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IMPROVING COASTAL COMMUNITIES' MICRO ENTERPRISES' KNOWLEDGE CAPABILITIES: BOOSTING FINANCE DIGITALISATION IN SMALL ISLANDS REGION

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ABSTRACT

Central government efforts to push MSMEs (micro, small and medium enterprises) into more digitalisation to improve the effectiveness and efficiency of MSME business processes and operations may face significant challenges for MSMEs in small island regions. Internet access, ICT (information communication technology) capabilities, and fintech services penetration hamper the government's good intentions. To help the government initiative, this study aimed to improve knowledge capabilities, especially in using financial technology (fintech) by the coastal communities' micro enterprises, consisting of fishermen and marine farmers in Kei Islands, Indonesia. This study integrates SWOT analysis and Fuzzy AHP (analytical hierarchy process) to obtain a viable alternative to increase and improve the knowledge capabilities of fishermen and marine farmers who use fintech services to improve their overall managerial performance. This study uses qualitative data collected from in-depth interviews conducted on three categories of experts, namely bank and financial senior officers (one head of state-owned bank regional chief), MSMEs in fisheries (ten MSMEs), and researchers (one researcher). The result showed that more socialisation, either to increase the knowledge on fintech services available, the use of ICT, and the importance of managing the business properly, can improve the knowledge capabilities of micro enterprises in coastal areas in order to adopt business digitalisation.

Keywords: Msmes; Fintech; Knowledge Capabilities; Performance

INTRODUCTION

The existence of the fourth industrial revolution presents both problems and possibilities for rural MSMEs. MSMEs are small businesses that can weather economic crisis shocks and contribute to national development. The presence of industrial revolution 4.0 and society 5.0 is anticipated to provide good values for MSMEs to develop autonomously and be empowered by the government, universities, and the public. The community can use the digital technology of the industrial revolution to grow micro, small, and medium-sized enterprise (MSME) operations in rural areas far from urban areas without communication technology infrastructure (Huang et al., 2019; Tortora et al., 2021).

The development of micro, small, and medium-sized enterprises (MSMEs) is still hindered by various challenges, which can be regarded from two perspectives. First, internal variables, including capital, production, marketing, and human resources, are inadequate; second, external factors include MSME developers' and coaches' difficulties. "Financial Inclusion" is a methodology designed to address these issues, particularly regarding money and marketing. Financial Inclusion is an endeavour to make the financial system accessible to all sectors of society, hence promoting economic growth and eradicating poverty. Financial inclusion is an endeavour to make the financial system accessible to all segments of society to promote quality economic growth and eradicate poverty (Kikkawa & Xing, 2014). Financial Inclusion aims to eliminate all barriers to the public's use of financial services, which are backed by a solid infrastructure. On a macro level, this program is anticipated to support inclusive and sustainable economic growth and provide welfare benefits for the general populace (Bire et al., 2019; Ibor et al., 2017; Lakuma et al., 2019).

The significance of financial inclusion stems from several factors, including: the inability to access financial services can result in the exclusion of financial institutions from obtaining capital; and the lack of access to safe and formal savings can reduce their incentive to save (Shankar, 2013). When saving, security benefits and interest rates may be less generous than those the formal system offers. At times of need, insufficient savings will force households to rely on external sources of assistance. Frequently, these lenders charge hefty loan rates.

High interest rates will raise the likelihood that borrowers will struggle to repay their loans, and a lack of credit products will prevent borrowers from making investments and improving their living standards. Hence, small entrepreneurs will lack an environment conducive to financial growth; the absence of remittance products makes money transfers cumbersome and high-risk; insurance products reduce risk management and wealth distribution options.

The poverty reduction efforts can be achieved by increasing MSMEs' access to capital facilities from traditional financial institutions and microfinance organisations (Wijono, 2005). Financial institutions can provide several types of financing to MSMEs, making it a potential alternative funding source, given that most MSMEs have not utilised financial institutions. In doing so, the Indonesian government initiated an effort to increase the performance of MSMEs in Indonesia by pushing digitalisation, including using finance technology (fintech) to access financial aid and enhance financial inclusion. MSMEs are the backbone of the nation's economy; thus, increasing MSMEs' capacity is necessary, especially in the 4.0 industrial era. The movement of the industrial revolution 4.0 that has reverberated in recent years influences changes in the manner of work in numerous domains, particularly the business sector (Rawat & Purohit, 2019; Sariyer et al., 2021).

Business owners employ information technology and telecommunications to conduct and assist commercial activities. MSMEs are compelled to respond to these developments due to the acceleration of movements and changes in business practices toward digitisation. Changes in business patterns that lead to digitisation do not pose too many difficulties for large organisations due to their characteristics and sufficient resources. However, this digitisation process necessitates extensive planning for MSMEs. To stimulate digitisation and simplify for MSMEs to adapt to the changes occurring, the government has enhanced MSMEs' access to technology and facilitated its transfer to them to survive in the commercial market (Slamet et al., 2016). The capacity to handle digital and internet gadgets is an absolute requirement for MSMEs to remain in a competitive environment (Purwana et al., 2017). Moreover, in the Kei Islands, fintech penetration has expedited the financial services based on mobile

and internet for transactions; however, still no evidence of a significant increase in the intention to use fintech as part of business transactions of MSMEs in the region (Pentury et al., 2025). Nevertheless, fintech literacy in terms of familiarity and knowledge is growing in the Kei Islands (Ngangun et al., 2024).

Therefore, this research aims to enhance the knowledge and skills of micro-enterprises, which are comprised of fishermen and marine farmers, regarding the use of financial technology (fintech). This research presents empirical input to relevant stakeholders to improve MSMEs' awareness and knowledge of using fintech to boost business performance. The strategies derived from this research can provide specific direction to the federal government to expand and expedite the digitisation of micro, small, and medium-sized enterprises (MSMEs), particularly in remote coastal areas.

METHODOLOGY

This research passed through the subsequent stages: The first is a literature review, which entails collecting research-related facts and theories for reference and research material. The literature review was done to construct a list of factors that can be classified into the four SWOT quadrants and the AHP hierarchy. Second, initial identification includes identifying study-related issues, collecting field research materials, and identifying locations and research objects. This phase attempts to generate a set of interview questions and select a list of experts who will be consulted for this study. Thirdly, the field survey directly surveyed the research location. The purpose of this survey is to validate the set of questions and elements contained inside the SWOT and AHP hierarchies.

This study used qualitative data collected by conducting in-depth interviews with three categories of experts: bank and financial senior officers (one head of state-owned bank regional chief), MSMEs in fisheries (ten MSMEs), and researchers (one researcher). The interviews were conducted between October and December 2022. Data was collected using a list of questions, each arranged according to the category of experts.

Table 1. Sample Experts For An In-Depth Interview

Code	Occupation	Description	Category
Exp 1	Director of CV Bringin Jaya	Micro enterprises in fisheries processing commodities	Practitioner MSMEs
Exp 2	Director of CV Cindy Group (Kei Islands Branch)	Micro enterprises in fisheries processing commodities	Practitioner MSMEs
Exp 3	Mandiri Bank Head Branch (Southeast Maluku District)	Financing entities	Practitioner Finance
Exp 4	Head of Credit Union AHA	Financing entities	Practitioner Finance
Exp 5	Lecturer and Researcher at Tual State Fisheries Polytechnic	Researcher in socio-economic fisheries	Academic
Exp 6	Lecturer and Researcher at Tual State Fisheries Polytechnic	Researcher in socio-economic fisheries	Academic

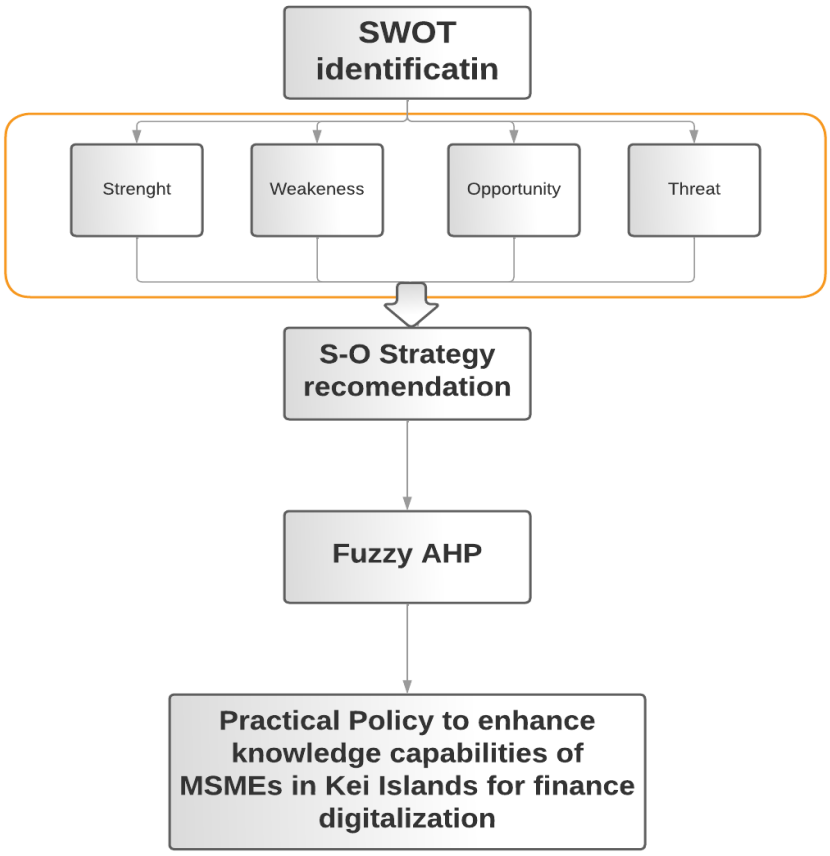

Figure 1. Integration of SWOT and Fuzzy AHP

In support of the government's ambition, this study aims to enhance the knowledge and skills of micro-enterprises comprised of fishermen and marine farmers about applying financial coastal technology (fintech). To accomplish this

objective, this study's data analysis design is integrated with the two analytical tools employed: the SWOT Matrix combined with the Fuzzy Analytical Hierarchy Process (AHP) for problem identification and strategic recommendations. Thus, the model obtained is expected to be more comprehensive and applicable and has been tested based on scientific principles.

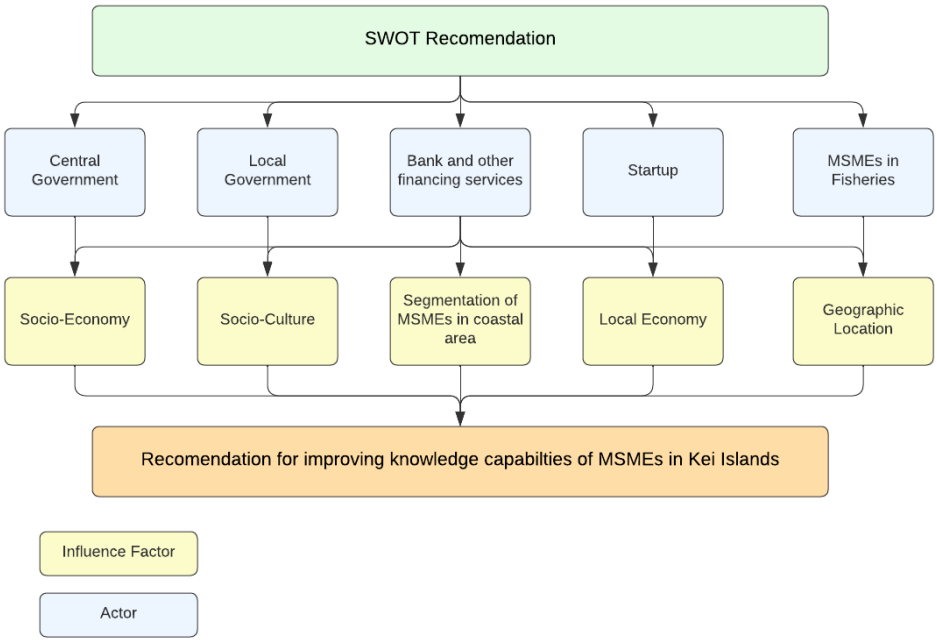

Figure 2. Fuzzy AHP framework

External / Internal	Opportunities	Threats
Strengths	Competitive Advantage	Mobilisation
Weaknesses	Investment/Divestment	Damage Control

Figure 3. SWOT Matrix

The analysis method of the study is a combination of qualitative and quantitative approaches. The research's data analysis methods include descriptive analysis and SWOT analysis. Hasan (2004) states that descriptive analysis is a type of research data analysis used to evaluate the generalizability of research results based on a single sample. This descriptive analysis employs one or more independent variables. Thus, this analysis does not employ comparisons or correlations. After obtaining the SWOT recommendation, proceed with the fuzzy AHP quantitative procedure. SWOT analysis is a method to look at an organisation's internal and external factors, which can then be used to make work plans and strategies. Part of an internal analysis is figuring out strengths and weaknesses. The external analysis, on the other hand, looks at both opportunities and problems (Threats) (Teniwut, 2022) (Figure 3).

Comparative advantages are when two of an organisation's strengths and opportunities come together to help it grow faster. Threat and strength work together to bring about mobilisation. Here, efforts must be made to use the organisation's strengths, which are its resources, to soften these outside threats and even turn them into chances. Divestment/Investment shows how weaknesses and chances work together. The opportunities are excellent, but cannot be taken advantage of because of insufficient human resources. A company can let other organisations take advantage of opportunities that are already there, or it can force businesses to work on those opportunities. Damage Control is the weakest of all the cells because it is where weakness and threat meet. It will not be suitable for the organisation if they make the wrong choice. Damage Control is the plan that needs to be used to keep things from getting worse than expected.

Table 2. Triangular Fuzzy Conversion Scale

Linguistic Scale	TFN fuzzy scale	Reciprocal TFN fuzzy scale
Both factors are equally important to the goal	(1,1,3)	(1/3,1,1
One factor is somewhat more important than the other	(1,3,5)	(1/5,1/3,1)
One factor is much more important than the other	(3,5,7)	(1/7,1/5,1/3)
One factor is significantly more important than the other	(5,7,9)	(1/9,1/7,1/5)
One factor is absolutely more	(7,9,9)	(1/9,1/9,1/7)

important than the other

The value of an element's membership ranges from 0 to 1. Fuzzy-fication in the AHP fuzzy method is changing the value of the rating interval (in the form of a value limit) given by the rater to an interval in the form of fuzzy numbers (Marimin et al., 2013). This is like the way that AHP is usually done. This rating interval is made so that raters can give different ratings. Conversely, defuzzification is the process of turning a fuzzy output back into a single-value output (crisp). The fuzzy AHP construct of the study can be seen in Figure 2.

1. Fuzzy-fication

   This study uses a triangular fuzzy number (TFN), which ranges from 1 to 9, to compare two parts of the selection process to capture ambiguity. TFN 1–9 gives people more options on a standard nine-point scale. The five TFNs are plotted based on the membership function so that qualitative human judgment can be as accurate as possible.

2. Aggregation of experts

   The fuzzy form of expert input is assembled by giving more weight to the average of the lower, middle, and upper limits of the three groups of input (Meixner, 2009). This is necessary because there are three groups of information coming in. The score that comes out of this step is still fuzzy.

3. Defuzzification

   Defuzzification is done to determine one crisp value from the fuzzy score. Here, the centroid method is used, in which a single value of the output variable is found by finding the variable value from the centre of gravity of a membership function for fuzzy values (Meixner, 2009). (Table 2).

4. Final Score

   The final score is derived by multiplying the alternate eigenvalue matrix by the weight of each criterion. The values are then ordered from highest to lowest.

RESULTS AND DISCUSSION

SWOT Analysis

A wide variety of strengths are associated with using ICT and fintech in developing nations. Developing regions can spur economic expansion, advance the cause of financial inclusion, and improve communities' lives by using the technologies available. Based on the result in Table 3, the experts had consensus on the strengths, weaknesses, opportunities, and threats of the existing condition of the effort to enhance knowledge capabilities of coastal communities in the region. Furthermore, on table 4 showed the S-O strategy recommendation, where based on the current existing condition, experts assessed that it is necessary to have in-depth and focused education for micro, small, and medium-sized enterprises (MSMEs) on business financial management, the impact of financial management on business performance, and fintech services and hazards. Doing so would consistently enhance the abilities of MSMEs in the region to improve their ability to manage the business's finances and knowledge of using fintech services.

Fuzzy AHP

Based on the recommendation of the S-O strategy, it is further processed and calculated with Fuzzy AHP. As seen in Figure 4, the actor that experts assessed to have a bigger role in enhancing knowledge capabilities of MSMEs in coastal areas is the central government, followed by the local government, banks and financial services, start-up fintech, and MSMEs' efforts. MSMEs' influence factors, segmentation, and characteristics are the primary influencers in the effort to increase their knowledge capabilities for digitalising fintech. As for the alternative practical policy recommendation, based on the result showed that the regular and join cooperation between local and central government and local and regional universities to facilitate and training MSMEs in the region on their capabilities in managing financial side of their business and introducing and using finance technology for lending and managing their transaction.

Regional development aims to create economic activity that would benefit the community. One way is to improve the performance of MSMEs so that they are more resilient to crises and an unfavourable economy. With the rise of MSMEs

comes more harsh competition; MSMEs that cannot compete will be pushed out of business. Increasing the expertise of MSME owners through various approaches and policies followed by local governments can make MSMEs more competitive and autonomous, and contribute to the regional economy. To minimise MSMEs' resistance to digitalising their business, including financial technology, transferring knowledge is important to help this objective happen.

Table 3. Internal And External Factor Identification

Internal Factor	
Code	Strengths
S1	The use of communication technology devices that are increasingly widespread and evenly distributed in the Kei Islands
S2	The wider the reach of the internet network in the Kei Islands
S3	The many availabilities of fintech applications by start-ups, banks and other financial institutions
S4	Platform support for most of the available fintech applications, both web and mobile applications
Code	Weaknesses
W1	The trust of business actors in using fintech applications is still low
W2	Still not used to cashless transactions from MSMEs in the Kei Islands
W3	The ability to record simple business finances is not good
W4	The relatively low percentage of the use of banks and financial institutions and financing from MSMEs in the Kei Islands
External Factor	
Code	Opportunities
O1	Government support to transform MSMEs into more digitally based ones
O2	Increasingly stringent supervision from OJK and PPATK to curtail illegal fintech applications
O3	Intense socialisation by the government, banks, and financial institutions (start-ups) on safe and legal fintech
O4	More and more businesses and economic and social activities are integrated with fintech.
Code	Threats
T1	There are still high opportunities for fraud by fraudulent and illegal fintech.
T2	It is easy for MSMES to be instigated and entangled in the influence of illegal fintech.

Table 4. S-O Strategy Recommendation

Strategy (S-O)
Competitive Advantage
"In-depth and focused education for micro, small, and medium-sized enterprises (MSMEs) on business financial management, the impact of financial management on business performance, and fintech services and hazards"

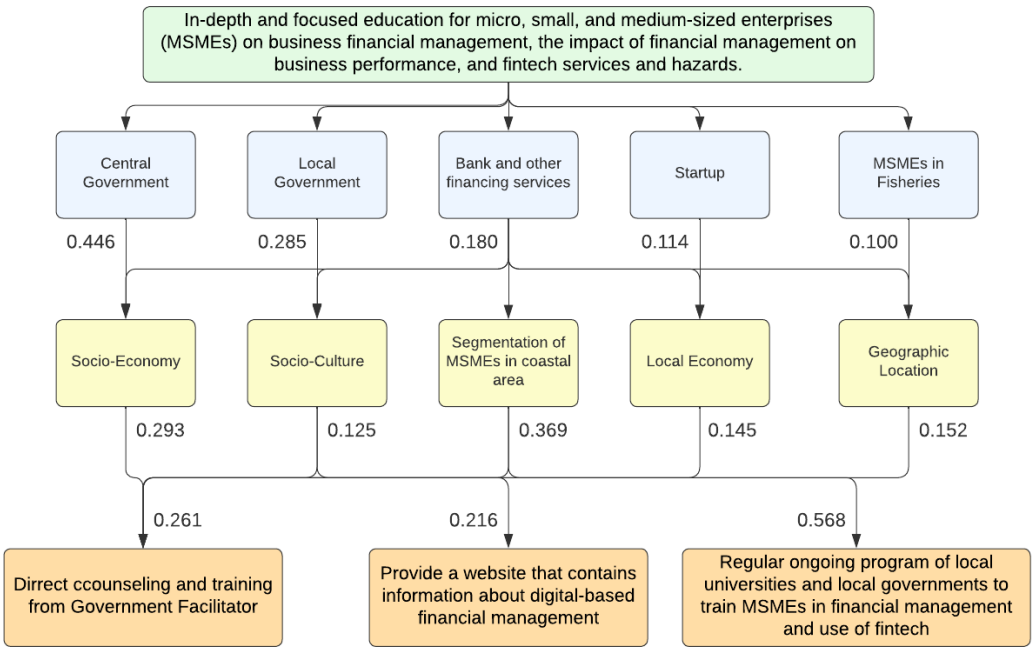

Figure 4. FAHP Results

Information sharing can maximise knowledge exploitation (Lumbantobing, 2011). In addition to fully utilising knowledge, knowledge sharing can provide an opportunity to explore knowledge to obtain or develop new knowledge. Knowledge transmission is a process or approach through which researchers share evidence for a theory or new information (Profetto, 2004). There are two types of knowledge: tacit and explicit (Nonaka & Takeuchi, 2000). Tacit knowledge exists in the human mind as intuition, judgment, abilities, attitudes, and beliefs that are difficult to formulate and transmit to others. On the other hand, explicit knowledge is knowledge that can or has been codified in documents or other tangible forms, allowing it to be easily transferred and distributed through many media. Both types of information can be converted in four ways: socialisation, externalisation, combination, and internalisation.

There are several challenges that micro, small, and medium-sized enterprises (MSMEs) must encounter, including a lack of access to technology comparable to technical improvements and a lack of venture capital. In addition, restrictions are placed on MSMEs in terms of product promotion, and they lack quality human resources. In addition, the management of MSMEs is still traditional; it has not yet been updated to reflect new practices. Knowledge

management is a term that is frequently used to refer to the management of knowledge. The strategy aimed at the owners of organisations about the use of knowledge in management, with the end goal of enhancing the performance of micro, small, and medium-sized enterprises (MSMEs) that are both competent and competitive.

Access to capital is one of the factors that caused the underdevelopment of the MSME sector in Indonesia. In addition, MSMEs cannot compete with e-commerce companies since the convenience of e-commerce transactions encourages customers to shift to e-commerce services (Junadi[a], 2015). According to data from the Asian Development Bank as of January 2017, Indonesia's use of fintech, particularly e-payment and transfer facilities with the Philippines, lags significantly behind those of its neighbouring country. The service provider estimates the comparative ratio by comparing the number of fintech service users to the total number of subscribers.

There are still financial limitations for MSMEs, making it challenging to grow operations and produce marketable products. When discussing conventional financial institutions such as banks, most SMBs are dissatisfied with the services they receive. Several MSMEs are compelled to utilise the services of conventional microfinance banks, despite the significant shortcomings and risks associated with these organisations. In numerous corporate contexts, societal issues are tackled. In Indonesia, small and medium enterprises (SMEs) are frequently considered as a potent tool for decreasing poverty. According to surveys and research, most firms are classed as MSMEs. Hence, fintech plays a crucial role in micro-enterprises' success (INDEF, 2019).

Previous research indicates that using fintech as an alternate type of finance is possible. Fintech-based money lending and borrowing services will be beneficial in expanding the public's online access to various financial service goods, particularly with parties who do not need to know one another (Alwi, 2018). Using technology to ease the delivery of financial services may be highly advantageous for both organisations and individuals. In addition to being incredibly rapid and efficient, the technique for supplying services is quite affordable (Cahyadi, 2020). Thus, the use of technology in the financial services sector innovation (Disemadi,

2021; Wijaya & Herwastoeti, 2022). Combining financial services with technological speed, this innovation enhances client access to financial services (Afnesia & Ayunda, 2021; Fitriani et al., 2022).

Each member of a group or organisation must have the opportunity to share their thoughts, ideas, critiques, and observations about other group members for knowledge to be shared. Knowledge sharing consists of six stages: producing, seizing, capturing, storing, processing, and disseminating knowledge, as well as the desire of each organisation member to share knowledge (Ngah & Jusoff, 2009). The company's performance can be evaluated based on its ability to implement knowledge sharing successfully. For companies to achieve high performance, they must have ample resources and skills, including knowledge that can be used to integrate and coordinate current resources and capabilities. The greater the interchange of information and expertise, the greater the company's business performance.

Through the transfer and exchange of knowledge from associated parties, MSMEs become less resistant to initiatives to strengthen their capacity to manage their finances and digitise their operations. Due to the tendency of MSMEs in this region to be closed, it is challenging to establish new ideas, orientations, and values and norms that enrich existing values and norms. The social capital group that ultimately forms has a high resistance to change.

CONCLUSION

There may be a significant obstacle in the way for micro, small, and medium-sized businesses in regions with fewer islands if the central government continues its push for more digitalisation of MSMEs (micro, small, and medium-sized businesses) in the hope of improving the effectiveness and efficiency of MSME business processes and operations. Access to the internet, ICT (information and communication technology) capabilities, and the spread of fintech services are all variables that work against the government's good intentions. To support the initiative the government took, this study aimed to enhance the knowledge capabilities of the coastal communities' micro enterprises, which are comprised of fishermen and marine farmers in the Kei Islands, Indonesia. Specifically, the study

focused on using financial technology (fintech).

This study integrates SWOT analysis and Fuzzy AHP (analytical hierarchy process) to obtain a viable alternative to increase and improve the knowledge capabilities of fishermen and marine farmers in using fintech services to improve their overall managerial performance. This study aims to improve the overall managerial performance of fishermen and marine farmers. This research involved in-depth interviews with members of three distinct specialist groups: bank and financial senior officers, MSME players, and educators. The result recommended in-depth and focused education for micro, small, and medium-sized enterprises (MSMEs) on business financial management, the impact of financial management on business performance, and fintech services and hazards by regularly training and facilitating the MSMEs on the knowledge to manage their business and the use of financial technology services.

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