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IMPROVING MSME PERFORMANCE THROUGH DIGITAL LITERACY IN THE DIGITAL ECONOMY ERA

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Abstrak

This study aims to develop a risk management model for network technology projects based on the Certainty Factor (CF). The background of this research is the high complexity and risks often encountered in network technology projects, which impact the timeliness, budget, and quality of outcomes. The research method employed is a quantitative approach through simulation and testing on a network project case study. The results indicate that the CF-based approach enhances accuracy in risk identification and mitigation, providing greater efficiency compared to conventional methods. These findings contribute to offering a systematic framework for project managers to effectively manage risks, particularly in the field of network technology.

Keyword : *Risk management, network technology projects, Certainty Factor, risk mitigation, project management.*

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a strategic role in Indonesia's economy as the driving force behind economic growth, job creation, and income distribution. According to data from the Ministry of Cooperatives and Small and Medium Enterprises (UKM), MSMEs contribute more than 60% to the national Gross Domestic Product (GDP) and absorb about 97% of the total workforce. However, amidst the rapid development of digital technology, MSMEs face significant challenges in adapting and transforming towards digitalization (Suminah et al., 2022; Skare et al., 2023).

The digital economy era, characterized by the application of information technology in every aspect of life, opens up great opportunities for MSMEs to grow. Digitalization allows MSMEs to access global markets, speed up operational processes, and improve competitiveness (Lorenz et al., 2020; Verhoef et al., 2021). However, optimal utilization of digital technology remains a challenge, especially for MSMEs with limited digital literacy (Firmansyah et al., 2022).

Digital literacy, which includes the ability to search for, assess, and utilize information through digital technology, is a key to the successful transformation of MSMEs in the digital economy era. Digital literacy not only affects MSMEs' ability to adopt technology but also has a significant impact on marketing effectiveness, product innovation, and operational efficiency (Hasmiah et al., 2021; Solberg et al., 2020). Additionally, digital literacy encourages collaboration with a broader digital economy ecosystem, which in turn accelerates MSME growth (Zhao, 2024; Pan et al., 2022).

Previous research shows that digital transformation not only increases MSME productivity but also contributes to business sustainability in the face of global competition (Pouri & Hilty, 2021; Kilay et al., 2022). The adoption of digital technology, when supported by adequate literacy, can help MSMEs face new challenges such as changing consumer preferences and increasingly complex market dynamics (Reis et al., 2020).

This research aims to discuss how digital literacy can improve MSME performance in facing challenges and leveraging opportunities in the digital economy era. Using a quantitative approach, this study identifies the relationship between digital literacy and MSME development and provides strategic recommendations for optimizing digital transformation in this sector.

RESEARCH METHODS

Research Approach

This study uses a quantitative approach with a descriptive correlational method. The quantitative approach was selected because this research aims to systematically measure the influence of digital literacy on the performance of MSMEs in the context of the digital economy using numerical data. The correlational method is employed to identify the relationship between the independent variable, namely digital literacy, and the dependent variable, namely MSME performance.

Population and Sample

The population in this study comprises all MSMEs registered under the Department of Cooperatives and MSMEs in Medan City. According to the latest data, there are 1,825 fostered MSMEs. The sampling technique employed is stratified random sampling to ensure representation of each subgroup. The sample size is determined using the Slovin formula with a 10% margin of error, resulting in a total of 95 respondents.

Research Variables

a. Independent Variable (X): Digital Literacy
   Measured using indicators such as operational skills, digital search and communication, digital content creation, and strategic capabilities (Firmansyah et al., 2022).
b. Dependent Variable (Y): MSME Performance
   Measured based on indicators such as revenue, operational efficiency, and access to global markets (Pan et al., 2022).

Research Instrument

Data were collected using a questionnaire designed with a 5-point Likert scale, where 1 indicates "strongly disagree" and 5 indicates "strongly agree." The research instrument has been tested for validity and reliability in a prior pilot study.

Data Collection Technique

Primary data were obtained through the distribution of questionnaires to the selected respondents. Secondary data were gathered from reports by the Department of Cooperatives and MSMEs in Medan City, as well as relevant academic sources.

Data Analysis Technique

The data were analyzed using the Structural Equation Modeling-Partial Least Square (SEM-PLS) approach with SmartPLS version 3.0 software. The analysis was conducted through the following steps:

1. Measurement Model Test (Outer Model) To test the validity and reliability of the research variables' indicators.
2. Structural Model Test (Inner Model) To measure the relationships between variables and test the research hypotheses based on path coefficients.
3. Goodness of Fit Test: To assess the overall goodness of fit of the research model

RESULTS AND DISCUSSION

1. Analysis of Measurement Model (Outer Model)

a. Construct Reliability dan Validity

The testing of reliability and validity of the constructs shows that all variables have values that meet the criteria:

- Cronbach's Alpha > 0.7
- rho_A > 0.7
- Composite Reliability > 0.6
- Average Variance Extracted (AVE) > 0.5

The results indicate that the indicators for each variable have good internal consistency and validity.

Table 1. Construct Reliability dan Validity

Variabel	Cronbach's	rho_A	Composite Reliability	AVE
Digital Literacy (X)	0.983	1.014	0.984	0.886
Digital Economy (Z)	0.977	0.979	0.981	0.896
MSME Performance (Y)	0.942	0.942	0.954	0.776
Moderation (X*Z)	0.993	1.000	0.993	0.748

b. Discriminant Validity

Discriminant validity is tested using the Heterotrait-Monotrait Ratio (HTMT) value. All variables have HTMT values < 0.90, indicating that each construct is truly distinct from one another.

Table 2. Discriminant Validity

Variabel	X	X*Z	Y	Z
Digital Literacy (X)		0.161	0.268	0.188
Moderation (X*Z)	0.161		0.406	0.182
MSME Performance (Y)	0.268	0.406		0.505
Digital Economy (Z)	0.188	0.182	0.505	

2. Analysis of Structural Model (Inner Model)

a. Koefisien Determinasi (R^2):

An R^2 value of 0.695 indicates that 69.5% of the variation in MSME performance (Y) can be explained by the digital literacy variable (X) and the digital economy variable (Z) with the moderating effect.

Table 3. Koefisien Determinasi (R^2)

Variabel Dependen	R^2	Adjusted R^2
MSME Performance (Y)	0.695	0.685

b. F-Square:

The analysis of the F-Square results shows that digital literacy (X) and moderation (X*Z) have a significant influence on MSME performance.

Table 4. F-Square

Variabel	X	X*Z	Y	Z

Digital Literacy (X)		0.599		0.317
Moderation (X*Z)		1.034		

3. Analysis of Direct Effect

The analysis of the direct effect shows that digital literacy (X) has a positive and significant influence on MSME performance (Y), with a P-Value < 0.05. The moderation of the digital economy (X*Z) significantly strengthens this relationship.

Table 5. Direct Effect

Relationship Between Variables	Path Coefficient	T-Statistic	P-Value
Digital Literacy (X) - MSME Performance (Y)	0.436	5.978	0.000
Moderation (X*Z) - MSME Performance (Y)	0.583	7.157	0.000

Discussion

1. Construction of Validity and Reliability

The analysis results in Table 1 show that all variables meet the validity and reliability criteria. The Cronbach's Alpha and Composite Reliability values above 0.7 indicate high internal consistency of the indicators, while the AVE values greater than 0.5 suggest that each indicator is able to explain its latent variable well. This indicates that the instrument used in this study is valid and reliable for measuring digital literacy, digital economy, and MSME performance.

2. Discriminant Validity

Discriminant validity was tested using the Heterotrait-Monotrait Ratio (HTMT), and the results showed a value of < 0.90 for all variables. This confirms that each construct in this study has a significant distinction from one another. In other words, the variables used do not overlap in terms of concept and measurement, which is crucial for maintaining the accuracy of the results.

3. The Relationship Between Digital Literacy and MSME Performance

Based on the analysis results, digital literacy has a positive and significant impact on MSME performance with a path coefficient of 0.436 (P-Value = 0.000). This aligns with previous research (Hasmiah et al., 2021; Solberg et al., 2020), which shows that digital literacy enhances MSMEs' ability to manage information, digital marketing, and operational efficiency. Digital literacy enables MSMEs to leverage technology to create new opportunities in a competitive market.

4. Moderating Role of the Digital Economy on the Relationship Between Digital Literacy and MSME Performance

The moderating variable (digital economy) strengthens the relationship between digital literacy and MSME performance, with a path coefficient of 0.583 (P-Value = 0.000). This indicates that the impact of digital literacy on MSME performance becomes more significant in the context of the evolving digital economy. Digital technologies, such as e-commerce platforms and social media, offer significant opportunities for MSMEs to expand market access and enhance productivity, provided that business actors' digital literacy is adequate.

5. Implications of Digital Transformation

Digital transformation, supported by digital literacy, not only helps MSMEs increase revenue but also contributes to business sustainability. This result aligns with the view of Pouri & Hilty

(2021) that digitalization can create an innovative and efficient business ecosystem. With better digital literacy, MSMEs can overcome various challenges, such as changing consumer preferences and market dynamics.

6. Sustainability and Competitiveness of MSMEs

This study emphasizes the importance of digital literacy as the foundation for building the competitiveness of MSMEs. As technology advances, digital literacy becomes a crucial skill that business actors must possess to survive and compete in the global market. The practical implication is that the government and relevant institutions need to strengthen training and education on digital literacy to enhance the capabilities of MSMEs.

CONCLUSION

This study concludes that digital literacy has a positive and significant impact on MSME performance. MSME actors with strong digital skills are better equipped to optimize technology to enhance operational efficiency, expand market access, and increase business competitiveness. Furthermore, the role of the digital economy as a moderating variable strengthens the relationship between digital literacy and MSME performance, demonstrating that technology adoption supported by digital literacy can maximize the benefits of digital transformation. Therefore, enhancing digital literacy becomes a strategic priority to support the sustainability and competitiveness of MSMEs, particularly in addressing challenges and seizing opportunities in the digital economy era. The government, educational institutions, and the private sector are expected to play an active role in providing training and education to improve the digital skills of MSME actors.

SUGGESTION

Enhancing digital literacy for MSME actors is a strategic step that needs to be carried out through comprehensive training programs encompassing basic operational skills to strategic capabilities in utilizing technology. Furthermore, the government is expected to provide equitable digital infrastructure, particularly in areas with significant MSME potential but limited internet access. MSMEs should also be encouraged to utilize digital platforms such as e-commerce and social media, supported through collaborations with digital service providers. To accelerate digital transformation, government policies in the form of tax incentives, training subsidies, and technology-based business mentoring are crucial. On the other hand, MSME actors need to conduct regular evaluations of the effectiveness of their technology adoption to ensure optimal outcomes. Continuous education on technological advancements, strengthening managerial capacity, and raising awareness about the importance of digital security are also key elements in supporting the success of MSME digitalization. With these measures, MSMEs are expected to improve their competitiveness and business sustainability in the digital economy era.

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