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Financial technology adoption on MSMEs sustainability: The mediating role of financial literacy and financial inclusion

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ABSTRACT

This research examines how the adoption of financial technology impacts the sustainability of Micro, Small, and Medium Enterprises (MSMEs), emphasizing the intermediary roles of financial literacy and financial inclusion. A random sample of 288 MSME owners was chosen from the 1,020 members participating in the business legality assistance program by the Bojonegoro Regency Cooperative and MSME Service. Out of these, 247 owners fully completed the survey, providing data for the research. Data analysis utilized Structural Equation Modeling-Partial Least Squares (SEM-PLS). The results indicate that although the adoption of financial technology positively influences MSME sustainability, the impact is relatively modest. However, financial literacy and financial inclusion considerably enhance this relationship, with financial literacy exhibiting a stronger mediating effect. These outcomes highlight the importance of specific financial literacy initiatives and better access to financial services to promote the sustainable growth of MSMEs.

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INTRODUCTION

MSMEs in developing countries, such as Indonesia, face substantial obstacles in achieving sustainability. Research shows that approximately half of these businesses in Indonesia do not make it past their first year, with only roughly 30% enduring until their fifth year (Mckenzie & Paffhausen, 2017). The low sustainability of MSMEs is primarily due to a few critical issues: restricted access to funding, insufficient managerial expertise, and fierce competition.

One of the main challenges impacting the sustainability of MSMEs in Indonesia is financial management and capital access. The 2019 National Survey on Financial Literacy and Inclusion (SNLIK) highlighted this issue, revealing a financial literacy index of 38.03% and a financial inclusion index of 76.19% (Otoritas Jasa Keuangan, 2021). A financial literacy index of 38.03% demonstrates that many Indonesians lack a proper understanding of various financial products and services. Meanwhile, a financial inclusion index of 76.19% reveals that the usage of financial products and services among the population is still comparatively low, especially when contrasted with the average financial inclusion index of approximately 94.13% seen in developed nations.

In response to the low indices of financial literacy and inclusion, the Indonesian government has launched key initiatives aimed at improving these areas. The Financial Services Authority (OJK), along with other financial institutions, has been actively involved in providing financial education to the public

(Otoritas Jasa Keuangan, 2020). This nationwide initiative engages the financial services sector and a variety of financial technology providers, with the goal of enhancing financial literacy and encouraging the use of financial products and services. The campaign specifically targets middle to low-income individuals, including MSME owners, to foster better financial understanding and inclusion (Otoritas Jasa Keuangan, 2021).

Advancements in financial technology have brought significant contributions, opportunities, and challenges for entrepreneurs. By leveraging financial technology, individuals can explore entrepreneurial ventures through online marketplaces, thereby promoting social equality, reducing poverty, and narrowing income disparities. Additionally, financial technology facilitates financial inclusion for those without access to traditional banking services, offering solutions to working capital challenges (Hasan, Yajuan, & Khan, 2022).

As financial technology evolves, it also raises concerns about the potential misuse of digital data (Angeles, 2022; Frimpong, Agyapong, & Agyapong, 2022). To capitalize on opportunities for competitiveness and growth, Micro and Small Enterprises (MSMEs) need to develop digital expertise in applying financial technology to their businesses. This can be facilitated by engaging in thorough financial literacy programs (Lohana et al., 2023).

The internal knowledge within a company or organization serves as a strategic asset for MSMEs. According to the Resource-Based View theory, which focuses on a firm's internal resources and capabilities, management skills are a prime example. These internal strengths are crucial for formulating strategies that ensure sustainable competitive advantage and effectively adapt to shifts in the business landscape and external environment (Mckenzie & Paffhausen, 2017; Safii & Rahayu, 2021). The personal insights and perceptions of business leaders, such as recognizing business opportunities based on the local environment, constitute part of an organization's resources and capabilities. These elements play a crucial role in shaping the direction and objectives of business development (Anom & Safii, 2022). Additionally, the Knowledge-Based View elucidates management concepts and organizational learning techniques that can enhance an organization's knowledge resources (Mabenge, Ngorora-Madzimure, & Makanyeza, 2022). To address the evolving dynamics of the business environment, such as the digital economic transformation, MSMEs will leverage internal knowledge at both the individual and organizational levels (Mabenge et al., 2022).

Financial technology services encompass a range of offerings, including payment processing, digital banking, wealth management, crowdfunding, lending, insurance, and property management (Weigel & Hiebl, 2023). This research incorporates marketplace business models and digital management applications within the financial technology adoption variable, as these digital innovations are closely linked to the financial and operational aspects of MSMEs.

Financial literacy is essential for micro and small business owners when making business decisions. Despite their busy schedules, enhancing financial literacy, particularly in the digital realm, can offer significant benefits and growth opportunities. The key concepts to assess entrepreneurs' financial literacy include understanding interest rates, inflation, and investment risk management (Zaky & Hamidi, 2022). This research highlights the crucial role of financial education for those making financial decisions, as their choices significantly affect both the business and its surrounding environment.

While the primary objective of a company is to achieve strong revenue and profit, it is equally important to ensure the business can sustain long-term operations and fulfill the needs of all stakeholders (Martins et al., 2022). The sustainable performance of MSMEs is reflected in their customer management, employee management, operational efficiency, return on capital, and the capacity to adapt and continually innovate in response to market changes (Mabenge et al., 2022; Zaky & Hamidi, 2022).

When MSME owners decide to adopt digital financial products, they must familiarize themselves with various types of financial services, which ultimately enhances their financial literacy. Implementing digital finance in MSME financial management simplifies the creation of financial reports, recording of transactions, budgeting, and financial planning. It assists owners and managers in accurately tracking the financial activities of their businesses. Digital financial technology, supported by innovative applications, has the potential to significantly improve financial capabilities and also promotes and facilitates financial education (Alnemer, 2022).

Financial literacy among MSME owners plays a crucial role in enhancing business performance and sustainability. Due to the small organizational structure of MSMEs, business owners have a significant influence on financial decision-making. The choice of funding sources is influenced by various factors, and these decisions largely depend on the perspectives of the MSME owners (Meiryani et al., 2021). A common challenge faced by MSME owners is their low level of financial literacy, particularly among solo entrepreneurs (Angeles, 2022). Previous studies indicate that an entrepreneur's financial literacy, encompassing their knowledge, attitudes, and awareness, is a component of competitive advantage that enhances company performance (Zaky & Hamidi, 2022). Other studies on MSMEs in developing nations highlight financial literacy as a crucial knowledge resource for making informed financial decisions (Weigel & Hiebl, 2023).

The adoption of financial technology simplifies financial transactions via smartphones, including digital payments. MSME entrepreneurs facing working capital shortages can apply for loans through financial technology lending applications, which promotes financial inclusion. Previous research has highlighted the potential of financial technology innovations in offering digital financial services to enhance financial inclusion among MSMEs (Angeles, 2022; Weigel & Hiebl, 2023).

Enhancing financial inclusion through financial technology positively impacts company performance. Prior research has established a connection between increased financial inclusion and the improved performance of MSMEs (Rahayu et al., 2023). Financial technology is a crucial tool for enhancing financial inclusion and supporting sustainable development goals. By promoting financial inclusion, it creates opportunities for individuals to think strategically, plan, and make informed financial decisions over the medium and long term (Danladi et al., 2023). Enhancing the attainment of a country's sustainable development goals promotes economic stability and fosters a favorable business environment for MSMEs to thrive and develop sustainably.

The limited adoption of financial technology by MSMEs in Indonesia is a critical focus in the push to promote financial inclusion. Despite the various benefits and innovative solutions fintech provides, many MSMEs have yet to take advantage of these services (Otoritas Jasa Keuangan, 2020). A survey conducted by researchers revealed that out of 1,000 randomly selected MSME respondents in Bojonegoro City, only 194, or 19%, reported using financial technology services. This indicates that fintech adoption among MSMEs in Bojonegoro remains relatively low, considering the existing potential.

This research aims to assess the impact of financial technology usage on sustainable performance from the perspective of MSMEs. Another goal is to investigate how financial literacy among MSME entrepreneurs and financial inclusion mediate the relationship between digital technology adoption and business sustainability. This research will provide valuable insights into addressing the complexities and evolving dynamics of the MSME sector. Given the growing trend of financial technology adoption among MSMEs, an in-depth analysis of how this technology can enhance their performance is essential.

RESEARCH METHOD

The population for this research comprises 1,020 culinary-based MSMEs in Bojonegoro, participating in the Business Legality Assistance Program of the Bojonegoro Regency Cooperative and MSME Service in 2023. The sample size was determined using the Slovin formula, which accounts for population proportions and a 95% confidence level. The calculation indicated a required sample size of approximately 288 MSMEs. Therefore, this sample of 288 MSMEs is expected to accurately represent the broader population.

This research employed a simple random sampling technique, selecting 288 MSMEs at random from the list of participants in the business legality assistance program. Questionnaires were then mailed to the addresses of these MSMEs or their owners. A total of 288 questionnaires were distributed to MSME owners across various areas in Bojonegoro Regency. Out of these, 247 questionnaires were completed and returned, resulting in an 86% response rate.

The questionnaire for this research utilizes a 5-point Likert scale, with response options ranging from 1 to 5: 1 for Strongly Disagree, 2 for Disagree, 3 for Neutral, 4 for Agree, and 5 for Strongly Agree. The research questionnaire includes four questions on financial technology adoption, based on Alnemer (2022), It also covers six indicators of financial literacy, according to Hasan et al. (2022), and six indicators of financial inclusion, as outlined by Hadar

& Manos (2021). Additionally, there are seven indicators related to the sustainable performance of MSMEs, derived from Mabenge et al. (2022). A detailed summary of each research variable's indicators is provided in Table 1.

Table 1. Measurement Indicators for Each Latent Variable

Latent Variable	Indicator	Indicators Definition	Reference
Financial technology adoption (FTA)	FTA1	Use of Digital Payment System	Alnemer (2022)
	FTA2	Use of Fintech Services	
	FTA3	Sales via marketplace and ecommerce	
	FTA4	Integration of financial technology in business operational	
Financial literacy (FLT)	FLT1	Separation of business funds from personal funds	Hasan et al. (2022)
	FLT2	Awareness of financial planning and budgeting	
	FLT3	knowledge of cash flow management	
	FLT4	Knowledge of various types of investments	
	FLT5	Understanding of applicable taxation and financial regulations	
	FLT6	Financial education or training that has been attended	
Financial inclusion (FIC)	FIC1	Frequency of use of banking services	Hadar & Manos (2021)
	FIC2	Access to Credit and Financing	
	FIC3	Target returns from savings and investments	
	FIC4	Insurance Utilization	
	FIC5	Alternative financing from microfinance institutions	
	FIC6	Long-term savings and retirement funds	
MSME Sustainable Performance (SP)	SP1	Revenue and Profit Growth	Mabenge et al. (2022)
	SP2	Efficient Use of Resources	
	SP3	Product innovation and development	
	SP4	Customer satisfaction level	
	SP5	Employee satisfaction and wellbeing	
	SP6	Transparency and accountability	
	SP7	Contribution of MSMEs to local communities	

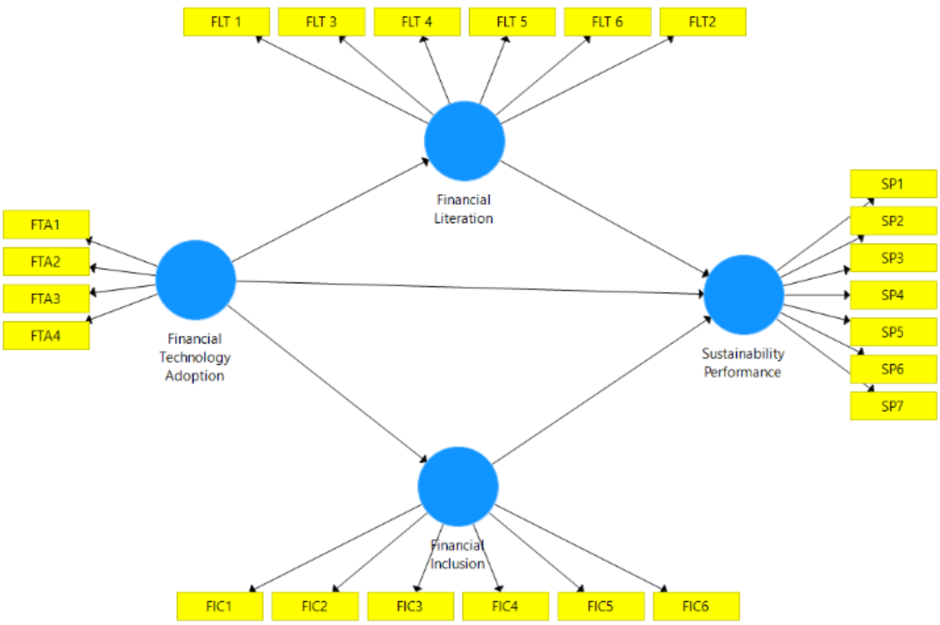

Figure 1. Research Full Model

In this research, Structural Equation Modeling-Partial Least Squares (SEM-PLS) is employed as a statistical multivariate analysis method to simultaneously analyze multiple research variables and test the hypothesized relationships. SEM-PLS is a causal modeling approach designed to maximize the explained variance of the criterion (endogenous latent variable) by the predictor (exogenous latent variable) (Hair, Babin, & Anderson, 2010).

The complete research model image illustrates the reflective structure of all indicators for each latent variable in this research (Figure 1). Additionally, Figure 2 outlines the relationships between the variables, which will be tested using SEM-PLS analysis. This includes examining both the direct effects between variables and the mediating role in indirect effects.

RESULT AND DISCUSSION

Demographics of Respondents

In this study, an examination of respondent demographics was performed prior to data analysis to better grasp the context and characteristics of the MSME sample under investigation. The purpose of this demographic review is to gain a deeper understanding of the individuals participating in the research, considering factors such as their education level, business experience, family background, and region of origin. A summary of the demographics for the entire MSME sample is provided in Table 2.

Based on the demographic data in Table 2, the gender distribution of the respondents indicates that men constituted the majority at 74.49%, with women making up 25.51%. The age breakdown reveals that most respondents were between 40 and 50 years old (50.20%), followed by those aged 30-40 (41.30%). A smaller portion of the respondents were over 50 years old (6.88%), and only 1.62% were under 30. In terms of educational background, the majority had completed junior high school (42.11%), followed by those with an elementary school education (23.08%), high school education (21.46%), and a bachelor's degree (13.36%). This indicates that a significant portion of respondents have a lower middle school educational level. Additionally, only 17% of respondents had business experience, while 83% did not, suggesting that many are new to the micro, small, and medium enterprises (MSME) sector or are still in the learning phase. Regarding family background, 53.74% of respondents came from families with a business background, highlighting the influence of business within their family environments, whereas 46.26% did not have such a background. The majority of respondents (87.04%) were from Bojonegoro, with 12.96% coming from outside the region, emphasizing the local focus of the survey. This demographic information is crucial for understanding the context and needs of MSME development in the area.

Table 2. Demographics of Respondents

Descriptions	Frequency	Proportion %
Gender		
Male	184	74.49
Female	63	25.51
Age		
Under 30 years	4	1.62
Between 30-40 Years	102	41.30
Between 40-50 Years	124	50.20
More than 50 Years	17	6.88
Education Level		
Primary school	57	23.08
Junior High School	104	42.11
High school	53	21.46
Bachelor	33	13.36
Business Experience		
Have Business Experience	42	17.00
No Business Experience	205	83.00
Family Background		
From a business family	122	53.74
Not from a business family	105	46.26
The origin of the MSME owner		
From Bojonegoro	215	87.04
From outside Bojonegoro	32	12.96

Sample size = 247

Model Feasibility Analysis

The viability of the SEM-PLS model was assessed through a two-step process: first, the measurement model was evaluated, followed by an assessment of the structural model. For each latent variable, the reflective indicator measurement model was examined by reviewing the standardized loading factor, composite reliability, and average variance extracted (AVE). The outcomes of this measurement model evaluation are detailed in Table 3.

The model fit test results, as outlined in Table 4, confirm that the fit indicators meet the required criteria. The p-values for APC, ARC, and AARS are all significant ($p<0.001$), specifically APC=0.252, ARS=0.233, and AARS=0.228. Additionally, the values for AVIF and AFVIF are both less than 3.3, indicating no multicollinearity issues between indicators or predictor variables. The goodness of fit (GoF) is 0.397, which is greater than 0.36, demonstrating that the research model is highly suitable. Furthermore, the parameters SPR, RSCR, SSR, and NLBCDR all equal one (1), indicating that there are no causality problems within the research model.

Table 3. Model Measurement

Variables	Indicator	Standardized loading factor	Composite reliability	AVE
Financial technology adoption (FTA)	FTA1	0.768	0.871	0.629
	FTA2	0.820		
	FTA3	0.732		
	FTA4	0,874		
Financial literation (FLT)	FLT1	0.902	0.809	0.543
	FLT 2	0.743		
	FLT 3	0.735		
	FLT 4	0.434		
	FLT5	0,687		
	FLT6	0,693		
Financial inclusion (FIC)	FIC1	0734	0.902	0.605
	FIC2	0.821		
	FIC3	0.769		
	FIC4	0.446		
	FIC5	0,746		
	FIC6	0,742		
Sustainability Performance (SP)	SP1	0.734	0.922	0.634
	SP2	0.774		
	SP3	0.711		
	SP4	0.834		
	SP5	0.876		
	SP6	0.738		
	SP7	0.732		

According to the data in Table 3, the standardized loading factor for the FIC4 indicator is below 0.05, whereas the loading factors for the other indicators exceed 0.05. Consequently, SC4 needs to be excluded from the model.

The purpose of evaluating the structural model is to measure how effectively the model was constructed using the current data. This assessment includes performing goodness-of-fit tests to verify that the model accurately captures the relationships between the variables (Hair, Hult, Ringle, & Sarstedt, 2021). The outcomes from the model fit test are presented in Table 4.

Results of Path Analysis

The results of the path analysis using SEM-PLS, as shown in Table 5, indicate that the adoption of digital finance (FTA) significantly impacts the sustainable performance of MSMEs (SP) with a coefficient of 0.278 and a p-value of less than 0.01. Additionally, the influence of financial literacy on the sustainable performance of MSMEs is significant, with a path coefficient of 0.425 and a p-value of 0.001. Furthermore, the effect of financial inclusion on the sustainability of MSMEs is also significant, with a coefficient of 0.386 and a p-value of 0.001.

The Partial F-test, or effect size (f2), is utilized to determine the proportion of variance that exogenous variables contribute to endogenous variables. Effect sizes are classified as weak (0.02-0.15), medium (0.15-0.35), and large (> 0.35). An effect size below 0.02 is considered too weak to be practically significant. According to Table 5, the Direct Effect Description Path, financial literacy has the largest effect size on the sustainable performance of MSMEs at 0.275, placing it in the medium category. This is followed by financial inclusion's effect on the sustainable performance of MSMEs, with an effect size of 0.243, also in the medium category. In the weak category, financial technology impacts financial inclusion with an effect size of 0.114, and financial technology affects financial literacy with an effect size of 0.031.

Table 4. Model Fit Test

Index	Parameters	Conditions Accepted
Average Path Coefficient (APC)	0.252	p < 0.05
Average R-squared (ARS)	0.233	p < 0.05
Average Adjusted R-squared (AARS)	0.228	p < 0.05
Average block VIF (AVIF)	1.258	accepted if <= 5
Average full collinearity VIF (AFVIF)	1.602	accepted if <= 5
Tenenhaus GoF (GoF)	0.397	small >= 0.1; medium >= 0.25; large>= 0.36
Sympson's paradox ratio (SPR)	1.000	accepted if >= 0.7
R-squared contribution ratio (RSCR)	1.000	accepted if >= 0.9
Statistical suppression ratio (SSR)	1.000	accepted if >= 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)	1.000	accepted if >= 0.7

Table 5. Factors Affecting Sustainability Performance of MSME

Path Description	Path-Coefficient	F Square	p-Value
Financial Technology Adoption→ Sustainability Performance	0.278	0.072	0,001***
Financial Technology Adoption→ Financial Literation	0.177	0.031	0.002***
Financial Technology Adoption→ Financial Inclusion	0.080	0.020	0.095*
Financial Literation → Sustainability Performance	0.425	0.275	0.001***
Financial Inclusion → Sustainability Performance	0.386	0.253	0.001***
Indirect Effects 1:			
Financial Technology Adoption→ Financial Literation→ Sustainability Performance	0.075		0,009***
Indirect Effects 2:			
Financial Technology Adoption→ Financial Inclusion→ Sustainability Performance	0.130		0.001***

The simultaneous analysis of all mediating variables in the model reveals that the direct effect of Financial Technology Adoption on the sustainable performance of MSMEs has a path coefficient of 0.253 and a p-value of less than 0.001, as shown in Table 5, without considering the two mediating variables. When the mediating variable is included, the indirect effect of financial technology adoption has a coefficient of 0.080 with a p-value of 0.095, which is not significant. However, the indirect effect path coefficient, considering the combination of two mediating variable paths (2 segments), totals 0.205 with a significant p-value of less than 0.01. The total effect size of this indirect effect, using these two paths, is 0.052, which falls into the weak category.

Examining the mediating role of the connecting variables revealed that the effect of Financial Technology Adoption (FTA) on Sustainable Performance (SP) through Financial Literacy (FLT) has an indirect effect path coefficient of 0.075, with a significant p-value of 0.0096 (<0.05). Similarly, the influence of Financial Technology Adoption (FTA) on Sustainable Performance (SP) through Financial Inclusion (FIC) has an indirect effect path coefficient of 0.130, with a p-value of less than 0.001. The Sobel test results confirmed the significance of the mediation effect, as indicated by the t-values obtained for both financial literacy and financial inclusion.

Factors Affecting Performance of MSME

1. Financial Technology Adoption

The analysis revealed that the adoption of financial technology significantly impacts sustainability performance, with a path coefficient of 0.278 and a p-value of 0.001. This outcome underscores the importance of understanding and utilizing technology and financial digitalization to enhance the sustainable performance of MSMEs. These results are consistent with previous studies (Long, Morgan, & Yoshino, 2023; Thathsarani & Jianguo, 2022). The effect size of financial technology adoption on the sustainable performance of MSMEs is categorized as weak in both the total and indirect effect channels. Enhancing the understanding and implementation of financial technology adoption could lead to a more substantial impact on company performance and the sustainability of MSMEs (Long et al., 2023).

The total effect encompasses the overall impact of financial technology adoption on sustainable performance, including both direct and indirect effects. A weak total effect indicates that the direct influence of financial technology adoption, along with any indirect effects mediated through factors like enhanced access to finance or improved operational efficiency, is not substantial enough to significantly alter the sustainable performance of MSMEs. When both the total and indirect effect channels are categorized as weak, it suggests that the link between financial technology adoption and sustainable performance in MSMEs is not strong. This may imply that while MSMEs have adopted financial technology solutions, they are not fully leveraging or integrating these technologies effectively into their business operations (Svirina et al., 2021). Overcoming these challenges necessitates focused strategies to improve the adoption, utilization, and effectiveness of financial technology solutions among MSMEs. Potential interventions could include capacity-building programs, enhanced access to digital infrastructure, regulatory reforms to promote innovation, and customized financial education initiatives to boost awareness and skills related to financial technology adoption (Naumenkova, Mishchenko, & Dorofeiev, 2019).

2. Financial Literation

Financial literacy significantly impacts sustainability performance, with a path coefficient of 0.425 and a p-value of 0.001. This outcome suggests that enhancing financial literacy substantially improves MSMEs' capacity to manage their operations sustainably. Higher financial literacy levels among business owners or managers are associated with better business and financial decision-making, which, in turn, enhances business sustainability. This result aligns with the observation that increased financial knowledge among business managers boosts MSMEs' resilience in the face of intense competition, ultimately enabling their continued survival (Angeles, 2022).

MSME owners should focus on enhancing financial literacy within their organizations. This can be accomplished by engaging in training sessions, attending workshops, and utilizing educational resources. With improved financial understanding, managers will be able to create more effective and sustainable financial strategies. This includes managing cash flow efficiently, planning budgets realistically, and allocating resources optimally to support long-term business operations.

3. Financial Inclusion

The research outcomes reveal that financial inclusion significantly impacts sustainability performance, with a path coefficient of 0.386 and a p-value of 0.001. Improved access to financial services, such as loans, savings, and insurance, enables MSMEs to strengthen their capacity to survive and expand over the long term.

Financial inclusion provides MSMEs with essential access to loans and other financial products, enabling them to invest in their operations, manage cash flow, and attain sustainable growth. With better access to capital, MSMEs can acquire new equipment, adopt advanced technologies, and offer training programs, thereby increasing productivity and supporting business expansion (Al-Hanakta et al., 2023). Financial inclusion also helps MSMEs build resilience by providing access to savings, insurance, and other financial tools, enabling them to endure economic shocks and uncertainties (Le, Chuc, & Taghizadeh-Hesary, 2019).

4. Mediation of Financial Literacy in Financial Technology Adoption

The test for indirect influence produces interesting outcomes. It shows that financial technology adoption impacts sustainability performance through financial literacy, with an indirect path coefficient of 0.075 and a p-value of 0.009. This underscores the crucial role of financial literacy as a mediator in the link between technology adoption and sustainability performance. The outcomes suggest that improved utilization of financial technology leads to higher financial literacy levels, which in turn enhances the sustainable performance of MSMEs. These results are consistent with previous studies (Thathsarani & Jianguo, 2022). This mediation indicates that the connection between financial technology adoption and sustainable performance is influenced or clarified by the financial literacy level of business owners.

Financial literacy among business owners encompasses their knowledge, understanding, and skills in financial concepts, including budgeting, financial planning, cash flow management, investment evaluation, and risk assessment. Those with higher levels of financial literacy are more capable of understanding, assessing, and effectively implementing financial technology tools and services in their business operations (Eniola & Entebang, 2017). Recognizing the mediating role of financial literacy in the relationship between financial technology adoption and sustainable performance enables policymakers, financial institutions, and business support organizations to create targeted interventions to boost both financial literacy and technology adoption among MSMEs. Such efforts could involve offering financial education and training programs, providing technical assistance for financial literacy implementation, promoting digital inclusion initiatives, and establishing partnerships between financial literacy providers and MSMEs to ensure effective utilization of financial literacy solutions for sustainable business growth (Risman et al., 2023).

5. Mediation of Financial Inclusions in Financial Technology Adoption

The research outcomes also demonstrated that financial technology adoption affects sustainability performance through financial inclusion, with an indirect path coefficient of 0.130 and a p-value of 0.001. This suggests that financial inclusion is a significant mediator, enabling MSMEs to leverage financial technology to enhance their sustainability. Essentially, as MSMEs improve their understanding and utilization of financial technology, increased financial inclusion will, in turn, positively impact their sustainable performance. The results of this study support some previous research (Cunningham et al., 2023; Nurwulandari, 2023). Furthermore, the correlation between the adoption of financial technology and the advancement of financial inclusion aligns with prior studies (Angeles, 2022; Rahayu et al., 2023).

Financial inclusion acts as a facilitator in the connection between the adoption of financial technology and sustainable performance. It shapes how MSMEs employ financial technology solutions and their ability to achieve sustainable results. MSMEs that are financially included are better positioned to adopt and utilize financial technology tools effectively. This advantage stems from their access to essential infrastructure, knowledge, and support systems, enabling them to harness these technologies for business advancement (Bongomin & Ntayi, 2020). Furthermore, financial inclusion guarantees that MSMEs can capitalize on the entire spectrum of advantages provided by financial technology solutions. This amplifies their capability to enhance operational efficiency, broaden market penetration, secure financing, mitigate risks, and attain enduring sustainability. Acting as a mediator, financial inclusion significantly bolsters the attainment of sustainable performance outcomes among MSMEs. By enabling MSMEs to access and proficiently deploy financial technology solutions, financial inclusion elevates their competitiveness, resilience, and prospects for growth (Jungo, Madaleno, & Botelho, 2022). MSMEs that have achieved financial inclusion and possess digital empowerment are more adept at navigating economic uncertainties, capitalizing on opportunities, and ensuring long-term business growth (Javed & Husain, 2021).

Research Implication

The outcomes of this research offer insights into recommendations for enhancing accessibility and adoption of financial technology among MSME owners. Survey data collected from MSME operators, many of whom have attained a lower level of education (ranging from primary to junior high school), underscores the necessity for governmental and financial institutions to conduct training and outreach initiatives. These efforts are crucial to augmenting MSMEs' comprehension of the advantages of financial technology, encompassing digital payment applications, technology-driven financial management, and access to digital financing. Moreover, training and outreach programs aimed at boosting financial literacy would greatly benefit MSMEs by enhancing their understanding and capacity to adapt to the evolving dynamics of business competition (Naumenkova et al., 2019).

Governmental regulations should be designed to encourage innovation in financial technology, with a primary focus on safeguarding consumer interests. Emphasizing security, data confidentiality, and transactional transparency will establish a resilient financial ecosystem that caters to the needs of MSMEs, ensuring inclusivity, safety, and operational efficiency (Hasan et al., 2022).

The research identified substantial obstacles to MSMEs adopting financial technology, as evidenced by the minimal impact observed in the research model regarding the influence of financial technology application. Despite the widespread use of financial technology, its impact on the performance and sustainability of MSMEs has not reached its full potential. To optimize this impact, it is advised that financial technology service providers tailor their solutions to meet the specific needs and capabilities of MSMEs. This approach will ensure that the adoption of financial technology more effectively enhances the future competitiveness and sustainability of MSMEs (Danladi et al., 2023).

CONCLUSION AND SUGGESTION

The outcomes of this research indicate that the practical implementation of financial technology positively impacts the sustainable performance of MSMEs. There is significant potential for financial technology services to benefit MSMEs, supported by government initiatives and robust infrastructure. Additionally, the research shows that financial literacy plays a mediating role in the relationship between the adoption of financial technology and the sustainable performance of MSMEs. By leveraging financial technology services, MSME owners gain improved insights, particularly in financial management and business risk management, leading to enhanced sustainability of MSMEs. Furthermore, the research reveals that financial inclusion can mediate the link between financial technology adoption and sustainable performance. Technology-driven financial services offer alternatives to traditional banking challenges and create new opportunities for MSME entrepreneurs in achieving financial inclusion.

This research offers important managerial and practical insights. Firstly, MSMEs experience significant benefits from utilizing fintech services. Despite the currently low adoption rate of fintech among the general population, the diverse advantages of financial services indicate that fintech providers can gain a deeper understanding of MSMEs' needs and concerns. This understanding will enable them to create more suitable and appealing products and services for this sector. Enhanced use of fintech services can improve MSMEs' competitiveness. Secondly, the research outcomes are directed at the government and regulatory bodies to help them develop policies that support financial inclusion and foster a more MSME-friendly fintech ecosystem. This approach includes improving digital infrastructure, implementing comprehensive education and training initiatives, and ensuring robust consumer protection to build trust in financial technology services.

This research aims to expand the current body of knowledge concerning effective financial management strategies tailored for MSMEs. However, a limitation of this research is the reliance on self-reported data and assessments by MSME entrepreneurs, potentially introducing biases. Future research endeavors should focus on refining research methodologies, such as experimental approaches that involve digital financial literacy training for specific MSME target groups utilizing digital financial services, to enhance the accuracy and applicability of outcomes.

REFERENCES

Al-Hanakta, R., Hossain, M. B., Pataki, L., & Dunay, A. (2023). Eco-innovation influence on business performance in Jordanian micro, small and medium enterprises operating in the food processing sector. PLOS ONE, 18(2), e0281664. https://doi.org/10.1371/journal.pone.0281664

Alnemer, H. A. (2022). Determinants of digital banking adoption in the Kingdom of Saudi Arabia: A technology acceptance model approach. Digital Business, 2(2), 100037. https://doi.org/10.1016/j.digbus.2022.100037

Angeles, I. (2022). The moderating effect of digital and financial literacy on the digital financial services and financial behavior of MSMEs. Review of Economics and Finance, 20(20), 505–515. https://doi.org/10.55365/1923.x2022.20.57

Anom, L., & Safii, A. A. (2022). Enhancing MSME Performance through market sensing capability, innovation capability, and iconic ethnic product development. Jurnal Ilmu Manajemen Advantage, 6(1), 1–10. https://doi.org/10.30741/adv.v6i1.778

Bongomin, G. O. C., & Ntayi, J. M. (2020). Mobile money adoption and usage and financial inclusion: mediating effect of digital consumer protection. Digital Policy, Regulation and Governance, 22(3), 157–176. https://doi.org/10.1108/DPRG-01-2019-0005

Cunningham, J. A., Damij, N., Modic, D., & Olan, F. (2023). MSME technology adoption, entrepreneurial mindset and value creation: a configurational approach. The Journal of Technology Transfer, 48(5), 1574–1598. https://doi.org/10.1007/s10961-023-10022-0

Danladi, S., Prasad, M. S. V., Modibbo, U. M., Ahmadi, S. A., & Ghasemi, P. (2023). Attaining sustainable development goals through financial inclusion: Exploring collaborative approaches to fintech adoption in developing economies. Sustainability, 15(17), 13039. https://doi.org/10.3390/su151713039

Eniola, A. A., & Entebang, H. (2017). SME managers and financial literacy. Global Business Review, 18(3), 559–576. https://doi.org/10.1177/0972150917692063

Frimpong, S. E., Agyapong, G., & Agyapong, D. (2022). Financial literacy, access to digital finance and performance of SMEs: Evidence from Central region of Ghana. Cogent Economics & Finance, 10(1), 2121356. https://doi.org/10.1080/23322039.2022.2121356

Hadar, R., & Manos, R. (2021). Government policy and financial inclusion: analyzing the impact of the Indian national mission for financial inclusion. Inclusive Financial Development, pp. 265–292. Edward Elgar Publishing. https://doi.org/10.4337/9781800376380.00018

Hair, J. F., Babin, B. J., & Anderson, R. E. (2010). Multivaraite Data Analysis. New Jersey: Prentice Hall.

Hair, J. F. Jr., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). A primer on partial least squares structural equations modeling (PLS-SEM). California: Sage Publications. Third Edition (3rd Edition).

Hasan, Md. M., Yajuan, L., & Khan, S. (2022). Promoting China's inclusive finance through digital financial services. Global Business Review, 23(4), 984–1006. https://doi.org/10.1177/0972150919895348

Javed, S., & Husain, U. (2021). Impact of financial factors on social and financial sustainability in banking sector: A mediating role of financial literacy. Financial Inclusion in Emerging Markets, pp. 257–280. Springer Singapore. https://doi.org/10.1007/978-981-16-2652-4_13

Jungo, J., Madaleno, M., & Botelho, A. (2022). The effect of financial inclusion and competitiveness on financial stability: Why financial regulation matters in developing countries? Journal of Risk and Financial Management, Vol. 15, p. 122. MDPI AG. https://doi.org/10.3390/jrfm15030122

Le, T.-H., Chuc, A. T., & Taghizadeh-Hesary, F. (2019). Financial inclusion and its impact on financial efficiency and sustainability: Empirical evidence from Asia. Borsa Istanbul Review, 19(4), 310–322. https://doi.org/10.1016/j.bir.2019.07.002

Lohana, S., Rashid, U. K., Zabri, S. M., & Rehman, Z. U. (2023). Performance analysis of industry 4.0 and small and medium enterprises (SMEs) for financial sustainability using strategic planning. 2023 Global Conference on Wireless and Optical Technologies (GCWOT), 1–9. IEEE. https://doi.org/10.1109/GCWOT57803.2023.10064655

Long, T. Q., Morgan, P. J., & Yoshino, N. (2023). Financial literacy, behavioral traits, and ePayment adoption and usage in Japan. Financial Innovation, 9(1), 101. https://doi.org/10.1186/s40854-023-00504-3

Mabenge, B. K., Ngorora-Madzimure, G. P. K., & Makanyeza, C. (2022). Dimensions of innovation and their effects on the performance of small and medium enterprises: the moderating role of firm's age and size. Journal of Small Business & Entrepreneurship, 34(6), 684–708. https://doi.org/10.1080/08276331.2020.1725727

Martins, A., Branco, M. C., Melo, P. N., & Machado, C. (2022). Sustainability in small and medium-sized enterprises: A systematic literature review and future research agenda. Sustainability, 14(11), 6493.

Mckenzie, D., & Paffhausen, A. L. (2017). Small Firm Death in Developing Countries. Retrieved from http://econ.worldbank.org.

Meiryani, Elizabeth, J., Chang, A., & Sun, Y. (2021). The effect of financial and financial technology literation on financial inclusion. Proceedings of the 2nd International Conference of Mental Health. SCITEPRESS - Science and Technology Publications. https://doi.org/10.5220/0011243200003376

Naumenkova, S., Mishchenko, S., & Dorofeiev, D. (2019). Digital financial inclusion: Evidence from Ukraine. Investment Management and Financial Innovations, Vol. 16, pp. 194–205. LLC CPC Business Perspectives. https://doi.org/10.21511/imfi.16(3).2019.18

Nurwulandari, A. (2023). Analysis of the impact of financial technology and financial literacy on MSME business sustainability. Lead Journal of Economy and Administration, 1(4), 92–97.

Otoritas Jasa Keuangan. (2020). Supporting MSMEs through FinTech Financial Inclusion for Supporting.

Otoritas Jasa Keuangan. (2021). National Strategy on Indonesian Financial Literacy (SNLKI) 2021 – 2025.

Rahayu, F. S., Risman, A., Firdaus, I., & Haningsih, L. (2023). The behavioral finance of msme in indonesia: financial literacy, financial technology (fintech), and financial attitudes. International Journal of Digital Entrepreneurship and Business, 4(2), 95–107. https://doi.org/10.52238/ideb.v4i2.127

Risman, A., Ali, A. J., Soelton, M., & Siswanti, I. (2023). The behavioral finance of MSMEs in the advancement of financial inclusion and financial technology (Fintech). The Indonesian Accounting Review, 13(1), 91–101. https://doi.org/10.14414/tiar.v13i1.3213

Safii, A. A., & Rahayu, S. (2021). Human capital and social capital as determining factors of the MSMEs Surviving Ability. Jurnal Ilmu Manajemen Advantage, 5(1), 1–9. Retrieved from https://ejournal.itbwigalumajang.ac.id/index.php/adv/article/view/659

Svirina, A., Appalonova, N., Garanin, D., Lukashevich, N., & Koshkin, I. (2021). Fintech developmental trends: the role and influence of sustainable digital logistics. E3S Web of Conferences, 258, 02019. https://doi.org/10.1051/e3sconf/202125802019

Thathsarani, U. S., & Jianguo, W. (2022). Do digital finance and the technology acceptance model strengthen financial inclusion and sme performance? Information, 13(8), 390. https://doi.org/10.3390/info13080390

Weigel, C., & Hiebl, M. R. W. (2023). Accountants and small businesses: toward a resource-based view. Journal of Accounting & Organizational Change, 19(5), 642–666. https://doi.org/10.1108/JAOC-03-2022-0044

Zaky, M., & Hamidi, D. Z. (2022). The role of financial technology in improving financial literacy for MSME actors. KnE Social Sciences, 257–266. https://doi.org/10.18502/kss.v7i14.11974