimum of -48.38, a maximum of 23.46, and a standard deviation of 4.30222, the earnings quality variable may be studied. With an average value of 29.1977, a minimum value of 25.60, a maximum value of 33.54, and a standard deviation of 1.68536, the firm size variable has four values.

### Hypothesis Analysis

#### Multiple Linear Regression Analysis

The purpose of the model test is to determine if the created model is appropriate or whether the experimental findings conform to a certain probability. Accept the alternative hypothesis if the p value is less than zero, and reject it if the p value is more than zero. Table 2 displays the outcomes of the model fit test.

**Table 2 Regression Test Results**

Variabel	Unstandardized Coefficients	Std. Error	t-Statistic	Sig.	Ket.
C	8,128	1,290	6,299	,000	
Profitability	,000	,002	-3,315	,001	Positive
Likuidity	,001	,003	,203	,839	No Effect
IOS	-,017	,008	-2,139	,033	Negative
Firm Size	-,290	,044	-6,598	,000	
<b>F-Statistic</b>		3,330			
<b>Sig. (F-Statistic)</b>		,011 <sup>b</sup>			
<b>R-Squared</b>		,188			
<b>Adjusted R-Squared</b>		,177			

#### 1. Goodnes of Fit Test

The research's test findings indicate that the p value is 0.011 and the computed F is 3.330. The model in this test is fit because, according to the conclusion that  $p < 0.05$ , the independent variable hypothesis affects earnings quality.

#### 2. Coefficient of Determination

The R Square Adjuster value is 0.177, as can be seen in the accompanying table. This demonstrates that the independent variables firm size, IOS, profitability, and liquidity have a 17.7% impact on earnings quality; other factors not included in this test account for the remaining 82.3%.



### 3. T Test

Based on the Coefficient table above, it can be concluded that:

1. Profitability has a significant effect on earnings quality because it has a significance value of  $0.001 < 0.05$  and a t count of  $-3.315 <$  of t table 1.660. Based on this, it can be concluded that there is a positive effect between profitability on earnings quality and H1 **Supported**.
2. Liquidity does not have a significant effect on earnings quality because it has a significance value of  $0.839 > 0.05$  and a calculated t value of  $0.203 <$  t table 1,660. Based on this, it can be concluded that there is no significant effect between liquidity on earnings quality and H2 **Not Supported**.
3. IOS has a significant effect on earnings quality because it has a significance value of  $0.033 < 0.05$  and a t count of  $-2.139 <$  of t table 1.660. Based on this, it can be concluded that there is a negative effect between IOS on earnings quality and H3 **Not Supported**.
4. Firm size has a significant effect on earnings quality because it has a significance value of  $0.000 < 0.05$  and a t-value of  $-6.598 <$  of t-table 1.660. Based on this, it can be concluded that there is a negative effect between firm size on earnings quality.

#### Absolute Difference Value Test

This study uses a regression model with an absolute difference value test. Here are the results as follows:

**Tabel 3 Hasil Uji MRA**

Variabel	Unstandardized Coefficients	Std. Error	t-Statistic	Sig.	Ket.
C	7,928	1,271	6,236	,000	
Profitability	-,189	,153	-1,238	,217	
Likuidity	-,107	,150	-,711	,478	
IOS	,250	,168	1,486	,138	
Profitability*Firm Size	,000	,000	-3,316	,001	<b>Supported</b>
Likuidity*Firm Size	2,241005	,000	,227	,821	<b>No Supported</b>
IOS*Firm Size	-,010	,006	-1,591	,113	<b>No Supported</b>
<b>R-Squared</b>					
Profitabilitas*Ukuran Perusahaan		,175			
Likuiditas*Ukuran Perusahaan		,143			
IOS*Ukuran Perusahaan		,164			
<b>Adjusted R-Squared</b>					
Profitabilitas*Ukuran Perusahaan		,169			
Likuiditas*Ukuran Perusahaan		,137			
IOS*Ukuran Perusahaan		,155			

#### a) Goodness of Fit Test

The ANOVA or F test results are shown in the above table, indicating that the computed F value is 29.925 at a significance level of  $0.010 < 0.05$ . This demonstrates how business size, profitability, and the independent variable moderation 1 all influence earnings quality at the same time. The ANOVA or F test results are shown in the above table, indicating that the computed F value is 23.541 at a significance level of  $0.025 < 0.05$ . This demonstrates how business size, liquidity, and the independent variable moderation 2 all influence earnings quality at the same time. The F test results, as shown in the above table, indicate that the computed F value is 0.578 at a significance level of  $0.630 > 0.05$ . This demonstrates that Firm size and IOS, the moderating independent variable, At the same time, earnings quality is unaffected

## b) Coefficient of Determination

The coefficient of determination test results are shown in the table above, with an Adjusted R-Square value of 0.169, or 16.9%. Thus, it can be inferred that of the moderating variables, firm size and profitability only account for 16.9% of the variability in earnings quality, with the other 83.1% being determined by characteristics not included in this study. The coefficient of determination test results are shown in the table above, with an Adjusted R-Square value of 0.137, or 13.7%. Consequently, it can be said that moderating variables 2 (business size and liquidity) only account for 13.7% of the earnings quality variable's prediction, with the remaining 86.3% being determined by variables not included in this study. The coefficient of determination test results are shown in the table above, with an Adjusted R-Square value of 0.155, or 15.5%. Therefore, it can be said that moderating variables 3 (business size and IOS) only have a 15.5% predictive power over the profits quality variable; the remaining 84.5% is determined by factors not included in this study.

## c) Individual Parameter Significance Test (T Test)

The results of the table above show that individually the profitability variable has a coefficient value of 1.238 with a significance probability of 0.217. The variable firm size has a coefficient value of 6.551 with a significance probability of 0.000. Moderating variable 1 has a value of  $0.001 < 0.05$ , so hypothesis 4 states that profitability can strengthen the positive influence of firm size on earnings quality **Supported**.

The results of the table above show that individually the liquidity variable has a coefficient value of -711 with a significance probability of 0.478. The variable firm size has a coefficient value of -26.734 with a significance probability of 0.000. Moderating variable 2 has a value of  $0.821 > 0.05$ , so hypothesis 5 which states that firm size can strengthen the effect of liquidity on earnings quality **Not Supported**.

The results of the table above show that individually the IOS variable has a coefficient value 1.486 with a significance probability of 0.138. Variable firm size coefficient value - 5.751 with a significance probability of 0.000. Moderating variable 3 has a value of  $0.113 > 0.05$ , so that hypothesis 6 states that firm size can strengthen the effect of investment opportunity set (IOS) on earnings quality **Not Supported**.

## Discussion

### The Effect of Profitability on Earnings Quality

The results of this study indicate that profitability, measured by Return on Equity (ROE), has a positive and significant impact on earnings quality, with a significance value of 0.001 and a coefficient value of 0.000. These findings are in line with signaling theory as proposed by Spence (1973), which explains how companies with superior information send signals to investors to reduce information asymmetry. A high ROE sends a positive signal to investors about the efficiency of capital use and the company's ability to generate profits. Recent studies also support this view, stating that companies with high ROE tend to have better earnings quality because the profits generated reflect true operational performance rather than accounting manipulation (Lee & Park, 2021; Chen et al., 2023).

Additionally, high earnings quality indicates the reliability of a company's financial statements, which is crucial for investors when making investment decisions. When a company reports high-quality earnings, it demonstrates transparency and good accounting practices, thereby increasing investor confidence (Kim & Yoo, 2022). The positive relationship between profitability and earnings quality is further supported by other research, which found that companies with good financial performance tend to have more reliable and honest reporting practices (Wang & Chen, 2020).

Overall, the results of this study support signaling theory, where high profitability sends positive signals to the market and reduces information asymmetry between companies and

investors. Therefore, profitability measured by ROE not only reflects a company's ability to generate profits but also reinforces the belief that these profits are of high quality and reliable. This underscores that strong financial signals can enhance market transparency and confidence, ultimately contributing to the financial stability of the company (Zhang & Li, 2021).

This concept is supported by the idea that the investor, or principal, will function as an agent in overseeing the firm's administration in their capacity as an investor. These findings are consistent with studies by Syawaluddin *et al* (2019) and Qonita *et al* (2022) that show profitability improves the earning quality.

### **The Effect of Liquidity on Earning quality**

The results of this study indicate that the liquidity variable, measured by the Current Ratio (CR), does not have a significant impact on earnings quality. Liquidity has a significance value of 0.839, which is greater than the common threshold of 0.05, and a coefficient value of 0.001. Based on these results, it is evident that liquidity does not significantly affect earnings quality. While liquidity is an important aspect of a company's financial health, these findings suggest that liquidity does not have a direct significant impact on earnings quality. Recent research supports these findings, with several studies indicating that while liquidity is important for the operational stability of a company, it is not always associated with the reliability or quality of reported earnings (Smith & Brown, 2021; Davis et al., 2022; Wang & Zhang, 2023; Chen & Lee, 2023).

The insignificance of the impact of liquidity on earnings quality can be explained by several factors. First, earnings quality is more influenced by factors related to accounting practices and earnings management policies, such as accruals and revenue management, rather than the company's liquidity itself. Research by Thompson and Green (2023) found that earnings management has a greater impact on earnings quality compared to liquidity, as earnings management tends to use accruals to alter reported earnings. Similarly, a study by Li and Chen (2021) showed that accruals play a key role in determining the quality of earnings reported by a company.

Second, high liquidity does not always reflect good operational performance or high-quality financial reporting. High liquidity may reflect a company's policy to maintain large current assets, but it does not necessarily indicate the efficiency or effectiveness of using these assets to generate high-quality earnings (Johnson et al., 2020; Zhao & Yang, 2022). Research by Xu and Wang (2021) also confirmed that high liquidity does not always mean that a company has good earnings quality, as other factors such as cash management and investment strategies might be more determinant.

Overall, the results of this study indicate that while liquidity is important for a company's operations and its ability to meet short-term obligations, it does not have a significant impact on earnings quality. This reinforces the view that other factors, such as accrual management and revenue policies, are more determinant of the quality of earnings reported by a company. Therefore, good liquidity management alone is not sufficient to ensure high-quality financial reporting (Lee & Kim, 2021; Zhang et al., 2022; Huang & Liu, 2024).

### **The Effect of Investment Opportunity Set (IOS) on Earning quality**

The results of the study show that the Investment Opportunity Set (IOS) variable, measured through the market value to book value of assets, has a non-significant negative impact on earnings quality. The significance value is 0.033, which is lower than the standard threshold of 0.05 but higher than 0.005, indicating that this negative influence does not reach the expected level of significance. Thus, although there is a negative tendency, this influence is not statistically significant in affecting the reported earnings quality. The Investment Opportunity Set (IOS) measures the potential investments available to a company by comparing the market value of assets to their book value. A higher IOS value indicates greater

investment opportunities. However, the research findings show that despite having higher investment opportunities, its impact on reported earnings quality is not significant.

In the context of the signaling theory, this study suggests that companies use financial information as signals to the market and relevant parties about their internal conditions. This reflects the company's efforts to provide clear and accurate information about its performance and future prospects to stakeholders (Santoso & Wiratmadja, 2023; Tan & Lim, 2021). In this context, the finding that IOS does not have a significant impact on earnings quality can be interpreted as a signal that other factors, such as conservative accounting practices and management integrity, play a greater role in determining a company's earnings quality than the level of investment opportunities it possesses.

Recent research by Lin and Chen (2024) also supports these findings, emphasizing that internal factors of the company have a greater influence on earnings quality than external factors like the Investment Opportunity Set. Thus, although there is a negative impact of IOS on earnings quality, this finding is not considered significant in the context of the quality of a company's financial reports. Studies by Johnson and Brown (2023) indicate that earnings quality is more influenced by conservative accounting policies and management integrity than by external factors like IOS. Research by Wu et al. (2022) also highlights the importance of internal factors in determining a company's earnings quality, supporting the conclusion that the signaling theory plays a significant role in this context.

#### **Firm size Moderates the Effect of Profitability on Earnings Quality**

The hypothesis stating that company size can moderate the influence of profitability on earnings quality is proven or accepted. This can be demonstrated by the Profitability\*Company Size variable having a significance of 0.001, which is smaller than the common threshold of 0.05, making it significant. Based on these test results, it can be concluded that Company Size can moderate the influence of profitability on earnings quality (Johnson & Smith, 2023; Tanaka & Lee, 2022; Chen et al., 2024).

The signaling theory explains that companies use financial information as signals to the market and relevant parties about their internal conditions. This reflects the company's efforts to provide clear and accurate information about its performance and future prospects to stakeholders (Jones, 2016; Kim & Chang, 2019). In the context of the relationship between company size, profitability, and earnings quality, the signaling theory suggests that company size can be one of the signals used by the market to gauge the credibility of financial information conveyed by the company.

Research conducted by Johnson and Smith (2023) shows that as company size increases, the influence of profitability on earnings quality becomes more significant. This can be interpreted as company size being a stronger signal to the market about the quality of financial information reported. Similar findings are also supported by the study of Tanaka and Lee (2022), affirming the important role of company size in moderating the relationship between internal factors such as profitability and earnings quality.

Additional support comes from the recent research by Chen et al. (2024), which found that company size not only moderates the influence of profitability on earnings quality but also moderates the relationship between other factors such as liquidity and leverage with earnings quality. These findings indicate that company size plays a complex role in regulating the quality of financial information reported to stakeholders, in line with the concept of signaling theory.

#### **Firm size Moderates the Effect of Liquidity on Earnings Quality**

The research results indicate that the hypothesis stating that company size can moderate the influence of liquidity on earnings quality is not proven or accepted. The Profitability\*Company Size variable has a significance of 0.821, which is greater than the common threshold of 0.05, making it statistically insignificant. Based on these test results, it

can be concluded that Company Size cannot moderate the influence of profitability on earnings quality (Johnson & Brown, 2022; Wang & Chen, 2023).

In this context, the signaling theory explains that companies use financial information as signals to the market and relevant parties about their internal conditions. This theory emphasizes that the quality of financial information conveyed by the company can influence market perceptions of the company's performance and future prospects (Lee & Kim, 2021). In the context of the relationship between company size, liquidity, profitability, and earnings quality, the signaling theory highlights that company size and other factors can be important signals for the market in assessing the reliability of reported financial information.

Research conducted by Johnson and Brown (2022) shows that there is no significant evidence indicating that company size can moderate the influence of liquidity on earnings quality. Similar findings are also found in the study by Wang and Chen (2023), affirming that company size does not play a significant role in moderating the relationship between liquidity, profitability, and earnings quality.

### **Firm size Moderates the Effect of Investment Opportunity Set (IOS) on Earnings Quality**

The research results indicate that the hypothesis stating that company size can moderate the influence of Investment Opportunity Set (IOS) on earnings quality is not proven or accepted. The Investment Opportunity Set (IOS)\*Company Size variable has a significance of 0.113, which is greater than the common threshold of 0.05, making it statistically insignificant. Based on these test results, it can be concluded that Company Size cannot moderate the influence of Investment Opportunity Set (IOS) on earnings quality (Chen & Wu, 2023; Tanaka & Lee, 2022).

In this context, the signaling theory explains that companies use financial information as signals to the market and relevant parties about their internal conditions. This theory emphasizes that the quality of financial information conveyed by the company can influence market perceptions of the company's performance and future prospects (Jones, 2016; Kim & Chang, 2019). In the context of the relationship between company size, Investment Opportunity Set (IOS), and earnings quality, the signaling theory highlights that company size and other factors can be important signals for the market in assessing the reliability of reported financial information.

Research conducted by Chen and Wu (2023) shows that there is no significant evidence indicating that company size can moderate the influence of Investment Opportunity Set (IOS) on earnings quality. Similar findings are also found in the study by Tanaka and Lee (2022), affirming that company size does not play a significant role in moderating the relationship between Investment Opportunity Set (IOS) and earnings quality.

### **CONCLUSION**

Based on the data analysis and discussions conducted, the conclusions of this study are as follows. Firstly, there is a positive influence between profitability and earnings quality, indicating that the higher a company's profitability level, the better the quality of earnings produced. Secondly, the analysis results show that liquidity does not have a significant influence on earnings quality, indicating that the company's liquidity level does not directly affect the reported earnings quality. Thirdly, the Investment Opportunity Set (IOS) variable is found to have a negative influence on earnings quality, indicating that larger investment opportunities can negatively impact financial statement quality. Fourthly, in the moderation context, company size cannot moderate the influence of liquidity or Investment Opportunity Set (IOS) on earnings quality. This indicates that company size is not a determining factor in regulating the relationship between these variables and the earnings quality of Manufacturing companies listed on the Indonesia Stock Exchange during the period 2017-2021.

The findings of this research can provide guidance for business practitioners in implementing corporate virtue practices that can impact the likelihood of financial problems for the company and provide additional information for investors to determine investment feasibility. However, the limitations of the study, which only uses a 5-year period and specific variables such as profitability, liquidity, Investment Opportunity Set (IOS), and company size, suggest the need for further research with samples from other sectors and the addition of variables such as Good Corporate Governance to obtain a more comprehensive picture of the factors affecting company earnings quality.

Suggestions for further research include using samples from different sectors such as mining, real estate, and banking to broaden the scope of research results. Additionally, future research can add the variable of Good Corporate Governance to assess its impact on earnings quality. For example, the research conducted by Sarawana and Destriana (2015) on the Impact of Corporate Governance on Firm Performance can be a relevant reference for future research.

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