

ANALYSIS OF FINTECH UTILIZATION BY MSME ACTORS IN THE LAKE TOBA TOURISM AREA: CHALLENGES AND DEVELOPMENT STRATEGIES

ANALISIS PENGGUNAAN FINTECH OLEH AKTOR UMKM DI DAERAH WISATA LAKE TOBA: TANTANGAN DAN STRATEGI PENGEMBANGAN

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ABSTRACT

This research aims to analyze the level of financial technology (fintech) utilization by Micro, Small, and Medium Enterprises (MSMEs) in the Lake Toba tourist area and identify challenges and development strategies. The research method used was qualitative descriptive through in-depth interviews with MSME actors around the Pangururan and Tuk-Tuk areas. The results of the study show that most MSME actors only use one type of fintech service, namely BRI QRIS, as a means of digital payment. The low level of digital literacy and the lack of government socialization are the main obstacles in the wider use of fintech. Most respondents do not understand the concept of fintech lending and still rely on conventional banking institutions to obtain business capital. This research emphasizes the importance of the role of the government, financial institutions, and the education sector in improving literacy and providing training on the use of fintech for MSME actors. The fintech development strategy in the Lake Toba tourist area needs to be directed at increasing access to information, strengthening digital capacity, and cross-sector collaboration to support local economic growth based on financial technology.

Keywords: Fintech, MSMEs, Digital Literacy, Lake Toba, Local Economic Development

ABSTRAK

Penelitian ini bertujuan untuk menganalisis tingkat pemanfaatan teknologi keuangan (fintech) oleh Usaha Mikro, Kecil, dan Menengah (UMKM) di kawasan wisata Danau Toba serta mengidentifikasi tantangan dan strategi pengembangan. Metode penelitian yang digunakan adalah deskriptif kualitatif melalui wawancara mendalam dengan pelaku UMKM di sekitar kawasan Pangururan dan Tuk-Tuk. Hasil penelitian menunjukkan bahwa sebagian besar pelaku UMKM hanya menggunakan satu jenis layanan fintech, yaitu BRI QRIS, sebagai sarana pembayaran digital. Rendahnya tingkat literasi digital dan kurangnya sosialisasi dari pemerintah menjadi hambatan utama dalam penggunaan fintech yang lebih luas. Sebagian besar responden tidak memahami konsep pinjaman fintech dan masih bergantung pada lembaga perbankan konvensional untuk mendapatkan modal usaha. Penelitian ini menekankan pentingnya peran pemerintah, lembaga keuangan, dan sektor pendidikan dalam meningkatkan literasi dan memberikan pelatihan penggunaan fintech bagi pelaku UMKM. Strategi pengembangan fintech di kawasan wisata Danau Toba perlu difokuskan pada peningkatan akses informasi, penguatan kapasitas digital, dan kolaborasi lintas sektor untuk mendukung pertumbuhan ekonomi lokal berbasis teknologi keuangan.

Kata kunci: Fintech, UMKM, Literasi Digital, Danau Toba, Pengembangan Ekonomi Lokal.

INTRODUCTION

The development of financial technology has brought significant changes to the global economic system, including in Indonesia (Siregar & Lubis, 2025; Ikhsanuddin et al., 2024). Fintech facilitates financial access through various digital services such as payments, loans, investments, and financial management that can be accessed by the wider community (Miftah, Ida, et al., 2023). For Micro, Small, and Medium

Enterprises (MSMEs), the presence of fintech is expected to increase transaction efficiency, expand the market, and accelerate business growth (Financial Services Authority, 2023). However, the use of fintech in the Indonesian MSME sector is not fully optimal. Many business actors are still limited in their understanding of digital technology and do not have adequate financial literacy (Bank Indonesia, 2022). This condition also occurs in the Lake

Toba tourist area, one of the national super priority destinations, where most MSME actors still depend on conventional payment systems. In fact, the existence of domestic and foreign tourists opens up great opportunities for an increase in fintech-based digital transactions (Annisa & Amna, 2025; Harianto et al., 2025).

This research departs from the phenomenon of low fintech adoption rates by MSME actors in the Lake Toba tourist area (Aldhi et al., 2024). Most business actors only know one fintech product, namely QRIS, and have not taken advantage of other fintech services such as e-commerce platforms (Pentury, 2023). This is due to a lack of socialization, limited knowledge, and a low level of trust in the digital financial system. Therefore, this study aims to analyze the extent to which the use of fintech is carried out by MSME actors in the Lake Toba tourist area, identify the challenges faced, and formulate development strategies that can be applied to strengthen the digital capacity and competitiveness of local MSMEs (Asiedu et al., 2024; Dewanto et al., 2023; Wantu et al., 2024).

Fintech is an innovation in the financial services industry that utilizes technology to improve the efficiency, speed, and reach of financial services (Arner et al., 2017). In Indonesia, the most widely used forms of fintech are digital payment systems such as QRIS, e-wallets, and peer-to-peer lending platforms (Pangesti et al., 2024). Fintech plays an important role in expanding financial inclusion, especially for MSME actors who previously had difficulty reaching conventional banking services (OJK, 2022). MSMEs have a strategic role in the Indonesian economy, contributing more than 60% to the Gross Domestic Product (BPS, 2023). The use of fintech in this sector is able to increase

transaction efficiency, accelerate capital turnover, and open access to digital markets. However, the level of fintech adoption by MSMEs still faces obstacles such as low digital literacy, limited infrastructure, and concerns about data security (Pratama & Rahardjo, 2021).

Technology acceptance models such as the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB) are often used to explain user behavior in adopting technology. According to TAM (Davis, 1989), the adoption of technology is influenced by the perception of perceived ease of use and perceived usefulness. Meanwhile, the SDGs (Ajzen, 1991) emphasize the role of attitudes, subjective norms, and perceived behavioral control. In the context of fintech, the low perception of convenience and trust is the main factor that hinders adoption among MSMEs (Halawa et al., 2025); (Daryana et al., 2025).

Tourist areas such as Lake Toba have high economic potential because tourism activities create demand for fast and efficient transactions (Shobandiyah et al., 2023). Fintech can be a solution for MSME actors in the tourism sector to serve tourists who are increasingly dependent on non-cash payments (Ginting, 2023). However, the successful implementation of fintech requires cross-sectoral support, including local governments, financial institutions, and educational institutions through digital literacy and training programs (Kemenparekraf, 2023).

The development of financial technology (fintech) has become the main driver of the digital transformation of the micro, small, and medium enterprises (MSMEs) sector in various countries, including Indonesia. A number of studies confirm that the adoption of fintech services, such as e-wallets, QRIS, and digital lending

platforms, is able to improve transaction efficiency, expand market access, and strengthen the resilience of small businesses to fluctuations in demand (Putra et al., 2023; Bank Indonesia, 2024). Research by Rahmawati et al. (2023) in Makassar shows that the implementation of QRIS-based digital payments significantly encourages MSME revenue growth through transaction cost efficiency and increased customer convenience. Another study by Kusnadi and Arifin (2024) highlights that digital literacy factors, infrastructure support, and trust in system security are key determinants of successful fintech implementation (Arianty et al., 2025). Meanwhile, a study on the digital transformation of the tourism sector in the Lake Toba area (Sihombing et al., 2024) emphasizes the role of e-business and digital-based service innovation in increasing the competitiveness of tourism MSMEs, although the study has not specifically reviewed the use of fintech as a financial instrument. In general, these studies affirm the importance of adopting financial technology for MSMEs to encourage growth and competitiveness in the digital economy era, but the majority still focus on urban contexts or the general trade sector (Surya et al., 2024; Yovita, 2025).

Although various previous studies have explored the benefits and determinants of fintech adoption in MSMEs, there is still a knowledge gap related to its implementation in the context of the regional tourism ecosystem, especially in the Lake Toba area as a super priority destination (Ilham et al., 2025; Utami et al., 2025). The characteristics of tourism MSMEs that serve domestic and foreign tourists present unique dynamics, such as dependence on the visiting season, variations in tourist payment preferences, and limited digital infrastructure in rural

areas. To date, there has not been much research that has identified the specific challenges faced by tourism MSME actors in adopting fintech services, including digital literacy barriers, trust in the system, and the effectiveness of local government policies in supporting financial inclusion. In addition, there is still limited empirical evidence on the extent to which the use of fintech has an impact on business performance, local economic sustainability, and tourism sector development strategies. Therefore, this study seeks to fill this gap by analyzing the use of fintech by MSMEs in the Lake Toba area, identifying the challenges faced, and formulating a development strategy that is in accordance with the characteristics of the tourism area

RESEARCH METHODS

This study uses a descriptive qualitative approach with the aim of describing in depth the experiences, understandings, and challenges faced by Micro, Small, and Medium Enterprises (MSMEs) in utilizing financial technology (fintech) in the Lake Toba tourist area. This approach was chosen because it is able to explore social realities contextually and provide a more comprehensive understanding of the phenomenon being studied (Creswell, 2014). The research was carried out in the Lake Toba tourist area, especially in the two main points of MSME economic activity, namely the Pangururan and Tuk-Tuk areas.

These two regions were chosen purposively because they are the center of tourism economic activity with the highest concentration of MSMEs that serve the needs of domestic and foreign tourists. The research informants consisted of 30 MSME actors engaged in various business fields such as culinary, handicrafts, and souvenir sales. The

technique of determining informants was carried out by purposive sampling, with the following criteria: MSME actors who have been operating for at least one year in the Lake Toba tourist area, Have experience using at least one fintech product (e.g. QRIS, digital wallet, or online lending application) and Willing to be a respondent and provide information openly The data collection technique was carried out through in-depth interviews with MSME actors to gain a direct understanding of the level of fintech use, obstacles faced, and perceptions of financial technology, field observations, conducted to see firsthand the form of fintech use in daily transaction activities, and documentation, in the form of observation results, photos of activities, and secondary data from local government and Bank Indonesia reports related to use of QRIS in the MSME sector. Teknik analisis data dilakukan menggunakan model Miles dan Huberman (1994), yang meliputi tiga tahapan utama:

1. Data reduction, which is the process of selecting, simplifying, and grouping data from interviews and observations;
2. Data display, in the form of organizing data in the form of a descriptive narrative that facilitates the extraction of meaning;\
3. Conclusion drawing/verification, which is the process of identifying key findings and relationships between variables such as digital literacy level, trust in fintech, and government support. To maintain the validity of the data, this study applied source triangulation and techniques, namely comparing the results of interviews from various informants and verifying the findings with secondary data from financial institutions and the government.

RESULTS AND DISCUSSIONS

Overview of Fintech Utilization by MSMEs in the Lake Toba Tourism Area

The results of the study show that the adoption of fintech among MSME actors in the Lake Toba tourist area is still very limited and tends to be functional. From the interviews conducted, the majority of business actors only use BRI QRIS as a means of non-cash payment transactions. QRIS is used primarily to serve tourists who do not carry cash when shopping at food stalls, souvenir kiosks, and beverage stalls around the Pangururan Hotel and the Tuk-Tuk area (Febriyani et al., 2024). This use is triggered by external encouragement, not because of the awareness or internal needs of MSME actors themselves. Most of the informants admitted that the use of QRIS began with a brief socialization organized by the local government in collaboration with Bank BRI. After the activity is completed, there is no follow-up in the form of mentoring, evaluation, or additional training (Nasution et al., 2023). As a result, only a small number of business actors remain active in using QRIS on an ongoing basis. This phenomenon shows that the process of technology adoption has not transformed into a stable use behavior, as stated in the Technology Acceptance Model (TAM) model, where the initial perception of benefits (perceived usefulness) needs to be followed by positive experiences in order to form habits of use (Pelantri1, 2024).

A similar condition was also found in the research of Hidayat et al. (2022) in the Mandalika tourist area, which showed that the application of fintech in the MSME sector is still limited to digital payments, with low integration with other financial services such as

financing, investment, or online marketing. In the context of Lake Toba, geographical factors and uneven digital infrastructure have also slowed down the diffusion of fintech innovation (Zakaria Andi, 2025). The area around the Tuk-Tuk, for example, still faces internet signal constraints and limited digital devices, which are the main obstacles to the implementation of cashless transactions. Thus, it can be concluded that although fintech has been introduced through national policies, such as the QRIS obligation by Bank Indonesia, the readiness level of MSME actors in the Lake Toba tourist area is still low. The fintech adoption process has not been followed by an increase in knowledge, skills, and adequate supporting infrastructure.

Digital Financial Literacy and the Perception of MSME Actors

The level of digital financial literacy is a fundamental aspect that affects the extent to which MSME actors are able to adapt to fintech developments in the Lake Toba tourist area. The results show that most business actors have a low level of understanding of the basic concepts of fintech, including how it works, benefits, and potential risks (Nurchayati et al., 2024). Although some have used QRIS as a means of payment, many do not understand the relationship between QRIS and the fintech ecosystem as a whole. QRIS is seen only as a practical tool for accepting payments from cashless tourists, not as part of a long-term business digitalization strategy.

In-depth interviews show that MSME actors in the Pangururan area are more familiar with fintech than those in Tuk-Tuk. This is due to more intense interaction between business actors in Pangururan and banking institutions as well as local government socialization

activities (Manurung et al., 2025). However, their understanding is still limited to the transaction aspect, not to the potential integration of fintech for financing, promotion, or business management. Many business actors in Tuk-Tuk even equate fintech with "bank applications" or "online loans", showing that digital financial literacy has not been fully formed.

In the context of the Technology Acceptance Model (TAM) (Davis, 1989), the low level of digital literacy is closely related to two main constructs, namely *perceived usefulness* and *perceived ease of use*. Perceived usefulness: MSME players are not yet aware of the strategic benefits of using fintech, such as transaction time efficiency, access to sales data, or opportunities to expand the market through digital channels. Some respondents think that the use of fintech only adds to administrative complexity without a direct impact on sales and Perceived ease of use: Many MSME actors find it difficult to understand the procedures for registration, account settings, and digital identity verification. The lack of practical guidance from financial institutions makes them feel that fintech is more complicated than traditional cash systems (Luciana et al., 2024; Markiano Solissa et al., 2023).

This factor is exacerbated by inequality of access to digital technology and infrastructure. Most business actors in the Lake Toba tourist area still use smartphones with low specifications, unstable internet connections, and lack basic skills such as managing financial applications or scanning QR codes. This condition causes their perception of the ease of use of fintech to be lower. These findings are in line with research by Rahman and Suharto (2021) which found that the level of digital literacy is significantly related to fintech adoption

in MSMEs in Indonesia. When business actors understand the functions, benefits, and how fintech works, they are more open to using it as part of business activities. However, in the context of Lake Toba, digital literacy has not been followed by financial literacy, namely the ability to understand digital financial management, data security, and online loan risks (Pradnyani et al., 2025); (JASF et al., 2024).

From a psychological perspective, MSME actors' perception of fintech is also influenced by local social and cultural experiences. Based on interviews, some business actors feel "not confident" in using fintech applications because they are afraid of making technical mistakes, such as entering the wrong transaction nominal or losing their balance due to digital fraud. This negative perception forms a mental barrier to the use of new technologies.

In the perspective of the Theory of Planned Behavior (TPB) (Ajzen, 1991), the behavior of MSME actors in accepting or rejecting fintech can be explained through three main factors:

1. Attitude toward behavior – Most business actors have a neutral or negative attitude towards fintech because they have not felt the direct benefits in increasing revenue.
2. Subjective norms – The social environment of MSME actors, such as fellow traders, friends, or family, has not encouraged fintech adoption. They tend to imitate the behavior of the majority who still use cash transactions.
3. Perceived behavioral control – Low confidence and technological skills make business actors feel that they do not have the ability to control the use of fintech independently.

These findings reinforce the results of research by Pratama and Rahardjo

(2021) which stated that risk perception and behavioral control have a strong effect on fintech adoption intentions among micro business actors. When users feel unable to control the technological process, then the intention to use fintech will decrease, even though they already know the benefits (Sesa & Asnawi, 2025).

From a sociological perspective, the low level of digital financial literacy in Lake Toba is also caused by the lack of knowledge networks and local socialization. Government training is one-way and formal, without a community-based approach. There is no mentoring mechanism from more proficient users to new business actors, so knowledge transfer is slow. As a result, the digital divide among MSME actors continues to widen. In addition, many businesses do not have access to official sources of information about digital security. Some respondents admitted that they only got information about fintech from "other people's stories" or social media. This creates an *information gap* that makes them more vulnerable to misinformation, especially related to illegal online lending (Ridwansyah et al., 2024).

Conceptually, digital financial literacy is not just technical skills using applications, but also includes critical thinking skills and technology-based financial decision-making. According to the OECD definition (2021), digital financial literacy includes three dimensions: knowledge, skills, and attitude. Based on the results of this study, MSME actors in the Lake Toba tourist area are still weak in these three aspects.

1. Thus, improving digital literacy must be carried out comprehensively, including:
2. Technical training on the use of fintech applications;

3. Financial education on capital management and security of digital transactions; and A community approach to creating a social environment that supports technology adoption.

The approach has been shown to be effective in various global literature studies. For example, research by the OECD (2022) and IFC (2023) shows that community-based literacy programs with a *peer learning system* increase the adoption rate of MSME fintech by up to 35% in two years. In other words, improving digital financial literacy is not only the responsibility of business actors, but also a shared responsibility between local governments, educational institutions, and the financial sector. Multi-stakeholder collaboration is needed so that digital literacy does not stop at technical understanding, but develops into adaptive competencies that are able to change the way MSMEs interact with financial technology and the global tourism market (Insani & Khirdany, 2023); (Setyawati et al., 2025); (Sunarka et al., 2025).

Trust and Risk Perception in the Use of Fintech Lending

Aspects of trust and perceived risk have emerged as the main factors limiting the adoption of fintech lending among MSME actors. Based on the results of the interviews, almost all respondents stated that they had never used online lending services (peer-to-peer lending) and preferred to borrow business capital through conventional banks. The reasons given include lower interest rates, security guarantees, and clarity of procedures that they already understand. For most MSME actors, fintech lending is considered high risk. They heard various cases of personal data misuse, high interest rates, and inhumane collections, so the perception

of fintech lending became negative. In the context of the Theory of Planned Behavior (TPB) (Ajzen, 1991), this phenomenon can be explained through three components:

1. Attitude toward behavior: negative attitudes towards online loans due to other people's bad experiences and negative news in the media.
2. Subjective norms: social norms that form the collective perception that online lending is harmful.
3. Perceived behavioral control: low self-confidence to control risk due to lack of information and digital skills.

This research is in line with the findings of Putri and Fathoni (2022) in Bali, who stated that the level of trust is the most significant determinant in the intention to adopt fintech lending among tourism MSMEs (Azizah et al., 2024). They emphasized that the perception of transaction security and legal protection are key factors that determine the success of fintech implementation. Thus, the low trust in fintech lending in Lake Toba is not solely due to the rejection of innovation, but more due to information asymmetry and the lack of legal protection for users. Therefore, strengthening regulations and public education is a strategic step to build trust and expand digital financial inclusion in the MSME sector.

The Role of Government and Fintech Development Strategies in Tourist Areas

The role of local government in the development of fintech in the Lake Toba tourist area is still promotional in nature and has not yet reached the implementation and educational stages. The results of the study show that the QRIS socialization program by the Tourism Office was only carried out once and was not followed by ongoing training. This condition has led to

sporadic adoption of fintech, without a monitoring and evaluation system.

In fact, fintech development requires a collaborative ecosystem that encompasses regulation, infrastructure, literacy, and cross-sector partnerships. The Triple Helix model (Etzkowitz & Leydesdorff, 2000) of collaboration between government, academia, and industry can be a strategic approach. The government plays a role in providing policies and digital infrastructure; academics play a role in research, training, and mentoring based on local needs; while the financial industry is responsible for providing fintech products that are inclusive and easily accessible to small MSMEs in tourist areas (Roa et al., 2022).

In addition, support from the tourism sector is also important because fintech has the potential to strengthen the integration of the tourism economy through the digitization of payments and online marketing. A study by the Ministry of Tourism and Creative Economy (2023) shows that the adoption of financial technology in tourist areas can increase transaction efficiency by up to 40% and expand the market through digital-based promotion. In the context of Lake Toba, fintech integration can help MSME players sell local specialty products to tourists digitally through e-commerce platforms and cashless payments. Thus, a fintech development strategy in tourist areas.

The development of financial technology (fintech) has become one of the important factors in supporting economic growth in the tourism region. Fintech provides access to digital payment services, micro-business lending, and financial platform integrations that can strengthen the tourism sector's value chain. However, the success of fintech implementation in the tourism area is not only determined

by technological innovation, but also by the government's active role in creating a supportive environment. The government is in control of the formulation of policies, regulations, and infrastructure that enable micro, small, and medium enterprises (MSMEs) in the tourism sector to adopt fintech services effectively and safely. Therefore, the role of the government is the main pillar in encouraging inclusive digital transformation in tourist destinations (Nasution et al., 2023).

The government has a strategic responsibility in setting regulations that can maintain a balance between fintech innovation and consumer protection. Policies such as the implementation of *Know Your Customer* (KYC), personal data protection, and payment system supervision are needed to ensure public trust in the use of fintech. In the tourism sector, the government also plays a role in facilitating collaboration between fintech service providers, banks, and local MSME actors to create a financial ecosystem that is friendly to domestic and foreign tourists (Ridwansyah et al., 2024). In addition, digital literacy programs organized by local and central governments can improve the ability of tourism MSME actors to manage digital transactions transparently and efficiently.

The government plays an important role in strengthening digital infrastructure as a foundation for the development of fintech services in the tourism area. Access to high-speed internet, stable mobile networks, and the availability of digital payment devices are crucial factors that determine the success of fintech adoption. Remote tourist areas often face limited infrastructure, which hinders MSME actors from utilizing digital payment technologies such as QRIS or electronic wallets. The government's investment in

internet network expansion and *smart tourism* initiatives is a strategic step to reduce the digital divide, improve the efficiency of financial services, and support economic sustainability in tourist areas (Zikrillah & Sartika, 2024).

Fintech development strategies in tourism areas must integrate the interests of various stakeholders, including governments, fintech providers, financial institutions, and local business actors. The government can encourage innovation through incentives for fintech service providers that target MSMEs in the tourism sector, for example through transaction fee subsidies or working capital support (Miftah, Widianingsih, et al., 2023). In addition, the development of an integrated platform that connects fintech services with travel promotions, service bookings, and payments can improve the tourist experience while strengthening the local economic ecosystem. With this synergy, tourism areas can become a model of financial inclusion that encourages small business growth and increases the competitiveness of tourist destinations at the national and global levels (Ikhsanuddin et al., 2024); (Harianto et al., 2025).

CONCLUSION AND SUGGESTION

This study shows that the level of use of financial technology (fintech) by MSME actors in the Lake Toba tourist area is still relatively low and limited to basic functions, especially in the form of digital payments using QRIS. The use of fintech emerged not because of high technological awareness, but rather because of external factors in the form of government policies and the needs of tourists who are increasingly accustomed to non-cash transactions. The low level of digital and financial literacy is the main inhibiting factor in the optimal use of fintech. Most MSME

actors do not understand how fintech services work, benefits, and risks, both in the form of payment and financing. From the perspective of the Technology Acceptance Model (TAM), this condition illustrates the weak perception of perceived ease of use and perceived usefulness, which results in low interest and adoption of technology.

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