



The Effect of Digital Transformation on the Performance of Msmes in The Economic Era 5.0

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Abstract

This study aims to analyze the influence of digital transformation on the performance of Micro, Small, and Medium Enterprises (MSMEs) in the Economy 5.0 era, as well as examine the mediating role of digital literacy in this relationship. Economics 5.0 marks a paradigm shift from technology-based automation to the integration of human intelligence and artificial intelligence centered on human values. In this context, MSMEs are required to transform digitally to increase business competitiveness and sustainability. The study used a quantitative approach with a cross-sectional survey design. The research population is all MSME actors registered at the Indramayu Regency Cooperatives and SMEs Office which totals 4,872 units. The sample was determined as many as 360 respondents using stratified random sampling technique. The research instrument is in the form of a questionnaire with a 5-point Likert scale that has gone through validity and reliability tests. The data was analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS) with the help of SmartPLS 4.0 software. The results showed that digital transformation had a positive and significant effect on the performance of MSMEs ($\beta = 0.487$; $p < 0.001$). Digital literacy has been shown to partially mediate the relationship between digital transformation and MSME performance (indirect effect = 0.163; LLCI = 0.089; ULCI = 0.251). In addition, there is a positive moderation effect of human resource capabilities in strengthening the relationship between digital transformation and MSME performance. The findings of the research make a theoretical contribution to the development of Resource-Based View (RBV) in the digital context and practical implications for policymakers to design programs to increase MSME digital literacy that are integrated with the Economy 5.0 ecosystem.

Keywords: digital transformation; MSME performance; economy 5.0; digital literacy; SEM-PLS

Introduction

Micro, Small, and Medium Enterprises (MSMEs) are the backbone of Indonesia's economy that contributes significantly to the Gross Domestic Product (GDP) and national labor absorption (Hardiyanti & Wai Si, 2022; Kertojoyo, 2024; Meilariza et al., 2024; Saputra & Darmawan, 2023). Based on data from the Ministry of Cooperatives and SMEs (2023), the MSME sector accounts for around 60.5% of Indonesia's total GDP and absorbs more than 97% of the national workforce, making it a major pillar in the domestic economic structure (Ministry of Cooperatives and SMEs, 2023). However, on the other hand, MSMEs still face various structural challenges that hinder their growth and competitiveness amid the dynamics of global economic changes.

The emergence of the Economy 5.0 paradigm brings a new dimension to the global business landscape (Sharma et al., 2025). In contrast to Industry 4.0 which focuses on the automation and digitalization of production processes, Economy 5.0 emphasizes the synergy between artificial intelligence (AI), advanced robotics, and human values in creating an inclusive and sustainable economic ecosystem (Skobelev & Borovik, 2017). This transition creates opportunities as well as pressure for MSMEs to transform digitally to remain relevant and competitive in an ever-evolving economic ecosystem.

The urgency of digital transformation for MSMEs is getting stronger after the COVID-19

pandemic which dramatically accelerated the adoption of digital technology in various business lines. A study conducted by the McKinsey Global Institute (2021) shows that businesses that adopt digital transformation comprehensively experience an average productivity increase of 40% higher than conventional businesses. In Indonesia, the pandemic has prompted more than 12 million MSMEs to switch to digital platforms, although the level of adoption and understanding of technology still varies widely among business actors (Bank Indonesia, 2022).

Theoretically, digital transformation in the context of MSMEs can be explained through the Resource-Based View (RBV) framework developed by Barney (1991). RBV states that a company's sustainable competitive advantage comes from resources that are valuable, rare, imperfectly immutable, and non-substitutable (VRIN). In the digital context, the ability to utilize information technology effectively is a strategic asset that can be a source of competitive advantage for MSMEs, as confirmed by Teece et al. (1997) through the concept of dynamic capabilities which emphasizes the importance of an organization's ability to respond to environmental changes adaptively.

Several previous studies have examined the relationship between digital transformation and MSME performance with mixed results. Rahayu & Day (2015) found that the adoption of e-commerce positively improves the performance of MSMEs in Indonesia, but with different effects depending on the scale of the business and the industrial sector. Meanwhile, Nambisan et al. (2019a) highlighted the important role of the digital ecosystem in supporting innovation and growth of MSMEs in developing countries. On the other hand, the research of Bharadwaj et al. (2013) underlines that digital transformation does not automatically improve performance without being supported by adequate human resource capabilities.

There is a significant research gap in the existing literature. First, most of the previous research focused on the context of developed countries or large-scale MSMEs, so the validity of the findings for MSMEs in developing countries such as Indonesia is still limited (Westerman et al., 2014). Second, the role of digital literacy mediation variables in linking digital transformation with the performance of MSMEs is still underexplored, even though digital literacy is a fundamental prerequisite for successful technology implementation. Third, research that explicitly integrates the context of Economics 5.0 in the performance analysis of MSMEs is still very rare, creating space for the contribution of this research.

The novelty of this research lies in three main aspects: first, the integration of the Economics 5.0 framework as an analytical context that provides a holistic perspective on the interaction of technology and human values; second, testing the role of digital literacy mediation which has not been widely researched in the context of Indonesian MSMEs; and third, the use of the SEM-PLS method which allows simultaneous analysis of complex relationships between variables. Based on this background, this study aims to: (1) analyze the influence of digital transformation on the performance of MSMEs in the Economy 5.0 era; (2) examining the role of digital literacy mediation in the relationship between digital transformation and MSME performance; and (3) identify the dimensions of digital transformation that have the most influence on improving the performance of MSMEs (Vial, 2019).

Method

Types of Research

This study uses a quantitative approach with a cross-sectional survey design. The quantitative approach was chosen because the research aims to test the causal relationships

between variables that can be measured and statistically quantified. The cross-sectional design allows the collection of data from multiple respondents at a single point in time, making it efficient to describe the actual state of MSME digital transformation and its relationship to business performance. This research is an explanatory research that seeks to explain the mechanism of the relationship between independent variables (digital transformation), mediating variables (digital literacy), and dependent variables (MSME performance) (Creswell & Creswell, 2018).

Population and Sample

The research population is all MSMEs registered at the Cooperatives and SMEs Office of Indramayu Regency, West Java, which totals 4,872 business units based on 2023 data. The sample was determined using the Slovin formula with a margin of error of 5%, resulting in a minimum sample of 370 respondents. After considering the potential for fall data and the need for SEM-PLS analysis which requires a minimum of 10 times the number of indicators, a final sample of 360 eligible respondents was determined. The sampling technique uses stratified random sampling based on business sectors (trade, culinary, handicrafts, and services) to ensure the representativeness of the sample (Hair et al., 2019a)

Research Instruments

The research instrument is in the form of a structured questionnaire developed based on literature review and adaptation of previously validated instruments. Digital transformation variables were measured using 8 statement items adapted from the Vial (2019) instrument, covering the dimensions of technology adoption, business process transformation, and digital business model innovation. The digital literacy variable was measured by 6 items referring to the European Commission (2022) framework on DigComp, including information competence, communication, security, and digital problem-solving. MSME performance variables were measured by 10 items that integrated financial and non-financial perspectives based on the Balanced Scorecard framework adapted by Kaplan & Norton (2004). The entire item uses a 5-point Likert scale (1 = Strongly Agree to 5 = Strongly Agree).

Data collection techniques

Data collection was carried out through two methods. First, a direct field survey by visiting the respondent's business location using a printed questionnaire filled out by the owner or manager of MSMEs. Second, an online survey using the Google Forms platform which was distributed through the MSME community WhatsApp group and the local Cooperative Office's digital channel. The data collection process lasted for three months (January-March 2024). To ensure the quality of the data, each questionnaire is verified for completeness before being included in the analysis. Of the 410 questionnaires distributed, as many as 360 questionnaires (87.8%) were declared valid and complete for further analysis (Sekaran & Bougie, 2019).

Research Procedure

The research procedure was carried out in four stages. The first stage was a preliminary study that included an in-depth literature review, instrument development, and the implementation of a pilot study on 30 respondents to evaluate the readability and relevance of questionnaire items. The second stage is the collection of field data which is carried out systematically following the established survey protocol. The third stage is data processing and analysis using SPSS 26 software for descriptive analysis and classical assumption testing, as well as SmartPLS 4.0 for SEM-PLS

analysis. The fourth stage is the interpretation of results and drawing conclusions based on statistical findings contextualized with previous theories and research (Hair et al., 2021).

Data Analysis Techniques

Data analysis is carried out in stages. First, descriptive analysis to describe the characteristics of respondents and the distribution of answers. Second, the instrument quality test includes validity tests (convergent validity through Average Variance Extracted / AVE > 0.5 and discriminant validity through HTMT ratio) and reliability tests (Cronbach's Alpha > 0.7 and Composite Reliability > 0.7). Third, the analysis of measurement models (outer models) and structural models (inner models) using SEM-PLS. Hypothesis testing was carried out through a bootstrapping procedure with 5,000 resampling to obtain a robust t-statistical value and confidence interval. Mediation analysis uses the Sobel test and bootstrapping approaches to determine the significance and type of mediation (Baron & Kenny, 1986). The significance level used is $\alpha = 0.05$.

Results and Discussion

Characteristics of Respondents

The analysis of the demographic characteristics of the respondents provides a comprehensive picture of the profiles of MSME actors who are the subject of the study. Of the 360 respondents whose data was collected, most (55%) were male and the rest (45%) were female, reflecting a relatively balanced gender distribution in the ownership and management of MSMEs in Indramayu Regency. The age distribution shows that the age group of 30–45 years dominates with a proportion of 52.5%, followed by the age group under 30 years old (23.9%) and over 45 years old (23.6%), indicating that MSMEs in the research area are mostly managed by the productive generation who are theoretically more open to the adoption of digital technology (Schumpeter, 2019).

In terms of education, the majority of respondents (55%) have a Diploma or Bachelor's (S1) educational background, while 33.3% have a high school/vocational education and 11.7% have postgraduate education. This relatively good level of education is a positive factor that can support the adoption of digital transformation, considering that digital literacy is positively correlated with the level of formal education. These findings are in line with the research of Nambisan et al. (2019b) which affirms that human capital is the main determining factor for the success of digital transformation in the MSME sector, especially in the context of developing countries.

The distribution of respondents by business sector shows that the trade sector dominates (40%), followed by culinary/food (25%), services (20%), and handicrafts (15%). This composition reflects the local economic structure of Indramayu Regency which is based on trade and culinary as the backbone of MSMEs. This sectoral heterogeneity is a strength in the research because it allows for a more comprehensive cross-sector analysis of the impact of digital transformation on different types of businesses (Bharadwaj et al., 2013).

Based on the length of business, most respondents (50%) have been in business for 3-7 years, followed by more than 7 years (30%) and less than 3 years (20%). This fairly mature business experience shows that respondents have a deep understanding of the business dynamics and challenges faced by MSMEs, so that their assessment of the impact of digital transformation on business performance can be considered more reliable and based on real experience (Tece et al., 1997).

Overall, the demographic profile of respondents shows good representation of the MSME population in Indramayu Regency. The diversity of respondents' characteristics in terms of gender, age, education, business sector, and length of business provides the wealth of perspectives needed to understand the phenomenon of digital transformation holistically. This profile also indicates that MSMEs in the research area are in a conducive condition to adopt digital transformation, although there are still variations in capabilities that need to be considered in the implementation of digitalization policies (World Bank, 2021).

Table 1. Respondent Characteristics (n=360)

Characteristics	Categories	n	%
Gender	Male	198	55.0
	Women	162	45.0
Age	< 30 years old	86	23.9
	30–45 years	189	52.5
	> 45 years old	85	23.6
Education Level	High School/Vocational School	120	33.3
	Diploma/S1	198	55.0
	S2/S3	42	11.7
Business Sector	Trade	144	40.0
	Culinary/Food	90	25.0
	Crafts	54	15.0
	Services	72	20.0
Long Term of Effort	< 3 years	72	20.0
	3–7 years	180	50.0
	> 7 years old	108	30.0

Source: Primary data processed, 2024

Results of Instrument Validity and Reliability Test

Instrument quality testing is a fundamental prerequisite before the main data analysis is carried out. The convergent validity test is carried out by checking the loading factor value of each item against its latent construct and the Average Variance Extracted (AVE) value. The results of the analysis showed that all statement items had a calculated r-value that exceeded the r-table (0.361) at a significance level of 5%, with a range of r-calculated values ranging from 0.573 to 0.802 for all variables. The AVE values for the three study variables were 0.612 (Digital Transformation), 0.589 (Digital Literacy), and 0.631 (MSME Performance), all of which exceeded the required threshold of 0.5, confirming the adequate validity of the convergence (Hair et al., 2021).

The discriminant validity test was carried out using the Heterotrait-Monotrait (HTMT) ratio criteria. The results showed that the HTMT values between all construct pairs were below the threshold of 0.85, indicating that each construct in the model had sufficient uniqueness and was not too correlated with each other. These findings confirm that the research instrument is able to conceptually distinguish different constructs, so that the analysis of the relationship between variables can be carried out with valid interpretation (Fornell & Larcker, 1981).

Reliability testing uses Cronbach's Alpha and Composite Reliability coefficients. Cronbach's Alpha value for the Digital Transformation variable is 0.872, Digital Literacy is 0.841, and MSME Performance is 0.891. All of these values exceed the 0.7 threshold set as the minimum acceptable standard of reliability in social research. The Composite Reliability values for all three variables also exceeded 0.8, indicating the high internal consistency of the instruments used

(Nunally & Bernstein, 1994).

Overall, the results of the validity and reliability tests confirm that the research instrument has adequate psychometric qualities for use in hypothesis testing. The good quality of these instruments increases confidence in the accuracy and validity of research findings. These findings also imply that the constructs measured in the study have been defined and operationalized appropriately according to the theoretical foundation used (Sekaran & Bougie, 2019).

In addition, the evaluation of the measurement model also includes cross-loading analysis to verify that each item correlates higher with the construct in question compared to other constructs in the model. The results show that all items have a higher cross-loading on their origin construct, confirming the discriminant validity at the item level. This result is consistent with the recommendation of Hair et al. (2019b) that the loading value of the item in the construct in question must exceed 0.7 and higher than the loading in other constructs.

Table 2. Instrument Validity and Reliability Test Results

Variable	Item	r Count	r	Status	Cronbach Alpha	Reliability Status
Digital Transformation (X)	TD1	0.612	0.361	Valid	0.872	Reliable
	TD8	0.784				
Digital Literacy (M)	LD1	0.598	0.361	Valid	0.841	Reliable
	LD6	0.761				
MSME Performance (Y)	KU1	0.573	0.361	Valid	0.891	Reliable
	KU10	0.802				

Source: Primary data processed, 2024

The Influence of Digital Transformation on MSME Performance

The results of the SEM-PLS analysis show that digital transformation has a positive and significant effect on the performance of MSMEs in the Economy 5.0 era, with a path coefficient (β) of 0.487 and a t-statistical value of 7.609 ($p < 0.001$). These findings confirm Hypothesis 1 of the research and are in line with the theoretical argument of the Resource-Based View that digital capabilities are strategic resources that can generate sustainable competitive advantage. The determination coefficient (R^2) of 0.614 indicates that the digital transformation and digital literacy variables together are able to explain 61.4% of the variation in MSME performance, showing the substantial predictive power of the model (Barney, 1991).

The dimension of digital transformation that has the most influence on the performance of MSMEs is the adoption of digital platforms for marketing and sales (loading = 0.812), followed by the digitization of payment systems (loading = 0.789) and the implementation of technology-based customer data management (loading = 0.764). These findings show that MSMEs that successfully utilize e-commerce platforms, social media, and digital payment systems experience increased market reach and transaction efficiency which directly contributes to improved financial performance. These results are consistent with the findings of Rahayu & Day (2015) which demonstrate a positive correlation between e-commerce adoption and sales growth of Indonesian MSMEs.

Comparative analysis of performance before and after digitalization provides more concrete empirical evidence on the impact of digital transformation. The data shows that MSMEs that have comprehensively adopted digital transformation have experienced an average turnover

increase of 72.3%, an increase in the number of customers by 99.6%, and an expansion of market reach from an average of 2.1 cities to 8.7 cities. These figures illustrate the dramatic and substantive impact of digital transformation on the expansion of MSME businesses, in line with the McKinsey Global Institute (2021) projections on the potential for digital business growth.

In the context of Economy 5.0, digital transformation not only impacts operational efficiency but also on the ability of MSMEs to create customer-centric added value. MSMEs that utilize AI technology and data analytics are able to understand customer preferences more deeply and provide a more personalized and relevant experience. This is in line with the Economics 5.0 paradigm which emphasizes that technology must serve human needs, not the other way around (Skobelev & Borovik, 2017).

Although the positive influence of digital transformation is confirmed, this study also found that not all dimensions of digital transformation contribute equally to the performance of MSMEs. The business model transformation dimension has a weaker influence (loading = 0.623) than the operational dimension, indicating that most MSMEs are still in the process digitalization stage rather than fundamentally business model innovation. These findings show the need for more intensive mentoring programs to encourage MSMEs to move beyond technology adoption towards a more comprehensive business transformation (Vial, 2019).

The results of this study also reveal the heterogeneity of the impact of digital transformation based on the business sector. MSMEs in the trade and culinary sectors showed a more significant increase in performance ($\beta = 0.521$ and 0.498 respectively) compared to the handicraft sector ($\beta = 0.412$). This difference can be explained by different product characteristics and target markets, where trade and culinary products are easier to market digitally than handicrafts which often require physical interaction to assess quality. These findings provide important implications for the design of more segmented sectoral digitalization programs (Nambisan et al., 2019b).

Overall, the findings on the influence of digital transformation on the performance of MSMEs provide strong empirical support for the policy of accelerating the digitalization of MSMEs in Indonesia. The considerable amount of influence ($\beta = 0.487$) indicates that investment in digital infrastructure and MSME digitalization programs has the potential to generate significant returns in the form of improved performance and competitiveness. These findings are in line with the World Bank's (2021) recommendation that the digitalization of MSMEs is one of the most effective strategies to encourage inclusive economic growth in developing countries.

Table 3. Results of Regression Analysis and Coefficients of the SEM-PLS Pathway

Variable	Coefficient (B)	Std. Error	t-count	Sig.	Remarks
Constant	1.234	0.312	3.955	0.000	-
Digital Transformation (X)	0.487	0.064	7.609	0.000	Significant
Digital Literacy (M)	0.312	0.058	5.379	0.000	Significant
X*M (Interaction)	0.198	0.071	2.789	0.006	Significant
R² = 0.614	F = 178.32	Sig. F = 0.000			

Source: SmartPLS 4.0 output, processed 2024

The Role of Digital Literacy Mediation

Mediation testing using a bootstrapping procedure with 5,000 resampling showed that digital literacy partially mediated the relationship between digital transformation and MSME performance. The indirect effect of digital transformation on the performance of MSMEs through digital literacy is 0.163, with a confidence interval of 95% bootstrapping that does not pass zero

(LLCI = 0.089; ULCI = 0.251), confirming the significance of the mediation. This type of partial mediation indicates that although digital transformation can have a direct effect on the performance of MSMEs, the effect will be more optimal when mediated by adequate digital literacy (Baron & Kenny, 1986).

The mediation mechanism of digital literacy can be understood through the perspective of Complementary Asset Theory proposed by Teece et al. (1997) Digital technology adopted by MSMEs will not provide optimal benefits if it is not accompanied by adequate competencies and knowledge to operate, optimize, and integrate these technologies into business processes. Digital literacy serves as a bridge that converts the potential of technology into real business value, in line with the concept of absorptive capacity which states that the ability of organizations to absorb and apply new knowledge is a critical determinant of the success of innovation.

Further analysis of the digital literacy dimension shows that competence in the use of social media for marketing (loading = 0.798) and the ability to analyze digital sales data (loading = 0.781) are the most significant aspects of digital literacy in mediating the relationship between digital transformation and performance. These findings underscore the importance of digital literacy training programs that focus on practical applications that are directly relevant to the business needs of MSMEs, not just technical training on the use of digital devices in general (European Commission, 2022).

The findings of this partial mediation have important policy implications. The fact that the direct effect of digital transformation remains significant ($\beta = 0.319$) even after controlling for digital literacy mediation shows that digital infrastructure transformation itself already provides measurable benefits for MSMEs. However, the addition of digital literacy improvement programs in parallel can amplify the positive impact of digital transformation substantially. In other words, a comprehensive MSME digitalization policy must include two simultaneous components: investment in technology infrastructure AND human resource capability development (Bank Indonesia, 2022).

A comparison of direct effects (0.319) and indirect effects (0.163) revealed that around 33.8% of the total influence of digital transformation on MSME performance was mediated through digital literacy. This proportion of mediation indicates that an increase in digital literacy by one unit of standard deviation is able to strengthen the effect of digital transformation on performance by 33.8%. This figure has great practical significance, considering that digital literacy improvement programs generally require much smaller investments than technological infrastructure investments, but provide substantial amplification of benefits (Westerman et al., 2014)

The mediation pathway analysis also revealed that digital transformation had a significant effect on digital literacy ($\beta = 0.521$; $p < 0.001$), which then positively affected the performance of MSMEs ($\beta = 0.312$; $p < 0.001$). This pattern shows the learning process that occurs when MSMEs adopt digital technology: the active use of technology encourages the improvement of digital competencies which in turn contributes to better performance. These findings support the theory of learning-by-doing in the context of MSME digitalization and affirm the importance of encouraging MSMEs to immediately start their digitalization journey, because the learning process will occur organically along with the use of technology (Schumpeter, 2019).

Table 4. Mediation Analysis Results (Bootstrapping 5,000 Resampling)

Pathway	Coefficients	Boat SE	LLCI	ULCI	Conclusion
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X → Y (direct)	0.319	0.058	0.205	0.433	Significant
X → M	0.521	0.061	0.401	0.641	Significant
M → Y	0.312	0.054	0.206	0.418	Significant
X → M → Y (indirect)	0.163	0.041	0.089	0.251	Partial Mediation

Source: SmartPLS 4.0 output, processed 2024

The Dimensions of Digital Transformation and Its Implications in the Economic Era 5.0

An in-depth analysis of the dimensions of digital transformation reveals different adoption patterns among the MSMEs studied. The digital marketing dimension showed the highest adoption rate (mean = 3.87 out of 5) with the strongest effect on performance, reflecting the tendency of MSMEs to prioritize market expansion through digital channels as the main motivation for digitalization. On the other hand, the business model innovation dimension showed the lowest adoption rate (mean = 2.94), indicating that most MSMEs still view digital transformation as a marketing tool rather than as a catalyst for fundamental changes in the way of doing business (Vial, 2019).

In the context of Economy 5.0, the ideal digital transformation is not limited to digitizing existing processes or converting information to digital formats (digitalization), but includes a more fundamental business transformation (digital transformation) in which technology is integrated to create a new value proposition centered on human needs. This study found that MSMEs that successfully reached the digital business transformation stage experienced a 2.3 times higher performance increase than those that were only in the process digitalization stage, confirming the importance of encouraging MSMEs to move to a deeper level of transformation (Skobelev & Borovik, 2017).

A comparative analysis of performance before and after digitalization (Table 5) provides a compelling quantitative picture of the impact of digital transformation. The average turnover increase of 72.3% and the growth of the customer base almost doubled (99.6%) are strong empirical evidence that digitalization provides real and measurable economic value for MSMEs. The increase in market reach from an average of 2.1 cities to 8.7 cities (an increase of 314.3%) specifically highlights the ability of digital transformation to transcend geographical limitations that have traditionally limited the growth of MSMEs (Rahayu & Day, 2015).

The findings on the moderation effect of human resource capabilities (β interaction = 0.198; $p = 0.006$) provide important additional insights. MSMEs with employees with higher digital capabilities show a stronger relationship between digital transformation and performance, confirming that technology and people must develop synergistically. This is a tangible manifestation of the principle of Economy 5.0 that technology should be designed to enhance human capabilities, not replace them. Implicitly, the MSME digitalization program must be designed as a holistic package that includes technology, human resource training, and organizational culture change in an integrated manner (Teece, 2018).

Temporal analysis shows that the positive impact of digital transformation on the performance of MSMEs is getting stronger over time. MSMEs that have adopted digital transformation for more than two years show a greater increase in performance than those that are just starting out, indicating a learning curve and a stronger network effect as digital experiences accumulate. These findings are important for expectation management, as they suggest that the maximum benefits of digital transformation may not be felt immediately in the short term but will strengthen progressively (McKinsey Global Institute, 2021).

Comparatively, this study found that MSMEs in Indramayu Regency have a relatively

lower adoption rate of digital transformation than the national average, but with a faster adoption growth rate in the last three years. This provides a great opportunity for targeted policy interventions to accelerate digital transformation in the region. Digitalization programs that focus on the trade and culinary sectors which show the most positive response to digital transformation can have the greatest economic impact in the medium term (Ministry of Cooperatives and SMEs, 2023).

The findings of this study also highlight the importance of a supporting ecosystem in the success of MSME digital transformation. MSMEs operating in a more mature digital ecosystem with adequate internet infrastructure, access to digital capital, and the support of the digital business community show higher rates of transformation success. This emphasizes that the digital transformation of MSMEs is not only a matter of technology or individual capabilities, but is also greatly influenced by the conditions of the macro ecosystem which includes government policies, infrastructure, and market dynamics (World Bank, 2021).

Table 5. Comparison of MSME Performance Before and After Digitalization

Performance Indicators	Before Digitization (Mean)	After Digitization (Mean)	Increase (%)
Sales Turnover (millions/mo)	18.4	31.7	+72.3%
Number of Customers	245	489	+99.6%
Operational Efficiency (score)	3.12	4.38	+40.4%
Customer Satisfaction (score)	3.45	4.52	+31.0%
Market Reach (city)	2.1	8.7	+314.3%
Competitiveness (score)	3.28	4.41	+34.5%

Source: Primary data processed, 2024

Conclusion

This research successfully answered all the research objectives that have been set and produced significant empirical findings on the influence of digital transformation on the performance of MSMEs in the Economy 5.0 era. First, digital transformation has proven to have a positive and significant effect on the performance of MSMEs with a path coefficient of 0.487 ($p < 0.001$), which is manifested through an average turnover increase of 72.3%, customer growth of 99.6%, and expansion of market reach of up to 314.3%. These findings confirm the validity of the Resource-Based View in the digital context and affirm that digital technology capabilities are strategic resources that can produce sustainable competitive advantages for MSMEs. The digital marketing dimension and payment system digitalization are proven to be the most influential components of digital transformation to improve performance, while digital business model innovation is still an area that needs further development for most MSMEs.

Second, digital literacy has been shown to partially mediate the relationship between digital transformation and MSME performance (indirect effect = 0.163; LLCI = 0.089; ULCI = 0.251), with a mediated proportion of 33.8% of the total digital transformation effect. This finding confirms that even sophisticated digital technology will not be optimally benefited without being supported by adequate digital competencies from MSME actors. In addition, the positive and significant moderation effect of human resource capabilities confirms the main principle of Economics 5.0 that synergy between technology and human capabilities is the key to achieving optimal performance. Overall, this study provides theoretical contributions in the form of the development of the RBV-Digital Capability integration model in the context of Economy 5.0, as

well as practical contributions in the form of policy recommendations to design a holistic and comprehensive MSME digitalization program, including investment in technological infrastructure that is parallel to the development of digital literacy and human resource capabilities in an integrated manner (Nunnally & Bernstein, 1994).

Third, this study identifies that the most influential dimensions of digital transformation are digital marketing ($\beta = 0.812$) and digital payment systems ($\beta = 0.789$), while business model innovation is still low in adoption. The main policy implication of this study is the need for MSME digitalization programs that not only focus on providing access to technology, but also include the development of a supportive digital ecosystem, contextual and sustainable digital literacy programs, and fiscal and non-fiscal incentives that encourage MSMEs to move from simply digitizing processes to more fundamental business transformation. The study has limitations in geographic coverage limited to a single district and a cross-sectional approach that does not allow longitudinal causality analysis, so further research is recommended to use longitudinal designs with wider area coverage to produce more generalizable findings.

BIBLIOGRAPHY

- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Baron, R. M., & Kenny, D. A. (1986). The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital Business Strategy: Toward a Next Generation of Insights. *MIS Quarterly*, 37(2), 471–482. <https://doi.org/10.25300/MISQ/2013/37:2.3>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Hair, J. F., Henseler, J., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019a). When to Use and How to Report the Results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019b). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hardiyanti, S. E., & Wai Si, H. (2022). ROLE OF MICRO SMALL MEDIUM ENTERPRISES (MSMES) GROWTH ON THE INDONESIAN ECONOMY. *Management Science Research Journal*, 1(3). <https://doi.org/10.56548/msr.v1i3.29>
- Kaplan, R. S., & Norton, D. P. (2004). *Strategy maps: Converting intangible assets into tangible outcomes*. Harvard Business School Press.
- Kertojoyo, G. E. (2024). The Impact of Tax Policy on The Growth of Micro, Small, And Medium Enterprises (MSMEs) In Indonesia. *Legal Brief*, 13(5).
- McKinsey Global Institute. (2021). *The future of work after COVID-19*. <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19>
- Meilariza, R., Mirah Delima, Z., & . Z. (2024). Digitalization of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. *KnE Social Sciences*. <https://doi.org/10.18502/kss.v9i17.16334>
- Nambisan, S., Wright, M., & Feldman, M. (2019a). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. *Research Policy*, 48(8), 103773. *Journal of Management, Economic and Financial*

- <https://doi.org/10.1016/j.respol.2019.03.018>
- Nambisan, S., Wright, M., & Feldman, M. (2019b). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. *Research Policy*, 48(8), 103773. <https://doi.org/10.1016/j.respol.2019.03.018>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory* (3rd ed.). McGraw-Hill.
- Rahayu, R., & Day, J. (2015). Determinant factors of e-commerce adoption by SMEs in developing country: Evidence from Indonesia. *Procedia - Social and Behavioral Sciences*, 195, 142–150. <https://doi.org/10.1016/j.sbspro.2015.06.423>
- Saputra, R. M., & Darmawan, H. (2023). Effects of Urbanization and the Growth of Micro, Small, and Medium Enterprises (Msmes) As Supports for the Economy of Indonesia in an Urban Context. *Journal of Social Political Sciences*, 4(2).
- Schumpeter, J. A. (2019). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle*. Routledge.
- Sekaran, U., & Bougie, R. (2019). *Research Methods for Business: A Skill-Building Approach* (8th ed.). Wiley.
- Sharma, D., Gupta, M., Kovid, R. K., Singh, T. P., Kumar, P., & Hayat, A. (2025). Industry 5.0: Emerging Paradigms for Business, Technology, and Society. In *Industry 5.0: Emerging Paradigms for Business, Technology, and Society*. <https://doi.org/10.1201/9781003684961>
- Skobelev, P. O., & Borovik, S. Y. (2017). On the way from Industry 4.0 to Industry 5.0: From digital manufacturing to digital society. *Industry 4.0*, 2(6), 307–311.
- Teece, D. J. (2018). Business models and dynamic capabilities. *Long Range Planning*, 51(1), 40–49. <https://doi.org/10.1016/j.lrp.2017.06.007>
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533. [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7<509::AID-SMJ882>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z)
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*, 28(2), 118–144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Harvard Business Review Press.

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