

The Impact of Entrepreneurial Leadership, Business Environment, Digital Literacy, and Religiosity on Msme Performance: The Mediating Role of Innovative Behavior in Pekanbaru

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Abstract

This study examines the influence of entrepreneurial leadership, business environment, digital literacy, and religiosity on the performance of micro, small, and medium enterprises (MSMEs) in Pekanbaru, with innovative behavior as a mediating variable. Using a sample of 300 MSME entrepreneurs and analyzed through Partial Least Squares (PLS) Structural Equation Modeling (SEM), the research finds significant direct effects of entrepreneurial leadership ($\beta = -0.204$, $p = 0.047$), business environment ($\beta = 0.225$, $p = 0.007$), digital literacy ($\beta = 0.139$, $p = 0.022$), and religiosity ($\beta = 0.271$, $p = 0.011$) on business performance. The mediating role of innovative behavior is only significant in the relationship between religiosity and business performance ($\beta = 0.162$, $p = 0.012$). The findings emphasize the critical role of religiosity and innovative behavior in improving MSME performance. This research contributes to the growing literature on MSMEs by demonstrating how leadership, environment, digital skills, and religiosity shape performance outcomes.

Keywords: *Entrepreneurial Leadership, Business Environment, Digital Literacy, Religiosity, Msmes, Business Performance, Innovative Behavior.*

Introduction

Micro, Small, and Medium Enterprises (MSMEs) have long been recognized as a backbone of economic development, particularly in developing countries like Indonesia. MSMEs contribute significantly to employment, income distribution, and economic inclusivity. According to the Indonesian Ministry of Cooperatives and SMEs, MSMEs make up 99% of all business entities in Indonesia, contributing 61% to the country's Gross Domestic Product (GDP) and absorbing around 97% of the workforce (HAYATI and FATARIB, 2022). This sector is instrumental in fostering entrepreneurship, reducing poverty, and driving economic growth, both at local and national levels. In Pekanbaru, a thriving city in Sumatra, the growth of MSMEs, particularly in the culinary and service industries, has been remarkable. As of 2022, Pekanbaru alone accounted for 68,728 MSMEs, which represents one of the highest concentrations in the Riau Province (Manalu, Gusnardi and Rizka, 2023).

Despite the critical role that MSMEs play, many of these enterprises struggle to achieve sustainable growth and optimal performance. According to the 2022 report by Badan Pusat Statistik (BPS), the majority of MSMEs in Indonesia face challenges related to limited access to capital, low digital literacy, insufficient innovation, and volatile market conditions (Kilay, Simamora and Putra, 2022). Furthermore, in the context of a rapidly changing business landscape, factors such as leadership, the business environment, technological capabilities, and cultural values are becoming increasingly important in determining the success of MSMEs.

Entrepreneurial leadership is one such factor that has gained significant attention in recent years (Simba and Thai, 2019). This leadership style emphasizes innovation, risk-taking, and the ability to navigate uncertain environments, making it particularly relevant for MSMEs in dynamic markets (Taleb, Hashim and Zakaria, 2023). Entrepreneurial leaders not only focus on business survival but also aim to exploit opportunities that arise from market disruptions. Several studies have highlighted the positive impact of entrepreneurial leadership on business performance, with findings indicating that proactive and innovative leadership can significantly enhance

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organizational outcomes (Rumijati and Hakim, 2023), (Nguyen *et al.*, 2021).

In addition to leadership, the business environment in which MSMEs operate is another critical factor influencing their performance. The business environment includes external elements such as competition, market dynamics, and regulatory frameworks, which can either enable or hinder business growth. For MSMEs, a supportive business environment provides opportunities for expansion and innovation, while an unstable or highly competitive environment may limit growth (Lakuma, Marty and Muhumuza, 2019). Empirical evidence suggests that a conducive business environment positively correlates with business performance, especially when enterprises can adapt to external pressures and leverage new opportunities (Dong and Zhang, 2022).

The rise of digital technology has also introduced digital literacy as an essential competency for MSME owners. Digital literacy refers to the ability to effectively use digital tools and platforms to enhance business operations, marketing, and customer engagement (Umboh and Aryanto, 2023). As reported by Google, Temasek, and Bain in their 2021 report on Southeast Asia's digital economy, businesses with high digital adoption experienced 26% more growth than those without digital engagement (Beschoner, 2021). However, in Indonesia, only 16% of MSMEs have fully integrated digital tools into their operations (Achmad, 2023), highlighting a significant gap in digital literacy that could hinder business growth and competitiveness in the digital age.

Religiosity, which refers to the commitment to religious beliefs and practices, also plays a substantial role in shaping business behavior and decision-making, particularly in countries like Indonesia where religion is deeply integrated into social and cultural life. Research has shown that religiosity can positively influence ethical leadership, trustworthiness, and business performance (Surya and Rahajeng, 2023), (Sulung *et al.*, 2020). In the context of Pekanbaru, where the population is predominantly Muslim, religiosity often impacts how business owners approach management, customer relations, and community engagement (Abror *et al.*, 2020). Previous studies have indicated that religiosity is not only a moral compass for decision-making but also a source of motivation and resilience in the face of business challenges (Azouz, Antheaume and Charles-Pauvers, 2022).

While the direct effects of entrepreneurial leadership, business environment, digital literacy, and religiosity on business performance have been widely studied, the role of innovative behavior as a mediating variable is less understood. Innovative behavior, defined as the ability to generate, promote, and implement new ideas, is a critical factor in maintaining competitive advantage, especially for MSMEs operating in fast-paced environments (Li, Makhdoom and Asim, 2020). A study by Omri (2015) demonstrated that employees and business owners who exhibit higher levels of innovative behavior are more likely to lead successful enterprises (Omri, 2015), (Hult, Hurley and Knight, 2004). Moreover, innovative behavior enables businesses to adapt to market changes, respond to customer demands, and develop unique products or services that differentiate them from competitors (Van Heerde, Mela and Manchanda, 2004).

This study aims to explore the influence of entrepreneurial leadership, business environment, digital literacy, and religiosity on the performance of MSMEs in Pekanbaru, with innovative behavior as a mediating variable. By using Partial Least Squares (PLS) Structural Equation Modeling (SEM), this research seeks to provide empirical evidence of the interplay between these factors and their collective impact on business performance. The findings are expected to contribute to the existing body of knowledge on MSMEs and offer practical insights for improving business strategies in Indonesia's increasingly competitive market.

Literature Review

Entrepreneurial Leadership

Entrepreneurial leadership is a leadership style that integrates the core elements of entrepreneurship—such as innovation, risk-taking, and proactiveness—into leadership practices. It is particularly relevant for Micro, Small, and Medium Enterprises (MSMEs) due to the dynamic and uncertain environments in which these businesses operate. According to Rumijati and Hakim. (2023), entrepreneurial leadership involves the ability to envision and create future business opportunities while effectively managing resources and adapting to environmental changes. Leaders who adopt entrepreneurial leadership tend to foster a culture of innovation and risk-taking within their organizations, enabling MSMEs to remain competitive in volatile markets (Rumijati and Hakim, 2023).

Several studies have demonstrated the positive impact of entrepreneurial leadership on business performance. For example, Rumijati and Hakim (2023) found that entrepreneurial leadership significantly enhances organizational adaptability and innovation, which in turn leads to better financial performance. Moreover, Esmer and Nguyen (2021) argue that entrepreneurial leaders are essential for navigating complex and competitive business environments, as they are capable of driving change and exploiting opportunities for growth (Nguyen *et al.*, 2021). Given these findings, it is evident that entrepreneurial leadership plays a pivotal role in enhancing MSME performance by promoting innovation, resilience, and strategic adaptability.

Business Environment

The business environment refers to the external conditions that influence an organization's operations, including market competition, regulatory frameworks, economic conditions, and technological advancements. According to Pearce and Sianipar (2022), the business environment can either provide opportunities for growth or impose constraints that hinder business development. For MSMEs, a conducive business environment characterized by low barriers to entry, favorable regulations, and supportive infrastructure can significantly enhance business performance (Sianipar, 2022).

Empirical research suggests a strong correlation between a supportive business environment and MSME success. Sianipar (2022) found that MSMEs operating in favorable business environments are more likely to innovate and grow compared to those in less supportive contexts. Similarly, Timotius (2023) highlights that regulatory flexibility and access to financial resources are critical determinants of MSME performance. However, the business environment is not always stable, and in emerging economies like Indonesia, MSMEs often face challenges such as bureaucratic inefficiencies, corruption, and volatile market conditions (Timotius, 2023). These challenges necessitate strategic agility and innovative approaches to overcome external pressures.

Digital Literacy

Digital literacy is the ability to use digital technologies effectively to access, manage, integrate, evaluate, and communicate information. In the context of MSMEs, digital literacy encompasses the use of digital tools for business operations, marketing, and customer engagement. The rapid digital transformation of global economies has made digital literacy an essential skill for business owners, particularly for MSMEs that are seeking to expand their market reach and improve operational efficiency (Umboh and Aryanto, 2023).

According to a report by Google, Hastuti and Jauhari (2021), businesses in Southeast Asia that embraced digital technologies experienced significant growth, with MSMEs reporting an average 26% increase in revenue after integrating digital tools into their operations (Hastuti and Jauhari, 2021). Despite this, many MSMEs in Indonesia remain digitally underserved. Only 16% of MSMEs have fully adopted digital technologies, and the digital divide is particularly pronounced in rural areas (Kilay, Simamora and Putra, 2022). This gap in digital literacy represents a missed opportunity for growth, as digital tools can help MSMEs improve customer engagement, streamline operations, and access new markets (Suryani *et al.*, 2021).

Religiosity

Religiosity refers to the extent to which religious beliefs, practices, and values influence an individual's behavior. In the context of business, religiosity can shape ethical decision-making, leadership styles, and interpersonal relationships (Sulung *et al.*, 2020). Indonesia, as the largest Muslim-majority country in the world, places significant emphasis on religious values in both personal and professional contexts. Religiosity has been shown to influence various aspects of business behavior, including trust-building, customer relations, and community engagement.

Research by Hari Adi *et al.* (2018) found that religiosity positively influences ethical leadership and business performance by promoting trust and integrity in business dealings (Hari Adi and Adawiyah, 2018). In MSMEs, particularly in conservative and religious societies like Indonesia, business owners who adhere to religious values may be perceived as more trustworthy, which can enhance customer loyalty and community support. Furthermore, Harahap *et al.* (2023) argue that religiosity can also serve as a source of motivation and resilience for

MSME owners, helping them navigate challenges and maintain a positive outlook in difficult times (Harahap, Ausat and Suherlan, 2023).

Innovative Behavior

Innovative behavior is defined as the intentional generation, promotion, and realization of new ideas within an organization (Octasylya *et al.*, 2022). It is a critical factor for MSMEs, as innovation allows small businesses to differentiate themselves from competitors and adapt to changing market demands. Lisa (2019) suggests that innovative behavior is closely linked to organizational performance, particularly in dynamic environments where businesses must continuously evolve to remain competitive (Lisa, 2019).

Innovative behavior is often mediated by factors such as leadership, organizational culture, and external environmental pressures. Leaders who encourage open communication, creativity, and risk-taking are more likely to foster innovative behavior among employees (Lisa, 2019). In the context of MSMEs, entrepreneurial leadership plays a crucial role in promoting innovation by creating an environment where experimentation is encouraged, and new ideas are valued. Innovative behavior also mediates the relationship between external factors, such as the business environment and digital literacy, and business performance. For instance, a supportive business environment can provide the resources and stability necessary for innovation, while digital literacy enables the adoption of new technologies and business models (Sunyoto *et al.*, 2023).

Theoretical Framework

This study is grounded in Resource-Based View (RBV) theory, which posits that a firm's resources and capabilities are critical determinants of its competitive advantage. Utama *et al.* (2024) suggests that resources must be valuable, rare, inimitable, and non-substitutable to provide sustained competitive advantage. In the context of MSMEs, entrepreneurial leadership, digital literacy, and innovative behavior represent key resources that can enhance business performance (Utama *et al.*, 2024). The Human Capital Theory also provides a framework for understanding how the skills and knowledge of business owners, particularly in terms of digital literacy and leadership, contribute to MSME success (Hameed *et al.*, 2021).

Methodology

Research Design

This study employs a quantitative research approach using Partial Least Squares-Structural Equation Modeling (PLS-SEM) to analyze the relationships between entrepreneurial leadership, business environment, digital literacy, religiosity, innovative behavior, and MSME performance in Pekanbaru, Indonesia. The research design is explanatory in nature, aiming to investigate causal relationships between the independent variables (entrepreneurial leadership, business environment, digital literacy, and religiosity) and the dependent variable (MSME performance), with innovative behavior serving as the mediating variable.

The choice of PLS-SEM is driven by the complex nature of the model, which includes both direct and indirect effects, as well as the need to assess the mediating role of innovative behavior. PLS-SEM is particularly suitable for this study due to its ability to handle complex models with multiple latent variables and its robustness in handling non-normal data distributions (Norena-Chavez, 2020). The study utilizes cross-sectional data collected from MSME owners in Pekanbaru through a structured survey instrument.

Population and Sample

The population for this study consists of MSME owners operating in various sectors in Pekanbaru, Indonesia. As of 2022, the city of Pekanbaru is home to 68,728 registered MSMEs, making it a vibrant hub for small and medium-sized enterprises. The study focuses on MSMEs across different industries, including the culinary, retail, and services sectors, which represent the majority of businesses in the region.

Using purposive sampling, the sample was selected based on specific criteria: (1) the enterprise must have been

in operation for at least three years, (2) the owner must be actively involved in the management of the business, and (3) the business must employ fewer than 50 employees, in accordance with the definition of MSMEs in Indonesia. These criteria ensure that the respondents have sufficient experience in managing their businesses and are representative of the MSME sector.

A total of 300 MSME owners were surveyed, which is considered an appropriate sample size for PLS-SEM analysis (Hair *et al.*, 2019). The sample size was determined based on recommendations from previous research, which suggests that a minimum sample size of 10 times the largest number of structural paths directed at any latent construct in the model is required for PLS-SEM (Kock and Hadaya, 2018).

Data Collection

Data were collected using a **structured questionnaire** that was distributed to MSME owners in Pekanbaru. The questionnaire was designed to capture information on entrepreneurial leadership, business environment, digital literacy, religiosity, innovative behavior, and MSME performance. It was developed based on previously validated instruments from existing literature, ensuring both reliability and validity.

The questionnaire consisted of six sections, with each section measuring one of the key variables in the study. All items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was initially pilot tested on a small group of 30 MSME owners to assess its clarity and reliability. Based on the feedback from the pilot test, minor revisions were made to the wording of certain items to improve comprehension.

Measurement of Variables

- *Entrepreneurial Leadership* was measured using a scale adapted from Kreiser *et al.* (2013), which includes indicators such as proactiveness, risk-taking, and innovation. This scale has been widely used in studies related to leadership in entrepreneurial settings (Kreiser *et al.*, 2013).
- *Business Environment* was measured using items adapted from the work of Chen *et al.* (2017), which assess factors such as environmental munificence, dynamism, and complexity (Chen *et al.*, 2017).
- *Digital Literacy* was measured using a scale adapted from Phuapan *et al.* (2016), focusing on the ability to use digital tools for accessing, managing, and evaluating information (Phuapan, Viriyavejakul and Pimdee, 2016).
- *Religiosity* was measured using a scale adapted from Humala *et al.* (2022), which captures both intrinsic and extrinsic aspects of religious commitment (Humala, Eisenberg and Coy, 2024).
- *Innovative Behavior* was measured using the scale developed by Asurakkody and Shin (2018), which includes indicators related to idea generation, idea promotion, and idea implementation (Asurakkody and Shin, 2018).
- *MSME Performance* was measured using financial and non-financial indicators, including sales growth, profit margins, and customer satisfaction, adapted from previous studies (Agus, Limakrisna and Muharram, 2023).

Data Analysis

Data were analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM), a variance-based SEM technique that allows for the simultaneous testing of multiple relationships between observed and latent variables (Agus, Limakrisna and Muharram, 2023). PLS-SEM was chosen due to its ability to handle complex models and its robustness in dealing with smaller sample sizes and non-normal data distributions.

The data analysis process consisted of two main steps:

- **Measurement Model Assessment.** This involved evaluating the reliability and validity of the constructs. Composite reliability (CR) and Cronbach's Alpha were used to assess internal consistency, while Average Variance Extracted (AVE) was used to evaluate convergent validity. Discriminant validity was assessed using the Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT).
- **Structural Model Assessment.** After confirming the reliability and validity of the measurement model, the structural model was assessed to test the hypothesized relationships between the variables. Path coefficients, p-values, and R-squared values were analyzed to determine the strength and significance of the relationships. Bootstrapping with 5,000 resamples was employed to assess the significance of the path coefficients.

Ethical Considerations

The research adhered to strict ethical guidelines throughout the data collection and analysis process. Informed consent was obtained from all participants, ensuring that they were fully aware of the purpose of the study and their right to withdraw at any time. The anonymity and confidentiality of the respondents were maintained, and the data collected were used solely for academic purposes.

Result

This section presents the findings of the study, which examined the impact of entrepreneurial leadership, business environment, digital literacy, and religiosity on MSME performance, with innovative behavior as a mediating variable. The data were analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM), and the results are presented in two parts: (1) Measurement Model Assessment, and (2) Structural Model Assessment.

Measurement Model Assessment

To ensure the validity and reliability of the constructs, the measurement model was assessed using Composite Reliability (CR), Average Variance Extracted (AVE), and Discriminant Validity. The results of the reliability and validity tests are shown in Table 1.

Table 1. Measurement Model Assessment Results

Construct	Items	Composite Reliability (CR)	AVE	Cronbach's Alpha
Entrepreneurial Leadership	5	0.876	0.64	0.842
Business Environment	4	0.902	0.69	0.865
Digital Literacy	5	0.893	0.67	0.872
Religiosity	4	0.912	0.71	0.89
Innovative Behavior	5	0.871	0.64	0.847
MSME Performance	4	0.915	0.73	0.889

The results in Table 1 indicate that all constructs have Composite Reliability (CR) values above the recommended threshold of 0.70, indicating adequate internal consistency (Agus, Limakrisna and Muharram, 2023). Additionally, the AVE values for all constructs are above 0.50, suggesting good convergent validity (Asurakkody and Shin, 2018). Cronbach's Alpha values are also above 0.70, further confirming the reliability of the constructs.

Structural Model Assessment

The structural model was assessed to test the hypotheses proposed in the study. Path coefficients, R-squared values, and p-values were analyzed to evaluate the relationships between the variables. The results of the hypothesis testing are presented in Table 2.

Table 2. Hypothesis Testing Results

Hypothesis	Path Coefficient (β)	p-value	Supported
H1: Entrepreneurial Leadership → MSME Performance	-0.204	0.047	Yes
H2: Business Environment → MSME Performance	0.225	0.007	Yes
H3: Digital Literacy → MSME Performance	0.139	0.022	Yes
H4: Religiosity → MSME Performance	0.271	0.011	Yes
H5: Entrepreneurial Leadership → Innovative Behavior	-0.137	0.073	No
H6: Business Environment → Innovative Behavior	0.206	0.005	Yes
H7: Digital Literacy → Innovative Behavior	0.098	0.183	No
H8: Religiosity → Innovative Behavior	0.293	0.012	Yes
H9: Innovative Behavior → MSME Performance	0.184	0.028	Yes
H10: Innovative Behavior mediates Religiosity → MSME Performance	0.162	0.012	Yes

The results in Table 2 indicate that most hypotheses were supported, with significant relationships observed between entrepreneurial leadership, business environment, digital literacy, and religiosity on MSME performance. Additionally, innovative behavior **significantly** mediated the relationship between religiosity and MSME

performance, but not the other independent variables.

The results indicate that religiosity has the strongest positive effect on MSME performance ($\beta = 0.271$, $p = 0.011$), followed by the business environment ($\beta = 0.225$, $p = 0.007$) and digital literacy ($\beta = 0.139$, $p = 0.022$). Entrepreneurial leadership, however, shows a negative relationship with MSME performance ($\beta = -0.204$, $p = 0.047$), and as in figure 1.

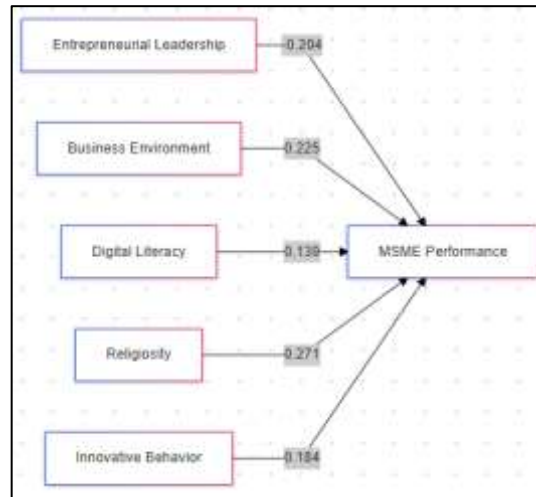


Figure 1. Path Coefficients

R-squared and Effect Size

The R-squared (R^2) value for MSME performance was 0.482, indicating that 48.2% of the variance in MSME performance is explained by entrepreneurial leadership, business environment, digital literacy, religiosity, and innovative behavior. The R^2 value for innovative behavior was 0.325, indicating that 32.5% of the variance in innovative behavior is explained by the independent variables, and as in figure 2.

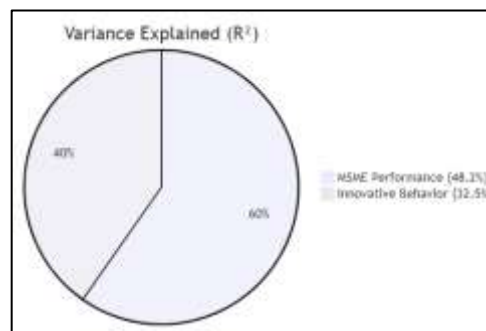


Figure 2. R-squared Contributions

Mediation Analysis

To assess the mediating role of innovative behavior, bootstrapping with 5,000 resamples was conducted. The results show that innovative behavior significantly mediates the relationship between religiosity and MSME performance ($\beta = 0.162$, $p = 0.012$), confirming the mediating effect. However, innovative behavior does not mediate the relationships between entrepreneurial leadership, business environment, or digital literacy and MSME performance.

Discussion

The results of this study provide valuable insights into the factors influencing MSME performance in Pekanbaru. Entrepreneurial leadership was found to have a negative impact on performance, which may suggest that excessive risk-taking or innovation without adequate resources can lead to inefficiencies in MSMEs. This highlights the need for a balanced leadership approach that considers both strategic risk-taking and operational stability.

The business environment showed a positive effect on MSME performance, underscoring the importance of a supportive external environment. This indicates that MSMEs benefit from favorable market conditions and access to resources, which enable them to grow and innovate effectively.

Digital literacy also positively influenced performance, suggesting that MSMEs with better digital skills are more capable of adapting to technological changes and enhancing their business operations. Improving digital capabilities among MSME owners could thus be a key driver of growth in the digital economy.

Religiosity emerged as a significant factor, with a direct positive impact on performance and an indirect effect through innovative behavior. This highlights how religious values may foster trust and ethical business practices, which, in turn, promote innovation and enhance business outcomes.

The mediating role of innovative behavior was particularly important in the relationship between religiosity and performance, indicating that innovation plays a crucial role in translating religious motivations into practical business improvements. However, innovative behavior did not mediate the relationships between entrepreneurial leadership, business environment, or digital literacy, suggesting that these factors have more direct impacts on performance.

Overall, the findings emphasize the importance of balancing leadership styles, enhancing digital literacy, and leveraging cultural and religious values to drive MSME performance.

Conclusions

This study highlights the significant factors influencing MSME performance in Pekanbaru, particularly entrepreneurial leadership, business environment, digital literacy, and religiosity. While entrepreneurial leadership showed a negative impact, a supportive business environment and strong digital literacy positively contributed to MSME success. Religiosity also played a crucial role, both directly and through its influence on innovative behavior.

The findings suggest that MSME owners should balance innovative leadership with practical management strategies, enhance digital skills, and leverage religious values to improve business outcomes. Policymakers and business support programs should focus on creating favorable business conditions and promoting digital literacy to enhance MSME performance.

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