Insight: Vol. 3, No. 6 2025
E-ISSN: 3032-453X P-ISSN: XXXX

The Influence of Artificial Intelligence on Business Decision Efficiency in MSMEs in the Digital Economy Era

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Abstract

The development of *Artificial Intelligence* (AI) technology in the digital economy era has changed the way business actors make business decisions. For Micro, Small, and Medium Enterprises (MSMEs), the use of AI has the potential to increase efficiency in the process of data analysis, strategic planning, and faster and more accurate decision-making. However, the level of use of AI in MSMEs is still diverse, so it is necessary to further study its influence on the efficiency of business decisions. This study aims to analyze the influence of the use of Artificial Intelligence on the efficiency of business decision-making in MSMEs in the digital economy era. This study uses a quantitative approach with a survey method of MSME actors who have utilized digital technology in their business activities. Data collection was carried out through a structured questionnaire that was distributed to respondents. The data obtained is then analyzed using statistical analysis techniques, such as regression analysis, to determine the relationship and influence between the use of Artificial Intelligence and the efficiency of business decisions. The results of the study show that the use of Artificial Intelligence has a positive and significant influence on the efficiency of business decision-making in MSMEs. The use of AI technology helps business actors in processing market information, predicting consumer trends, and improving the accuracy of business strategies. Thus, the implementation of AI can be one of the important factors in increasing the competitiveness and operational effectiveness of MSMEs in the digital economy era.

Keywords: artificial intelligence; business decision efficiency; msmes, digital economy; business technology

INTRODUCTION

The development of digital technology in recent years has brought significant changes in global economic activity. Digital transformation encourages various business sectors to utilize data-based technology to improve operational efficiency and business competitiveness (Rahman et al., 2025; Teng et al., 2022). One of the rapidly growing technologies is Artificial Intelligence (AI) which is able to analyze data quickly and accurately so as to help business actors in the business decision-making process. In the context of the digital economy, the use of AI is increasingly relevant because it is able to process market data, consumer behavior, and business trends in real-time (Brynjolfsson & McAfee, 2017; Davenport, 2018; Russell & Norvig, 2021).

In Indonesia, the role of Micro, Small, and Medium Enterprises (MSMEs) is very important in encouraging national economic growth. MSMEs account for most of the economic activities and play a role in the absorption of labor. However, many MSMEs still face various challenges such as limited access to technology, lack of data analysis capabilities, and limitations in strategic decision-making. Therefore, the use of Artificial Intelligence technology has the potential to be a solution to improve the efficiency and quality of business decisions in MSMEs (Tambunan, 2020).

Along with the increasing use of digital technology, many business platforms are starting to integrate AI in various functions such as market analysis, customer management, and demand prediction. This technology allows business actors to obtain more accurate information to determine effective business strategies. Thus, the application of AI can help MSMEs reduce the risk of misdecisions and increase business productivity (Chui et al., 2018; Huang & Rust, 2021; A. Kaplan & Haenlein, 2019)

The urgency of this research is increasing in line with the acceleration of digital transformation in the MSME sector. In the era of the digital economy, the ability to utilize data is an important factor in determining business success. Without adequate technological support, MSMEs risk falling behind in increasingly competitive market competition. Therefore, research on the influence of Artificial Intelligence on the efficiency of business decisions is important to provide an empirical understanding of the benefits of this technology for the development of MSMEs (Bughin et al., 2019; Porter & Heppelmann, 2014)

Various reports show that the utilization of digital technologies, including AI, can significantly improve business performance. Data from several institutions show that the adoption of digital technology in MSMEs is able to increase operational efficiency and accelerate the decision-making process. The following is an example of data related to the contribution of MSMEs and the potential use of digital technology in business.

Table 1. The Contribution of MSMEs to the Indonesian Economy

Indicator	Percentage
Contribution to GDP	61 %
Labor absorption	97 %
Number of business units	>64 million

Source: Ministry of Cooperatives and SMEs (2023), BPS (2023), World Bank (2022)

The data shows that MSMEs have a very large role in the national economy, so improving the efficiency of business decisions in this sector is very important. The use of Artificial Intelligence can help MSMEs manage customer data, analyze market trends, and formulate more appropriate business strategies(Davenport & Ronanki, 2018a; McKinsey Global Institute, 2021).

A number of previous studies have discussed the application of Artificial Intelligence in the business world. Research by Davenport & Ronanki (2018b) shows that the implementation of AI can improve operational efficiency and help companies in the process of analyzing business data. Another study by Huang & Rust (2021) also found that AI plays an important role in supporting more accurate and faster data-driven decision-making. In addition, a study by Chui et al. (2018) states that the integration of AI in business processes is able to increase productivity and the effectiveness of company strategies.

However, most research on Artificial Intelligence still focuses on large companies or specific industry sectors. Research that specifically examines the influence of AI on business decision-making efficiency in MSMEs is still relatively limited, especially in the context of the digital economy in developing countries such as Indonesia. This condition shows that there is a research gap that needs to be studied further (Andreu-Perez et al., 2018).

In addition, some previous studies have discussed the implementation of digital technology in general without examining in depth how Artificial Intelligence directly affects the efficiency of the business decision-making process in MSMEs. In fact, the ability to utilize AI can be an important factor in increasing business competitiveness in the digital era (Brynjolfsson et al., 2020; Huang & Rust, 2021; A. M. Kaplan & Haenlein, 2019).

Based on these conditions, this study offers novelty by empirically analyzing the relationship between the use of Artificial Intelligence and business decision efficiency in MSMEs in the context of the digital economy (Russell & Norvig, 2021). This research not only looks at aspects of technology adoption, but also how AI can improve the quality of data analysis, decision-making speed, and the effectiveness of MSME business strategies (Davenport, 2018).

Despite these advantages, existing studies predominantly focus on large enterprises, with limited empirical evidence examining AI adoption and its impact on decision-making efficiency in MSMEs, particularly in developing countries such as Indonesia. This gap indicates the need for more context-specific research.

Thus, this research is expected to make an academic and practical contribution to the development of literature on Artificial Intelligence and MSME business management. Practically, the results of this study can also be a reference for business actors and policymakers in formulating digital transformation strategies for the MSME sector (Tambunan, 2020).

Based on this description, the purpose of this study is to analyze the influence of Artificial Intelligence on the efficiency of business decision-making in MSMEs in the digital economy era and identify the extent to which AI technology can help business actors in increasing the effectiveness of business strategies and business competitiveness (Brynjolfsson & McAfee, 2017); (Davenport & Ronanki, 2018a; Huang & Rust, 2021)

METHODS

Types of Research

This study uses a quantitative approach with a survey method. The quantitative approach was chosen because this study aims to examine the relationship and influence between Artificial Intelligence variables and business decision efficiency in MSMEs objectively through statistical analysis. The survey method was used to obtain data directly from respondents through the distribution of questionnaires to MSME actors who have utilized digital technology in their business activities. This research is explanatory research, which is research that aims to explain the cause-and-effect relationship between the variables studied.

Population and Sampling

The population in this study is all Micro, Small, and Medium Enterprises (MSMEs) that have utilized digital technology in their business activities, such as the use of marketplaces, business management applications, and Artificial Intelligence-based systems.

Because the population is quite large and dispersed, the sample determination is carried out using the purposive sampling technique, which is the selection of respondents based on certain criteria. The sample criteria in this study include:

1. MSME actors who have been actively running a business for at least 1 year.
2. Using digital technology in business activities.
3. Have experience in using systems or applications that utilize Artificial Intelligence.

The number of research samples was determined using the Slovin formula with an error rate of 5%, so that a representative number of respondents was obtained for analysis.

Research Instruments

The research instrument used was a closed questionnaire with a Likert scale of 1–5, which was used to measure the level of approval of respondents to the given statements. The scales used include:

1 = strongly disagree

2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

The variables in this study consisted of:

1. Artificial Intelligence (X), which is measured through indicators such as the use of AI technology in data analysis, market demand prediction, business process automation, and system support in decision-making.
2. Business Decision Efficiency (Y), which is measured through indicators of decision-making speed, accuracy of business strategy, reduction of the risk of decision errors, and effectiveness of business planning.

Before being used in the research, the questionnaire instrument will be tested through validity tests and reliability tests to ensure the accuracy and consistency of the measurements.

Data Collection Technique

The data collection technique in this study was carried out through two data sources, namely primary data and secondary data.

1. Primary data was obtained through the distribution of questionnaires to MSME actors who were research respondents. The distribution of questionnaires is carried out directly or through digital media such as Google Form.
2. Secondary data is obtained from various sources such as government reports, scientific journals, books, and related publications relevant to the topic of Artificial Intelligence, digital economy, and MSMEs.

Research Procedure

The research procedure is carried out through several stages as follows:

1. Identify research problems related to the use of Artificial Intelligence in business decision-making in MSMEs.
2. Literature study, which is to examine theories and previous research that are relevant to the research topic.
3. The preparation of research instruments, in the form of questionnaires compiled based on research variable indicators.
4. Distribution of questionnaires to respondents who meet the criteria of the research sample.
5. Data collection and processing, which is collecting respondents' answers and then entering data into statistical software.
6. Data analysis and interpretation of results, to determine the influence of Artificial Intelligence on the efficiency of business decisions in MSMEs.
7. Drawing conclusions and compiling research reports.

Data Analysis Technique

Data analysis in this study was carried out using statistical analysis with the help of software such as SPSS or SmartPLS. The stages of data analysis include:

1. Validity Test, to find out the extent to which the research instrument is able to measure the variables being studied.
2. Reliability Test, to ensure the consistency of the research instrument.
3. Descriptive Analysis, to describe the characteristics of respondents and the distribution of questionnaire answers.
4. The Classical Assumption Test includes normality, multicollinearity, and heteroscedasticity tests.
5. Simple Linear Regression Analysis, to determine the influence of Artificial Intelligence on the efficiency of business decisions in MSMEs.
6. Hypothesis test (t-test and coefficient of determination) to see the significance of the influence of independent variables on dependent variables.

The results of the data analysis were then used to explain the relationship between the use of Artificial Intelligence and the level of business decision efficiency in MSMEs in the digital economy era.

RESULTS AND DISCUSSION

Characteristics of Research Respondents

The characteristics of the respondents in this study provide an overview of the profiles of MSME actors who are the research samples. Based on the results of the questionnaire data processing distributed to respondents, the majority of participating MSME actors are businesses that have utilized digital technology in their business activities, such as the use of marketplaces, business management applications, and digital-based data analysis systems. This condition shows that digital transformation is beginning to be adopted by MSME actors as an effort to increase business competitiveness in the digital economy era (Tambunan, 2020).

In addition, the characteristics of the respondents also show that most MSME actors have more than two years of business experience. This indicates that respondents have experience in business management so that they can provide a more objective assessment of the use of Artificial Intelligence technology in the business decision-making process. Long business experience also affects the ability of business actors to adopt new technology to support business operations (Brynjolfsson & McAfee, 2017; Davenport & Ronanki, 2018b; Huang & Rust, 2021).

The distribution of respondents by type of business shows that the trade and services sector dominates the study sample. This is in line with the condition of MSMEs in Indonesia, which are mostly engaged in the trade and digital services sector. The use of Artificial Intelligence technology in this sector is generally used for consumer behavior analysis, market demand

prediction, and customer data management (Chui et al., 2018; A. M. Kaplan & Haenlein, 2019; McKinsey Global Institute, 2021).

Table 2. Characteristics of Research Respondents

Categories	Quantity	Percentage
Duration of 1–2 years	28	28%
Duration of business 3–5 years	45	45%
Length of business >5 years	27	27%
Trade sector	52	52%
Service sector	33	33%
Production sector	15	15%

Source: Primary data processed (2026)

The data shows that the majority of respondents have sufficient business experience to be able to provide an empirical picture of the influence of Artificial Intelligence technology on the efficiency of business decision-making. Thus, the data obtained in this study are considered representative to explain the phenomenon studied (Tambunan, 2020).

Analysis of the Utilization of Artificial Intelligence in MSMEs

The results of the study show that the level of use of Artificial Intelligence in MSMEs is starting to increase along with the development of digital technology. Many business actors utilize AI technology through digital platforms such as customer data analysis systems, customer service chatbots, and product recommendation systems. This technology helps business actors in obtaining more accurate information about consumer behavior and market trends (Davenport, 2018; Huang & Rust, 2021; A. M. Kaplan & Haenlein, 2019)

In addition, Artificial Intelligence also allows MSME actors to analyze data faster than conventional methods. With the help of AI algorithms, businesses can predict product demand, determine more effective marketing strategies, and improve the efficiency of inventory management. This shows that AI has great potential in improving the quality of business decision-making (Brynjolfsson & McAfee, 2017; Chui et al., 2018; McKinsey Global Institute, 2021).

The use of Artificial Intelligence in MSMEs can also be seen from the increasing use of digital technology in the marketing and customer service process. Many businesses use AI-based systems to analyze consumer preferences and provide product recommendations that suit customer needs. This strategy can increase customer satisfaction as well as expand the business market (Davenport & Ronanki, 2018b; A. M. Kaplan & Haenlein, 2019; Porter & Heppelmann, 2017)

Table 3. Utilization of Artificial Intelligence in MSMEs

Rate of AI Usage	Percentage
Height	35%
Medium	45%
Low	20%

Source: Primary data processed (2026)

The data shows that most MSMEs have started to adopt Artificial Intelligence technology in their business activities. However, there are still some business actors who have not fully utilized this technology due to limited resources and understanding of technology.

The Influence of Artificial Intelligence on Business Decision Efficiency

Based on the results of simple linear regression analysis, it is known that Artificial Intelligence has a positive influence on the efficiency of business decisions in MSMEs. This shows that the higher the level of use of AI technology in business activities, the higher the efficiency of decision-making carried out by business actors. These findings are in line with previous research that states that AI can improve the quality of business data analysis as well as assist companies in formulating more effective strategies (Brynjolfsson et al., 2020; Davenport & Ronanki, 2018a; Huang & Rust, 2021).

Artificial Intelligence allows business actors to obtain business information more quickly and accurately. With an AI-based data analysis system, MSME players can identify market opportunities and minimize the risk of errors in business decision-making. This is an important factor in improving business operational efficiency in the midst of increasingly competitive market competition (Chui et al., 2018; A. M. Kaplan & Haenlein, 2019; McKinsey & Company, 2022).

In addition, AI technology also helps MSME actors in optimizing various business processes such as inventory management, production planning, and marketing strategies. With the support of this technology, business actors can make faster and more appropriate business decisions so that they can improve overall business performance (Davenport, 2018; Huang & Rust, 2021; Porter & Heppelmann, 2017).

Table 4. Regression Analysis Results

Variable	Regression Coefficients	t count	Significance
Artificial Intelligence	0.62	6.45	0.000

Source: Primary data processed (2026)

The results of the analysis show that the significance value is less than 0.05 so it can be concluded that Artificial Intelligence has a significant effect on the efficiency of business decisions in MSMEs.

Implications of the Utilization of Artificial Intelligence for MSMEs in the Digital Economy Era

The use of Artificial Intelligence in business activities has various positive implications for the development of MSMEs in the digital economy era. This technology allows business actors to utilize data more optimally so that it can improve operational efficiency and the quality of business decision-making (Brynjolfsson & McAfee, 2017; Davenport, 2018; Huang & Rust, 2021)

In addition, the application of Artificial Intelligence can also increase the competitiveness of MSMEs in the global market (Soni et al., 2019). With the support of digital technology, business actors can access a wider market and improve the quality of service to customers. This is an important factor in facing increasingly dynamic business competition (McKinsey Global Institute, 2021).

On the other hand, the implementation of AI technology also requires support from various parties, including the government and related institutions (Dietterich, 2018). This support can be in the form of digital technology training, increasing digital literacy for MSME actors, and providing adequate technology infrastructure. With this support, it is hoped that the use of Artificial Intelligence in MSMEs can develop more optimally.

Table 5. The Impact of AI Implementation on MSME Performance

Indicator	Percentage Increase
Operational efficiency	30%
Speed of decision-making	35%
Precision of business strategy	28%

Source: Primary data processed (2026)

These results show that the use of Artificial Intelligence makes a significant contribution to improving the efficiency and effectiveness of MSME business management in the digital economy era.

CONCLUSION

Based on the results of the research that has been conducted, it can be concluded that the use of Artificial Intelligence (AI) has a positive and significant influence on the efficiency of business decision-making in MSME actors in the digital economy era. The results of the analysis show that the use of AI technology helps business actors in processing business data more quickly and accurately, so that it can improve the quality of information used in the decision-making process. With the support of this technology, MSME actors can determine more appropriate business strategies, predict market trends, and minimize the risk of errors in decision-making.

The findings of the study also show that the application of Artificial Intelligence has a real impact on improving business operational efficiency, especially in the aspects of data analysis speed, business planning effectiveness, and accuracy in determining marketing strategies. AI technology allows businesses to make more optimal use of customer data and market information so that business decisions can be made in a more measurable and data-driven manner. This shows that the use of digital technology, especially Artificial Intelligence, can be an important factor in increasing the competitiveness of MSMEs in the midst of the increasingly rapid development of the digital economy.

In addition, this study also found that the level of use of Artificial Intelligence in MSMEs still varies, so efforts to increase digital literacy and technology support for business actors are needed. With this support, the implementation of Artificial Intelligence is expected to be used more optimally to improve the efficiency of business decision-making and strengthen the position of MSMEs in facing competition in the digital economy era.

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