Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2022.vol9.no10.0129

Exploring Factors Affecting the Digitization of Blue Economy Micro- Small and Medium Enterprises (MSMEs): Indonesian Context*

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Received: September 15, 2022 Revised: November 26, 2022 Accepted: December 05, 2022

Abstract

This study aims to identify the factors supporting and inhibiting the digitalization of blue economy MSMEs in Bitung, Indonesia. The literature shows little research on digitalization related to the blue economy in Southeast Asia, especially in Indonesia. This indicates that there is a large research gap related to digitalization and the blue economy in the Indonesian context. Data was collected through the distribution of questionnaires with open-ended questions to blue economy MSMEs. Data was also obtained from in-depth interviews with representatives of Aruna, an Indonesian company that focuses on simplifying the supply chain of fishery products by connecting small-scale fishers to the global market through technology. According to the study's findings, two primary factors—motivation to develop their business and efforts to maintain seller-buyer interaction—support SMEs' use of technology in the blue economy. However, digital literacy and technological infrastructure, such as the internet network, are the two main factors that become obstacles in the effort to digitize MSMEs in the blue economy. The role of the government is also a contingent factor that can strengthen the relationship between factors that support digitization and weaken the relationship between factors that hinder digitalization.

Keywords: Digitalization, Blue Economy, MSMEs, Indonesia

JEL Classification Code: D90, D91, M13, M15

1. Introduction

Digitization is a word that is heard a lot and gets high exposure in many media. This is because digitalization is related to technology that continues to increase in its ability and use for humankind. Digitization is defined as changes associated with the application of digital technology in all aspects of human life (Stolterman & Fors, 2004). From this definition, it can be understood that digitalization will and can change the way humans interact in their lives, including their work. The blue economy is inseparable from digitalization. The blue economy is often associated with development based on the economic value of marine resources. Specifically, the blue economy is a concept that seeks to achieve a balance between two related aspects of marine ecosystems, namely ecology and economy. In other words, the blue economy does not only see marine potential as an economic commodity but also places great emphasis on the vital importance of preserving the environment in the marine ecosystem (World Bank, 2017). One country that emphasizes the importance of a blue economy is Indonesia.

Indonesia is known as a maritime country that has many islands in it. In addition, Indonesia is also referred to as a maritime country. Indonesia's territory is 70% ocean and 30% land, has more than 17,000 islands, with a coastline of more than 99,000 km. With a long coastline, the sea has a key role in supporting the economy and livelihoods of

***Acknowledgements:**
This research was funded by Directorate of Research, Technology and Community Service, Directorate General of Higher Education, Research and Technology Ministry of Education, Culture, Research and Technology in accordance with the Letter of Assignment Agreement for the Implementation of Research Grants Number: 435/LL3/AK.04/2022, June 17 2022.

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the Indonesian people. Indonesia's vast marine area makes Indonesia a country that has enormous potential in the marine and fisheries sector. The blue economy is one of the development priorities of the Indonesian government, including a focus on blue economy SMEs. In relation to digitalization, a limited number of Indonesian MSMEs have utilized digital platforms in their business. Research on MSMEs and digitalization has also received sufficient attention. Although research studies on technology and technological transformation are topics that continue to receive great attention, there is still little research on digitalization related to the blue economy in Southeast Asia. In particular, the systematic review research conducted by Layman et al. (2022) showed that there is still limited research related to digitalization and the blue economy in Indonesia. This indicates that there is a large research gap related to digitalization and the blue economy in the Indonesian context.

One area in Indonesia that focuses on the blue economy is the city of Bitung. Bitung City Bitung is one of the largest fishing industrial areas in Indonesia (Rabbi, 2021). The dominant fishery commodities in Bitung are tuna and skipjack. Both are fishery products with high economic value, both in local and world markets. Regarding MSMEs, in March 2022, MSME data collection has been carried out. Based on the data that has been registered, the number of MSMEs in Bitung has reached 4,534 (Dinas Koperasi dan UMKM Bitung, 2022). MSMEs in Bitung are more focused on the fisheries sector because Bitung City is a location with a high increase in marine fishery production every year. However, to the best of the author's knowledge, there has been no research that has focused on the digitalization of blue economy SMEs, especially those relating to the identification of the supporting and inhibiting factors for the digitalization of blue economy SMEs in Bitung. Therefore, this study aims to identify the factors supporting and inhibiting the digitalization of blue economy SMEs in Bitung, Indonesia. Furthermore, the main question in this research is: what are the factors that support and hinder the process of digitizing the blue economy MSMEs in Bitung?

Understanding the factors that support and hinder the digitization of MSMEs is important, considering the COVID-19 pandemic has had a major impact on many fields in Indonesia, including the blue economy MSMEs in Indonesia. This research contributes to increasing knowledge through the development of research models, which will further provide insight for policymakers, the community, and other parties in understanding the main factors that influence business actors in using technology in the blue economy sector in Bitung, Indonesia.

2. Literature Review

2.1. MSMEs and the Digitization of MSMEs in Indonesia

The MSME sector is one of the pillars of Indonesia's economic growth. Data from the Ministry of Cooperatives and SMEs shows the number of MSMEs as of March 2021 is 64.2 million, with a contribution to Gross Domestic Product (GDP) of 61.07 percent or Rp. 8.57 trillion. Furthermore, the contribution of MSMEs to the Indonesian economy includes the ability to absorb 97 percent of the total workforce and can collect up to 60.4 percent of the total investment (Deviyana, 2021). The resilience of MSMEs as the foundation of the Indonesian economy can be demonstrated through data where the number of MSMEs in 2018 (before the COVID-19 pandemic) was 64.18 million MSME units and their contribution to GDP was 61 percent. The previous 2021 data above shows that the MSME sector has proven to be resilient because its contribution to Gross Domestic Product has not changed at all despite being under pressure due to the COVID-19 pandemic (Deviyana, 2021).

Digitalization is an unavoidable factor in human life. Digitization is the phenomenon of converting analog data into digital language. The need for digitalization in human life is increasingly strengthened today, especially with the unprecedented COVID-19 pandemic. The COVID-19 pandemic has made a shift in life activities that were previously offline to online in many aspects, such as work, shopping, education, and many others aspects.

Regarding MSMEs, the digital transformation of MSMEs is a necessity (Alibekova et al., 2020; Bui, 2021; International Labour Organization, 2021; Min & Kim, 2021). This is inseparable from the rapid development of technology that encourages a shift in buying and selling activities from face-to-face to network. Thus, SMEs in Indonesia are expected to be able to enter the digital ecosystem. The main purpose of digitization is to help the community by simplifying all daily activities and work. For example, the use of technology in buying and selling business activities through the digitization process provides convenience in conducting transactions between sellers and buyers that can be done briefly through marketplaces, e-commerce, and online stores. Thus, Indonesian MSMEs can increase their sales because of expanding their market reach, including those related to blue economy business actors. Blue economy business actors who previously had not fully utilized digital technology now seem to be "forced" to immediately live with digital technology itself.

The benefits of developing a blue economy are the preservation of marine biodiversity and marine and coastal

ecosystems, as well as sustainable livelihoods, especially for coastal communities. Indonesia has enormous potential to carry out a blue recovery after the COVID-19 pandemic (Blue Recovery) and to encourage the transition from extractive efforts to the creation of added value and productivity. The blue economy is also a space to create innovation and creativity, both in existing and developing sectors, so that the blue economy can be a driver of inclusive welfare improvement. Indonesia's transition to a blue economy is also expected to become a model for the development of a sustainable marine-based industry that reduces the economy's dependence on the extractive sector.

However, technology support through digitization is not always easy, especially for the blue economy in Indonesia. The Indonesian government does not yet have a road map for a blue economy. The regulations made are still not fully integrated. One of the main problems in Indonesia's blue economy is efforts to improve the welfare of Indonesian fishers, who until now still have many whose income is below a decent standard of living. Blue Economy Development must be the creation of jobs and social welfare for the people of Indonesia in the future, along with sustainable marine management.

2.2. The Face of the Digitization of MSMEs in Indonesia

Digitizing MSMEs is not just about making MSMEs enter the digital marketplace and e-commerce trading platforms. However, with digitalization, it is hoped that MSMEs can advance to class and be sustainable (Nasution, 2022; Wulan, 2022). Digitalization is carried out from upstream to downstream and covers all aspects of MSME life, which includes production, management, and financial management.

Data shows that in August 2021 there were as many as 15.3 million micro, small and medium enterprises or MSMEs that had entered the digital ecosystem. This number represents 23.9 percent of the total MSMEs which amounts to around sixty-four million business actors (Damara, 2021). The data also shows that until June 2022, the number of MSMEs entering the digital ecosystem has increased and reached 19.5 million business actors, or 30.4% of the total MSMEs (Salinatri, 2022). Furthermore, the Indonesian government targets as many as 30 million MSME players to enter the digital ecosystem by 2024 (Salinatri, 2022).

To achieve this target, the Indonesian government has taken many ways. One way is for the government to collaborate with e-commerce platforms and fintech platforms to hold an MSME clinic roadshow with the theme "Cultivate MSMEs, Create New Digital Heroes" (CNBC Indonesia, 2021). Another way that the Government has taken to accelerate the digitization of MSMEs is where the Ministry of SOEs creates a digital market called "PaDi" for SMEs that can pave the way for business actors in the sector to enter digital platforms (Salinatri, 2022). Specifically, PaDi is a digital platform that brings together MSME actors with SOEs to optimize and encourage the efficiency of SOE spending transactions, as well as expand the opportunities for MSME actors to obtain capital (Christanto, 2022; Cueto et al., 2022).

2.3. Constraints to Digitizing Indonesian MSMEs

The literature shows the problems faced by micro, small and medium enterprises (MSMEs) to enter the digital market. The main problem for MSMEs is digital literacy (Mirani et al., 2022; Andjarwati & Wulan, 2021; Kurniadi, 2021; Sukarmi et al., 2021; Harmawan, 2018; Reis et al., 2020). Studies on MSMEs also show that limited funding is a major constraint faced by many MSMEs (Tambunan et al., 2021; Andjarwati & Wulan, 2021; Sukarmi et al., 2021). This limited funding has resulted in MSME actors being more concerned with the funds they have for their business rather than investing the money for digitalization purposes such as website creation, promotion on social media platforms, and others. Furthermore, studies also show that the products produced by MSMEs are often inconsistent both in quantity and quality (Hadi & Zakiah, 2018; Harmawan, 2018). Regarding digitalization, the inability to meet online demand can be an obstacle for MSMEs.

3. Research Method

This research is exploratory research that aims to identify the supporting factors and obstacles faced by small and medium enterprises in the blue economy sector in their digitalization efforts. Identification is done both by deduction and induction (Borgstede & Scholz, 2021; Hanim et al., 2021). By deduction, literature searches related to internal and external factors are used as the basis for determining these factors. The literature search process was directed by research questions regarding the factors supporting and inhibiting the digitization of MSMEs in Bitung, Indonesia. The process of searching for literature through search engines either Google Scholar, ProQuest, and others. The criteria used in the literature search are (1) articles related to MSMEs, digitization, supports, and obstacles to digitization, (2) articles from journals, proceedings, books, official government websites, and news agencies that can be accessed online, and (3) the article is written in Indonesian or English.

By induction, the survey was conducted using an open-ended question questionnaire addressed to SMEs in the blue

economy sector. Specifically, blue economy MSMEs are MSME business actors who focus on businesses related to marine resources such as fish traders, fish cultivators, and other marine organisms, fishery product processors, and suppliers of fishery production facilities to restaurants that provide seafood. In the questionnaire, respondents can freely write down the supporting and inhibiting factors that they feel affect them in using technology in their business. There are ninety-five open questionnaires that can be used and analyzed to identify the supporting and inhibiting variables for small and medium blue economy business actors. The most frequently mentioned factors will then be taken as variables that represent the supporting and inhibiting factors.

Data from the inductive approach also resulted from qualitative information based on opinions gathered from interview expert panels. The expert panel consists of three experts from Aruna, an Indonesian technology company that focuses on social issues in the blue economy. Specifically, Aruna streamlines the supply chain of fishery products by connecting small-scale fishers to the global market through technology.

The next step is to conduct a Focus Group Discussion to ensure that the variables obtained both by induction and deduction are appropriate so that a research model and indicators can then be built. Indicators of research variables will be developed using a scale development procedure. This procedure is a separate research stage that is not presented in this manuscript.

4. Empirical Results

This study aims to identify the supporting factors and obstacles faced in the digitalization effort for small and medium enterprises in the blue economy sector. Human life is supported by technology. The ease of communicating and interacting with many parties through cellular phones, mobile phones, the internet, and others is an example that cannot be denied.

There are eighty-seven questionnaires with open-ended questions that can be analyzed to answer research questions. Of the eighty-seven respondents, there were 32 (37%) male respondents and fifty-five female respondents (63%). More than half of the respondents (64%) work as fish sellers and as many as 31% have a special seafood food stall business, and 5% of the respondents are fishers. Furthermore, more than a third of respondents (39%) have more than ten employees, 28% of respondents have 1–3 employees, 23% of respondents have 4–6 employees, and the rest (10%) have workers as many as 7–9 people.

All respondents (86%) stated that technology can help their business. The technology referred to specifically is the use of mobile phone communication tools. With this communication tool, both fish sellers and food sellers can communicate smoothly with both sellers and buyers. This smoother communication has a positive impact on the efficient use of time and ease of exchanging information. Not only that, the use of mobile phones not only provides benefits for fish and food entrepreneurs, but also fisher respondents indicate that using mobile phones can help find fish, such as the Fish Finder application. The results of this study also show that there are 14% of respondents state that technology does not help their business. According to them, without the help of cell phones, buyers will still come to their stores. This is understandable, considering that these respondents stated that they have been selling fish/food for a long time, so they already have regular customers.

In the past, cell phones were used to send and receive SMS, and MMS, and make outgoing calls or receive calls. However, now this tool is widely used for social media applications such as Facebook, Twitter, Instagram, and others. Likewise with the respondents of this study where 65% of respondents use social media to promote their business. Of all respondents who use social media as a simple promotion site, all (85%) respondents use the Facebook application. Apart from Facebook, the social media applications used and mentioned by respondents are Instagram, TikTok, and WhatsApp. However, even though they use social media on their mobile phones, they do not yet understand how to make sales in e-commerce. In addition, they have not consistently uploaded information and photos related to their products on social media platforms.

Respondents indicated that the use of mobile phones is the close use of technology in their business life. These phones are not only used to interact with suppliers or buyers through direct communication but also use social media to promote, inform and offer their products. The results of the analysis show that two main factors that support the use of technology in their business are: (1) motivation to develop their business, and (2) efforts to maintain seller-buyer interaction.

However, most of the respondents (82%) stated that the main obstacle in using cellular phones was the unstable network. In addition, there were respondents (11.5%) who stated that the obstacle in using mobile phone technology was the cell phone itself which had been owned for a long time so the ability of the tool itself was limited. They also said that they still use their old cell phones because they can still be used to interact and have limited funds. However, the outdated version of the cell phone has limited memory, which makes it impossible to install various social media or e-commerce platforms.

Questions about digitalization for blue economy SMEs were also posed to Arena, a technology company that aims to simplify the supply chain of fishery products by connecting

small-scale fishers to the global market through technology. Aruna was founded by three founders specializing in technology in 2016. Aruna started its initiative by being the first Indonesian startup focused on connecting local fishers to a wider market using advanced technology. Until 2021, Aruna empowers more than 26,000 fishers in twenty-seven provinces in Indonesia.

As a technology company, Aruna realizes that digitization for fishers is not an easy matter. Proficiency in technology needs to be taught to fishers as one of the blue economy actors. One of the ways that Aruna introduces technology to fishers is by recruiting "local heroes" in each of Aruna's operational areas. These local heroes are then tasked with interacting with the fishers by informing the fishers about a reasonable purchase price of fish based on the updated fish market price.

Aruna develops a platform that bridges fishers with buyers, both domestically and abroad. The application is currently only used by local heroes. However, Aruna is currently developing the application so that it can then be integrated into the fishermen's cell phones. Furthermore, the digitization process begins with an educational process for fishers by introducing an application that can inform updated fish prices. In addition, through local heroes, local heroes are also asked to be able to provide information to Aruna about the pattern of using fishermen's cell phones. Specifically, it is hoped that local heroes can find out what features are often used by fishers and whether fishers know other features that have not been tried on their cell phones.

Although there is still a long way to go, Aruna as an integrated fisheries startup from Indonesia is committed to streamlining the supply chain of fishery products by connecting small-scale fishers to the global market through technology so that it has an impact on ensuring safe and fair selling prices for fishers. To achieve this goal, Aruna is looking for local sons who are competent in technology to be recruited as local heroes. Local heroes are a special team that helps the process of digitizing fishery data for fishers. Not only that, but Aruna is also assisted by the Maritim Nusantara Lestari Foundation in educating Aruna's fishers so that they understand the benefits and uses of technology, especially the technology that Aruna has developed.

5. Propositions for Future Research

Literature and phenomena show that digital access is an important way for society to move toward a better future. Digitization is helping the lives of many people in work and life. Digitalization is becoming increasingly important when the COVID-19 pandemic hits the world, including Indonesia. Indonesian MSMEs are "forced" to be technology literate in this pandemic condition so that businesses can continue to survive where sales, interactions, and other things related to trading can be made online. However, digitization is not an effortless process like turning the hand so that everyone will use technology. The motivation of the blue economy MSME actors and the desire to maintain the interaction of sellers and buyers are the main factors that support the digitization of MSMEs. The literature shows the efforts made by the Indonesian government in efforts to digitize Indonesian MSME actors and especially blue economy MSMEs.

However, digital literacy is one of the obstacles in digitizing MSMEs in Indonesia, including the blue economy MSMEs in Bitung – Indonesia. Although blue economy MSMEs in Bitung usually use mobile phones, these phones are more dominantly used as a communication tool than as a tool to sell their products on digital platforms, either through e-commerce or social media. This is due to the lack of ability of MSMEs to utilize digital technology, both in marketing products and for other activities. The results of interviews with Aruna staff, where Aruna is Indonesia's first digital startup that focuses on the fisheries sector, also said that Indonesian fishers still have low digital literacy, so a "local hero" is needed to assist fishers in entering catch data into the application developed by Aruna. Therefore, the Indonesian government needs to continue to implement digital literacy education consistently and reach out to MSME actors in the territory of Indonesia. Not only that, but capital assistance also needs to be the government's attention, especially if the capital is used for digitizing MSME actors.

Based on the results and discussion above, this study proposes a research model and research proposition as follows (Figure 1).

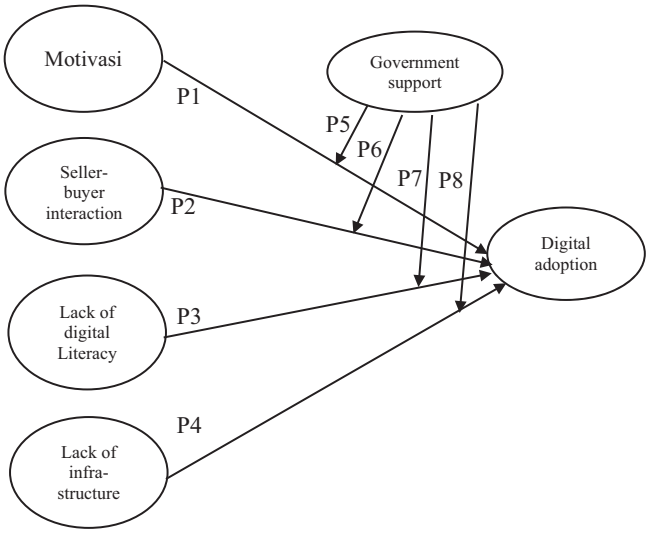

Figure 1: The Proposed Research Model

P1: There is a positive relationship between MSME motivation and digital adoption.

P2: There is a positive relationship between seller-buyer interaction and digital adoption.

P3: There is a negative relationship between a lack of digital literacy and digital adoption.

P4: There is a negative relationship between a lack of infrastructure and digital adoption.

P5: Government support strengthens the relationship between MSME motivation and digital adoption.

P6: Government support strengthens the relationship between seller-buyer interaction and digital adoption.

P7: Government support weakens the relationship between lack of digital literacy and digital adoption.

P8: Government support weakens the relationship between lack of infrastructure and digital adoption.

6. Conclusion

The COVID-19 pandemic is a disruption that has helped many people "realize" that technology can be a tool for sustaining everyday life, commerce, and many other things. The technology used by the Blue Economy SMEs in Bitung is the use of mobile phones and social media to promote their products. However, digitalization efforts are not only using mobile phones and social media but also how payment and ordering systems and other matters related to MSME trade can be done digitally. Education and support from the government, foundations, the private sector, and the community are needed so that digital life becomes an easier part of human life. The research is inseparable from two limitations. First, this research focuses on research respondents in the Bitung area, Indonesia. Future research can consider the use of other areas in Indonesia which are blue economy areas. Second, this study develops a model based on the results of the analysis of primary and secondary data. This research model needs to be tested empirically in subsequent studies.

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