

PENETRATION OF ISLAMIC FINTECH MODEL IN PROMOTING THE ACCELERATION OF MSMES IN THE EASTERN COASTAL OF ACEH

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ABSTRACT

This study aims to find ways to introduce Islamic fintech that fit the social, cultural, and economic needs of SMEs in Aceh's eastern coastal area. The main goal is to support financial and digital inclusion and improve literacy. This research is important because coastal SMEs rarely use Islamic fintech. The main reasons are limited internet access, weak digital infrastructure, and low worker readiness, even though Aceh's strong religious culture supports Islamic financial products. This research uses both exploratory and descriptive methods. It brings together secondary data from Otoritas Jasa Keuangan and Badan Pusat Statistik reports, along with academic literature, and primary data from interviews and questionnaires. Key informants include people from Bank Syariah Indonesia, Bank Aceh, coastal salted fish SMEs, local government, and Islamic fintech service providers. The data were analyzed using an interactive model, then reviewed using a SWOT analysis. The results show that Islamic fintech can improve access to financial services and help coastal SMEs grow. However, its use is still limited by poor digital access and low financial and digital literacy. The SWOT analysis points to a model with three main pillars: improving digital access, increasing SME literacy and mentoring, and strengthening regulatory cooperation and the Islamic financial ecosystem.

BACKGROUND

The Islamic finance industry has emerged as a significant area of academic inquiry, particularly in comparison to the conventional financial sector. Empirical studies suggest that Islamic banking demonstrates greater stability than conventional banking when confronted with both internal and external shocks (Mujiatun, Jasin, Fahmi, & Jufrizen, 2022; Rosalina, Anggraini, & Nurhayati, 2025). This finding highlights the need for further empirical validation. Currently, the Islamic economy is experiencing increased momentum in various countries (Al-Banna & Jannah, 2023). The rapid expansion of the Islamic financial industry, alongside other Islamic economic institutions, has drawn attention to the financial technology (fintech) sector as a particularly dynamic area of study. Financial technology (fintech) encompasses innovations in financial services achieved through technological advancements, which facilitate broader public access to financial products and services while reducing traditional barriers to entry. Fintech refers to financial service or product innovations developed through new technologies (Rosalina, Yuliari, & Zati, 2023). This evolution has significantly altered established financial business models, as reduced barriers to entry enable fintech firms to operate with less regulatory oversight while employing business models similar to those of regulated entities (BI, 2024).

Indonesia has entered the era of Society 5.0 (Ellitan, 2020; Syarifuddin, Muin, & Akramunnas, 2021) characterized by technological advancements that enhance various aspects of life, including financial services (Evangelista, Guerrieri, & Meliciani, 2014). Financial technology (fintech) has emerged as a significant product of this technological revolution, providing essential financial solutions that support the development of micro, small, and medium enterprises (MSMEs) (Syarifuddin et al., 2021; Zetzche, Buckley, Arner, & Barberis, 2017). MSMEs play a vital role in the national economy, contributing 61% to Indonesia's Gross Domestic Product in 2025, according to Badan Pusat Statistik (BPS, 2025). Preferences for Islamic fintech among MSMEs have continued to rise. The Global Islamic Fintech Report 2025 indicates that Indonesia holds a strategic position in the global Islamic fintech ecosystem, ranking third in the Global Islamic Fintech (GIFT) Index, following Saudi Arabia and Malaysia, and ahead of the United Arab Emirates and the United Kingdom. Indonesia is classified as a "Leader Hub," distinguished by a large market volume and robust growth momentum. However, the growth rate has begun to moderate compared to emerging hubs. The Islamic fintech market in Indonesia was valued at approximately USD 8.5 billion in 2023/24, with projections estimating an increase to USD 15.7 billion by 2028, representing a

compound annual growth rate of about 12.9%. This positions Indonesia among the global Top 6, alongside Saudi Arabia, Malaysia, the UAE, Iran, and Turkey, which together account for 83% of the global Islamic fintech market. Indonesia hosts 64 Islamic fintech companies, ranking second globally, and makes substantial contributions to the alternative finance, payments, wealth management, and fundraising sectors. Furthermore, Indonesia surpasses many Organisation of Islamic Cooperation member countries in ecosystem depth, domestic market scale, and regulatory and infrastructure readiness. These factors reinforce Indonesia's status as a leading hub, characterized by sustained double-digit growth and a central role in technology-based innovation in Islamic retail products (DinarStandard, 2024).

The research focused on micro, small, and medium enterprises (MSMEs) in the eastern coastal area of Aceh, particularly those engaged in fisheries activities such as salted fish production. These enterprises frequently encounter substantial barriers to accessing financial services. Data from Badan Pusat Statistik indicate that the Agriculture, Forestry, and Fisheries sector recorded the highest growth in 2025, at 13.53 percent (BPS, 2025). Despite Aceh's financial inclusion index reaching 89.87 percent in 2022 (Otoritas Jasa Keuangan (OJK) Indonesia, 2022) MSMEs in the fisheries sector along the eastern coast absorbed only 2 percent of available credit in 2021. This limited credit absorption is largely attributed to low financial literacy among fisheries sector MSMEs (Arnis, Baga, & Burhanuddin, 2018). Consequently, financial inclusion in these coastal areas remains below the national index.

This study is important because it examines why Islamic fintech, despite its great potential, is not widely used by MSMEs in Aceh, especially in coastal areas where access to formal financial services has long been limited. By focusing on the right strategies, Islamic fintech could help boost financial inclusion and literacy (Wijayanti & Riza, 2017), and also make coastal communities—whose livelihoods depend mostly on micro and small businesses—more economically resilient.

From a regional development perspective, Aceh's strong socio-religious values suggest that Shariah-compliant financial products are likely to be more widely accepted than conventional ones. Still, without a clear, targeted strategy, this advantage does not guarantee that MSMEs will use Islamic fintech services more often. This research aims to identify the best approaches and models that align with the social, cultural, and economic realities of Aceh's coastal communities, so Islamic

fintech can serve as a real solution, not just another product.

In the context of MSME empowerment, low financial literacy and inclusion have made it hard for coastal businesses, such as salted fish MSMEs, to access financing, use digital payments, or access other financial tools that help them grow (Aminah, Soewito, Erisna, Tarmizi, & Redaputri, 2020). This study shows how improving financial literacy and inclusion, along with the use of Islamic fintech—such as Shariah-compliant peer-to-peer lending, digital payments, and simple bookkeeping apps—can help these businesses grow, reach more markets, and rely less on informal loans.

Third, from a policy and institutional standpoint, the findings of this study are expected to provide. From a policy and institutional perspective, this study's findings should help local governments, financial authorities, Islamic banks, and fintech providers create more targeted programs for coastal MSMEs. Strategies developed from field research can guide the design of support programs, products, partnerships, and regulations, ensuring that Islamic fintech in Aceh grows in a truly inclusive and fair way for small coastal businesses.

METHODOLOGY

This study uses an exploratory research design to examine and interpret events through systematic data collection and categorization (Yin, 2016). The research is descriptive, aiming to explain how Islamic fintech develops by improving financial inclusion literacy. Secondary data came from sources such as conference proceedings, academic journals, reports from the Otoritas Jasa Keuangan, Global Islamic Fintech reports, and publications by the Badan Pusat Statistik. Primary data were gathered through interviews and questionnaire surveys with research informants.

The study's informants included representatives from Bank Syariah Indonesia, Bank Aceh, salted-fish MSME actors in eastern coastal area of Aceh, the local Office of Communication and Information in eastern Aceh, and Islamic fintech service providers in Aceh. This research uses two analytical methods: the interactive model and SWOT analysis. As described by Miles (Miles, Huberman, & Saldana, 2013), the interactive model involves data reduction, data display, drawing conclusions, and verification. The findings from this model are then presented as a SWOT analysis, which covers strengths, weaknesses, opportunities, and threats (Pereira, Pinto, da Costa, Dias, & Gonçalves, 2021). SWOT analysis is one of several tools that help support

effective planning and strategy development (Vlados, 2019). In this study, a SWOT analysis is used to develop strategies to expand Islamic fintech's reach in eastern Aceh and help MSMEs grow in Indonesia.

Result and Discussion

This study analyzes the implementation of financial technology (fintech) among micro, small, and medium enterprises (MSMEs) in Aceh's coastal areas to promote financial inclusion. The analysis focuses on Bank Syariah Indonesia, Bank Aceh, salted-fish MSME in eastern Aceh, the Office of Communication and Information in eastern Aceh, and Islamic fintech service providers operating in Aceh, each of which applies distinct standards in financial activities. The core principle shared by all Islamic banks is the prioritization of effectiveness and efficiency in these processes. Therefore, any acceleration system implemented should be structured to adequately support the achievement of these objectives.

Results of the SWOT Analysis on the Penetration of Islamic Fintech in Aceh's Coastal Areas

Strengths

Strengths refer to internal factors that underpin Islamic fintech's competitive advantage in Aceh. The strengths possessed by Islamic financial technology include the following:

- a) A large population market in Indonesia with a high level of internet usage. According to the Asosiasi Penyelenggara Jasa Internet Indonesia (APJII, 2025), the number of internet users in Indonesia, based on the 2025 survey, reached 229.4 million, with an internet penetration rate of 80.66%. Specifically in Aceh, the internet penetration rate in 2025 was recorded at 75.65% (APJII, 2025). This indicates that information technology has advanced very rapidly, generating significant convenience for society in meeting daily needs. Such conveniences include easier communication through social media, simplified transaction processes, time efficiency, access to information and news, and other benefits. All of these activities can be carried out using a single device supported by an internet connection. Internet usage in Indonesia is not limited to entertainment and social media; it also extends to financial and commercial services, as evidenced by APJII surveys.
- b) The availability of easy access to large-scale financial service data and the convenience of conducting transactions anytime and anywhere. Financial technology is closely associated with the

internet and digital devices; therefore, activities within this ecosystem tend to be transparent, efficient, and flexible.

- c) A substantial portion of the population remains underserved by the formal financial industry, thereby creating opportunities for Islamic financial technology companies to address these unmet needs. Islamic banking branch offices have not been evenly distributed across regions, particularly in remote and peripheral areas. Consequently, Islamic fintech can serve as an effective alternative channel for financial access.
- d) The community requires alternative sources of financing beyond traditional financial institutions and banking services. Islamic fintech emerges as a viable option by offering conveniences such as unsecured capital financing and the ability to conduct transactions within a relatively short period of time.

Weaknesses

Weaknesses are internal factors that slow the growth of Islamic fintech. In Aceh, some common weaknesses are:

- a. Financial technology depends heavily on internet access. In Indonesia, internet infrastructure is still not fully reliable, and some areas have unstable connections. The central government says that about 87% of villages in Aceh have internet coverage, so around 13% are still underserved. According to the Dinas Komunikasi dan Informatika Aceh, 536 out of 6,497 villages (about 12%) cannot access the internet. Of these, 387 villages only have 2G signals, which do not support internet, and 149 villages have no signal at all. The Aceh government says that limited access is often due to hilly terrain and scattered settlements, especially in coastal villages in valleys or behind hills. Many of these villages are in disadvantaged, frontier, and remote (3T) areas, including the western and southern coasts and islands. To provide internet, satellite support like SATRIA-1 and more communication towers are needed. Because of this, coastal MSMEs, fishermen, and marine product processors in these villages have trouble using digital apps that need stable internet, such as fintech and e-commerce services.
- b. Human resources (HR) readiness remains limited in operation. Many people are not yet ready to use online financial services. While technology has made daily life

easier, many still use the internet mostly for socializing, not for financial activities. The Asosiasi Penyelenggara Jasa Internet Indonesia reports that only 14.95% of internet users make online transactions, and just 5.84% use digital financial services. This low usage limits the wider adoption of Islamic fintech (APJII, 2025).

Opportunities

Opportunities are external factors that can accelerate the growth of Islamic fintech in Aceh.

- a. High market potential and strong Sharia preference. In 2022, Indonesia's Islamic fintech market was valued at IDR 41.7 trillion, and more MSMEs are choosing Sharia-compliant financial products. The Global Islamic Fintech Report ranks Indonesia fifth globally for Islamic fintech market share, with an estimated value of about USD 8.5 billion (over IDR 130 trillion at an exchange rate of IDR 15,000/USD), according to DinarStandard (DinarStandard, 2024). This matches what INDEF researchers shared in a public discussion on 30 December 2025, noting that the market value in 2023 was around USD 8.85 billion (about IDR 130 trillion). The GIFT Index also predicts strong growth in the global Islamic fintech market through 2028, with Indonesia expected to have some of the highest transaction volume growth.
- b. Substantial contribution of MSMEs to GDP. Data from Indonesia's Ministry of Cooperatives and SMEs for 2023–2024 show that MSMEs make up about 61% of the country's GDP, or around IDR 9,580 trillion, and employ about 97% of the workforce. The Ministry of Finance and the Ministry of Cooperatives and SMEs confirm that in 2023, MSMEs were the main driver of employment and GDP. Badan Pusat Statistik and other agencies also report that MSMEs have contributed over 60% to GDP in recent years, showing their key role in Indonesia's economy (Direktorat Analisis dan Pengembangan Statistik, 2025).
- c. Supportive socio-religious context in Aceh. Because Aceh follows Islamic law, it is a good place for Islamic fintech products compared to regular financial services. Aceh has strict rules and support for Sharia-compliant finance, including fintech. Qanun Aceh No. 11/2018 on Islamic Financial Institutions requires all financial institutions in Aceh to follow

Sharia principles, provides a three-year transition period, and prohibits conventional financial institutions from continuing to operate. Studies show that Sharia financial literacy in Aceh (18.64%) is higher than the national average (8.93%), and Banda Aceh has the highest rate at 71.99%. Research also shows that religious reasons, like wanting to avoid *riba* and follow fatwas from the Majelis Ulama Indonesia, are the main reasons people choose Sharia-compliant financial products. The Otoritas Jasa Keuangan and academic studies say Aceh is the only province that requires a Sharia-based financial system, making it a national example for Islamic economics. This is seen in the exit of conventional banks and the dominance of Sharia banking in the region. The combination of required Sharia-compliant rules, high literacy, and strong religious preferences makes Aceh especially supportive of Islamic fintech compared to traditional financial services.

Threats

Threats are external factors that can slow or harm the growth of Islamic fintech.

- a. Low financial literacy among coastal MSMEs. Many people in the fisheries sector lack financial knowledge, which is a key reason they do not use formal financial services, including Islamic fintech.
- b. Very low credit absorption. In 2025, MSMEs in the fisheries sector in eastern Aceh used only about 1% of available credit, or around IDR 0.30 trillion, even though Aceh had a high financial inclusion index of 89.87% (BI, 2024). This low use of credit shows a clear gap between the financial services available to fisheries businesses and what they actually use. Most people already have access to banks, savings, or other basic financial products, and Aceh's financial inclusion index is even higher than the national average of about 85%. But this access has not led to greater use of credit for business growth. Banking and finance for the fisheries sector in eastern Aceh remain limited, even though agriculture, forestry, and fisheries are national priority sectors for MSME credit.
- c. Limited physical and digital access. Most salted-fish MSMEs in coastal

areas struggle to get formal financial services and good technology. Small fish-processing businesses face major challenges using financial services and digital tools, which slow their growth and limit their ability to reach new markets. Studies show these problems come from limited access to financial products and poor record-keeping. Remote locations and a lack of basic infrastructure, such as roads, bank branches, and financial institutions, make it more expensive for small businesses to use financial services. On the digital side, weak internet connectivity, low digital skills, and limited investment in technology in coastal villages make it hard for fisheries MSMEs to use online platforms for marketing, managing finances, or securing financing. These issues slow down financial inclusion and digital change for coastal MSMEs compared to those in other areas. standing Islamic fintech products. Many MSME owners do not fully understand the schemes, contracts (*akad*), risks, and benefits of fintech products, which makes them hesitant to use these services. In Indonesia, including the Sharia segment, many MSMEs are still not well informed about how Islamic fintech products work, even though these products are becoming more available. Financial literacy data shows a big gap between what is offered and what users

understand. In 2025, the Otoritas Jasa Keuangan reported that the national financial literacy index was about 49.68%, while Sharia financial literacy was only around 30% (OJK, 2025). A 2022 survey by Bank Indonesia found the national Islamic economic and financial literacy index was just 23.3%. This means most people, including MSMEs, do not clearly understand the differences between Sharia and regular financial products, especially in fintech. Studies show that low Sharia financial literacy makes it hard for MSMEs to choose and use Islamic fintech products, mainly because they do not understand the contracts, financing methods, and risk management. Because of this, many studies suggest improving education and training, including adding interactive learning features to Islamic fintech platforms, so MSME owners can better understand Sharia-compliant financing.

Penetration of Islamic Fintech Model

The approach to introducing Islamic fintech in Aceh's coastal areas considers the unique structural, social, and economic features of local MSMEs, particularly fishermen and fisheries processing businesses, such as salted-fish producers. These groups have struggled for years to access financial and digital services. The strategy starts with a SWOT analysis of coastal MSMEs in Aceh and is then organized into three connected strategic pillars :

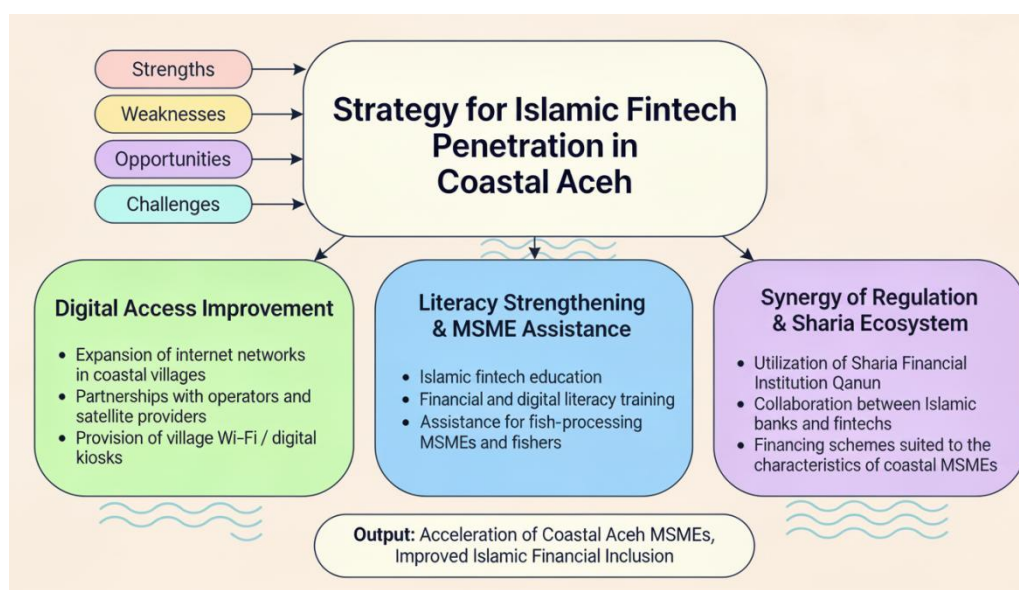


Figure 1. *Penetration of Islamic Fintech Model*

1. The first step is to improve digital access, which is essential for bringing Islamic fintech to these areas. Expanding internet in coastal villages, working with telecom and satellite providers, and setting up village Wi-Fi or digital kiosks will help lower the barriers and costs that have kept coastal MSMEs from formal financial services. Improving digital access should be positioned as a structural prerequisite (enabling condition) for the penetration of Islamic fintech in coastal areas, as all fintech services—from user registration and e-KYC processes to financing applications and transaction execution—are highly dependent on stable internet connectivity. From the perspective of the Technology Acceptance Model (TAM) (Mahade, Elmahi, Alomari, & Abdalla, 2025), intention to use technology is primarily influenced by perceived usefulness and perceived ease of use; however, in the context of coastal villages, these perceptions are strongly shaped by external factors, particularly the availability of network infrastructure and the quality of internet access. In other words, regardless of how well Islamic fintech applications are designed, their perceived benefits and ease of use will not materialize if salted-fish MSMEs and fishermen face weak signal coverage, high data costs, or lack adequate devices and internet access. Islamic fintech cannot succeed without a strong digital infrastructure (Amaral & Peças, 2021; Khan, Khan, & Ghafoor, 2023).
 - a. Expand internet networks in coastal villages by building telecommunications towers, making the most of the SATRIA-1 initiative, and working with mobile network operators to reach disadvantaged, remote, and outermost (3T) coastal areas in the western and southern regions and island districts.
 - b. Partner with satellite service providers and set up public Wi-Fi at village offices, fishermen's halls, or MSME centers. This will let salted-fish MSMEs and fishermen use Islamic fintech apps at these locations, even if they do not have internet at home.
 - c. Create digital kiosks or small digital service centers in coastal areas. These centers will offer devices, internet access, and help from local facilitators to support MSMEs with registration, financing applications, and digital transactions.
2. Second, strengthening MSME literacy and assistance focuses on enhancing business actors' understanding of the concepts, contractual structures (*akad*), risks, and benefits of Islamic fintech. Improving MSME literacy and mentoring should be seen as a way to help users make real use of Islamic fintech services, not just adopt them in name (Afif, Nabila, & Rohmah, 2023). Financial literacy means having the awareness, knowledge, skills, attitudes, and behaviors needed to make good financial choices. For Islamic fintech, this should include understanding contracts (*akad*), understanding rights and obligations, being aware of risks, and having digital skills to access and use information across different digital platforms (Wijayanti & Riza, 2017). Literacy and mentoring help users find fintech easier to use and more useful, while ensuring the right support is in place for them to actually use the technology. Programs that teach about Islamic contracts, offer digital and financial literacy training, and provide hands-on help do more than just share information. They reduce the time and errors involved for salted-fish MSMEs and fishermen when signing up, uploading documents, selecting financing, and making digital transactions. These programs also build trust by guiding users through the process and clearly explaining costs, profit-sharing, risks, and data security. Islamic fintech education, financial and digital literacy training, and direct assistance for salted-fish MSMEs and fishermen are designed to bridge the gap between service availability and MSMEs' capacity to utilize these services effectively. This approach is essential to ensure that fintech adoption is not merely symbolic but genuinely contributes to improving business capacity.
 - a. Structured Islamic fintech education delivered through face-to-face training in coastal villages, user-friendly modules, and simple digital content in local languages

to explain contractual schemes, costs, default risks, and the benefits of technology-based Sharia financing.

- b. Financial and digital literacy training focused on basic financial record-keeping, the use of financial applications, account security, and the ability to distinguish officially licensed platforms from illegal online lending practices.
- c. Ongoing assistance for salted-fish MSMEs, fishermen, and marine product processors from the registration stage through regular use of Islamic fintech platforms, including support in integrating digital financing with improvements in business management and online marketing.

While some MSME studies focus on personal attitudes and readiness, research shows that higher financial literacy is associated with better MSME performance, including higher profits, greater efficiency, and stronger business sustainability. Studies from Indonesia also show that financial literacy helps MSMEs by improving their access to finance and encouraging careful risk management. This study points out that for coastal communities, where salted-fish MSMEs and fishermen face unstable incomes, weather risks, and limited formal services, the required literacy is specific to their situation. It combines knowledge of Islamic contracts, digital skills, and administrative support. In practice, this can be delivered through three main packages: (1) education on Islamic fintech based on akad and transaction ethics; (2) training in financial and digital skills, including basic bookkeeping, managing seasonal cash flow, and digital security; and (3) direct help with registration, preparing documents, running financing simulations, and making first transactions. This approach helps ensure that using Islamic fintech becomes a regular part of business, not just a one-time or surface-level change

3. Third, regulatory synergy and the Sharia ecosystem are directed toward leveraging Aceh's Islamic Financial Institutions (LKS) Qanun, strengthening collaboration between Islamic banks and Islamic fintech

providers, and developing financing schemes aligned with the seasonal, high-risk, and community-based characteristics of coastal MSMEs.

- a. This synergy ensures that Islamic fintech penetration is not only legally compliant and Sharia-adherent but also contextualized to local needs.
- b. Utilization of the Islamic Financial Institutions Qanun and regional Sharia regulations as a basis for promoting the integration of Islamic banking and Islamic fintech (for example, through channeling or partnership schemes), enabling coastal MSMEs to access financing products better suited to micro-scale and seasonal business characteristics.
- c. Collaboration between Islamic banks and fintech providers to design specialized products for coastal MSMEs (fishermen, salted-fish processors, and aquaculture operators), featuring repayment schemes aligned with harvest cycles, top-up facilities, and community-based risk mitigation mechanisms.
- d. Strengthening the role of local authorities, the Majelis Ulama Indonesia, and Sharia Supervisory Boards to ensure that fintech innovations remain compliant with Sharia principles, while also providing additional trust for Acehese communities that are highly sensitive to issues of *riba* and the halal status of financial products.

Conclusion

This study finds that Islamic fintech could help strengthen and expand coastal MSMEs in eastern Aceh, especially fisheries-based businesses such as salted fish processing. It offers an alternative for entrepreneurs who have struggled to access formal financial services. However, Islamic fintech use in Aceh's coastal areas remains limited due to limited digital access and low financial and digital literacy among MSME owners. The main challenge is not the lack of fintech products, but rather the need for better internet infrastructure and improved human resource skills, including understanding contracts, risks, and costs, so that fintech services can be used safely and effectively.

The SWOT analysis shows that Islamic fintech can grow in Aceh's coastal regions if there is a focused strategy based on three main pillars: better digital access, stronger MSME literacy and business mentoring, and closer cooperation between regulators and the Islamic financial sector. Expanding internet networks, providing digital access, ongoing education and training, and partnerships between Islamic banks and fintech companies to create products that fit coastal businesses are all necessary steps. If these three pillars are not consistently put into practice, Islamic fintech may remain just a policy idea rather than a real solution that improves the economic strength and welfare of coastal MSMEs.

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