

The Effect Of Digital Transformation On Company Performance In Umkm In The Food Industry With Innovation Business Model As A Mediation Variable

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Abstract

This research aims to 1) test and analyze the influence of digital transformation and company performance in MSMEs at the food souvenir center in Wonosobo, 2) test and analyze the company's performance in MSMEs in Wonosobo, 3) test and analyze the influence of digital transformation on company performance in MSMEs mediated by innovation business models. The type of research used in this research is convenience sampling. This research involved 133 MSMEs in Wonosobo Regency, Central Java. Using an analysis tool in the form of PLS-SEM, the results of this research show that 1) there is an influence of innovation business models on company performance, 2) there is an influence of digital transformation on innovation business models, 3) there is an influence of digital transformation on company performance. 4) there is an influence of the mediating role of innovation business models on company performance. And there is an influence of the mediating role of innovation business models on digital transformation.

Keywords: Digital Transformation, Company Performance, Business Model Innovation, mediating role of business model innovation.

INTRODUCTION

The rapid economic growth in Indonesia presents competitive challenges for every company, particularly in the Micro, Small, and Medium Enterprises (MSME) sector. Companies face various obstacles, including consumer demand, product and service quality, and operational efficiency. Therefore, businesses must implement various

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IJEBIR, Volume 04 Issue 02, 2025



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strategies to survive in this competitive environment. One of the approaches adopted by MSMEs to gain a competitive advantage is digital transformation, which aims to enable businesses to adapt and compete in the market. According to Verhoef et al. (2021), digital transformation is a process conceptualized into three phases: digitization, digitalization, and digital transformation. Each phase implies a progressive step in the use of digital technology, resulting in more significant strategic imperatives for companies and enhancing the potential for transformation. According to Gong and Ribiere (2021), digital transformation refers to "a fundamental change process enabled by the innovative use of digital technology, accompanied by strategic influence on key resources and capabilities, with the goal of radically improving the company and redefining its value proposition for stakeholders" (Matt et al., 2015; Warner & Wager, 2019).

Digital transformation enables companies to leverage technological advancements to gain a competitive edge. According to Li et al. (2017) and Giustiziero et al. (2023), a notable example is the MSME sector, where the challenges of digital transformation are more pronounced due to significant resource constraints (Gong & Ribiere, 2021). As mentioned earlier, digital transformation is not merely the application of digital technology to optimize internal business processes but a fundamental transformation aimed at redefining the company's value proposition. However, as Eller et al. (2020) argue, not all MSMEs are prepared to undergo digital transformation. Innovative MSMEs play a crucial role in sustainable economic development in any country (Abdullahi-Abubakar et al., 2019). These enterprises have superior technological competencies, positioning them better for digital transformation. Thus, responding to calls for a better theoretical and empirical understanding of the relationship between digital transformation and firm performance (Eller et al., 2020; Verhoef et al., 2021; Foss & Saebi, 2017) is essential. While there is a conceptual correlation between digital transformation and business model innovation, empirical evidence on their relationship and roles in shaping the performance of innovative firms remains limited.

Considering this, the objectives of this study are: (1) to examine the impact of digital transformation and business model innovation on the performance of innovative firms and (2) to analyze the mediating role of business model innovation in the relationship between digital transformation and firm performance. Companies may possess strategic digital resources such as data, algorithms, or specialized applications that can be leveraged to achieve superior performance and gain a competitive advantage (Giustiziero et al., 2023; Helfat et al., 2023). Consistent with prior research (Teece, 2018; Ferreras-Méndez et al., 2021), we view business model innovation as a dynamic capability that

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facilitates changes in value creation, value delivery, and value capture. Following this theoretical rationale, we argue that (1) digital transformation provides new ways of conducting business that can stimulate business model innovation and (2) business model innovation enables companies to adapt and modify their business models in ways that facilitate effective profit generation.

Based on recent survey data from innovative MSMEs in Wonosobo, we propose and test our research model using Partial Least Squares Structural Equation Modeling (PLS-SEM). This study contributes to the existing literature on digital transformation and business model innovation in MSMEs in several ways. First, we offer new insights for researchers on the impact of digital transformation on business model innovation, thereby contributing to a deeper understanding of the drivers of business model innovation in innovative MSMEs. Second, we seek to enhance our knowledge of the mediating role of business model innovation in helping innovative MSMEs translate digital transformation into firm performance. Third, by focusing on innovative MSMEs, we move beyond a homogeneous treatment of such enterprises and provide new theoretical knowledge. Ultimately, this study is expected to make both theoretical and empirical contributions and raise critical questions to stimulate further research on digital transformation and business model innovation in MSMEs.

LITERATURE REVIEW

Digital Transformation

Digital transformation is a process divided into three stages: digitization, digitalization, and digital transformation, each representing a progressive step in adopting digital technology and driving deeper strategic imperatives for companies (Verhoef et al., 2021). It can be facilitated by restructuring cognitive management models, establishing new digital routines, and integrating new organizational structures to adopt and synchronize digital systems, yet how this transformation unfolds in practice remains unclear (Lanzolla et al., 2020). As a cognitive process, managers must envision new ways to compete, and employees at all levels must comprehend digital technology, with the extent of managerial focus on new digital business models depending on their digital mindset (Solberg et al., 2020). Given its complexity, digital transformation demands significant shifts in mindset, routines, and cognitive structures, posing challenges in exploring new digital opportunities while leveraging proven technologies, often creating tensions as organizations move away from pre-digital structures. A key area for future



research is understanding how organizations manage these strategic tensions in digital transformation (Lauritzen & Karafyllia, 2019).

Verhoef et al. (2021) conceptualize Digital Transformation as a three-phase process: digitization, digitalization, and digital transformation, each representing a deeper integration of digital technology and expanding strategic imperatives for companies. In practice, Digital Transformation helps businesses compete effectively in an increasingly digital world by leveraging financial resources and skilled personnel (Gong & Ribiere, 2021). It positively impacts innovative SMEs by enhancing data collection and processing for more precise strategic decisions (Volberda et al., 2021), improving digital customer interfaces to foster collaboration and engagement, and creating strong synergies for operational efficiency. For instance, it enables cost-effective goods transit and better information flow, reducing expenses and making innovative SMEs more profitable (Nasiri et al., 2020).

H1: *Digital Transformation has a positive effect on the performance of Innovative companies.*

According to Boto (2019) and Gong & Ribiere (2021), Digital Transformation drives Business Model Innovation through mechanisms such as experimenting with value creation, delivery models, and new ways to capture value. While theoretical arguments support a positive link between Digital Transformation and Business Model Innovation in SMEs, it also enables innovative SMEs to collect and analyze large, real-time, and diverse data for new services (Frank et al., 2019). Their smaller size allows greater adaptability and collaboration with suppliers and partners (Klein & Todesco, 2021), balancing power, responsibility, and independence within value chains (Autio et al., 2018). Innovative SMEs can leverage internal customer data to generate new revenue streams, such as data-driven services for customers or external organizations (Sorescu, 2017). Additionally, Digital Transformation enhances market segmentation and price personalization, improving firms' ability to capture value (Lanzolla et al., 2020).

H2: *Digital transformation has a positive effect on the business model of innovation in innovative MSMEs.*

Business Model

Business model innovation (BMI) is key to maximizing digital transformation, and creative SMEs must recognize its crucial role in design and implementation (Verhagen et al., 2023). As a vital source of value creation, BMI encompasses various innovations

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IJEBIR, Volume 04 Issue 02, 2025



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related to processes, products, or services (Foss & Saebi, 2017). It has fundamentally reshaped consumer expectations and behaviors, challenging conventional companies and impacting multiple industries, as consumers now engage through diverse media channels, communicate actively with businesses and peers, and navigate an increasingly digital purchase journey (Lemon & Verhoef, 2016). BMI involves planned, novel, and significant changes to key aspects of a company's business model or its structural linkages (Foss & Saebi, 2017, p. 201). In product markets, most SMEs operate within interconnected supplier-buyer networks, specializing in their core competencies and relying heavily on these networks for complementary products and services (Pahnke & Welter, 2019).

Business Model Innovation is recognized in the literature as a key dynamic capability for responding to external environmental changes and creating competitive advantage (Wirtz et al., 2016; Foss & Saebi, 2018; Heider et al., 2021). Despite potential threats to SMEs, innovative SMEs possess unique characteristics that allow them to leverage Business Model Innovation, enhancing customer appeal and overall performance (Ferrerias-Méndez et al., 2021). Business Model Innovation enables SMEs to utilize and reconfigure company resources in new domains, ultimately improving profitability (Latifi et al., 2021; Codini et al., 2023).

H3: *Business model innovation has a positive effect on the performance of innovative companies.*

Company Performance

Company performance in the digital era requires SMEs to not only leverage existing resources and capabilities but also develop new skills, processes, and mindsets to ensure sustainability, emphasizing a positive and holistic approach to innovation (Verhoef et al., 2021). Performance spans multiple business model dimensions, and future BMI studies should consider how dimensionality interacts with and influences variables within BMI's nomological network (Foss & Saebi, 2017). It reflects a firm's competitive advantage in environmental performance, financial performance, competitiveness, and corporate reputation (Khan et al., 2020). Designed as a second-order formative construct, company performance consists of four first-order formative constructs measured using Khan et al.'s (2020) scale.



Mediation Role of Business Model Innovation

Al-Debei and Avison (2010) propose that business models serve as a mediating construct between technological innovation and strategic goals. While prior BMI research has focused on its direct impact on organizational outcomes (e.g., Latifi et al., 2021), fewer studies have examined BMI as an internal intermediary mechanism (Guo et al., 2017; Ferreras-Méndez et al., 2021). Both DT and BMI contribute to SME performance (Bouwman et al., 2019). A seal is granted if, within the past three years, a company has received public innovation funding, holds a patent or tax benefits from verifiable innovation activities, or possesses official certification of innovative activities.

Business Model Innovation helps companies leverage the benefits of Digital Transformation by converting business opportunities identified through digital processes into new revenue streams (Bouwman et al., 2019). Similarly, Teece (2018) highlights that Business Model Innovation provides a pathway for transforming technological innovation into revenue generation. Additionally, it maximizes Digital Transformation by enhancing external coordination and enabling firms to allocate activities beyond their boundaries.

H4: *Business model innovation is a mediating variable that has a positive influence between digital transformation and innovative company performance.*

RESEARCH FRAMEWORK

Based on the description and explanation of theoretical investigations and hypotheses, a research model can be created which is used in this research. This research model is shown in the following figure:

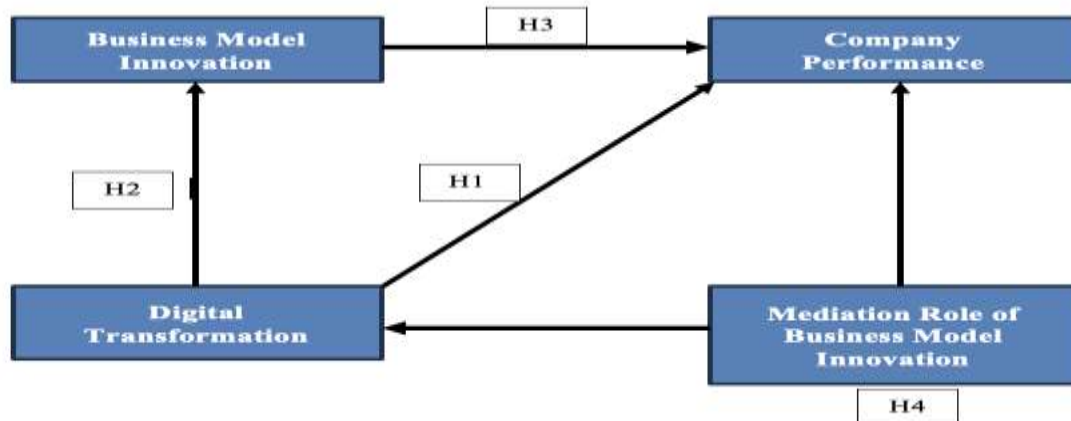


Figure 1. Research Framework

RESEARCH METHODS

The research employs a quantitative survey method, as it is one of the most widely used approaches in social science research (Babbie, 2020). According to Creswell (2014), quantitative research is an approach used to test objective theories by examining relationships between variables, which can be measured using instruments and analyzed statistically. This method enables the collection of original data to describe the target population (Krisnan, 2022). The study adopts a mixed-mode survey approach, combining both online and face-to-face data collection, as suggested by Olson et al. (2021). The data will be gathered through a closed-ended questionnaire, allowing researchers to capture the perceptions of MSME actors regarding the factors driving digital transformation, business model innovation, and firm performance, with business model innovation acting as a mediating variable.

The study population consists of MSMEs in Wonosobo, Central Java, that have been operating in the food industry for at least one year (Sekaran & Bougie, 2016). The sample consists of 133 MSMEs, selected using non-probability sampling, specifically convenience sampling, which allows researchers to collect data from easily accessible respondents. The sample size is determined using the "10-times rule" method, which sets the minimum required respondents based on the largest number of items measuring latent variables (PLS-SEM analysis). Primary data will be collected through questionnaires distributed via social media platforms such as Facebook, Instagram, WhatsApp, and Telegram, as well as through direct interactions with respondents. The questionnaire covers various aspects related to the impact of digital transformation and firm performance in MSMEs, mediated by business model innovation (Sekaran & Bougie, 2016).

RESULTS

From the results of the questionnaires distributed, 133 respondents were obtained. From a number of respondents, data analysis was then carried out using model evaluation. The evaluation of the measurement model was tested using several indicators, including:



Statistics Analysis**Outer Model Testing (Measurement Model)****Convergent Validity Testing**

An indicator is said to be valid if the loading factor of an indicator is positive and greater than 0.7 and the AVE value is more than 0.5. The loading factor value shows the weight of each indicator/item as a measure of each variable. An indicator with a large loading factor indicates that the indicator is the strongest (dominant) measure of the variable.

Table 1. Convergent Validity Testing Results

	<i>Business Model Innovation</i>	<i>Company Performance</i>	<i>Mediation Role of Business Model Innovation</i>	<i>Digital Transformation</i>
<i>BMI1</i>	0.777			
<i>BMI2</i>	0.849			
<i>BMI3</i>	0.804			
<i>BMI4</i>	0.866			
<i>BMI5</i>	0.786			
<i>BMI6</i>	0.753			
<i>BMI7</i>	0.851			
<i>KP1</i>		0.831		
<i>KP2</i>		0.841		
<i>KP3</i>		0.802		
<i>KP4</i>		0.848		
<i>PMBMI1</i>			0.815	
<i>PMBMI2</i>			0.827	
<i>PMBMI3</i>			0.792	
<i>TD1</i>				0.888
<i>TD2</i>				0.873
<i>TD3</i>				0.866
<i>TD4</i>				0.870
<i>TD5</i>				0.852

Table 2. AVE Results

	<i>Average variance extracted (AVE)</i>
<i>Business Model Innovation</i>	0.661
<i>Company Performance</i>	0.690
<i>Mediation Role of Business Model Innovation</i>	0.658
<i>Digital Transformation</i>	0.756



Based on table 2, it is known that the loading factor value produced by each indicator is more than 0.7 and the AVE value is more than 0.5. Thus, these indicators are declared valid as a measure of the latent variables.

Discriminant Validity Testing

Discriminant validity measures the validity of the model by examining the cross loading value and the Fornell-Larcker criterion, which shows the correlation between the construct and its indicators compared to other constructs. Discriminant validity is considered good if the square root value of the Average Variance Extracted (AVE) of each construct is higher than the correlation between the construct and other constructs in the model.

Table 3. Cross Loading results

	<i>Business Model Innovation</i>	<i>Company Performance</i>	<i>Mediation Role of Business Model Innovation</i>	<i>Digital Transformation</i>
<i>BMI1</i>	<i>0.777</i>	<i>0.374</i>	<i>0.209</i>	<i>0.290</i>
<i>BMI2</i>	<i>0.849</i>	<i>0.492</i>	<i>0.364</i>	<i>0.505</i>
<i>BMI3</i>	<i>0.804</i>	<i>0.512</i>	<i>0.479</i>	<i>0.497</i>
<i>BMI4</i>	<i>0.866</i>	<i>0.451</i>	<i>0.332</i>	<i>0.466</i>
<i>BMI5</i>	<i>0.786</i>	<i>0.528</i>	<i>0.351</i>	<i>0.483</i>
<i>BMI6</i>	<i>0.753</i>	<i>0.473</i>	<i>0.386</i>	<i>0.496</i>
<i>BMI7</i>	<i>0.851</i>	<i>0.544</i>	<i>0.387</i>	<i>0.533</i>
<i>KP1</i>	<i>0.447</i>	<i>0.831</i>	<i>0.350</i>	<i>0.459</i>
<i>KP2</i>	<i>0.611</i>	<i>0.841</i>	<i>0.490</i>	<i>0.509</i>
<i>KP3</i>	<i>0.453</i>	<i>0.802</i>	<i>0.405</i>	<i>0.548</i>
<i>KP4</i>	<i>0.460</i>	<i>0.848</i>	<i>0.448</i>	<i>0.443</i>
<i>PMBMI1</i>	<i>0.413</i>	<i>0.424</i>	<i>0.815</i>	<i>0.274</i>
<i>PMBMI2</i>	<i>0.400</i>	<i>0.441</i>	<i>0.827</i>	<i>0.432</i>
<i>PMBMI3</i>	<i>0.272</i>	<i>0.382</i>	<i>0.792</i>	<i>0.285</i>
<i>TD1</i>	<i>0.540</i>	<i>0.543</i>	<i>0.390</i>	<i>0.888</i>
<i>TD2</i>	<i>0.522</i>	<i>0.490</i>	<i>0.409</i>	<i>0.873</i>
<i>TD3</i>	<i>0.490</i>	<i>0.462</i>	<i>0.358</i>	<i>0.866</i>
<i>TD4</i>	<i>0.534</i>	<i>0.567</i>	<i>0.372</i>	<i>0.870</i>
<i>TD5</i>	<i>0.454</i>	<i>0.505</i>	<i>0.272</i>	<i>0.852</i>



In testing in this study, the Cross Loadings criteria will be applied. This test is useful for evaluating whether the construct has good discrimination through a comparison of loading levels, where the value of the specified construct must be greater than the other constructs. All variable items are proven valid because each construction value has exceeded 0.7, which is used as a benchmark in assessing cross loadings testing. Therefore, it can be concluded that the latent variables in this study have been well explained by the indicators, and the research variables are stated to have discriminant validity which shows positive results.

Reliability Testing

Table 4. Reliability Testing Results

	<i>Cronbach's alpha</i>	<i>Composite reliability (rho_a)</i>	<i>Composite reliability (rho_c)</i>
<i>Business Model Innovation</i>	0.915	0.919	0.932
<i>Company Performance</i>	0.851	0.856	0.899
<i>Mediation Role of Business Model Innovation</i>	0.743	0.753	0.852
<i>Digital Transformation</i>	0.920	0.922	0.939

The table above shows that the composite reliability values for all research variables are greater than 0.7, and the Cronbach Alpha values are also above 0.7. These findings suggest that each variable satisfies the criteria for composite reliability and Cronbach alpha, indicating a high level of reliability for all variables. Therefore, further analysis can proceed by evaluating the goodness of fit model through an assessment of the inner model.

Inner Model (Structural Model)

The evaluation of the PLS structural model begins by looking at the R-square of each dependent latent variable. Table 6 is the result of the R-square estimate using PLS.



R-Square (R^2)**Table 5. R-Square Testing Results**

	<i>R-square</i>	<i>R-square adjusted</i>
<i>Bisnis Model Inovasi</i>	0.343	0.338
<i>Kinerja Perusahaan</i>	0.495	0.483
<i>Transformasi Digital</i>	0.174	0.167

In the table results above, the adjusted R-Square value for the independent variable Business Model Innovation is 0.338. This means that the ability of the independent variable Business Model Innovation to explain X2 is 33.8% (Moderate). So it is said that the ability of the company performance variable, and digital transformation in explaining the moderate business model innovation is 33.8%, while the independent variable Company performance is 0.484. This means that the ability of the independent variable company performance to explain X1 is 48.3% (moderate). So it is said that the ability of the business model innovation variable, and digital transformation in explaining moderate company performance is 48.3%.

Predictive Relevance (Q-Square)**Table 6. Predictive Relevance**

	<i>Q²predict</i>	<i>RMSE</i>	<i>MAE</i>
<i>Business Model Innovation</i>	0.153	0.935	0.814
<i>Company Performance</i>	0.238	0.885	0.716
<i>Digital Transformation</i>	0.153	0.937	0.718

Based on the image above, seen from the Q-Square value of the dependent variable through the PLS Predict analysis shows the numbers 0.254 and 0.221. If using the parameters from Chin (1998), the Q-square value shows moderate predictive relevance. This means that endogenous variables can be measured well in the structural model in PLS-SEM to estimate observational data.



Hypotesis Testing

Table 8. Hypotesis Testing Results

	<i>Original sample (O)</i>	<i>Sample mean (M)</i>	<i>Standard deviation (STDEV)</i>	<i>T statistics (O/STDEV)</i>	<i>P values</i>
Business Model Innovation -> Company performance	0.309	0.311	0.124	2.499	0.012
Mediation Role of Business Model Innovation -> Company Performance	0.247	0.249	0.112	2.204	0.028
Mediation Role of Business Model Innovation -> Digital Transformation	0.417	0.421	0.092	4.518	0.000
Digital Transformation -> Business Model Innovation	0.586	0.589	0.073	7.976	0.000
Digital Transformation -> Companu Performance	0.308	0.308	0.121	2.539	0.011



DISCUSSION

The findings of this study confirm that digital transformation positively and significantly impacts firm performance. The hypothesis testing results indicate an original sample value of 0.308, with a p-value of 0.011, suggesting a statistically significant relationship. These findings imply that the adoption of digital transformation strategies enhances a firm's operational efficiency, competitiveness, and overall performance. Thus, MSMEs that embrace digital tools and technologies can improve productivity, streamline processes, and strengthen their market positioning.

Additionally, the study examines the relationship between digital transformation and business model innovation among 133 MSMEs in Wonosobo, Central Java. The results reveal a strong positive influence, with an original sample value of 0.586 and a p-value of 0.000, confirming statistical significance. This suggests that digital transformation fosters business model innovation by enabling firms to develop new value propositions, optimize resource utilization, and improve customer engagement. The findings highlight the crucial role of digitalization in driving business model innovation, which, in turn, contributes to business growth and sustainability.

Furthermore, the study explores the mediating role of business model innovation in the relationship between digital transformation and firm performance. The results indicate that business model innovation positively influences firm performance, with an original sample value of 0.309 and a p-value of 0.012. Additionally, the mediation analysis shows a significant impact of business model innovation on both digital transformation (0.417, p-value 0.000) and firm performance (0.247, p-value 0.028). These findings suggest that business model innovation acts as a critical intermediary, enhancing the effectiveness of digital transformation initiatives and ultimately improving firm performance.

CONCLUSION

This study examines the impact of digital transformation and business model innovation on firm performance in Wonosobo Regency, Central Java. Researchers distributed questionnaires via Google Forms, gathering responses from 133 participants who met the study criteria. The collected data was analyzed using SmartPLS 4, leading to the following conclusions: (1) Digital transformation has a clear and positive impact on firm performance, indicating that MSMEs in Wonosobo integrate digital transformation into their business strategies to enhance performance. (2) Business model innovation significantly influences firm performance, suggesting that MSMEs in Wonosobo view it as

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a key factor in improving their business outcomes. (3) Digital transformation strongly affects business model innovation, implying that MSMEs consider it a crucial driver of innovative business models. (4) The mediating role of business model innovation is significant, reinforcing the interconnectedness between digital transformation and firm performance among MSMEs in Wonosobo.

RESEARCH LIMITATIONS

This study has certain limitations that should be considered for future research to achieve more optimal results. One key limitation is that the research was conducted solely in Wonosobo Regency, Central Java. As a result, the findings and the sampling techniques used may affect the generalizability of the results to other regions, which may have different economic and social dynamics. Future studies should consider expanding the research scope to multiple regions to provide a broader perspective on the impact of digital transformation and business model innovation on firm performance.

RECOMMENDATION

This study highlights the positive impact of digital transformation on firm performance. Therefore, MSME actors should continuously foster an innovative mindset, take calculated risks, and remain responsive to changes in digital transformation to enhance business performance. Additionally, given the significant influence of business model innovation, MSMEs should focus on exploring entirely new market segments, particularly in product and service development, process improvements, and market adaptation. Furthermore, as firm performance plays a crucial role in driving business model innovation, MSMEs must bring new products or services to market more swiftly than their competitors. Thus, reassessing their strategies will be essential for maximizing potential benefits. Lastly, the mediating role of business model innovation emphasizes its strong impact on both firm performance and digital transformation, reinforcing the need for continuous innovation among MSMEs in Wonosobo Regency.

MANAGERIAL IMPLICATIONS

Business owners and decision-makers must recognize digital transformation as a strategic investment rather than just a technological upgrade. By integrating digital tools and platforms, MSMEs can streamline operations, enhance customer engagement, and improve overall efficiency. Additionally, fostering a culture of innovation within the organization is essential to sustain competitive advantage. Managers should encourage

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proactive market research, continuous product and service improvements, and agile business processes to adapt to evolving consumer demands. Given the strong link between business model innovation and firm performance, companies must allocate resources effectively, ensuring that innovation-driven strategies align with long-term business goals. Moreover, policymakers and business development agencies should provide training and support programs to help MSMEs in Wonosobo adopt digital transformation and innovative business models, ensuring their sustainable growth in an increasingly digital economy.

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