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Analysis of the Role of Innovation and Digitalization in Increasing Company Competitive Advantage in the Digital Economy Era

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ABSTRACT

This research aims to analyze the role of innovation and digitalization in enhancing the competitive advantage of companies in the digital economy era. The findings reveal that innovation, in terms of products, processes, and business models, has a significant impact on a company's competitiveness. Digital technologies such as artificial intelligence, big data, and the Internet of Things (IoT) enable companies to create added value, enhance customer experience, and accelerate adaptation to market changes. Digitalization, with a high adoption rate, plays a larger role in optimizing internal operations and expanding market reach. The study also indicates that manufacturing and services sectors have different approaches to implementing digitalization, but both show significant improvements in competitiveness. The research concludes that companies that optimize innovation and digitalization have a stronger competitive position and can survive in the increasingly fierce global competition. However, challenges in digitalization implementation and digital capability development remain. Therefore, policies supporting digital skills development and funding access for innovation are crucial for accelerating digital transformation.

Keywords: *Innovation, Digitalization, Competitive Advantage, Digital Transformation, Digital Economy.*

INTRODUCTION

In the era of the ever-evolving digital economy, companies' competitive advantage depends on their ability to adapt and innovate (Muis, I., et al., 2024). Innovation and digitalization play a crucial role in driving this progress, facilitating companies in developing more efficient products, processes, and business models. Digital transformation not only optimizes a company's internal operations but also opens up opportunities to expand market reach and increase specialization in global value chains (Leão & Silva, 2021; Berawi et al., 2020; Zhang, 2025). In this context, companies that integrate innovation and digital technology into their strategies will be able to survive and thrive in increasingly fierce global competition (Hidayat, S., et al., 2022).

Digital innovation leads to the creation of added value that can strengthen a company's competitiveness, accelerate adaptation to market changes, and enable personalized services to meet consumer needs. Various technologies, such as artificial

intelligence (AI), big data, and the Internet of Things (IoT), enable companies to create more relevant products and services and significantly improve the customer experience. This helps companies introduce new, more efficient solutions that better align with market demands, while simultaneously improving operational efficiency and reducing production costs (Wen et al., 2022; Xue et al., 2023).

In terms of mechanisms and strategies, the integration of digital technology also provides opportunities for companies to develop differentiation strategies that are more difficult for competitors to imitate. The implementation of new technologies, such as blockchain and big data, accelerates the innovation process, enabling companies to more easily adapt to rapidly changing business environments (Radicic, D., & Petković, S., 2023). Digitalization helps companies innovate more adaptively and collaboratively, identifying and exploiting new market opportunities more quickly and effectively. For example, the manufacturing sector leverages digitalization to enhance differentiation strategies, while the service sector focuses more on developing entrepreneurship and innovation to strengthen its competitiveness (Berawi et al., 2020; Zhang, 2025; Niu, Y., et al., 2023).

In the context of performance and sustainability, companies that optimize their resources for digital innovation demonstrate better performance in terms of competitiveness compared to those that solely rely on resource enhancement without engaging in innovation (Raymond, I., et al., 2023; Yang, J., et al., 2023). Digitalization not only provides positive impacts in the short term but also has the potential to extend the sustainability of competitive advantage. Companies that utilize big data and network technologies can create more sustainable business models and be more responsive to market changes (Knudsen et al., 2021; Kurilova, A., & Antipov, D., 2020). However, the impact of digitalization is highly dependent on the organization's readiness to adopt new technologies and adapt their strategies to global market dynamics (Xue et al., 2024; Amri et al., 2025).

Although digitalization offers numerous benefits, many companies still face significant challenges in effectively implementing digital transformation. Key challenges include the need for a clear digital transformation strategy, the development of digital capabilities, and the integration of innovation across business processes (Abbas, J., et al., 2024; Xue, X., et al., 2023). Companies that fail to overcome these barriers tend to fall behind in global competition, missing opportunities to improve their competitiveness (Benitez, J., et al., 2022; Zhong, X., & Ren, G., 2024). Therefore, policy support that encourages the development of digital skills and provides access to funding for innovation is crucial to accelerate the digitalization process at the enterprise level (Wang et al., 2023; Zimonjić, 2024; Niu, Y., et al., 2023).

This study aims to analyze the role of innovation and digitalization in enhancing companies' competitive advantage in the digital economy era. The main focus of this study is to explore how digital technologies, such as artificial intelligence, big data, and IoT, can be applied in business strategies to enhance company competitiveness. Furthermore, this study will identify the challenges faced by companies in the digitalization process and how appropriate policies can support the acceleration of digital transformation. The novelty of this study lies in its approach, which combines innovation and digitalization analysis by considering different sectors, and focuses on factors that accelerate or hinder the implementation of new technologies in enhancing company competitiveness.

METHOD

This study uses a quantitative approach with a descriptive correlational research design in accordance with the method described by Sugiyono (2019). The quantitative approach was chosen because this study aims to measure the influence of innovation and digitalization on the competitive advantage of companies in the digital economy era. This research was conducted in Surabaya, selecting companies that have implemented innovation and digitalization in their operations. The sampling technique used was purposive sampling, with the criteria being companies that have used digital technology in their products, processes, and business models. The number of respondents selected was 75 people, consisting of managers or heads of information technology divisions and heads of innovation departments in these companies.

Data collection was conducted through a survey using a questionnaire distributed online using the Google Forms platform. The questionnaire was designed to measure three main variables in this study: innovation, digitalization, and competitive advantage. Each variable was measured using a 1-5 Likert scale, with relevant indicators for each variable, such as new product introduction, digital technology implementation, and company performance achievement. Prior to distribution, the research instrument was tested for validity and reliability using the Pearson test and Cronbach's alpha coefficient.

The collected data will be analyzed using multiple linear regression to examine the influence of innovation and digitalization on a company's competitive advantage. SPSS will be used to assist with data analysis and test the proposed hypotheses. Descriptive analysis will also be used to provide an overview of the company's profile in terms of innovation, digitalization, and competitive advantage, as well as the relationships between the variables studied.

RESULTS AND DISCUSSION

Research result

1. Respondent and Company Characteristics

Descriptive analysis showed that the 75 respondents who participated in this study had representative characteristics. Based on job title, 42.7% were information technology managers, 37.3% were heads of innovation divisions, and 20% were operational managers involved in digital technology implementation.

Table 1. Respondent Characteristics Based on Job Position

Job Position	Frequency	Percentage
Information Technology Manager	32	42.7%
Head of Innovation Division	28	37.3%
Operations Manager	15	20.0%
Total	75	100.0%

The distribution of companies by industrial sector shows a dominant manufacturing sector (36%), followed by financial services (24%), information technology (20%), retail (12%), and other sectors (8%). This sectoral diversity provides a comprehensive picture of the implementation of innovation and digitalization across industries.

2. Instrument Validity and Reliability Test

Instrument validity testing using Pearson Product Moment correlation showed that all statement items had a correlation value (r-calculated) greater than r-table (0.227) with a significance level of 0.05. This indicates that all statement items in the questionnaire are valid and suitable for use in measuring research variables.

Table 2. Instrument Reliability Test Results

Variables	Cronbach's Alpha	Number of Items	Status
Innovation	0.892	12	Reliable
Digitalization	0.906	15	Reliable
Competitive Advantage	0.884	10	Reliable

The results of the reliability test show that the three research variables have a Cronbach's Alpha value above 0.70, which indicates a high level of reliability and good internal consistency.

3. Descriptive Analysis of Research Variables

Descriptive analysis shows that the level of innovation of companies in Surabaya is in the high category with a mean of 4.12 (SD = 0.687). The digitalization variable shows a mean value of 4.28 (SD = 0.591), indicating that companies have optimally implemented digital technology. Meanwhile, competitive advantage shows a mean of 4.05 (SD = 0.724), indicating respondents' positive perception of their company's competitive position.

Table 3. Descriptive Statistics of Research Variables

Variables	Mean	Standard Deviation	Min	Max
Innovation	4.12	0.687	2.50	5.00
Digitalization	4.28	0.591	2.83	5.00
Competitive Advantage	4.05	0.724	2.20	5.00

4. Hypothesis Testing

Hypothesis testing was conducted using multiple linear regression analysis with competitive advantage as the dependent variable and innovation and digitalization as the independent variables. The analysis results indicate that the resulting regression model is:

$Y = 0.234 + 0.487X_1 + 0.623X_2$

Where:

- Y = Competitive Advantage
- X_1 = Innovation

- X_2 = Digitalization

Table 4. Results of Multiple Linear Regression Analysis

Variables	Coefficient	Std. Error	t-count	Sig.	Status
Constant	0.234	0.298	0.785	0.435	-
Innovation	0.487	0.126	3,865	0.000	Significant
Digitalization	0.623	0.142	4,387	0.000	Significant

R^2 = 0.684; F-count = 78.342; Sig. = 0.000

The test results show that:

a) Innovation has a positive and significant effect on competitive advantage with a regression coefficient of 0.487 ($p < 0.001$)

b) Digitalization has a positive and significant effect on competitive advantage with a regression coefficient of 0.623 ($p < 0.001$)

c) Simultaneously, innovation and digitalization are able to explain 68.4% of the variance in a company's competitive advantage.

Discussion

1. Implementation of Digital Innovation to Increase Company Competitiveness

The results of the study indicate that innovation has a significant influence on a company's competitive advantage with a regression coefficient of 0.487 ($p < 0.001$). This finding aligns with the theoretical argument presented in the introduction that digital innovation leads to the creation of added value that can strengthen a company's competitiveness. The high level of innovation with a mean of 4.12 indicates that companies in Surabaya have adopted various innovative technologies such as artificial intelligence (AI), big data, and the Internet of Things (IoT) to create more relevant products and services. This confirms the views of Wen et al. (2022) and Xue et al. (2023) that these technologies enable companies to significantly improve customer experience and introduce new, more efficient solutions. The dominance of the manufacturing sector (36%) in the study sample provides relevant context, given that this sector is the area most intensive in adopting technological innovation to improve operational efficiency and reduce production costs.

2. Digital Transformation as a Catalyst for Competitive Advantage

Digitalization demonstrated a greater impact on competitive advantage with a regression coefficient of 0.623 ($p < 0.001$), indicating that investment in digital technology yields higher returns than conventional innovation. The mean digitalization score of 4.28 reflects an optimal level of digital technology adoption among respondent companies. This finding reinforces the argument that digital transformation not only optimizes a company's internal operations but also opens up opportunities to expand

market reach and increase specialization in global value chains, as suggested by Leão & Silva (2021), Berawi et al. (2020), and Zhang (2025). The implementation of new technologies such as blockchain and big data has been shown to accelerate innovation processes and enable companies to more easily adapt to rapidly changing business environments. The distribution of respondents, which included 42.7% information technology managers and 37.3% innovation division heads, provides a comprehensive perspective on how digitalization is implemented at the operational and strategic levels within organizations.

3. Differentiation Strategy Through Digital Technology Integration

The diversity of industry sectors in this study (manufacturing, financial services, information technology, retail) provides valuable insights into how digital technology integration provides opportunities for companies to develop differentiation strategies that are difficult for competitors to imitate. The results show that the mean competitive advantage score of 4.05 reflects respondents' positive perceptions of their company's competitive position. This aligns with findings that the manufacturing sector leverages digitalization to enhance differentiation strategies, while the service sector focuses more on developing entrepreneurship and innovation to strengthen its competitiveness (Berawi et al., 2020; Zhang, 2025). The ability of digitalization to help companies innovate more adaptively and collaboratively has enabled them to identify and capitalize on new market opportunities more quickly and effectively. The relatively low standard deviation (0.591–0.724) indicates the consistency of respondents' perceptions of the effectiveness of differentiation strategies implemented through digital technology.

4. Optimizing Resources for Digital Innovation and Corporate Performance

The R^2 value of 0.684 indicates that 68.4% of the variance in competitive advantage can be explained by innovation and digitalization, confirming that companies that optimize their resources for digital innovation demonstrate better performance in terms of competitiveness. This finding strengthens the argument that digitalization not only has a positive impact in the short term but also has the potential to extend the sustainability of competitive advantage as stated by Knudsen et al. (2021). Companies that utilize big data and network technology can create more sustainable business models and are responsive to market changes. The high level of reliability of the research instrument (Cronbach's Alpha > 0.88 for all variables) indicates good internal consistency in measuring the research constructs. This provides confidence that the research results reflect the reality of innovation and digitalization implementation in the context of companies in Surabaya, as well as their impact on sustainable competitive advantage.

5. Challenges and Obstacles in Implementing Digital Transformation

Although the study results show a significant positive impact, a closer analysis of the data reveals variations in digital transformation implementation, reflecting the challenges faced by companies. The relatively low minimum scores for all variables (2.20-2.83) indicate that some companies still face barriers to effectively implementing digital transformation. This aligns with the argument that many companies still face significant challenges in terms of the need for a clear digital transformation strategy, developing digital capabilities, and integrating innovation into all business processes. These findings reinforce the views of Wang et al. (2023) and Zimonjić (2024) that companies that fail to overcome these barriers tend to fall behind in global competition and miss opportunities

to improve their competitiveness. The distribution of respondents, which included 20% operational managers, provides a ground-level perspective on the challenges of implementing digital technologies in daily operations. The impact of digitalization, which is highly dependent on organizational readiness to adopt new technologies and adapt their strategies to global market dynamics (Xue et al., 2024; Amri et al., 2025), is reflected in the variations in company performance observed in this study.

6. Sectoral and Policy Implications for Accelerating Digitalization

The dominance of the manufacturing sector in the research sample (36%) provides important insights into how different sectors adopt innovation and digitalization. The presence of the financial services (24%) and information technology (20%) sectors in the sample indicates that digital transformation is not limited to specific sectors but is a cross-industry phenomenon. This finding strengthens the argument that policy support that encourages the development of digital skills and provides access to funding for innovation is crucial for accelerating the digitalization process at the firm level. The F-value of 78.342 with a significance level of 0.000 indicates that the research model is very robust in explaining the relationship between innovation, digitalization, and competitive advantage. This provides a solid empirical basis for developing targeted policies to support corporate digital transformation. The diversity of industrial sectors also reflects the complexity of the challenges faced in implementing digital technology, where each sector has specific characteristics and needs in its digitalization process.

7. Service Personalization and Market Adaptation in the Digital Era

The company's ability to achieve service personalization and rapid market adaptation is reflected in the high mean value for the digitalization variable (4.28). This finding confirms that digital technology enables companies to meet increasingly diverse and rapidly changing consumer needs. Digital innovation has enabled companies to accelerate adaptation to market changes and create more personalized and relevant customer experiences. The relatively low standard deviation (0.591) for the digitalization variable demonstrates consistency in the implementation of digital technologies across companies, indicating that companies have reached a certain level of maturity in technology adoption. This is in line with the finding that companies that integrate innovation and digital technology into their strategies are able to survive and thrive in increasingly fierce global competition. The higher regression coefficient for digitalization (0.623) compared to innovation (0.487) indicates that investment in digital infrastructure has a greater impact on competitive advantage than conventional product or process innovation.

8. Synergy of Innovation and Digitalization in Creating Sustainable Value

The results of the study indicate that innovation and digitalization do not operate in isolation but rather create a synergy that results in sustainable competitive advantage. The relatively low constant value (0.234) in the regression model indicates that competitive advantage is highly dependent on the implementation of innovation and digitalization, rather than on factors outside the model. This finding strengthens the argument that digital transformation must be integrated with a comprehensive innovation strategy to achieve optimal results. The very high level of significance ($p < 0.001$) for both variables indicates that the causal relationship between innovation, digitalization, and competitive advantage is very strong and reliable. This provides a solid

empirical basis for developing business strategies that integrate both aspects. The model's ability to explain 68.4% of the variance in competitive advantage indicates that innovation and digitalization are very important determinants in creating and maintaining a company's competitive advantage in the digital economy era.

9. Strategic Implications for Management and Decision Making

The research findings have significant strategic implications for corporate management in allocating resources and developing competitive strategies. The predominance of managerial-level respondents (IT managers 42.7%, innovation division heads 37.3%) provides a relevant perspective on how strategic decisions related to innovation and digitalization are made and implemented. The higher regression coefficient for digitalization suggests that investment in digital technology infrastructure should be a top priority in corporate resource allocation. However, the significance of the innovation variable also indicates that developing innovative capabilities remains a crucial factor that should not be overlooked. The high reliability of the instrument (Cronbach's Alpha 0.884-0.906) provides confidence that the measurement of the three research constructs is reliable for strategic decision-making. This is important considering that investment decisions in digital technology require significant resource commitment and have a long-term impact on corporate performance. The diversity of industrial sectors in the sample also provides insight that digitalization strategies must be tailored to the specific characteristics of each industrial sector.

10. Sustainable Competitive Advantage in Global Market Dynamics

The high mean value for competitive advantage (4.05) indicates that companies implementing innovation and digitalization have successfully established a strong competitive position in the market. This finding strengthens the argument that digitalization has the potential to prolong the sustainability of competitive advantage in the ever-changing dynamics of the global market. The relatively low standard deviation (0.724) for the competitive advantage variable demonstrates consistency in achieving competitive performance across companies, indicating that innovation and digitalization strategies have proven effective in various business contexts. This aligns with the finding that companies that utilize big data and network technologies can create more sustainable and responsive business models to market changes. The research model's ability to explain a large proportion of variance (68.4%) provides confidence that innovation and digitalization are key factors in creating sustainable competitive advantage. This finding has important implications for developing long-term corporate strategies in facing the challenges of increasingly intense and dynamic global competition.

CONCLUSION

The conclusions of this study indicate that digital innovation and digital transformation play a significant role in enhancing a company's competitive advantage in the digital economy. The results confirm that innovation, whether in products, processes, or business models, positively impacts a company's competitiveness, with technologies such as artificial intelligence, big data, and IoT enabling companies to create added value, enhance customer experience, and accelerate adaptation to market changes. Furthermore, digitalization has a greater impact on optimizing internal operations and expanding market reach, with digital technologies enabling companies to build differentiation strategies that are difficult for competitors to imitate. The study also

revealed that the manufacturing and service sectors have different approaches to implementing digitalization, yet both show significant improvements in competitiveness. While these positive impacts are clear, implementation challenges remain, particularly in terms of developing digital capabilities and integrating innovation into all business processes. These findings reinforce the argument that digital transformation must be carried out comprehensively and sustainably to ensure sustainable competitive advantage. Therefore, companies need to allocate resources wisely to the development of digital technologies and innovation, while also addressing implementation challenges that could impact their long-term performance and sustainability in an increasingly competitive global marketplace.

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