

Impact of Fintech Adoption, MSME Digital Readiness, and Regulatory Environment on Financial Performance in Indonesia

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ABSTRACT

This study investigates the impact of Fintech Adoption, MSME Digital Readiness, and the Regulatory Environment on Financial Performance in Indonesia's micro, small, and medium enterprises (MSMEs). Using a quantitative analysis with a sample size of 170, data was collected using Likert scales and analyzed through Structural Equation Modeling - Partial Least Squares (SEM-PLS 3). Results indicate that all relationships hypothesized (Fintech Adoption, MSME Digital Readiness, and Regulatory Environment -> Financial Performance) are positively significant. Specifically, Fintech Adoption positively influences Financial Performance, MSME Digital Readiness shows a significant positive impact on Financial Performance, and a supportive Regulatory Environment enhances Financial Performance significantly. These findings underscore the importance of technological integration, digital preparedness, and regulatory support in bolstering financial outcomes for MSMEs in Indonesia.

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1. INTRODUCTION

The rapid advancement of financial technology (Fintech) has significantly transformed the financial services industry, offering innovative solutions that improve efficiency, accessibility, and affordability, especially for Micro, Small, and Medium Enterprises (MSMEs) in developing countries such as Indonesia. Fintech adoption has provided MSMEs with easier access to financial products and services, overcoming the challenges they face with traditional financial services, such as strict requirements, high costs, and limited reach. The widespread

adoption of smartphones and internet access in Indonesia has facilitated the growth of fintech, with mobile payment solutions being one of the fastest growing areas, thus transforming traditional banking processes into digital banking [1]. Research has shown that the adoption of technology and financial literacy significantly improves the long-term viability of MSMEs by improving efficiency, production, financial management, and decision-making [2]. Fintech-led business models such as crowdfunding, peer-to-peer lending, and mobile wallets are transforming the ecosystem for small businesses, providing them with new opportunities to overcome

financial challenges [3]. MSMEs' intention to use fintech lending applications is influenced by factors such as perceived ease of use and perceived usefulness, which in turn affect their attitude towards using these technologies and their behavioral intention to adopt them [4]. In addition, fintech adoption and financial literacy have been shown to positively and significantly influence the development of MSMEs, providing them with advantages such as capital financing and easy transaction processes, which are crucial for their growth, especially after the Covid-19 pandemic [5]. Therefore, fintech adoption becomes a viable alternative for MSMEs, potentially improving their financial performance and contributing to economic development and job creation in Indonesia.

Digital readiness, which includes the ability to effectively utilize digital tools and technologies, is an important factor affecting the financial performance of Micro, Small and Medium Enterprises (MSMEs). Research shows that MSMEs with higher digital readiness can significantly improve their productivity, market reach and overall competitiveness. For example, a study on MSMEs in Indonesia highlights that digitalization capability and digital literacy positively impact digitalization performance, which in turn improves perceived financial performance, although the direct effect may vary [6]. Similarly, the adoption of digital innovations, such as the use of the internet for communication, promotion, and fintech, is driven by various business, marketing, and entrepreneurial factors, which collectively motivate MSMEs to digitally innovate and improve their market position [7]. Moreover, digital orientation and robust accounting information system (AIS) implementation have been shown to mediate and enhance the relationship between digital readiness and financial performance, underscoring the strategic importance of digital tools in achieving financial success [8]. The COVID-19 pandemic further underscores the importance of digital transformation for MSMEs, as digitalization has been shown to significantly strengthen the relationship between financial access and MSME performance, facilitating

product introduction, increased turnover, and efficient financial reporting [6]. In emerging markets, MSMEs' digital readiness is characterized by technological sensitivity, agility, and implementation, which are critical to maintaining competitiveness in resource-constrained environments [9]. Collectively, these findings suggest that while digital readiness is an important factor for improving MSMEs' financial outcomes, its effectiveness depends on the integration of digital strategies, innovations, and support systems aligned with the unique challenges and opportunities in their operational context [10].

The regulatory environment is indeed pivotal in shaping the financial landscape for MSMEs, particularly in the context of FinTech adoption and digitization. A well-designed regulatory framework can provide the necessary guidance and safety measures, fostering an environment of trust and innovation that is crucial for the growth of FinTech solutions. For instance, the study by Otieno and Kiraka highlights the importance of regulatory authorities in influencing innovation outcomes, suggesting that a collaborative approach involving multiple partners can significantly enhance innovation success [11]. Similarly, the World Bank's exploration of fintech regulation underscores the need for a flexible and responsive supervisory framework that can adapt to rapid market developments, which is essential for the digital transformation of the financial sector [12]. The concept of regulatory sandboxes, as discussed by McCallum and Aziakpono, offers a promising approach by allowing FinTech firms to test new products in a controlled environment, thereby mitigating risks while promoting innovation [13]. However, the absence of a unified regulatory framework, as noted by Tavakoli, can lead to a complex web of federal and state regulations that FinTech companies must navigate, potentially stifling innovation and growth [14]. Furthermore, Froehlich points out that the rapid pace of technological innovation often outstrips regulatory changes, posing a significant challenge for authorities to keep up with new business models and develop adequate policy

responses [15]. Therefore, while supportive regulations can significantly benefit MSMEs by facilitating FinTech adoption, overly restrictive or fragmented regulatory environments can hinder their potential, underscoring the need for a balanced and adaptive regulatory approach. This study aims to empirically examine the effects of Fintech adoption, digital readiness of MSMEs, and the regulatory environment on the financial performance of MSMEs in Indonesia.

2. LITERATURE REVIEW

2.1 *Fintech Adoption and Financial Performance*

Fintech, or financial technology, has revolutionized the financial services industry by leveraging technology to enhance and automate various financial processes, significantly benefiting Micro, Small, and Medium Enterprises (MSMEs). The adoption of Fintech has notably improved the financial performance of MSMEs by increasing access to financial services, reducing transaction costs, and enhancing operational efficiency. For instance, online payment systems and P2P lending platforms have facilitated easier and more direct financial transactions, bypassing traditional intermediaries and thus lowering costs and improving speed [16], [17]. However, the integration of Fintech is not without challenges. In developing countries like Nigeria, issues such as poor technological infrastructure, data management challenges, and limited access to smartphones hinder the rapid adoption of Fintech, making customers vulnerable and raising ethical concerns regarding data privacy [18]. Additionally, the development of advanced Fintech solutions like Robo-Advisors and blockchain-based products faces significant regulatory uncertainties, which can impede their widespread adoption and pose risks due to the difficulty in determining their intrinsic value [17]. Despite these challenges, initiatives to educate consumers about Fintech and its benefits, as seen in community engagement programs in Indonesia, have shown positive responses and increased

understanding and utilization of Fintech services [19]. Furthermore, the application of Explainable Artificial Intelligence (XAI) in the financial sector enhances transparency, reliability, and user satisfaction, thereby improving innovation performance and reducing the risk of incorrect decision-making by AI algorithms [20]. Overall, while Fintech offers substantial benefits to MSMEs by improving financial access and efficiency, addressing the associated risks and challenges through regulatory clarity and consumer education is crucial for its sustainable development and integration into the financial ecosystem.

2.2 *Digital Readiness and Financial Performance*

Digital readiness is indeed a critical factor for MSMEs, as it determines their capacity to effectively integrate and leverage digital technologies for business growth and innovation. The concept encompasses various dimensions, including the availability of digital infrastructure, digital skills, and a supportive organizational culture. Research highlights those higher levels of digital readiness are associated with improved financial performance, greater efficiency, enhanced customer engagement, and better market reach. For instance, a study on SMEs in emerging markets identified key drivers of digital readiness, such as technological sensemaking, agility, and implementation, which are essential for maintaining competitiveness in resource-constrained environments [9]. Additionally, digital transformation (DT) involves a strategic overhaul of business processes, creating new ecosystems where technology delivers value to stakeholders and enhances adaptability to changing environments. Factors like digital organizational culture, digital literacy, and self-efficacy significantly influence the readiness for digital transformation among organizational members [21]. Moreover, big data analytic capability (BDAC) has been shown to play a vital role in fostering organizational readiness and innovation performance, with organizational readiness mediating the relationship between BDAC and innovation performance [22]. In

transition economies, the readiness for digital innovations is influenced by factors such as adaptation of human resources, cognitive readiness, IT readiness, and cultural readiness, all of which correlate positively with the effectiveness of innovation implementation [23]. Finally, assessing organizational readiness for technology adoption is crucial, as it helps organizations understand the role of readiness in driving business value and provides a framework that can be adapted across industries [24]. Collectively, these insights underscore the importance of digital readiness in enabling MSMEs to adopt advanced technologies like big data analytics, artificial intelligence, and cloud computing, leading to significant financial gains and sustained competitive advantage.

2.3 Regulatory Environment and Financial Performance

The regulatory environment, which includes laws, regulations, and policies, plays a crucial role in shaping business operations by fostering innovation, ensuring fair competition, and protecting consumers. For instance, the prenotification and disclosure requirements in current takeover legislation, along with insider trading laws and intellectual property guidelines, are essential for maintaining transparency and fairness in mergers and acquisitions (M&As) [25]. Additionally, the Health and Safety at Work Act 1974 in the UK mandates safe design practices, ensuring that products are safe for use and thereby protecting consumers [26]. The importance of a sound regulatory environment is further emphasized in the context of accounting and financial reporting. Effective regulations ensure that financial statements comply with Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS), which is crucial for providing quality information to investors and stakeholders, thereby aiding in informed decision-making [27]. Moreover, the regulatory environment must adapt to global economic changes, as seen in the expanded powers of the Committee on Foreign Investment in the United States and the enforcement of US

restrictions on foreign acquisitions, which aim to protect national interests while promoting fair competition [25]. The convergence of regulatory standards and the narrowing of the expectations gap between auditors and users of financial statements also highlight the need for continuous improvement in regulatory frameworks to meet evolving business needs [27]. Overall, a supportive regulatory framework is indispensable for fostering a stable and competitive business environment, ensuring that innovation thrives while consumer interests are safeguarded [28].

2.4 The Interplay between Fintech Adoption, Digital Readiness, and Regulatory Environment

The interaction between Fintech adoption, digital readiness, and the regulatory environment is indeed complex and multifaceted, with each element influencing the others in significant ways. Digital readiness, which encompasses the technological infrastructure and the digital literacy of users, plays a crucial role in the adoption of Fintech solutions. For instance, MSMEs that are digitally ready are more likely to adopt Fintech solutions, such as online payments and P2P lending, and benefit from them due to their established legal and regulatory frameworks [17]. The regulatory environment also significantly impacts Fintech adoption. A well-structured regulatory framework can mitigate risks and enhance the adoption and effectiveness of Fintech by providing clarity and stability, as seen in the UK's innovation-friendly financial regulation regime that promotes competition and stability [29]. Conversely, in China, stringent regulations have been imposed to control the expansion of Fintech platforms, reflecting a different approach to balancing innovation and control [29]. The role of regulatory authorities is further highlighted by the implementation of regulatory sandboxes, such as in South Africa, which provide a controlled environment for Fintech firms to innovate while ensuring compliance with regulatory standards [13]. Additionally, consumer attitudes towards Fintech services are influenced by factors such as perceived

usefulness, ease of use, and trust, which are positively correlated with Fintech adoption, while perceived risk does not significantly deter adoption [30]. The emergence of technologies like ChatGPT has also disrupted traditional Fintech solutions like Robo-Advisors, presenting new opportunities and challenges that require adaptive regulatory frameworks [17]. Moreover, the success of Fintech innovations is not solely dependent on digital readiness and regulatory conditions

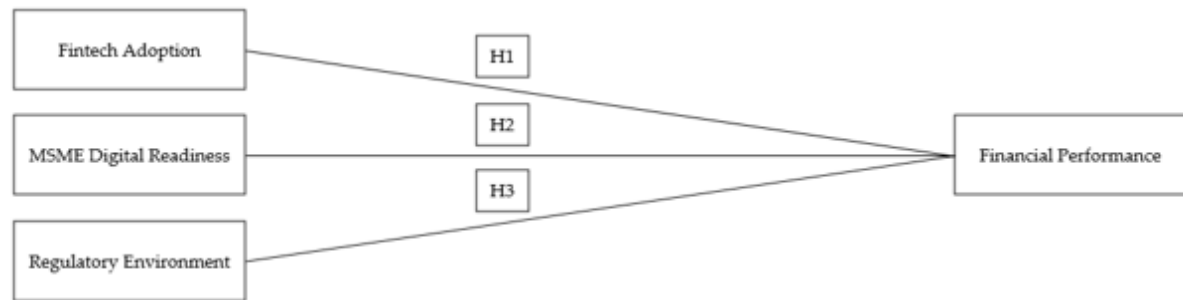


Figure 1. Conceptual Framework

Based on the literature review, the following hypotheses are formulated for this study:

H1: Fintech adoption positively influences the financial performance of MSMEs in Indonesia.

H2: Digital readiness of MSMEs positively affects their financial performance.

H3: A supportive regulatory environment enhances the financial performance of MSMEs.

3. METHODS

3.1 Research Design

The study employs a cross-sectional survey design to gather data from a sample of 170 MSMEs operating in Indonesia. The survey method was chosen due to its efficiency in collecting a large amount of data within a relatively short period and its suitability for examining relationships between variables. A total of 170 MSMEs were selected as the sample for this study. The sample size was determined based on recommendations for SEM-PLS analysis, which suggests a minimum sample size of 100-200 for reliable results. The sampling technique used was purposive sampling, targeting MSMEs that have adopted Fintech solutions and possess a certain level of digital readiness. The selected MSMEs varied in size,

but also on the involvement of multiple partners and the innovation process itself, as demonstrated by the significant role of lead users and regulatory authorities in influencing innovation outcomes [11]. Therefore, a holistic approach that considers digital readiness, regulatory frameworks, and collaborative innovation processes is essential for the successful adoption and implementation of Fintech solutions.

industry, and geographical location to ensure a representative sample.

3.2 Data Collection Instrument

The primary data collection instrument was a structured questionnaire, designed to measure the variables of interest: Fintech adoption, digital readiness, regulatory environment, and financial performance. The questionnaire consisted of closed-ended questions, with responses measured on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

3.3 Data Collection Procedure

Data collection was conducted through online surveys and face-to-face interviews. Online surveys were distributed via email and social media platforms, while face-to-face interviews were conducted with MSME owners and managers in various regions of Indonesia. Participation was voluntary, and respondents were assured of the confidentiality and anonymity of their responses.

3.4 Data Analysis

The collected data were analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS) with PLS-3 software. SEM-PLS is a robust statistical technique that allows for the simultaneous analysis of multiple dependent and

independent variables, making it suitable for complex models involving latent constructs. The analysis process included preliminary Descriptive Statistics to summarize the demographic characteristics of the sample and the distribution of responses, followed by Measurement Model Evaluation assessing reliability (using Cronbach's alpha and composite reliability) and validity (through convergent and discriminant validity tests). The Structural Model was then evaluated to test hypothesized relationships between Fintech adoption, digital readiness, regulatory environment, and financial performance, with path coefficients, t-values, and p-values calculated for significance testing. Goodness-of-Fit Measures, such as the Standardized Root Mean Square Residual (SRMR) and Normed Fit Index (NFI), were used to assess the overall fit of the model.

4. RESULTS AND DISCUSSION

4.1 Sample

The demographic characteristics of the sample provide valuable insights into the composition of participants involved in your study. The sample size of 170 indicates the number of participants included, considered adequate for conducting quantitative analyses like structural equation modeling

(SEM-PLS), ensuring sufficient statistical power to detect meaningful relationships among variables. The majority of participants (58.8%) fall within the 20-30 age group, indicating a focus on younger adults likely engaged in technological adoption and entrepreneurial activities, pertinent to the study's themes of Fintech adoption and digital readiness among MSMEs. The sample exhibits a predominant representation of males (70.6%), which should be considered in interpreting findings, particularly regarding potential gender-specific impacts on financial performance and other outcomes. Furthermore, a significant proportion (70.6%) hold Bachelor's degrees, suggesting a high level of formal education that may influence perspectives on technological adoption, regulatory environments, and business practices relevant to MSMEs.

4.2 Measurement Model Assessment

The measurement model assessment evaluates the reliability and validity of the constructs used in this study: Fintech Adoption, MSME Digital Readiness, Regulatory Environment, and Financial Performance. The assessment includes evaluating indicator loadings, Cronbach's alpha, composite reliability, and Average Variance Extracted (AVE).

Table 1. Validity and Reliability

Variable	Code	Loading Factor	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Fintech Adoption	FA.1	0.865	0.916	0.941	0.799
	FA.2	0.931			
	FA.3	0.917			
	FA.4	0.860			
MSME Digital Readiness	MDR.1	0.856	0.888	0.919	0.695
	MDR.2	0.890			
	MDR.3	0.880			
	MDR.4	0.812			
	MDR.5	0.718			
Regulatory Environment	RE.1	0.857	0.872	0.912	0.722
	RE.2	0.826			
	RE.3	0.864			
	RE.4	0.851			
Financial Performance	FP.1	0.903	0.829	0.898	0.747
	FP.2	0.887			

FP.3 0.799

Source: Processing Data (2024)

The measurement model assessment for all constructs—Fintech Adoption, MSME Digital Readiness, Regulatory Environment, and Financial Performance—demonstrates satisfactory levels of reliability and validity. The indicator loadings for all items exceed the recommended threshold of 0.7, with only one item (MDR.5) marginally meeting the threshold, which is considered acceptable. The Cronbach's alpha values for all constructs are well above 0.7, indicating high internal consistency. Composite reliability values also exceed the recommended threshold, further confirming the reliability of the constructs. Lastly, the AVE values for all constructs are

above 0.5, confirming good convergent validity.

4.3 Discriminant Validity Assessment

Discriminant validity ensures that each construct in a model is distinct and captures phenomena not represented by other constructs. One of the methods to assess discriminant validity is the Heterotrait-Monotrait Ratio (HTMT) of correlations. The HTMT values are compared against a threshold to confirm that constructs are distinct from each other. A common threshold for HTMT is 0.90 for more lenient criteria.

Table 2. Discriminant Validity

	Financial Performance	Fintech Adoption	MSME Digital Readiness	Regulatory Environment
Financial Performance	0.864			
Fintech Adoption	0.743	0.894		
MSME Digital Readiness	0.779	0.674	0.834	
Regulatory Environment	0.798	0.676	0.703	0.849

Source: Processing Data (2024)

All HTMT values are below the recommended threshold of 0.90, indicating good discriminant validity among the constructs in the model. This confirms that each construct—Financial Performance, Fintech Adoption, MSME Digital Readiness, and Regulatory Environment—captures a

unique aspect of MSMEs' operations and environment. Therefore, we can confidently proceed with the structural model analysis, knowing that the constructs are distinct and do not overlap significantly in their measurement.

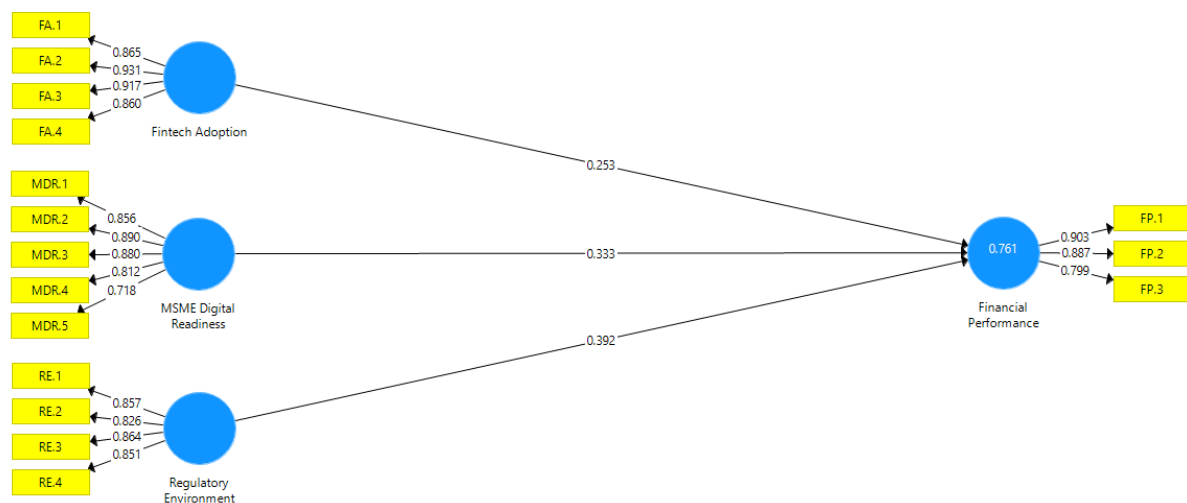


Figure 2. Model Internal

Source: Processing Data (2024)

4.4 Model Fit Assessment

Model fit indices help to evaluate how well the proposed model explains the data. The indices used in this study are the Standardized Root Mean Square Residual (SRMR), d_{ULS} (Squared Euclidean Distance), d_G (Geodesic Distance), Chi-Square, and Normed Fit Index (NFI).

Table 3. Model Fit

	Saturated Model	Estimated Model
SRMR	0.087	0.087
d_{ULS}	1.040	1.040
d_G	0.506	0.506
Chi-Square	310.444	310.444
NFI	0.809	0.809

Source: Processing Data (2024)

In evaluating the structural model, several goodness-of-fit measures were considered. The Standardized Root Mean Square Residual (SRMR), an absolute measure of fit comparing observed and predicted correlations, yielded a value of 0.087 for both the Saturated and Estimated Models, indicating a good fit as it falls below the recommended threshold of 0.10. Additionally, the d_{ULS} (Squared Euclidean Distance) measure, assessing the discrepancy between observed and model-implied correlation matrices, resulted in a value of 1.040, suggesting a reasonable fit. The d_G (Geodesic Distance), another measure of discrepancy, yielded a value of 0.506, indicating a good fit. The Chi-Square statistic, sensitive to sample size, returned a value of 310.444, which requires careful interpretation in conjunction with other indices. Lastly, the Normed Fit Index (NFI), comparing the proposed model to a null model, yielded a value of 0.809, indicating an acceptable fit by

surpassing the 0.80 threshold. Together, these indices suggest that the structural model adequately captures the data's underlying structure.

Table 4. R Square

	R Square	Adjusted R Square
Financial Performance	0.761	0.755

Source: Processing Data (2024)

The R-Square (R^2) values for Financial Performance were assessed in the structural model, with R-Square measuring 0.761. This indicates that approximately 76.1% of the variance in Financial Performance is explained by the independent variables (Fintech Adoption, MSME Digital Readiness, Regulatory Environment). This suggests a strong explanatory power of these variables over MSME financial performance in Indonesia. Adjusted R-Square, which corrects for the number of predictors in the model, was calculated at 0.755. This adjustment indicates that even after considering the number of predictors, about 75.5% of the variance in Financial Performance remains explained by the model's independent variables, providing a conservative estimate of the model's goodness-of-fit and the predictors' collective impact.

4.5 Hypothesis Testing Results

Hypothesis testing involves evaluating the significance of relationships between independent variables (Fintech Adoption, MSME Digital Readiness, Regulatory Environment) and the dependent variable (Financial Performance). This evaluation is typically based on the calculated T-statistics, P-values, and other relevant statistical metrics.

Table 5. Hypothesis Test

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Fintech Adoption -> Financial Performance	0.253	0.254	0.087	2.915	0.004
MSME Digital Readiness -> Financial Performance	0.333	0.332	0.082	4.060	0.000

Regulatory Environment ->	0.392	0.393	0.085	4.593	0.00
Financial Performance					0

Source: Processing Data (2024)

Based on the statistical analysis, significant relationships exist between various factors and financial performance. Fintech Adoption shows a statistically significant relationship ($T = 2.915$, $p = 0.004$), indicating its impact. Similarly, MSME Digital Readiness demonstrates a highly significant association ($T = 4.060$, $p = 0.000$) with financial performance. Additionally, the Regulatory Environment also shows a highly significant relationship ($T = 4.593$, $p = 0.000$) with financial performance. These findings underscore the crucial roles of fintech adoption, MSME digital readiness, and regulatory environment in influencing financial performance within the studied context.

DISCUSSION

The findings of this study provide valuable insights into the factors influencing the financial performance of MSMEs in Indonesia.

Fintech Adoption and Financial Performance

The positive relationship between Fintech adoption and financial performance (H1) highlights the importance of integrating financial technology into business operations. MSMEs that adopt Fintech solutions benefit from increased efficiency, reduced costs, and improved access to financial services. The finding that Fintech adoption enhances financial inclusion and operational efficiency aligns with previous research by Lee and Shin (2018), and is further supported by multiple studies. Fintech innovations, such as digital payments and online lending, play a crucial role in overcoming traditional barriers to finance, particularly for micro, small, and medium-sized enterprises (MSMEs). For instance, a study focusing on MSMEs in Punjab revealed that despite limited awareness, Fintech instruments are increasingly recognized as vital for addressing credit gaps and reshaping financial service delivery, which is essential for the growth of MSMEs [31]. Additionally, the role of Fintech in promoting financial

inclusion is evident in the significant impact of digital remittances, debit, and credit cards on account ownership across various income levels, although the effectiveness varies due to differences in technological development and financial literacy [32]. Furthermore, the adoption of Fintech services by Microfinance Institutions (MFIs) has shown mixed results; while innovative MFIs exhibit higher social efficiency, their operational efficiency tends to be lower, indicating a trade-off between social goals and operational performance [33]. On a broader scale, Fintech's potential to enhance financial inclusion is also highlighted through the forecasted growth in digital payments and commerce, which are expected to reach substantial transaction values in the coming years [34]. To maximize the benefits of Fintech, a multi-stakeholder approach is recommended, involving national ownership, private sector investment, and collaboration with international organizations to create an enabling environment for Fintech adoption, particularly in developing regions like Africa [35]. Collectively, these studies underscore the transformative impact of Fintech on financial inclusion and operational efficiency, reinforcing the notion that digital financial services are pivotal for economic development and the sustainability of MSMEs.

Digital Readiness and Financial Performance

The significant positive impact of digital readiness on financial performance (H2) underscores the importance of being digitally prepared. MSMEs with higher levels of digital readiness are better equipped to adopt and utilize digital technologies, leading to increased productivity, market reach, and competitiveness. Digital readiness is paramount for Micro, Small, and Medium Enterprises (MSMEs) as it equips them to effectively adopt and utilize digital technologies, thereby enhancing productivity, market reach, and competitiveness. The rapid evolution of technology necessitates that MSMEs develop capabilities in digital

technology, analytical thinking, and effective planning and management in human resources to remain competitive [36]. Financial capability and perceived benefits are critical drivers that enhance managerial, operational, and technological readiness, as demonstrated in the case of Malaysian SMEs preparing for Industry 4.0 [37]. Moreover, the success of digital transformation hinges on well-prepared talent, with readiness varying by industry, company, and employee characteristics, underscoring the need for tailored talent selection and development strategies [38]. Leaders play a vital role in guiding organizations through the stages of digital transformation, bridging the past and future to achieve digital maturity [39]. For resource-constrained SMEs, especially in emerging markets, digital readiness is crucial for competitiveness. Key drivers include technological sensemaking, agility, and implementation, which are essential for navigating the digital landscape [9]. Therefore, enhancing digital skills, infrastructure, and fostering a culture that embraces change and creativity within MSMEs is crucial for maximizing the benefits of digital transformation, ensuring long-term success and sustainability in the digital era.

Regulatory Environment and Financial Performance

The positive relationship between the regulatory environment and financial performance (H3) highlights the critical role of supportive regulations in fostering MSME growth. A conducive regulatory framework is essential for fostering innovation and ensuring the successful adoption of financial technologies, particularly for micro, small, and medium enterprises (MSMEs). The rapid growth of the Fintech industry, driven by internet penetration and the demand for financial services from underbanked groups, underscores the need for robust governance mechanisms to protect consumers and ensure sustainable development [40]. Regulatory frameworks should balance market integrity, rule clarity, and innovation, as seen in the AML regulatory hierarchies of offshore financial centers like Malta, Gibraltar, and Jersey, which maintain market integrity while

promoting financial innovation [41]. Additionally, the role of regulatory authorities and the innovation process significantly influences innovation outcomes, with factors such as the number of partners involved in the innovation process playing a crucial role [11]. Policymakers should focus on creating a regulatory environment that facilitates the adoption of financial technologies and supports MSMEs in their digital transformation efforts. This involves developing policies that address sustainable transformation, R&D opportunities, and data governance capacity, as well as improving R&D governance and enabling applications [42]. Furthermore, the current regulatory environment and supervisory frameworks must be regularly evaluated to adapt to the rapid digital transformation of the financial sector, ensuring they respond to inherent risks and remain flexible enough to accommodate market developments [43]. By implementing such comprehensive and adaptive regulatory frameworks, policymakers can significantly enhance the credibility, adoption, and sustainable growth of Fintech solutions, ultimately benefiting MSMEs and the broader economy.

Implications for Practice and Policy

The findings of this study have several practical and policy implications. For MSME owners and managers, the results emphasize the importance of adopting Fintech solutions and enhancing digital readiness to improve financial performance. Investing in digital skills, infrastructure, and a culture supportive of digital transformation is essential for leveraging the benefits of financial technology.

For policymakers, the study underscores the need to create a supportive regulatory environment that facilitates Fintech adoption and digitalization efforts. Clear and flexible regulations, coupled with initiatives such as regulatory sandboxes and innovation hubs, can encourage the development and deployment of Fintech solutions, ultimately benefiting MSMEs.

Limitations and Future Research

Despite its contributions, this study has several limitations. The cross-sectional

design limits the ability to establish causality between the variables. Future research could employ longitudinal designs to better understand the causal relationships. Additionally, the study focused on MSMEs in Indonesia, and the findings may not be generalizable to other contexts. Further research could explore the impact of Fintech adoption, digital readiness, and regulatory environment on MSMEs in different countries and regions.

5. CONCLUSION

In conclusion, this study provides empirical evidence of the critical roles played by Fintech Adoption, MSME Digital Readiness, and the Regulatory Environment in shaping the Financial Performance of

MSMEs in Indonesia. The findings suggest that enhancing Fintech adoption and digital readiness can significantly improve financial outcomes, while a conducive regulatory environment is equally vital for fostering economic resilience and growth in the MSME sector. Policymakers and stakeholders are encouraged to prioritize initiatives that promote technological integration, enhance digital capabilities, and develop supportive regulatory frameworks to support the sustainable development of MSMEs, thereby contributing to broader economic stability and prosperity in Indonesia. Future research may delve deeper into specific mechanisms and policy implications to further optimize these relationships and their impact on MSMEs' financial sustainability.

REFERENCES

- [1] K. Maharani, H. Hudrasyah, and P. Belgiawan, "Marketing Strategy to Increase Brand Awareness: A Study Case on Digital Loan Application," *Int. J. Curr. Sci. Res. Rev.*, vol. 6, 2023.
- [2] A. Nurwulandari, "Analysis of the Impact of Financial Technology and Financial Literacy on MSME Business Sustainability," *Lead J. Econ. Adm.*, vol. 1, no. 4, pp. 92–97, 2023.
- [3] S. K. Sharma, P. V. Ilavarasan, and S. Karanasios, "Small businesses and FinTech: a systematic review and future directions," *Electron. Commer. Res.*, vol. 24, no. 1, pp. 535–575, 2024.
- [4] A. Rahadian and H. Thamrin, "Analysis of Factors Affecting MSME in Using Fintech Lending as Alternative Financing: Technology Acceptance Model Approach," *BBR. Brazilian Bus. Rev.*, vol. 20, no. 3, pp. 301–322, 2023.
- [5] N. Utami, "Analysis of the Use of Financial Technology and Financial Literacy Among MSMEs," *MBIA*, vol. 22, no. 1, pp. 11–21, 2023.
- [6] A. I. Sudrajad, D. Tricahyono, E. B. Yulianti, and W. Rosmawati, "The Role of Digitalization Performance on Digital Business Strategy in Indonesia MSEM," *Int. J. Prof. Bus. Rev.*, vol. 8, no. 6, pp. e02260–e02260, 2023.
- [7] M. Martini, D. Setiawan, R. T. Suryandari, R. K. Brahmana, and A. Asrihapsari, "Determinants of digital innovation in micro and small industries," *Economies*, vol. 11, no. 6, p. 172, 2023.
- [8] R. H. BinSaeed, Z. Yousaf, A. Grigorescu, V. Radu, and A. A. Nassani, "Digital Revolution and Digitization Process to Promote AIS as a Vector of Financial Performance," *Systems*, vol. 11, no. 7, p. 339, 2023.
- [9] S. R. Pingali, S. Singha, S. Arunachalam, and K. Pedada, "Digital readiness of small and medium enterprises in emerging markets: The construct, propositions, measurement, and implications," *J. Bus. Res.*, vol. 164, p. 113973, 2023.
- [10] N. G. Dewi, R. Ridhasyah, and T. A. Wibawa, "FINANCIAL ACCESS AND MSMEs PERFORMANCE DURING PANDEMIC COVID-19: THE MODERATING ROLE OF DIGITIZATION," *J. Dev. Econ.*, vol. 8, no. 1, 2023.
- [11] G. Otieno and R. Kiraka, "Beyond the innovator's Dilemma: The process and effect of fintech regulatory environment," *Cogent Bus. Manag.*, vol. 10, no. 2, p. 2226422, 2023.
- [12] S. Heseikova Bojmirova, "FinTech and Regulatory Sandbox-New Challenges for the Financial Market. The Case of the Slovak Republic," *Juridical Trib.*, vol. 12, p. 399, 2022.
- [13] W. McCallum and M. J. Aziakpono, "Regulatory sandbox for FinTech regulation: Do the conditions for effective adoption exist in South Africa?," *Dev. South. Afr.*, vol. 40, no. 5, pp. 1100–1116, 2023.
- [14] F. I. Lessambo, "FinTech Regulations and Supervision in the United States," in *Fintech Regulation and Supervision Challenges within the Banking Industry: A Comparative Study within the G-20*, Springer, 2023, pp. 43–71.
- [15] F. Lessambo, "Banking Regulation and Fintech Challenges," 2023, pp. 1–26. doi: 10.1007/978-3-031-25428-4_1.
- [16] Y. Zhang, "Fintech: Exploring the Digital Transformation of Banking & Financial Services," *BCP Bus. Manag.*, vol. 46, pp. 85–91, Jun. 2023, doi: 10.54691/bcpbm.v46i.5081.
- [17] R. Guo, "Fintech and Digital Transformation: Accelerating Innovation in Financial Services," *Highlights Business, Econ. Manag.*, vol. 15, pp. 140–144, 2023.
- [18] B. Sampat, E. Mogaji, and N. P. Nguyen, "The dark side of FinTech in financial services: a qualitative enquiry into FinTech developers' perspective," *Int. J. Bank Mark.*, vol. 42, no. 1, pp. 38–65, 2024.
- [19] E. S. Mubarak, "Sosialisasi Financial Technology (Fintech) Sebagai Layanan Perbankan Syariah: Socialization of Financial Technology (Fintech) as a Sharia Banking Service," *J. Abdimas Le Mujtamak*, vol. 3, no. 1, pp. 43–54, 2023.
- [20] J. Bae, "Does XAI Technology Improve Innovation Performance of Financial Services?," *Acad. Soc. Glob. Bus. Adm.*, vol.

- 20, pp. 194–213, Jun. 2023, doi: 10.38115/asgba.2023.20.3.194.
- [21] K. C. Ling, M. L. S. Cheng, A. Y. M. Ling, C. K. Sin, and Z. Li, "Readiness of Digital Transformation among Malaysian Digital Talents," *Int. J. Bus. Manag.*, vol. 18, no. 4, p. 161, 2023.
- [22] R. H. Binsaeed, A. Grigorescu, Z. Yousaf, E. Condrea, and A. A. Nassani, "Leading Role of Big Data Analytic Capability in Innovation Performance: Role of Organizational Readiness and Digital Orientation," *Systems*, vol. 11, no. 6, p. 284, 2023.
- [23] B. Taganoviq *et al.*, "Psychometric assessment of organizational readiness scale for digital innovations and antecedents of organizational readiness," *Hum. Syst. Manag.*, no. Preprint, pp. 1–18, 2023.
- [24] A. Sharma and S. Venkatraman, "Towards a Standard Framework for Organizational Readiness for Technology Adoption," in *Advances in Digital Manufacturing Systems: Technologies, Business Models, and Adoption*, Springer, 2023, pp. 197–219.
- [25] G. Kazarian, R. Gryshova, and N. Durglishvili, "Regulatory environment for the formation of leadership positions for the persons with disabilities," in *Sustainable Leadership for Entrepreneurs and Academics: 2018 Prague Institute for Qualification Enhancement (PRIZK) International Conference "Entrepreneurial and Sustainable Academic Leadership"(ESAL2018)*, Springer, 2019, pp. 171–179.
- [26] G. P. Otieno and R. Kiraka, "Influence of Regulatory Environment on the Process and Outcomes of Lead User Innovation," in *Academy of Management Proceedings*, Academy of Management Briarcliff Manor, NY 10510, 2022, p. 11704.
- [27] S. Hashim, "The impact of the regulatory environment and the quality of accounting information in narrowing the quality of expectations, the performance and responsibility of the auditor". 2022. doi: 10.21928/ICEARNC/4.
- [28] Y. Huang, "Research on Government Regulation: From the Perspective of Business Environment Governance," *Open J. Soc. Sci.*, vol. 10, no. 7, pp. 33–42, 2022.
- [29] P. Langley and A. Leyshon, "FinTech platform regulation: regulating with/against platforms in the UK and China," *Cambridge J. Reg. Econ. Soc.*, vol. 16, no. 2, pp. 257–268, 2023.
- [30] B. Jugurnath, P. Hemshika, and S. Štraupaitė, "FINTECH CHALLENGES AND OPPORTUNITIES IN BANKING.," *Manag.*, vol. 39, no. 1, 2023.
- [31] N. Sachdev and K. N. Singh, "Role of Fintech for MSME and Start-up Ecosystem in Punjab, India," in *Contemporary Studies of Risks in Emerging Technology, Part B*, Emerald Publishing Limited, 2023, pp. 123–145.
- [32] J. A. Mustafa, A. Marei, A. Al-Amarneh, and A. Al-Abbadi, "The role of Fintech payment instruments in improving financial inclusion," *Inf. Sci. Lett.*, vol. 12, no. 6, pp. 2659–2670, 2023.
- [33] M. Fersi, M. Boujelbene, and F. Arous, "Microfinance's digital transformation for sustainable inclusion," *Eur. J. Manag. Bus. Econ.*, vol. 32, no. 5, pp. 525–559, 2023.
- [34] S. Rhanoui, "Enhancing Financial Inclusion Using Fintech: Development Scenario for the Bank Card," *Int. Bus. Res.*, vol. 16, no. 5, pp. 1–38, 2023.
- [35] S. Danladi, U. M. Modibbo, and M. S. V Prasad, "Achieving sustainable development goals through financial inclusion: Collaborative approaches to fin-tech adoption in developing countries," 2023.
- [36] A. Chotipurk, R. Nuchniyom, and K. Lakkhongkha, "Preparing and Developing the Capabilities of Entrepreneurs in the Digital Age," *Int. J. Prof. Bus. Rev. Int. J. Prof. Bus. Rev.*, vol. 8, no. 7, p. 108, 2023.
- [37] D. M. H. Kee, M. Cordova, and S. Khin, "The key enablers of SMEs readiness in Industry 4.0: a case of Malaysia," *Int. J. Emerg. Mark.*, 2023.
- [38] J. Lee, Y. Kim, and J. Kang, "Preparation for Digital Transformation: A Case and Empirical Findings of South Korean Multinational Corporations," *J. Glob. Bus. Trade*, vol. 19, no. 1, pp. 57–74, 2023.
- [39] M. Sayyadi and M. J. Provitera, "Opinion: Becoming a digital era ready company," *Bus. Inf. Rev.*, vol. 40, no. 3, pp. 111–113, 2023.
- [40] O. Dmytryk, D. Kobylnik, O. Sereda, A. Isaiev, and A. Kotenko, "IMPROVING THE GOVERNANCE AND LEGAL FRAMEWORK FOR IMPLEMENTING FINANCIAL AND FISCAL INNOVATION IN A DIGITALIZED ENVIRONMENT.," *Eastern-European J. Enterp. Technol.*, vol. 119, no. 13, 2022.
- [41] N. Roide, "Fintech and Anti-Money Laundering Regulation: Implementing an International Regulatory Hierarchy Premised on Financial Innovation," *Tex. A&M L. Rev.*, vol. 9, p. 465, 2021.
- [42] C. Xu, S. Zhu, B. Yang, B. Miao, and Y. Duan, "A review of policy framework research on promoting sustainable transformation of digital innovation," *Sustainability*, vol. 15, no. 9, p. 7169, 2023.
- [43] D. Ahern, "Regulatory lag, regulatory friction and regulatory transition as FinTech disenablers: calibrating an EU response to the regulatory sandbox phenomenon," *Eur. Bus. Organ. Law Rev.*, vol. 22, no. 3, pp. 395–432, 2021.