

## THE ROLE OF FINANCIAL TECHNOLOGY IN ENHANCING THE DEVELOPMENT OF FISHERIES MSMEs IN COASTAL EAST KALIMANTAN

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**Abstract:** Fisheries Micro, Small, and Medium Enterprises (MSMEs) in the coastal areas of East Kalimantan play a vital role in local economic development, yet they continue to face various challenges such as limited access to financing, low financial literacy, and inadequate technological infrastructure. Financial Technology (fintech) emerges as an innovative solution to address these barriers through digital services such as peer-to-peer lending, digital payments, and automated financial record-keeping applications. This study employs a qualitative approach based on literature review to examine the contribution of fintech in supporting the development of fisheries MSMEs in coastal regions. The findings suggest that fintech can enhance access to finance, improve transaction efficiency, and expand market reach for MSME actors. However, its utilization remains constrained by low digital literacy and limited internet infrastructure in coastal areas. Therefore, collaboration among the government, fintech providers, and educational institutions is essential to strengthen the digital capacity of MSMEs and expand technological infrastructure. This study provides strategic insights into the importance of fintech adoption in promoting inclusive growth and sustainability of fisheries MSMEs in coastal communities.

**Keywords:** *Financial Technology; Fisheries MSMEs; Coastal East Kalimantan*

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### 1. Introduction

Micro, Small, and Medium Enterprises (MSMEs) in the fisheries sector play a strategic role in local economic development, particularly in the coastal areas of East Kalimantan, which are rich in marine resources. Through their significant contributions, MSMEs can generate employment, foster innovation, preserve local culture, stimulate economic growth, and reduce poverty. Moreover, MSMEs have the potential to absorb a substantial workforce, thereby increasing community income (Kaswinata et al., 2023).

Despite their great potential, fisheries MSMEs in coastal areas face various challenges that hinder their business development. One of the main obstacles is the limited access to formal financing due to low financial literacy, lack of business collateral, complex administrative procedures, and difficulties in accessing broader markets (Fitriyah, 2022). In addition, business actors often struggle with product marketing due to limited networks and the continued dominance of traditional marketing methods. On the other hand, financial management

practices tend to be conventional and lack proper record-keeping, leading to suboptimal business operations. These challenges are further exacerbated by the unequal distribution of financial and banking infrastructure in coastal regions, which significantly limits the opportunities for MSMEs to grow sustainably (Sulistyo & Nurhasanah, 2021).

The development of financial technology (fintech) has brought significant innovations in the provision of digital financial services, such as peer-to-peer lending, digital payments, and automated financial record-keeping. These innovations offer alternative solutions that reach business actors in areas underserved by conventional financial institutions, including MSMEs in coastal regions (Hutami & Junaedi, 2022). By leveraging digital technology, fintech helps reduce geographical and administrative barriers that previously hindered access to formal financial services. For example, peer-to-peer lending platforms enable MSMEs to obtain financing without undergoing complex traditional banking procedures. Likewise, digital payment systems facilitate financial transactions, while automated financial management applications assist entrepreneurs in managing their finances more efficiently. With the growing penetration of financial technology, digitalization is increasingly viewed as a strategic opportunity to improve financial behavior and enhance the performance of MSMEs (Sari et al., 2023).

Financial technology (fintech) offers substantial opportunities for the development of fisheries MSMEs, particularly in enhancing operational efficiency, expanding market access through digital platforms, and supporting entrepreneurs in managing their finances more transparently and systematically. Through digital financing services such as peer-to-peer lending, fintech can provide faster and more flexible access to capital for fisheries business actors who previously struggled to obtain funding from conventional financial institutions (Degong, 2023). In addition, the use of digital financial record-keeping applications enables MSMEs to manage and monitor cash flow in real-time, thereby improving financial transparency and accountability. According to Agustiyana et al. (2023), the adoption of fintech in vannamei shrimp farming businesses in Indonesia has proven effective in increasing production and operational efficiency through additional capital sourced from fintech platforms. Therefore, integrating fintech technology into the operations of fisheries MSMEs can serve as an effective strategy to promote business growth and sustainability in this sector.

The low adoption of financial technology (fintech) among fisheries MSMEs in coastal areas is primarily driven by two major factors: low levels of digital and financial literacy, and limited internet infrastructure. Many MSME actors lack adequate understanding of digital financial services such as online lending, e-wallets, or automated financial record-keeping (Septiani & Wuryani, 2023). This limitation prevents them from utilizing fintech platforms optimally. According to data from the Financial Services Authority (OJK), Indonesia's financial literacy index reached 65.43% in 2024, while the financial inclusion index stood at 75.02%. However, gaps in understanding digital financial products remain a key challenge. In addition, limited internet access in coastal areas exacerbates the problem. Many remote regions still lack adequate internet connectivity due to insufficient basic infrastructure, including electricity. This condition hinders MSME actors from accessing and utilizing fintech services, which are typically application-based and require online connectivity. The technological divide is further reinforced by the underdevelopment of information and communication technology (ICT) infrastructure in rural areas, compounded by geographical barriers and difficult topography. The combination of low digital and financial literacy and inadequate internet infrastructure represents a significant barrier to fintech utilization among fisheries MSMEs in coastal areas. To address these challenges, collaborative efforts among the government, fintech

service providers, and educational institutions are essential to improve digital financial literacy and expand internet infrastructure in remote areas (Antoni & Karlin, 2024).

Based on the aforementioned discussion, the urgency of this study lies in the need for an in-depth investigation into the extent to which digital financial technology (fintech) has contributed to the development of fisheries MSMEs in the coastal areas of East Kalimantan. Although fintech offers various potentials—such as easier access to financing, digital financial record-keeping, and market expansion—few studies have specifically examined its impact on the fisheries sector in coastal regions. Therefore, this research is crucial to provide a clearer understanding of the effectiveness of fintech utilization, as well as the challenges that need to be addressed in order to promote the sustainable strengthening of fisheries MSMEs.

## **2. Literary Review**

### **2.1. Fisheries MSMEs in Coastal Areas**

According to Law Number 20 of 2008 concerning Micro, Small, and Medium Enterprises, MSMEs are productive businesses owned by individuals and/or individual business entities that meet the criteria set forth in the legislation. The criteria are as follows:

- a. Micro Enterprises: Maximum assets of IDR 50 million, maximum annual turnover of IDR 300 million;
- b. Small Enterprises: Assets above IDR 50 million and up to IDR 500 million, annual turnover between IDR 300 million and IDR 2.5 billion;
- c. Medium Enterprises: Assets above IDR 500 million and up to IDR 10 billion, annual turnover between IDR 2.5 billion and IDR 50 billion.

Furthermore, Yuliana & Prasetyo (2024) state that MSMEs are a sector that demonstrates adaptability to global economic and technological changes and serve as the backbone of economic recovery in the post-pandemic era.

Micro, Small, and Medium Enterprises (MSMEs) in the fisheries sector are economic entities operating in coastal areas with distinct characteristics, such as small-scale operations, limited capital, and direct family involvement in day-to-day activities. Fisheries MSMEs encompass a wide range of activities, including fishing, aquaculture, and fish processing. These characteristics make fisheries MSMEs highly flexible yet vulnerable to environmental and market fluctuations. According to Iskandar et al. (2020), the characteristics of businesses and entrepreneurs, including demographic and psychological entrepreneurial traits, significantly influence the performance of fisheries processing MSMEs.

The strategic role of fisheries MSMEs in coastal economies is vital. These enterprises not only provide employment for local communities but also contribute to food security and poverty alleviation. In East Kalimantan, the fisheries sector holds great potential; however, it remains underutilized. Maryanto et al. (2022) reported that the fisheries sector's contribution to the Gross Regional Domestic Product (GRDP) of East Kalimantan was only 1.54%, indicating a strong need for more effective development strategies.

Fisheries MSMEs in East Kalimantan face a variety of challenges, including limited access to capital, technology, and markets. In addition to these issues, both internal and external factors influence the performance of fisheries enterprises. Internal challenges include poor business management practices, while external factors such as fluctuating fish prices and changing government policies also play a significant role. Febrianti and Fikriyah (2023), in their study conducted in Jembrana Regency, Bali, emphasized the importance of SWOT analysis in identifying the strengths, weaknesses, opportunities, and threats faced by fish-processing MSMEs—a framework also relevant to the context of East Kalimantan. Internal

factors affecting fisheries MSME performance include management quality, human resources, and production capacity, while external factors encompass market conditions, competition, and the level of government policy support. According to Iskandar et al. (2020), the characteristics of both the enterprise and the entrepreneur significantly influence the performance of fish-processing MSMEs, underscoring the importance of both internal and external determinants in the success of the sector.

## **2.2. Financial Technology (Fintech)**

Financial Technology (Fintech) refers to the use of technology to support financial services. The development of fintech has given rise to numerous innovations in financial service applications, such as digital payment tools, lending platforms, and other solutions that have become increasingly popular in today's digital era. Fintech encompasses a set of technological solutions aimed at enhancing financial processes and improving customer experience (Manish & G.S., 2022). It represents innovation in the financial services sector by integrating information technology to improve the efficiency, accessibility, and quality of financial services. According to the International Financial Stability Board (FSB), fintech includes financial innovations that result in new business models, applications, processes, or products with significant impact on financial markets and institutions. The scope of fintech is broad, covering a wide range of financial services supported by digital technologies (Nizar, 2018).

According to the Financial Services Authority (OJK) and the Indonesian Fintech Association (AFPI) (2024), the types of fintech services in Indonesia include:

- a. **Digital Payments:** Services that facilitate cashless transactions through digital wallets (e-wallets) such as GoPay, OVO, and Dana, as well as payment gateways like Midtrans and Xendit.
- b. **Financing (Peer-to-Peer Lending):** Platforms that connect borrowers and lenders directly without the intermediation of banks, such as KoinWorks and Amarta.
- c. **Automated Financial Record-Keeping:** Applications that assist users in managing personal or business finances automatically, such as expense tracking and budgeting features.

In Indonesia, the development of financial technology (fintech) is supported by regulations issued by the Financial Services Authority (OJK) and Bank Indonesia (BI). Key regulations include OJK Regulation No. 77/POJK.01/2016 on Information Technology-Based Lending Services and OJK Regulation No. 13/POJK.02/2018 on Digital Financial Innovation in the Financial Services Sector. Additionally, the Job Creation Law provides legal certainty for fintech operators and encourages innovation in the sector. Fintech plays a vital role in enhancing financial inclusion and economic empowerment, particularly for individuals and communities previously underserved by traditional financial services. Through services such as digital payments and peer-to-peer lending, fintech facilitates easier access to finance for individuals and MSMEs, thereby promoting more inclusive economic growth. With a comprehensive and collaborative approach among the government, industry players, and the public, fintech's role in advancing financial inclusion in Indonesia is expected to grow increasingly effective (Rustam, 2025).

This study employs a qualitative research method with a library research approach. The objective is to analyze the role of financial technology (fintech) in supporting the development of fisheries MSMEs in the coastal areas of East Kalimantan by reviewing various relevant literature sources. The data used in this study are secondary in nature and obtained from national and international academic journals, scholarly books, reports from government and

financial institutions, credible online articles, and regulations related to MSMEs and financial technology.

### **3. Research Method**

This study employs a qualitative research method with a library research approach. The objective is to analyze the role of financial technology (fintech) in supporting the development of fisheries MSMEs in the coastal areas of East Kalimantan by reviewing various relevant literature sources. The data used in this study are secondary in nature and obtained from national and international academic journals, scholarly books, reports from government and financial institutions, credible online articles, and regulations related to MSMEs and financial technology.

Data collection was conducted through a systematic review and examination of literature aligned with the research topic, followed by documentation techniques to record key information. Data analysis was carried out using content analysis, by identifying key themes related to the use of fintech by fisheries MSMEs, such as access to financing, transaction efficiency, and the promotion of financial inclusion. The analysis process involved the identification, classification, and synthesis of information to generate a comprehensive understanding of fintech's contribution to the growth of the fisheries MSME sector.

This research was conducted between March and May 2025, with the study area focused on the coastal regions of East Kalimantan. However, literature from broader contexts was also considered to enrich the analysis and provide comparative insights.

### **4. Results and Discussion**

#### **4.1. The Role of Financial Technology (Fintech) in the Development of Micro, Small, and Medium Enterprises (MSMEs) in Coastal East Kalimantan**

Financial technology plays a strategic role in expanding financial inclusion, particularly in the coastal areas of East Kalimantan. Amid limited access to formal financial services for much of the population—especially in rural and coastal regions—fintech has emerged as an innovative solution to reach groups previously underserved by conventional financial systems. The vast geographical landscape of East Kalimantan further highlights the importance of fintech in supporting the development of MSMEs in the region. Although not all coastal areas in East Kalimantan are currently equipped with fintech services, the majority have already been reached. The role of fintech in coastal East Kalimantan can be observed through the following aspects:

##### **a. Access to Financial Services for Previously Unserved Populations (the Unbanked).**

One of the main contributions of fintech is its ability to provide access to financial services for unbanked and underbanked groups—individuals or micro-enterprises who do not have a bank account or face challenges in accessing formal financial institutions. Fintech enables them to perform various financial activities, such as saving money, transferring funds, or accessing microfinance, through application-based digital platforms. Services such as digital wallets (e-wallets) and peer-to-peer lending offer flexible and efficient alternatives without the complexities of traditional banking procedures. Some MSMEs in the coastal areas of East Kalimantan have begun using QRIS as a payment tool for transactions with tourists. According to Gabor and Brooks (2019), financial digitalization through fintech has significantly advanced global financial inclusion by reaching communities traditionally excluded from the formal financial system. In the Indonesian



context, this is supported by findings from Yanti and Suhud (2021), which show that fintech has extended financial services to remote areas through mobile technology.

b. Bridging the Digitalization Gap in Coastal Areas.

Coastal regions such as East Kalimantan often face limitations in digital infrastructure, weak internet connectivity, and low levels of technological literacy. In this context, fintech serves not only as a provider of financial services but also as a catalyst for digital transformation. Many fintech providers utilize lightweight, cloud-based technologies that enable coastal communities to access financial services using only a smartphone. Some platforms even offer services through local agents (offline-to-online models) to bridge gaps in technology and user literacy. Research by Yulia and Tanjung (2020) highlights that fintech offers practical solutions in underdeveloped and coastal areas through user-friendly technologies that do not rely heavily on traditional financial infrastructure. Tambunan (2021) further notes that fintech has facilitated the integration of rural and coastal MSMEs into the digital economic ecosystem.

c. Collaborative Strategies Among Government, Private Sector, and Communities.

Optimizing the role of fintech in advancing financial inclusion cannot be achieved in isolation; it requires cross-sector collaboration. The government is responsible for formulating supportive policies that encourage innovation and protect consumers, while the private sector—particularly fintech providers—must proactively offer inclusive and educational services. Meanwhile, communities must be empowered through financial and digital literacy programs so they can use fintech services wisely and securely. This collaboration is reflected in various initiatives such as the MSME digitalization programs led by Bank Indonesia and the Financial Services Authority (OJK), digital financial training by the Ministry of Cooperatives and SMEs, and partnerships with local fintech startups. Setiawan and Nasution (2022) emphasize that the success of digital financial inclusion largely depends on the strength of stakeholder collaboration. This is in line with the World Bank (2020) report, which states that the development of a digital financial ecosystem requires integrated policy frameworks, supportive infrastructure, and active community participation.

#### **4.2. Challenges and Barriers to Fintech Implementation in the Development of Fisheries MSMEs in Coastal East Kalimantan.**

Although the development of financial technology (fintech) has created significant opportunities for expanding financial inclusion, its implementation in the fisheries MSME sector in the coastal areas of East Kalimantan still faces a number of complex barriers. These challenges are not only technical in nature but also encompass social, economic, and regulatory aspects that must be addressed in a comprehensive manner.

a. Low Levels of Digital and Financial Literacy Among Fisheries MSMEs.

One of the most fundamental challenges is the low level of digital and financial literacy among MSME actors, particularly those engaged in the fisheries sector in the coastal areas of East Kalimantan. Many business owners still rely on conventional transaction systems and are unfamiliar with using digital financial applications. A lack of understanding regarding how fintech services operate—including their risks and benefits—has contributed to the slow adoption of this technology. According to Sari and Hartono (2021), digital literacy is a key factor in determining the successful utilization of fintech among MSMEs. If business owners do not understand how to use financial applications or hold negative perceptions toward digital transactions, fintech adoption will remain very limited.

This is further supported by Tambunan (2020), who notes that MSME actors in remote areas tend to avoid new technologies, often perceiving them as complicated and irrelevant to their business operations.

b. **Limited Digital Infrastructure and Connectivity in Coastal Areas.**

Coastal regions in Indonesia, including those in East Kalimantan, continue to face significant limitations in digital infrastructure. Unstable or unavailable internet networks in several areas pose a major barrier to the operation of fintech services. Since most fintech applications require internet connectivity for transactions, this infrastructural gap directly impedes their distribution and utilization. Suryono et al. (2020), in their systematic review, stated that the successful implementation of fintech is highly dependent on reliable digital infrastructure. The digital divide between urban and rural areas is one of the primary causes behind the uneven adoption of fintech across Indonesia. Similarly, Yulia and Tanjung (2020) emphasized that MSME actors in coastal areas still face a digital gap, which affects not only their access to fintech services but also the overall competitiveness of their businesses.

c. **Data Security Risks and Regulatory Weaknesses.**

In addition to technical and social challenges, legal and security aspects also pose serious obstacles to the implementation of fintech. As digital-based services, fintech platforms are vulnerable to personal data misuse, hacking, and online fraud. Although the Indonesian government has enacted Law No. 27 of 2022 on Personal Data Protection, its implementation still requires time and preparedness from all stakeholders within the fintech ecosystem. According to Nurwahyuni and Ramadani (2022), many fintech service providers have yet to fully comply with data security and transparency standards. Regulatory uncertainty and limited oversight have also raised concerns among users, particularly those unfamiliar with digital transactions. Pratama and Wicaksono (2021) further argue that existing regulations on consumer protection in fintech lending are still insufficient to safeguard users from harmful practices, such as excessive interest rates and intrusive access to personal data.

#### **4.3.Fintech Implementation Strategies in Coastal Areas to Support Fisheries MSMEs**

To overcome the various barriers to fintech implementation in coastal areas, a holistic and collaborative strategy is required. This strategy should encompass the enhancement of digital literacy, the strengthening of infrastructure, and cross-sectoral synergy to promote equitable and sustainable digital financial inclusion.

a. **Enhancing Digital and Financial Literacy Among Coastal MSMEs.**

A crucial first step is to improve digital and financial literacy among fisheries MSME actors. Community-based education can be implemented through training programs tailored to the socio-cultural characteristics of coastal communities. Training content may include the use of fintech applications (e-wallets, digital lending, digital financial record-keeping), personal data security, and digital transaction simulations. According to Yanti and Suhud (2021), locally-based training approaches involving community leaders and experienced MSME actors have proven more effective in improving digital financial literacy. Furthermore, Putri et al. (2020) recommend integrating fintech literacy into village empowerment and fisheries cooperative programs to ensure more targeted and sustainable training efforts.

b. **Strengthening Technological Infrastructure and Internet Access.**

Both the government and private sector must accelerate the development of digital infrastructure in coastal areas, including the expansion of 4G/5G networks, the provision of public Wi-Fi, and subsidized digital devices for MSMEs. Stable connectivity is a fundamental prerequisite for the effective use of fintech services. Suryono et al. (2020) emphasize that without equitable infrastructure support, fintech adoption will primarily benefit urban areas, leaving coastal communities behind. Therefore, strong synergy between central and local governments and telecommunications providers is essential. In addition, initiatives such as the “Digital Village” program by the Ministry of Communication and Information Technology and the cooperative digitalization program by the Ministry of Cooperatives and SMEs can serve as catalysts in expanding access to technology in coastal regions.

- c. **Developing a Collaborative Ecosystem Among Government, Private Sector, and Communities.** The third strategy is to build a collaborative ecosystem involving the government as the regulator, fintech companies as technology providers, and communities as end users. This collaboration can be realized through initiatives such as:
  - 1) Formulating region-based digital financial inclusion policies.
  - 2) Providing mentorship to MSMEs by fintech companies through CSR programs and business incubation.
  - 3) Establishing partnerships between fintech firms and fisheries cooperatives or village-owned enterprises (BUMDes).

According to Setiawan and Nasution (2022), the active involvement of all stakeholders in the planning and implementation of digitalization programs will accelerate financial inclusion in coastal areas. In addition, the role of local figures—such as village heads, fisher groups, and cooperative leaders—can serve as change agents in introducing and disseminating technology.

- d. **Strengthening Fintech Regulation and Consumer Protection.** Another key solution is to strengthen the legal and regulatory framework for fintech to make it more adaptive and capable of protecting the interests of coastal communities, who remain vulnerable to digital fraud and data misuse. The implementation of the Personal Data Protection Law must be actively promoted, particularly in the operations of fintech lending platforms and digital wallets.

Nurwahyuni and Ramadani (2022) emphasize the importance of strict oversight of illegal fintech platforms, which often target communities with low levels of literacy. Firm law enforcement and transparency from service providers are essential to building public trust in digital financial technologies.

## **5. Conclusion**

Based on the literature review and analysis of the role of fintech in supporting the development of fisheries MSMEs in coastal areas, it can be concluded that Financial Technology (fintech) plays a crucial role in driving the transformation and empowerment of fisheries MSMEs in coastal East Kalimantan. Through services such as e-wallets, peer-to-peer lending, crowdfunding, and digital financial record-keeping systems, fintech has enhanced financial inclusion for communities previously underserved by formal financial institutions (the unbanked). Fintech also bridges the digital divide in coastal areas by providing more flexible access to financial services, funding, and digital transactions.

However, the implementation of fintech in coastal regions still faces several challenges, including low levels of digital and financial literacy among MSME actors, limited internet



infrastructure and telecommunications networks, as well as unresolved issues regarding data security and consumer protection. Therefore, a collaborative strategy involving central and local governments, fintech providers, and community stakeholders is essential to designing policies and support programs that are tailored to local needs.

To support the effective utilization of fintech, the following recommendations are proposed:

- a. **Recommendations for Central and Local Governments (Supportive Policies).**  
The government plays a critical role in creating an enabling ecosystem for the development of fintech in coastal regions. Central government ministries—such as the Ministry of Communication and Information Technology (Kominfo), the Ministry of Marine Affairs and Fisheries (KKP), and the Ministry of Cooperatives and SMEs—should formulate strategic policies to facilitate the development of digital infrastructure (e.g., internet access and 4G/5G connectivity) in coastal areas. In addition, financial and digital literacy training should be integrated into community empowerment programs, including regular outreach activities, technology-based MSME training, and digital business incubators at the village level. Local governments are also encouraged to take an active role in identifying the specific needs of coastal MSMEs and in connecting them with appropriate fintech service providers.
- b. **The Role of Fintech Providers in Digital Education and Outreach.**  
Fintech service providers (such as e-wallet platforms, P2P lending services, or MSME bookkeeping applications) should not focus solely on profit generation but also bear social responsibility in enhancing user capabilities, particularly in underserved areas. These providers can implement digital education initiatives through hands-on training sessions, instructional video tutorials, or partnerships with universities and training institutions. For example, a fintech lending platform could collaborate with a local fishers' cooperative to teach members how to apply for loans online safely. Such education is essential to ensure that coastal communities—especially fisheries MSME actors—do not merely use fintech applications, but also understand the associated risks, benefits, and how to use them effectively.
- c. **Strengthening MSMEs Through the Integration of Financial Technology.**  
Fisheries MSMEs in coastal areas often face challenges such as limited capital, manual bookkeeping, and restricted market access. Fintech can help address these issues if financial technologies are effectively integrated into their daily business operations. For instance, MSMEs can use digital bookkeeping applications to record sales and expenses, streamline financial reporting, and improve their chances of obtaining loans. Additionally, the adoption of QRIS and digital payment systems enables them to serve a broader customer base, including buyers from outside their local area. This strategy must involve structured training, ongoing mentorship, and gradual yet sustainable provision of access to digital tools.

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