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The Development and Implementation of Artificial Intelligence Technology in a Manufacturing Company in the Banten Province

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Abstract. *The heterogeneous backgrounds of employees within manufacturing firms contribute to disparities in their preparedness to embrace artificial intelligence. A prominent concern that engenders scepticism among prospective AI users is data security. The focus of the study is the use of AI technology in the context of companies engaged in the manufacturing industry in Banten Province, with the aim of understanding the views of potential AI users and the factors that influence their willingness to utilize this technology. This study aims to investigate the integration of AI technology in everyday tasks from the viewpoint of prospective AI users. The research sample comprised 100 respondents, potential AI users, who were employees at various levels within multiple manufacturing industries in Banten. The data analysis method used a mixed method with analysis techniques using regression tests and quantitative data with thematic analysis for qualitative data. The regression test results revealed that attitudes significantly impacted the intention to use artificial intelligence. Individual attitudes toward artificial intelligence (AI) can influence the desire to use it. Certain users are prepared to utilize AI, while others remain apprehensive due to concerns regarding adverse effects, including data security and privacy risks. Some users are also anxious that AI will replace their jobs. This variation is affected by multiple factors, including the profession, the hierarchical level, and the tasks' intricacy.*

Keywords: *Attitude, Intention To Use, Artificial Intelligence*

1. INTRODUCTION

Artificial intelligence (AI) represents one of the most recent technological advancements, profoundly influencing employment and human work systems. This trend has likewise affected Indonesia as artificial intelligence began to gain recognition in the country during the 1980s, coinciding with the introduction of computers in Indonesia. However, the use of AI at that time was still limited to several sectors, such as the oil and gas industry and logistics sectors.(Rizal & Yulianto, 2022). As time goes by, the development of AI technology has expanded and reached other sectors, such as automotive, retail, banking, and others. (Rusdianto, 2021). According to WriterBuddy, an AI content service provider, Indonesia is one of the countries with the highest number of AI application users in 2023. From September 2022 to August 2023, internet users in Indonesia made 1.4 billion visits to AI applications, accounting for approximately 5.60% of the total number of visits (Witjaksono et al., 2023). So, with the number of visits, Indonesia is ranked third as the world's largest user of AI applications.

Implementing AI in the work environment, especially in manufacturing companies, is a trend and a necessity to increase the company's effectiveness, efficiency, innovation, competitiveness and sustainability (Yusufadz & Rosyidin, 2022). Furthermore, using artificial intelligence can lead to higher productivity and better work quality among employees

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(Nurkholis & Ikasari, 2023). It confirms that using artificial intelligence will result in significant changes that could impact how people do their jobs and businesses function. The application of artificial intelligence possesses considerable potential to enhance the productivity of corporate operations, as AI is capable of executing routine tasks with a level of precision and efficiency that surpasses human capabilities. Therefore, more and more companies in Indonesia are starting to utilize AI technology to optimize time and resources and focus more on achieving long-term strategy, accuracy in decision-making, creativity, and innovation of resources(Silfiana & Putra, 2022).

The results of research conducted by(Davenport, 2018) show that a company that successfully adopts AI in its workprocess flow can achieve very high efficiency, reduce its operational costs, and accelerate its response to changes in an uncertain (dynamic) market. Several manufacturing companies have been able to make better and more efficient use of their resources and guarantee that their operations are of high quality and productivity. Even though artificial intelligence has many advantages, it does not mean that there are no difficulties or ethical issues that come with using it. Elon Musk once expressed concern that artificial intelligence could be more dangerous than nuclear energy. This phenomenon can be attributed to the capacity of artificial intelligence to evolve at an accelerated pace, often beyond human cognitive capabilities, which may consequently precipitate unforeseen occurrences (Rahardja et al., 2022). Furthermore, additional research conducted by McAfee and Brynjolfsson (2012) examines the influence of artificial intelligence on the workplace, emphasizing substantial alterations in work dynamics and transformations in organizational structures.

Artificial Intelligence serves to collect and analyze information in order to create predictive analysis. This information can be about friendships, interactions between individuals, political or religious views, purchasing history, health data, location or geographic position. Unsurprisingly, this situation will raise concerns regarding the security and use of AI users' personal data.(Azrul et al., 2024). Therefore, it is crucial to consider the different aspects of user data privacy and security, mainly because businesses and people are becoming more dependent on this technology, which can have negative consequences and influence how people perceive AI technology. The majority of people have a multi-interpretive view of artificial intelligence. They see the great potential of this technology to improve effectiveness, efficiency, productivity, and innovation, but they also recognize the ethical, privacy, and data security challenges that come with it. Even so, many individuals and manufacturing companies remain committed to implementing and continuously utilizing AI in various fields of life, including business, health, and technology. (Yulia, 2023). A study (Siddhi, 2021)shows that

using AI in the manufacturing industry system becomes more straightforward and efficient and saves time. However, AI can also negatively affect operational activities because regulations related to the misuse of AI in this sector do not yet exist, so it still depends on the interpretation of existing regulations, such as the ITE Law.

The theory of Planned Behavior(TPB) describes that every action a person takes arises from the individual's desire to act. This desire can be influenced by various factors, both internal and external factors from the individual himself (Dragičević & Bošnjak, 2019)In the scope of artificial intelligence (AI), TPB can be applied to assess attitudes, personal norms, and behavioural control that impact an individual's desire to utilize AI technology. According to(Dwi Natasya, 2023), the advantage of artificial intelligence is its ability to process information quickly and accurately, which helps humans make better and more efficient decisions. Furthermore, artificial intelligence can automate various repetitive tasks, allowing individuals more significant opportunities to focus on other pursuits. Due to these benefits, artificial intelligence is extensively implemented within manufacturing enterprises. Nevertheless, beneath the current advantages, the theoretical framework of artificial intelligence also underscores several challenges and risks that organizations must address. A paramount concern pertains to ethical considerations, encompassing accountability, equity, and safeguarding user privacy.

While a person's attitude towards the presence of artificial intelligence also varies significantly from one to another, this is influenced by various aspects such as views on the usefulness and dangers, past experiences, and the impact of changes in the social and cultural environment that occur. For instance, some people may have a favourable opinion of artificial intelligence (AI) because it can be used in fields such as science, engineering, health, top management, politics, and education, where complex problem-solving and interpersonal skills are required to make these fields more effective and efficient. On the other hand, this optimistic perspective is frequently accompanied by worries regarding the adverse consequences of putting artificial intelligence into practice. These concerns include the possibility of machines taking over human jobs, data privacy issues, and AI's impact on ethical and moral considerations in every decision-making process. On the other hand, there are also people who may have a sceptical or even hostile view of the implementation of AI. They may feel uncomfortable about the possibility of losing control over decisions made by algorithms or worry about the potential misuse of AI technology by irresponsible parties.

General Attitudes towards Artificial Intelligence (GAAI) include various views and attitudes, from positive and negative to neutral views towards implementing AI. Some people

may have a positive outlook on using artificial intelligence (AI), seeing it as a new and helpful tool for solving complicated problems, increasing efficiency and effectiveness, improving quality of life, and increasing productivity. However, some may be sceptical or pessimistic about implementing AI because of concerns about ethical issues, data privacy, or the risk of replacing human jobs with machines. Research findings conducted by (Ketut Bayu Yogha Bintoro et al., 2023) show significant variation in individual views of AI, ranging from optimistic to sceptical.

The propensity of user behaviour to persist in utilizing technology, commonly referred to as "Intention to Use," denotes a state in which an individual is inclined to engage in actions predicated on personal beliefs or emotions. As articulated by Arly (2023), the indicators of the intention to utilize online applications encompass the following: (1) the user's interest in engaging with online applications; (2) the propensity of users to favour specific online applications over others; and (3) the actions taken by users to recommend online applications that they perceive to be more effective and efficient from various perspectives, and which they consider to be of more excellent utility. Increasing the effectiveness and efficiency of companies engaged in both services and manufacturing is the main factor driving the high implementation of AI (Ririh, 2020). On the other hand, if AI technology is not carefully considered or combined with other technologies, such as food technology, the implementation and development of AI technology will not be as effective as it could be. When discussing artificial intelligence, the most important concept is the intention to use. This concept helps to determine how much people are willing to accept and adopt this technology. It includes how much each individual believes using AI will help achieve specific goals.

This study will examine how potential users of artificial intelligence (AI) technology might use it in their daily lives. This study aims to investigate and examine in detail the opinions of potential AI users from different levels of several companies in Banten Province.

2. RESEARCH METHODOLOGY

This study employs a methodology that integrates both qualitative and quantitative approaches, utilizing mixed methods. Data collection was conducted from October 2024 to November 2024 utilizing a questionnaire disseminated through Google Forms, serving as a quantitative data collection method encompassing 100 respondents. Meanwhile, for qualitative data, structured interviews were conducted with six respondents representing the population from various companies and different positions, such as directors, general managers,

executives, personnel staff, digital marketing staff, and SLIK (Financial Services Information System) admins.

The questionnaire that was given to 100 people included 23 questions. Of these, three were about intention to use (ITU), and 20 were about general attitudes towards artificial intelligence (GAAI). The questionnaire also includes control variables or descriptions of the respondents, consisting of questions about their profiles, such as their gender, education level, and year of birth. All question items use a five-point Likert scale where point 1 reflects a "strongly disagree" response and point 5 indicates a "strongly agree" response from the respondent(Putra & Silfiana, 2019). After collecting the questionnaires, an analysis was conducted using a simple linear regression test. Before that, validity and reliability tests were conducted to ensure that the data met the requirements for testing with linear regression.

3. RESULTS AND DISCUSSION

Results

Respondent Data Description

Characterizing the respondents' data serves as a preliminary step to elucidate their profiles concerning gender, year of birth, and educational background. In this study, 100 respondents were gathered from the data collected via the distribution of questionnaires.

Respondents in this study consisted of 52% female and 48% male. Thus, the description of respondent data based on gender is known that the highest number is female.

Furthermore, based on the year of birth, respondents can be categorized into the baby boomer generation born between 1946 and 1964, which reached 1%; generation X, born between 1965 and 1980, which reached 3%; generation Y, born between 1981 and 1996, which reached 38%, and the largest generation, generation Z, born between 1997 and 2012, with 58%.

Meanwhile, at the level of education, the most common respondents were at the Bachelor's level, reaching 57%, followed by high school graduates totalling 20%. In comparison, the remaining 23% were spread from diploma level to doctoral degree.

Validity and Reliability Test

The first step of the study was to test the data's validity and reliability to ensure that the data was consistent with the answers given by the respondents and that the measurement instruments were reliable. The Pearson Correlation Test method was used to test the validity of the data, while Cronbach's Alpha was used to test the reliability of the data. For validity, the

R table value for 100 respondents with a significance level of 5% is 0.195, where the value is obtained from the R table.

All results obtained from the calculated R-value are higher than the R table, so it can be concluded that all question items in this study are valid. Meanwhile, for reliability, the Cronbach's Alpha value obtained is 0.992 for the GAAI variable. Meanwhile, for the ITU variable, the value obtained is 0.920. It shows that both variables are reliable because their values have exceeded 0.6.

Table 1. Data Validity Test

Indicator	R Count	Status
G1	.523	Valid
G2	.679	Valid
G3	.796	Valid
G4	.671	Valid
G5	.767	Valid
G6	.814	Valid
G7	.813	Valid
G8	.564	Valid
G9	.671	Valid
G10	.671	Valid
G11	.804	Valid
G12	.765	Valid
G13	.365	Valid
G14	.565	Valid
G15	.700	Valid
G16	.600	Valid
G17	.690	Valid
G18	.582	Valid
G19	.669	Valid
G20	.651	Valid
IT'S 1	.896	Valid
IT'S 2	.949	Valid
IT'S 3	.935	Valid

Table 2. Data Reliability Test

Variables	Cronbach's Alpha	Status
GAAI	.997	Reliable
THAT	.925	Reliable

Classical Assumption Test

The subsequent phase in the testing procedure involves executing the classical assumption tests, which encompass the normality, heteroscedasticity, and linearity tests. The outcomes of the assessment indicate a significance value of 0.106 in the normality test, a value of 0.195 in

the heteroscedasticity test, and a value of 0.669 in the linearity test. The values of these three tests are above or more significant than the Sig. Level of 0.05. Thus, it can be concluded that the data in the normality test, heteroscedasticity test and linearity test are considered to have met the classical assumption requirements and can be continued to the next testing stage.

Table 3. Classical Assumption Test of Data

	Sig. Value	Status
normality test	0.106	Normal Distribution
heteroscedasticity test	0.195	No symptoms of heteroscedasticity
linearity test	0.669	Have a Linear Relationship

Simple Linear Regression Test

The last data analysis stage is to run a simple linear regression test. The significance value will be determined based on the results of the test. The significance value obtained is 0.000, which is less than 0.05. Therefore, hypothesis 1 in this study is accepted, which indicates a significant impact or influence between GAAI and ITU. The level of influence of GAAI on ITU is 51.1%.

Table 4. Simple Linear Regression Test

Linear Regression Equation	Sig.	R-Square	T-test
Y = -0.387 + 0.160 X	0.000	51.1%	H1 accepted

4. DISCUSSION

After conducting an in-depth analysis of this study's results section, the elements identified in the discussion can be presented in the following table.

Table 5. Cross Tabulation Data of Respondents' Response Tendencies

Dimensions	Indicator	Category Per Dimension	Category Per Indicator
Positive	I prefer interacting with AI systems rather than humans for my routine transactions.	Enough	Not enough
	AI can be used to create new economic opportunities for Indonesia.		Enough
	AI, with its convenience, can make people happier.		Enough
	AI impressed me with what it did.		Good
	In everyday life, I am interested in using AI systems.		Enough

	The convenience of AI will have a very positive impact on human welfare.		Enough
	I enjoy using AI.		Enough
	AI systems will be superior in many routine jobs compared to human employees.		Enough
	AI systems have many features that are useful for users.		Good
	In doing work, humans are no better than AI systems.		Enough
	AI will fill the future of most of society with its various benefits.		Enough
	I will use AI to support my work.		Enough
Negative	Unethical use of AI by many organizations	Enough	Enough
	AI systems make many mistakes.		Enough
	AI is very scary to me.		Enough
	In the future, AI may be able to control humans.		Enough
	The use of AI is hazardous.		Enough
	I feel anxious and uncomfortable when I think about the use of AI in the future.		Good
	If AI is used increasingly, people like me will suffer more and more.		Good
	AI is used to spy on someone's movements.		Enough
Positive	In supporting my work, I am willing to use AI-based applications.	Enough	Enough
	There is a good chance that I will utilize AI technologies and applications in my work.		Enough
	I plan to utilize AI-based technologies and applications to support my work.		Enough
	I am ready to utilize AI-powered technology and applications to support my work.		Enough
	I will likely utilize AI-based technologies and applications to support my work.		Enough
	I will soon utilize AI-powered technologies and applications to complete my tasks.		Enough

According to data analysis, it has been determined that the General Attitudes towards Artificial Intelligence (GAAI) value exerts a substantial influence of 51.1% on the Intention to Use (ITU). It suggests that attitudes exert an influence on the intention to utilize the AI system. Based on the analysis in Table 5, the Positive and Negative dimensions of the GAAI variable show a Sufficient value, which means that the attitude is at the middle level. The ITU variable (intention to use) also shows a Sufficient value, which implies that respondents are quite willing to use the AI system to support their work.

To obtain further information on the impact or influence of various companies, interviews were conducted with six respondents from the manufacturing sector. From the results of the interviews, all respondents stated that they still felt doubtful about the AI system. It demonstrates that they consider the advantages and disadvantages of artificial intelligence technology. For instance, a statement like "AI impresses me with what it does" is thought to have positive and negative effects on users. Some of the positive effects that have been experienced include improved efficiency and effectiveness, as well as an increase in productivity in several different industries.

The use of AI in everyday life involves in-depth data examination to assist the decision-making process in an organization. The advantages of this technology lie in its ability to adapt, accuracy, and efficiency quickly, which will support work optimization. Various features found in AI, such as selection, data processing or analysis, and data understanding, will provide convenience and increase the effectiveness of working. However, respondents also noted that challenges must be overcome to maximize the use of this AI system, including the lack of individual skills in operating the AI system, the accuracy of the analysis results, and data protection risks for AI users. Although it has benefits in data analysis, the disadvantages of AI also include bias and threats or risks to data security.

Problems in implementing this AI system include adjustments to previous work, interpretation of complex data, and ensuring the proper decision-making process. AI has been widely applied in various fields of manufacturing, such as employee, e-data analysis, consumer demand prediction, financial trend analysis, etc. However, because it replaces human emotions, this AI technology cannot completely take over the role of humans.

Some human roles believe that AI can get their work done faster than humans. However, AI cannot replace humans' emotional aspects. Therefore, it is important to carefully weigh the benefits and risks of implementing AI to ensure that this technology can have a positive and sustainable influence on society as a whole.

5. CONCLUSION

According to the study's findings and discussion, individual attitudes toward artificial intelligence (AI) can influence the desire to use it. Some users are eager to use AI, but others are hesitant due to concerns about the negative consequences, such as data security and privacy issues. Some users are also anxious that AI will replace their jobs. Several factors influence this variation, including the field of work, the level of work, and the complexity of the tasks that must be completed. This situation can also create the need for careful consideration before using artificial intelligence in the workplace and everyday life.

RECOMMENDATION

Future researchers should conduct research in more fields of work to understand potential users' attitudes towards AI, not just in the manufacturing sector. Future research can take into account additional variables, such as intervening variables, that may impact potential AI users.

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