

Fintech Innovation: A Solution to Enhance the Sustainability of Micro, Small, and Medium Enterprises

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ABSTRACT

This research examines the role of Financial Technology (fintech) in the sustainability of Micro, Small, and Medium Enterprises (MSMEs). This topic is intriguing because fintech is rapidly evolving and holds significant potential to address the financing access challenges often faced by MSMEs. The research problem formulated is: What are the antecedents and consequences of fintech on the sustainability of MSMEs? This study provides new contributions by exploring the relationship between fintech adoption and MSME performance from the perspective of current literature, which has not been extensively researched. The method employed is a systematic literature review of 22 articles from the Scopus database that meet the inclusion criteria based on the keywords “Financial Technology” and “SMEs.” The results indicate that the antecedents of fintech adoption include financial literacy, perceived usefulness, regulatory support, and digital readiness, while the consequences encompass improved access to financing, operational efficiency, and business growth. Furthermore, it was found that challenges in using fintech include technological risks and a lack of explain ability in AI methods. In conclusion, fintech plays a crucial role in supporting the sustainability of MSMEs through enhanced financial inclusion and market access. The implications of this research highlight the need for policies that support fintech adoption and improve financial literacy to strengthen the positive impact on MSMEs. This study proposes a future research agenda related to the development of more inclusive fintech business models and comparative studies between countries.

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1. INTRODUCTION

The Micro, Small, and Medium Enterprises (MSMEs) sector plays a central role in global economic growth, particularly in developing countries. MSMEs make significant contributions to job creation, innovation, and a more equitable distribution of the economy (El Gohary, 2019). However, MSMEs often face various challenges that hinder their sustainability, including limited access to financial resources, constrained management capabilities, and high dependence on local market conditions (Cornelli et al., 2023). One innovation that has the potential to address these challenges is financial technology (fintech), which provides broader access to financial services through digital platforms. This study aims to analyze the role of fintech in supporting the sustainability of MSMEs using the Systematic Literature Review (SLR) method from the Scopus database (Msomi & Nzama, 2022).

In recent years, fintech adoption among MSMEs has significantly increased, especially in developing countries like Indonesia. Services such as digital payments, peer-to-peer financing, and app-based financial management have offered more accessible and affordable solutions compared to traditional financial services (Purnamasari et al., 2020). This phenomenon raises questions about how fintech can impact the sustainability of MSMEs in financial, operational, and strategic aspects. This research focuses on identifying the antecedents (causal factors) and consequences (impacts) of fintech adoption on MSME sustainability, as well as formulating a relevant research agenda for the future (Festa et al., 2023).

The primary motivation for this research is the increasing dependence of MSMEs on digital technology in an increasingly complex and competitive business ecosystem (Agyei, 2018). Financial technology offers potential solutions to strengthen the financial resilience of MSMEs by addressing classic issues such as unequal access to capital, payment efficiency, and risk management. Several studies indicate that fintech can accelerate financial inclusion, improve cash flow, and enhance the competitiveness of MSMEs in the global market (Banna et al., 2021; Msomi & Nzama, 2022). However, the overall impact of fintech on the sustainability of MSMEs is still not fully understood, particularly in the context of developing countries.

The method used in this study is the Systematic Literature Review (SLR), which aims to compile, analyze, and synthesize relevant previous research findings. Through a comprehensive literature analysis, this study seeks to fill gaps in previous research related to the relationship between fintech and MSME sustainability (Hadi et al., 2023). The SLR approach is chosen to provide a solid foundation for explaining this emerging phenomenon and to ensure that the research results are based on consistent and reliable empirical evidence (Cornelli et al., 2023).

In the literature review, fintech has been identified to have several important antecedents contributing to its adoption among MSMEs, including advances in information and communication technology, changes in financial regulations, and increasing demand for inclusive

financial services (Hahm et al., 2021). Conversely, the consequences of fintech adoption for MSMEs include enhanced operational efficiency, easier access to international markets, and improved resilience against financial risks (Thottoli et al., 2024). Nevertheless, some studies also indicate challenges such as reliance on technology, cybersecurity risks, and gaps in digital literacy among MSME actors.

The research problem formulated is: What are the antecedents and consequences of fintech on MSME sustainability? And how can the development of future research agendas deepen our understanding of the impact of fintech on MSME sustainability? These questions guide the research to explore internal and external factors that drive or hinder fintech adoption among MSMEs, as well as how it impacts their competitiveness, growth, and business continuity.

The complexity of this issue lies in the diversity of fintech types available, as well as the varied characteristics of MSMEs across different sectors and geographical regions. MSMEs in rural areas, for example, may have different needs and challenges compared to those in urban areas (Chang et al., 2020). Additionally, the role of regulations and government policies in supporting the development of fintech in the MSME sector also needs to be considered as an important variable in this analysis.

The objective of this research is to provide a deeper understanding of how fintech can be an effective tool in enhancing the sustainability of

MSMEs. Furthermore, this study also aims to formulate a future research agenda focusing on the role of fintech in the digital transformation of MSMEs, as well as how innovations in financial technology can be optimized to support the long-term growth of MSMEs (Agyei, 2018).

As a contribution to the literature, this research not only provides theoretical analysis but also practical implications for policymakers, fintech service providers, and MSME actors. By understanding the dynamics of the antecedents and consequences of fintech on MSME sustainability, it is hoped that the results of this research can serve as a reference for developing more inclusive and sustainable policies and business strategies (Alaassar et al., 2022).

This study will outline several strategic recommendations based on findings from existing literature, as well as propose further research areas that can support the development of fintech and MSME sustainability in the future. The interconnection between advancements in financial technology and MSME dynamics presents both challenges and new opportunities to create a more resilient and innovative business ecosystem amid the era of digital disruption. Thus, this research offers significant contributions to the development of literature on financial technology and MSMEs, providing insights for researchers, practitioners, and policymakers to better understand the role of fintech in strengthening the sustainability of the MSME sector in the future.

2. LITERATURE REVIEW

In this section, the theoretical foundation is established to explain the key concepts underlying the research on the role of fintech in the sustainability of MSMEs. Specifically, this section will present the literature related to financial technology (fintech), the sustainability of MSMEs, and the relevant theoretical frameworks that support the research analysis (Belozyorov et al., 2020). The goal is to identify research gaps and formulate hypotheses or research questions that can address the research objectives.

2.1. Financial Technology (Fintech)

Financial technology, or fintech, is defined as technological innovation in financial services aimed at enhancing accessibility, efficiency, and financial inclusion (Arner et al., 2020). Fintech encompasses a range of services such as digital payments, peer-to-peer (P2P) financing, blockchain technology, and app-based asset management. In the context of MSMEs, fintech plays a crucial role in overcoming barriers to accessing traditional banking services, especially in developing countries where MSMEs often face capital constraints and market access issues (Deng et al., 2021).

The literature indicates that fintech adoption can improve access to financing for MSMEs through more flexible methods and lower costs compared to traditional financial institutions (Chen et al., 2021). For example, P2P lending platforms have enabled MSME actors to access loans quickly without going through lengthy bureaucratic processes. Additionally, digital payments also assist MSMEs in speeding up transactions, reducing dependence on cash, and

enhancing their financial management efficiency (Imerman & Fabozzi, 2020).

2.2. Sustainability of MSMEs

The sustainability of MSMEs refers to the ability of small and medium enterprises to remain viable and grow amid market dynamics and operational challenges they face. According to the literature, the sustainability of MSMEs involves not only economic aspects but also encompasses social and environmental dimensions (Krah et al., 2024). Sustainable MSMEs are those that can maintain long-term profitability while being mindful of the social and environmental impacts of their business activities.

Fintech offers new opportunities for MSMEs to enhance their sustainability, both from financial and operational perspectives. The use of fintech enables MSMEs to be more flexible in managing working capital, respond to market changes in real-time, and improve financial inclusion (Banna et al., 2021). However, research on how fintech contributes to the social and environmental dimensions of MSME sustainability is still relatively scarce in the literature. This creates a gap that needs to be further explored in this research.

2.3. The Relationship Between Fintech and MSME Sustainability

Several previous studies have attempted to link fintech with the sustainability of MSMEs, but there is no strong consensus regarding the most effective model. For example, found that fintech enhances the operational efficiency of MSMEs through

automation and quick access to market information (Toth & Kasa, 2022). On the other hand, demonstrated that fintech plays a crucial role in reducing financial and operational risks for MSMEs by introducing more sophisticated financial management tools (Msomi & Nzama, 2022).

However, there is a gap in the literature explaining how different types of fintech services have varying impacts on MSMEs based on the characteristics of specific business sectors or geographic regions. Additionally, there is still a lack of research linking the impact of fintech on non-economic sustainability, such as social and environmental impacts (Tóth et al., 2021). Therefore, this study aims to fill this gap by exploring in greater depth the antecedents and consequences of fintech on the sustainability of MSMEs.

2.4. Research Gaps and Future Agenda

Despite numerous studies addressing the role of fintech in enhancing financial efficiency and accessibility, there remains a gap in understanding its impact on the sustainability of MSMEs in a holistic manner, particularly in developing countries. Many previous studies have focused solely on financial dimensions, while the impact of fintech on the social and environmental dimensions of MSME sustainability is often overlooked (Rehman et al., 2023). Therefore, this research aims to develop a more comprehensive perspective on how fintech can contribute to the sustainability of MSMEs.

This research employs the Systematic Literature Review (SLR) method to explore the role of financial technology (fintech) in the sustainability of MSMEs (Ningrat & Nurzaman, 2019). The process begins with a literature search through the Scopus database, which is one of the leading academic reference sources. The keywords used in the search are “Financial Technology” AND “SMEs,” resulting in 84 initial documents. To narrow the scope of the literature, several filtering stages were conducted based on inclusion criteria relevant to the research topic. First, only scholarly articles (document type: article) were included, reducing the number of articles to 56 documents. The next filter was applied to “language,” including only articles published in English, which still resulted in 56 articles. Subsequently, articles from “scientific journal sources” at the “final publication stage” were selected, resulting in 49 documents. Finally, only articles that were “open access” were included, yielding 22 documents for further processing.

The selected articles were then analyzed using a “content analysis” approach. Each article was thoroughly read to identify the research context, the types of fintech services discussed, the antecedents of fintech adoption by MSMEs, and their impacts on MSME sustainability. This process involved data extraction covering various important variables, such as the role of fintech in enhancing access to financing, operational efficiency, and the social and environmental impacts of fintech use by MSMEs. Additionally, an in-depth analysis was conducted to identify recurring key themes and

3. METHOD, DATA, AND ANALYSIS

variations in findings across articles to understand general patterns and variables related to MSME sustainability (Hua & Huang, 2021).

To ensure the reliability of the analysis results, validation was performed using the “cross-referencing” method among articles to confirm the consistency of relevant findings. Furthermore, a triangulation approach was utilized by comparing the results of this research with relevant literature reviews that were not included in the selected articles. This aimed to reduce bias in the analysis and enhance the validity of the research results.

The limitations of this study lie in the scope of articles that are sourced solely from Scopus and are open access. This restriction may exclude some quality research that is not available publicly. However, the SLR method used in this study still provides a comprehensive understanding of the role of fintech in supporting MSME sustainability and opens avenues for further research that can deepen the understanding of aspects that have yet to be addressed in the existing literature.

4. RESULT AND DISCUSSION

This section presents the main findings from the systematic analysis of the literature examining the role of fintech in supporting the sustainability of MSMEs. Based on the 22 articles selected through a rigorous filtering process, the findings indicate that fintech has a significant impact on the sustainability of MSMEs across various aspects,

including access to financing, operational efficiency, and innovation capacity.

Additionally, this analysis reveals several key antecedents that influence the adoption of fintech by MSMEs, such as technological infrastructure, financial literacy, and government regulations (PURNAMASARI et al., 2020). In this discussion, each finding will be further analyzed to understand the interconnections between antecedents, fintech adoption, and their impact on MSME sustainability, as well as the research gaps that could serve as future research agendas.

4.1. Antecedents and Consequences of Fintech on MSMEs' Sustainability

This section discusses the antecedents and consequences of fintech adoption on the sustainability of MSMEs, identified through literature analysis. Antecedents refer to the factors influencing the readiness and decision-making of MSMEs to adopt financial technology, including digital infrastructure, regulations, financial literacy, and financing needs (Su & Xu, 2023). Meanwhile, the consequences encompass the impacts experienced by MSMEs after implementing fintech, in terms of access to capital, operational efficiency, increased competitiveness, and long-term sustainability (Enshassi et al., 2024). By mapping these antecedents and consequences, this research aims to provide a holistic picture of how fintech can drive the sustainability of MSMEs and the factors that influence the success of its adoption.

Table 1. Antecedents and Consequences of Fintech on SMEs' Sustainability

No.	Authors (year)	Antecedents	Consequences
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1	(Abbasi, Alam, Brohi, et al., 2021)	P2P Lending Fintechs and Institutional Quality	The increased access of SMEs to loans, influenced by the presence of P2P lending fintechs and better institutional quality
2	(Babaei et al., 2023)	Applying machine learning (ML) and artificial intelligence (AI) methods in credit assessment, such as using decision trees, k-nearest neighbors, and neural networks	Improving the accuracy of credit assessment models through ML methods, along with challenges related to explainability that require the use of explainable AI methods such as Shapley values to achieve transparency
3	(Thi et al., 2021)	Loan characteristics such as credit scores, loan purposes, loan durations, and business cycles that influence interest rates	Investor understanding of the risks and exposures they may face on P2P lending platforms in Malaysia
4	(Lontchi et al., 2023)	Fintech, operationalized in four dimensions: perceived usefulness, perceived ease, trust in fintech services, and perceived risk	The consequential factor of this article is SMEs performance, which consists of operational performance and financial performance
5	(Thottoli et al., 2024)	FinTech Adoption	Innovation in SMEs (Small and Medium Enterprises)
6	(Krah et al., 2024)	Perceived usefulness, perceived ease of use, and attitude towards use, which influence the intention to use fintech services	Adoption of fintech by SMEs in Ghana
7	(Aminy & Mas'ud, 2023)	Academic interest in fintech and COVID-19, as well as the need to develop technology in the fintech industry in Indonesia	Increase in publications and collaboration in fintech research during the pandemic
8	(Rehman et al., 2023)	Adoption of technologies such as blockchain, Big Data, and mobile banking that influence bank credit supply to SMEs	Improving access to and availability of credit for SMEs
9	(Hoque, 2023)	Financial technology services such as mobile payments, mobile finance, and mobile banking.	Growth of Micro, Small, and Medium Enterprises (MSMEs)
10	(Rusliati et al., 2024)	Financial Literacy and Financial Technology	Financial Inclusion
11	(Rahadjeng et al., 2023)	Financial literacy, financial inclusion, and financial technology	SME business performance
12	(Enshassi et al., 2024)	The perceived benefits and barriers experienced by SMEs regarding the adoption of AI in digital marketing and fintech	The decision of SMEs to adopt AI based on those perceptions

13	(Okfalisa et al., 2022)	Syariah Fintech, Quadruple Helix, and SMEs Digitalization Readiness	Performance Measurement and Financial Transaction
14	(Marjudi et al., 2023)	The technological revolution and the development of digital finance that influence company productivity	Reduction of information costs and improved access to financial services for SMEs
15	(Widyastuti & Hermanto, 2022)	Financial literacy and social media	Micro capital through financial technology
16	(Savitri et al., 2023)	Financial technology, innovation, business strategy, and market orientation	Performance of small and medium enterprises (SMEs)
17	(Alkhawaldeh et al., 2023)	Financial technology (fintech) and financial satisfaction	Financial performance
18	(Su & Xu, 2023)	The digital inclusive finance index (DIFI) and its sub-indices (DCB, DUD, DSS) that influence innovation investment in SMEs	The technological innovation capacity of SMEs, measured through R&D expenditures and the number of patents
19	(Hadi et al., 2023)	The use of financial technology, particularly crowdfunding and microfinance, as well as the implementation of the omnibus job creation law	Improvement of MSME performance and economic growth
20	(Gancarczyk et al., 2022)	External conditions influencing SME financing, such as the adoption of e-tax systems and the role of financial technology	Tax compliance and SME growth influenced by social and psychological capital
21	(Hua & Huang, 2021)	Highly repressive financial policies, strong government support for financial inclusion through digital technology, and a relatively accommodative regulatory environment	The development of the fintech sector in China and its impact on the economy
22	(Marjudi et al., 2023)	Digital transactions, transaction mechanisms, and the use of big data analytics in Halal businesses	Growth of Halal businesses and the enhancement of competitiveness among Malaysia Halal SME Owners (MHSEO)

The discussion regarding the antecedents and consequences of fintech adoption by SMEs reveals various factors influencing readiness, implementation, and the impact of financial technology on business sustainability (Bartlett et al., 2022). Key antecedents identified in the literature

include supporting technology infrastructure such as P2P lending, digital finance, and the adoption of new technologies like blockchain and artificial intelligence (AI) (Chen et al., 2021). The availability of this technology has facilitated improved access to financing for SMEs, especially

in developing countries that often face limitations in accessing capital. Research also indicates that perceived usefulness, perceived ease of use, and institutional factors such as government support and regulatory quality influence the intention and adoption of fintech by SMEs (Purnamasari et al., 2020).

Additionally, financial literacy and perceptions of technology play a crucial role as antecedents to fintech adoption. Financial literacy not only affects SMEs' decisions to use financial technology but also impacts how effectively these technologies can be applied to improve business performance (Msomi & Nzama, 2022). Higher financial literacy enables business owners to better understand the benefits and risks of fintech, thereby encouraging broader use of digital financial services. On the other hand, barriers such as high perceived risk, lack of supporting infrastructure, and complexity in using technology are also identified as hindrances to fintech adoption (Cornelli et al., 2023).

The consequences of fintech adoption for SMEs are generally related to enhanced operational and financial performance, including better access to financing, increased operational efficiency, and the ability to innovate through research and development (R&D) expenditures. Several studies have shown that fintech adoption can reduce information costs, expand access to markets, and strengthen financial inclusion, positively impacting business growth and competitiveness of SMEs (Lasak, 2022). In countries like China, government support for financial inclusion through

accommodating regulations has facilitated the rapid development of the fintech sector, which has subsequently had positive effects on the economy (Hua & Huang, 2021).

Research also indicates that the adoption of financial technology presents challenges, such as the need to enhance explainability in the use of machine learning (ML) methods for credit assessment. Although this technology can improve the accuracy of risk assessment, challenges related to transparency require solutions such as the use of explainable AI methods to be more accepted by users (Babaei et al., 2023). Furthermore, the impact of policies such as the omnibus law in Indonesia shows that regulations can influence how SMEs access alternative financing through crowdfunding and microfinance, which can then support business sustainability and economic growth (Hadi et al., 2023).

Overall, the findings of this literature emphasize the importance of developing supportive policies and the need for more holistic implementation strategies that encompass technological, financial, social, and regulatory factors to ensure that fintech can effectively support the sustainability of SMEs across various economic contexts.

4.2. Research Agenda of Fintech on SMEs' Sustainability

This section outlines the future research agenda related to the role of fintech in supporting the sustainability of SMEs, developed based on the findings and gaps in the current literature. Although fintech has proven to provide benefits for SMEs,

there are several areas that still require further research to deepen the understanding of the dynamics of fintech adoption and its impacts (Hahm et al., 2021). This research agenda includes the need to examine contextual factors such as industry variations, local economic conditions, and the influence of policies and regulations in facilitating or hindering the sustainability of SMEs

through fintech (Abbasi, Alam, Du, et al., 2021). Additionally, future research is also recommended to further explore the integration of financial technology with sustainability practices, thereby producing a more comprehensive framework to guide the adoption of fintech in various SME contexts.

Table 1. Research Agenda of Fintech on SMEs' Sustainability

No.	Authors (year)	Research Agenda
1	(Abbasi, Alam, Du, et al., 2021)	To explore the relationship between P2P lending fintechs and SMEs' access to financing, as well as how institutional quality moderates this relationship
2	(Babaei et al., 2023)	Enhancing explainability, integrating new methods, risk analysis, and case studies and practical applications
3	(Thi et al., 2021)	To explore the exposure that individual investors may face on licensed P2P lending platforms in Malaysia, as well as to provide insights into the relationship between interest rates and risk factors
4	(Lontchi et al., 2023)	Development of a research model that tests the relationship between fintech, financial literacy, and SME performance, as well as identifies the mediating role of financial literacy in that relationship
5	(Thottoli et al., 2024)	Exploration of mediating and moderating factors in the relationship between FinTech adoption and innovation in SMEs
6	(Krah et al., 2024)	Factors influencing FinTech adoption in different contexts and the development of a more comprehensive model to understand technology adoption in the financial sector
7	(Aminy & Mas'ud, 2023)	Encouraging further research on technology development in the fintech industry in Indonesia, as

		well as bridging the gap between fintech studies in Indonesia and those in other countries
8	(Rehman et al., 2023)	The need for longitudinal research, exploration of demand-side factors in SME financing, and further investigation into technological innovations that may impact SME financing
9	(Hoque, 2023)	Analysis of the impact of financial technology on the growth of SMEs in Bangladesh
10	(Rusliati et al., 2024)	The relationship between financial literacy, financial technology, and financial inclusion
11	(Rahadjeng et al., 2023)	To investigate the influence of financial literacy, financial inclusion, and financial technology on the performance of SMEs in Malang Raya, Indonesia
12	(Enshassi et al., 2024)	Empirical testing of the proposed framework and comparative studies between countries or regions to identify the factors influencing the adoption of AI and Fintech by SMEs
13	(Okfalisa et al., 2022)	Digitalization readiness of SMEs in the context of Sharia Fintech and the application of the Quadruple Helix model
14	(Fu & Mishra, 2022)	Development of a better digital financial system and enhanced regulations to support entrepreneurship in China
15	(Widyastuti & Hermanto, 2022)	The influence of financial literacy and social media on microcapital through financial technology in the creative industry sector in East Java
16	(Savitri et al., 2023)	Long-term strategies for the development of digital technology as a platform for the growth of SMEs, along with recommendations for future research that include non-financial dimensions in assessing SME performance
17	(Alkhalwaldeh et al., 2023)	Testing the relationship between fintech, financial satisfaction, and financial performance, as well as

		exploring the role of financial satisfaction as a mediator
18	(Toth & Kasa, 2022)	The impact of digital financial inclusion on technology innovation activities in SMEs, as well as exploring the relationship between these variables
19	(Hadi et al., 2023)	The impact of the job creation omnibus law on the sustainability of MSMEs and economic growth by applying the business model canvas method and the use of financial technology
20	(Gancarczyk et al., 2022)	Further understanding of the factors influencing MSME activities in developing countries, as well as the development of policies that support MSME growth post-pandemic
21	(Hua & Huang, 2021)	Understanding the evolution of fintech in China, including contributing factors, development processes, economic impacts, and potential risks
22	(Marjudi et al., 2023)	Development of sustainable transaction models and strategies to enhance literacy and knowledge in halal transaction decision management

The research findings on the fintech research agenda related to the sustainability of SMEs indicate various research directions that need further exploration to deepen the understanding of the dynamics of fintech in supporting the growth of SMEs in different contexts (Belozyorov et al., 2020). Several studies emphasize the importance of exploring the relationship between fintech, such as P2P lending, and access to financing for SMEs, as well as how institutional quality moderates that relationship (Tóth et al., 2021). This aspect is crucial because SMEs often face obstacles in obtaining financing from traditional financial institutions, and fintech can be a significant

alternative to address these issues. On the other hand, future research is also expected to provide insights into the risks that individual investors may face on P2P lending platforms, which can enrich the understanding of the interaction between interest rates and risk factors in the fintech context (Belozyorov et al., 2020).

The literature also highlights the need for improved explainability and the development of new analytical methods to understand the impacts of fintech more holistically. This includes the necessity for case studies and practical applications that can reveal how this technology can be better integrated into SME operations (Babaei et al.,

2023). Furthermore, research is directed towards developing conceptual models that examine the relationship between fintech, financial literacy, and SME performance, as well as the mediating role of financial literacy in strengthening fintech's influence on business outcomes (Lontchi, 2023). This research is important because financial literacy plays a key role in determining the level of fintech adoption and its effectiveness in enhancing SME sustainability.

Meanwhile, contextual factors such as regulatory differences between countries and the digital readiness of SMEs are also of concern in the research agenda. Some studies suggest that varying regulatory conditions in different countries can influence the level of technology adoption and the success of fintech implementation by SMEs (Tóth et al., 2021). Therefore, comparative research across countries or regions, especially in the context of Islamic fintech and the Quadruple Helix model, can provide insights into the factors that support or hinder the adoption of financial technology (Okoli & Tewari, 2020). Additionally, studies on the evolution of fintech in China (Muganyi et al., 2022) and the impact of digital financial inclusion on technological innovation (Alaassar et al., 2022) indicate that supportive policy development is necessary to ensure that fintech can effectively contribute to the growth of SMEs, particularly in developing countries.

Other studies also suggest further research on the non-financial dimensions in assessing SME performance, including aspects such as financial satisfaction and the social impact of technology.

Understanding the relationship between financial satisfaction, fintech, and financial performance is important, especially in how that satisfaction can act as a mediator in enhancing SME performance (Khan & Al-Harby, 2022). Furthermore, the impact of national policies, such as the omnibus law in Indonesia, highlights the need for a comprehensive analysis of how regulations can promote SME sustainability, both economically and socially (Festa et al., 2023). Future research on fintech is recommended to not only focus on technological or financial aspects alone but also encompass the development of long-term strategies that consider social, environmental, and regulatory dimensions to achieve comprehensive sustainability for SMEs.

5. CONCLUSION AND SUGGESTION

This research has revealed that Financial Technology (fintech) plays a crucial role in supporting the sustainability of Micro, Small, and Medium Enterprises (SMEs) through enhanced access to financing, operational efficiency, and business growth. The findings indicate that the antecedents of fintech adoption, such as financial literacy, perceived usefulness, regulatory support, and digital readiness, significantly influence the performance of SMEs. Furthermore, this study also identifies challenges faced, including technological risks and limitations in explainability when using AI, which can impact SMEs' decisions to adopt new technologies (Kostin et al., 2022). Empirically, this research contributes to the existing literature by providing a deeper understanding of the relationship between fintech and the sustainability

of SMEs. From a theoretical perspective, this study proposes a relational model that can be utilized by future researchers to further explore the impact of fintech in the SME sector.

Although this research offers valuable insights, there are several limitations to note. First, this study relies solely on articles found in the Scopus database, which may not encompass all perspectives and the latest findings related to fintech and SMEs. Second, the systematic literature review methodology may not fully address the specific contextual factors in each country or region. Therefore, further research is recommended to conduct empirical field studies using both qualitative and quantitative approaches to delve deeper into the perceptions and experiences of SMEs in adopting fintech. Future researchers are also encouraged to explore new aspects of fintech, such as the use of blockchain technology and artificial intelligence, as well as their impacts on

innovation in SMEs (Alnsour, 2022). Additionally, it is important to consider the social and cultural contexts that may influence fintech adoption in various regions. Thus, the results of this study can not only assist decision-makers in formulating policies that support fintech usage but also contribute to the development of more inclusive and sustainable business models for SMEs in the digital era.

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REFERENCE

- Abbasi, K., Alam, A., Brohi, N. A., Brohi, I. A., & Nasim, S. (2021). P2P lending Fintechs and SMEs' access to finance. *Economics Letters*, 204, 109890. <https://doi.org/10.1016/j.econlet.2021.109890>
- Abbasi, K., Alam, A., Du, M. (Anna), & Huynh, T. L. D. (2021). FinTech, SME efficiency and national culture: Evidence from OECD countries. *Technological Forecasting and Social Change*, 163(May 2020), 120454. <https://doi.org/10.1016/j.techfore.2020.120454>
- Agyei, S. K. (2018). Culture, financial literacy, and SME performance in Ghana. *Cogent Economics and Finance*, 6(1). <https://doi.org/10.1080/23322039.2018.1463813>
- Alaassar, A., Mention, A. L., & Aas, T. H. (2022). Ecosystem dynamics: exploring the interplay within fintech entrepreneurial ecosystems. *Small Business Economics*, 58(4), 2157–2182. <https://doi.org/10.1007/s11187-021-00505-5>
- Alkhawaldeh, B. Y., Alhawamdeh, H., Al-Afeef, M. A. M., Al-Smadi, A. W., Almarshad, M., Fraihat, B. A. M., Soumadi, M. M., Nawasra, M., & Alaa, A. A. (2023). The effect of financial technology on

- financial performance in Jordanian SMEs: The role of financial satisfaction. *Uncertain Supply Chain Management*, 11(3), 1019–1030. <https://doi.org/10.5267/j.uscm.2023.4.020>
- Alnsour, I. R. (2022). Impact of fintech over consumer experience and loyalty intentions: an empirical study on Jordanian Islamic Banks. *Cogent Business and Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2141098>
- Aminy, M. M., & Mas'ud, R. (2023). Financial technology amid the COVID-19: a bibliometric approach. *Quality - Access to Success*, 24(192), 285–292. <https://doi.org/10.47750/QAS/24.192.33>
- Arner, D. W., Buckley, R. P., Zetsche, D. A., & Veidt, R. (2020). Sustainability, FinTech and Financial Inclusion. *European Business Organization Law Review*, 21(1), 7–35. <https://doi.org/10.1007/s40804-020-00183-y>
- Babaei, G., Giudici, P., & Raffinetti, E. (2023). Explainable FinTech lending. *Journal of Economics and Business*, 125–126(June), 106126. <https://doi.org/10.1016/j.jeconbus.2023.106126>
- Banna, H., Kabir Hassan, M., & Rashid, M. (2021). Fintech-based financial inclusion and bank risk-taking: Evidence from OIC countries. *Journal of International Financial Markets, Institutions and Money*, 75(February), 101447. <https://doi.org/10.1016/j.intfin.2021.101447>
- Bartlett, R., Morse, A., Stanton, R., & Wallace, N. (2022). Consumer-lending discrimination in the FinTech Era. *Journal of Financial Economics*, 143(1), 30–56. <https://doi.org/10.1016/j.jfineco.2021.05.047>
- Belozyorov, S., Sokolovska, O., & Kim, Y. S. (2020). Fintech as a precondition for transformations on global financial markets. *Foresight and STI Governance*, 14(2), 23–35. <https://doi.org/10.17323/2500-2597.2020.2.23.35>
- Chang, V., Baudier, P., Zhang, H., Xu, Q., Zhang, J., & Arami, M. (2020). How Blockchain can impact financial services – The overview, challenges and recommendations from expert interviewees. *Technological Forecasting and Social Change*, 158(June), 120166. <https://doi.org/10.1016/j.techfore.2020.120166>
- Chen, X., You, X., & Chang, V. (2021). FinTech and commercial banks' performance in China: A leap forward or survival of the fittest? *Technological Forecasting and Social Change*, 166(January), 120645. <https://doi.org/10.1016/j.techfore.2021.120645>
- Cornelli, G., Frost, J., Gambacorta, L., Rau, P. R., Wardrop, R., & Ziegler, T. (2023). Fintech and big tech credit: Drivers of the growth of digital lending. *Journal of Banking and Finance*, 148. <https://doi.org/10.1016/j.jbankfin.2022.106742>
- Deng, L., Lv, Y., Liu, Y., & Zhao, Y. (2021). Impact of fintech on bank risk-taking: Evidence from China.

- Risks*, 9(5). <https://doi.org/10.3390/risks9050099>
- El Gohary, E. (2019). The impact of financial technology on facilitating e-government services in Egypt. *Journal of Distribution Science*, 17(5), 51–59. <https://doi.org/10.15722/JDS.17.5.201905.51>
- Enshassi, M., Nathan, R. J., Soekmawati, Al-Mulali, U., & Ismail, H. (2024). Potentials of artificial intelligence in digital marketing and financial technology for small and medium enterprises. *IAES International Journal of Artificial Intelligence*, 13(1), 639–647. <https://doi.org/10.11591/ijai.v13.i1.pp639-647>
- Festa, G., Elbahri, S., Cuomo, M. T., Ossorio, M., & Rossi, M. (2023). FinTech ecosystem as influencer of young entrepreneurial intentions: empirical findings from Tunisia. *Journal of Intellectual Capital*, 24(1), 205–226. <https://doi.org/10.1108/JIC-08-2021-0220>
- Fu, J., & Mishra, M. (2022). Fintech in the time of COVID–19: Technological adoption during crises. *Journal of Financial Intermediation*, 50(November 2021), 100945. <https://doi.org/10.1016/j.jfi.2021.100945>
- Gancarczyk, M., Łasak, P., & Gancarczyk, J. (2022). The fintech transformation of banking: Governance dynamics and socio-economic outcomes in spatial contexts. *Entrepreneurial Business and Economics Review*, 10(3), 143–165. <https://doi.org/10.15678/EBER.2022.100309>
- Hadi, D. P., Adi, P. H., Arintoko, & Ahmad, A. A. (2023). The Impact of the Omnibus Law Cipta Kerja on the Sustainability of MSMEs and Economic Growth by Applying the Canvas Model Business Method and the Use of Financial Technology, Especially Crowdfunding and Microfinance. *International Journal of Sustainable Development and Planning*, 18(2), 505–513. <https://doi.org/10.18280/ijstdp.180219>
- Hahm, H., Subhanij, T., & Almeida, R. (2021). Finteching remittances in paradise: A path to sustainable development. *Asia and the Pacific Policy Studies*, 8(3), 435–453. <https://doi.org/10.1002/app5.341>
- Hoque, A. (2023). Fintech's game-changing opportunities for SMEs: A study on selected SMEs in Bangladesh. *Asian Economic and Financial Review*, 13(5), 308–319. <https://doi.org/10.55493/5002.v13i5.4780>
- Hua, X., & Huang, Y. (2021). Understanding China's fintech sector: development, impacts and risks. *European Journal of Finance*, 27(4–5), 321–333. <https://doi.org/10.1080/1351847X.2020.1811131>
- Imerman, M. B., & Fabozzi, F. J. (2020). Cashing in on innovation: a taxonomy of FinTech. *Journal of Asset Management*, 21(3), 167–177. <https://doi.org/10.1057/s41260-020-00163-4>
- Khan, S., & Al-Harby, A. S. A. (2022). the Use of Fintech and Its Impact on Financial Intermediation – a Comparison of Saudi Arabia With Other Gcc Economies. *Intellectual Economics*, 16(2), 26–43.

<https://doi.org/10.13165/IE-22-16-2-02>

- Kostin, K. B., Fendel, R., & Wild, F. (2022). Comparing the Situation of FinTech Start-Ups in Russia and Germany through Equity Investments. *Economies*, 10(2), 1–19. <https://doi.org/10.3390/economies10020033>
- Krah, R., Tetteh, L. A., Boateng, A., & Amankwa, R. F. (2024). Financial technology adoption among small and medium enterprises in Ghana. *Cogent Business and Management*, 11(1). <https://doi.org/10.1080/23311975.2024.2321786>
- Lasak, P. (2022). The role of financial technology and entrepreneurial finance practices in funding small and medium-sized enterprises. *Journal of Entrepreneurship Management and Innovation*, 18(1), 7–34.
- Lontchi, C. B., Yang, B., & Shuaib, K. M. (2023). Effect of Financial Technology on SMEs Performance in Cameroon amid COVID-19 Recovery: The Mediating Effect of Financial Literacy. *Sustainability (Switzerland)*, 15(3). <https://doi.org/10.3390/su15032171>
- Marjudi, S., Setik, R., Ahmad, R. M. T. R. L., Hassan, W. A. W., & Kassim, A. A. M. (2023). Utilization of Business Analytics by SMEs in Halal Supply Chain Management Transactions. *International Journal on Informatics Visualization*, 7(2), 407–415. <https://doi.org/10.30630/joiv.7.2.1308>
- Msomi, T. S., & Nzama, S. (2022). Financial literacy and SME loan repayments in South Africa during the COVID-19 era. *Investment Management and Financial Innovations*, 19(4), 113–121. [https://doi.org/10.21511/imfi.19\(4\).2022.09](https://doi.org/10.21511/imfi.19(4).2022.09)
- Muganyi, T., Yan, L., Yin, Y., Sun, H., Gong, X., & Taghizadeh-Hesary, F. (2022). Fintech, regtech, and financial development: evidence from China. *Financial Innovation*, 8(1). <https://doi.org/10.1186/s40854-021-00313-6>
- Ningrat, R. G., & Nurzaman, M. S. (2019). Developing Fintech and Islamic Finance Products in Agricultural Value Chain. *Journal of Islamic Monetary Economics and Finance*, 5(3), 491–516. <https://doi.org/10.21098/jimf.v5i3.1077>
- Okfalisa, Mahyarni, Anggraini, W., Saeed, F., Moshood, T. D., & Saktioto. (2022). Quadruple Helix Engagement: Reviews on Syariah Fintech Based SMEs Digitalization Readiness. *Indonesian Journal of Electrical Engineering and Informatics*, 10(1), 112–122. <https://doi.org/10.52549/ijeei.v10i1.3455>
- Okoli, T. T., & Tewari, D. D. (2020). An empirical assessment of fintechs heterogeneous transmission channels to financial development among African economies. *Cogent Economics and Finance*, 8(1). <https://doi.org/10.1080/23322039.2020.1829273>
- Purnamasari, P., Pramono, I. P., Haryatiningsih, R., Ismail, S. A., & Shafie, R. (2020). Technology Acceptance Model of Financial Technology in Micro, Small, and Medium Enterprises (MSME) in

- Indonesia. *Journal of Asian Finance, Economics and Business*, 7(10), 981–988.
<https://doi.org/10.13106/jafeb.2020.vol7.no10.981>
- Rahadjeng, E. R., Pratikto, H., Mukhlis, I., Restuningdiah, N., & Mala, I. K. (2023). The impact of financial literacy, financial technology, and financial inclusion on SME business performance in Malang Raya, Indonesia. *Journal of Social Economics Research*, 10(4), 146–160.
<https://doi.org/10.18488/35.v10i4.3509>
- Rehman, S. U., Al-Shaikh, M., Washington, P. B., Lee, E., Song, Z., Abu-AlSondos, I. A., Shehadeh, M., & Allahham, M. (2023). FinTech Adoption in SMEs and Bank Credit Supplies: A Study on Manufacturing SMEs. *Economies*, 11(8). <https://doi.org/10.3390/economies11080213>
- Rusliati, E., Soegoto, A. S., Martutiningrum, D., Suganda, D. A., Dahliana, D., Yulinda, & Sesa, P. V. S. (2024). Investigating the effect of financial literacy on financial inclusion: Mediating role of financial technology. *Journal of Infrastructure, Policy and Development*, 8(7), 1–15.
<https://doi.org/10.24294/jipd.v8i7.5193>
- Savitri, E., Abdullah, N. H. N., Andreas, Diyanto, V., & Syahza, A. (2023). The Effect of Financial Technology, Innovation, Business Strategy, and Market Orientation on Business Performance among Indonesian SMEs: A Study in Riau Province. *Jurnal Pengurusan*, 68.
<https://doi.org/10.17576/pengurusan-2023-68-11>
- Su, F., & Xu, C. (2023). Curbing credit corruption in China: The role of FinTech. *Journal of Innovation and Knowledge*, 8(1), 100292. <https://doi.org/10.1016/j.jik.2022.100292>
- Thi, L., Nguyen, P., Kalabeke, W., Muthaiyah, S., Cheng, M. Y., Hui, K. J., Mohamed, H., Kim, D., Suryono, R. R., & Nam, R. J. (2021). *P2P lending platforms in Malaysia: What do we know? [version 3; peer review: 1 approved, 2 approved with reservations]*. 1–26.
<https://doi.org/10.12688/f1000research.73410.1>
- Thottoli, M. M., Islam, M. A., Ahsan, A., Yusof, M. F., Hassan, M. S., & Chowdhury, R. S. (2024). Exploring mediating and moderating factors of FinTech adoption for innovations in SMEs. *Cogent Economics and Finance*, 12(1). <https://doi.org/10.1080/23322039.2024.2387443>
- Toth, R., & Kasa, R. (2022). SMEs before and during COVID-19. *Risks*.
- Tóth, R., Zéman, Z., Túróczi, I., Kása, R., Popp, J., & Oláh, J. (2021). The system of relationships between sustainable corporate governance and corporate financial literacy. *Polish Journal of Management Studies*, 23(1), 418–435. <https://doi.org/10.17512/pjms.2021.23.1.26>
- Widyastuti, M., & Hermanto, Y. B. (2022). The effect of financial literacy and social media on micro capital through financial technology in the creative industry sector in East Java. *Cogent Economics and Finance*,

10(1). <https://doi.org/10.1080/23322039.2022.2087647>