

MSMEs E-Readiness and Its Contributing Factors: A Study of Batik Sekar Putri Cimahi

Lina Anatan, Wilson Bangun, Fransiscus Marcel

Faculty of Business, Maranatha Christian University Bandung

Corresponding author: lina.anatan@eco.maranatha.edu

Abstract. This study was conducted to determine Batik Sekar Putri readiness as MSME in responding to digital-based economic transformation. The main objective is to reveal problems faced specifically related to readiness in responding to digital-based economic transformation. According to the interview with the owner, it could be concluded that the use of ICT is still considered not optimal due to limited human resources competence and financial reasons. The level of readiness in facing the digitization is also considered to be moderate, the use of information technology, especially in terms of digital marketing is still limited to the development of the word press web which has not been used optimally and the use of social media such as Facebook and Instagram which is also still limited. The main factors considered to have significant contribution to improve MSMEs readiness are the availability of funds and the readiness of human resources. The moderate level of readiness of MSME in responding to the digitization of MSME is influenced by internal problems related to financial, human resources, operations, marketing and company management problems. MSME is faced with problems arising from external factors such as difficulties in accessing funding and increasingly competitive competition, and the Covid-19 Pandemic.

1. Introduction

Micro, Small and Medium Enterprises (MSMEs) have a significant contribution in supporting the Indonesian economy even in conditions where economic problems arise due to the Covid-19 pandemic. The Indonesian Young Entrepreneurs Association (HIPMI) stated that there was an increase in the contribution of MSMEs to GDP from 60% to 61% with the labor absorption rate growing up to 97% [9]. Of the many MSMEs engaged in various business fields, one of the industries that majorly contribute is the batik industry. Even the Government in particular prioritize to efforts to develop batik industry since it is considered to have great leverage in creating both value added, investment, impact on other industries, as well as related to speed in market penetration [2].

Behind the success of MSMEs in general, as well as MSMEs in batik industry, in contributing to economic growth through GDP (Gross Domestic Product), there are number of problems and challenges that must be solved and faced. The main problems faced by MSMEs in Indonesia are there are still many MSMEs who are lack of technological adoption, and lack of innovation which leads to the low productivity and competitiveness of Indonesian MSMEs [14]. It effects on the low competitiveness level of MSMEs products and it is unable to compete compared to similar products produced by other countries. The challenge that must be faced by MSMEs is the

emergence of the Industrial Revolution 4.0 era which is marked by the massive development of the use of supercomputers, smart robots, driverless vehicles, cloud computing, big data systems, genetic engineering to the development of neurotechnology.

Facing the global economy's challenges that are full of the use of information and communication technology, digital-based economic transformation is an important solution so that business actors might survive and compete with other business actors both domestically and internationally. However, it cannot be denied that the level of digitization of the MSMEs sector in Indonesia is still quite low. According to the data from the Ministry of Cooperatives and Small and Medium Enterprises as of June 2020, showed that data on MSMEs using digital platforms such as marketplaces and social media only reached 13%. The use of the digital platform is prioritized for product sales and promotion activities [7] .

According to the previous problem described, it is interesting to conduct a study on one of the Batik MSMEs in Cimahi City, namely Batik Sekar Putri. The main objective of this study is to reveal the main problems faced by business actors specifically related to readiness in responding to digital-based economic transformation as an effort to empower MSMEs in the era of the Industrial Revolution 4.0. Through this study, it is also expected that the study will be able to explore the important factors that contribute to increase MSMEs digitalization readiness so that productivity and competitiveness could be increased. This study was conducted to answer several research questions as follows:

1. How is the use of information and communication technology in Batik Sekar Putri?
2. What is the level of readiness of Batik Sekar Putri in responding to the digitization of MSMEs?
3. What are factors that contribute to the readiness of MSMEs to realize the digitization of MSMEs?

2. Literature Review

2.1. Overview of MSMEs in Indonesia and the Cimahi Batik Industry

Indonesian MSMEs are the sector that absorbs a large amount of labor in the labor market in Indonesia. According to the statistical data, 98.68% population of MSMEs in Indonesia is the non-agricultural sector with the largest employment rate in the two main sectors [2]. . The two sectors include wholesale and retail trade and the repair, car and motorcycle maintenance sector. This can be used as an indicator that MSMEs are a sector that has an important contribution and as a pillar of the Indonesian economy. As stated by [4] 99.98% of MSME units are a major contributor to GDP, reaching 57%.

One of the MSME sectors that has an important role is the batik industry sector. Batik has become an icon of cultural heritage and one of the characteristics of Indonesian culture. Batik has been designated as Masterpieces of the Oral and Intangible Heritage of Humanity since October 2, 2009 by UNESCO. The richness of Indonesian culture is reflected in the uniqueness of batik motifs owned by each region. The batik motif was born from the inspiration of natural wealth and local wisdom of the local community, as well as the batik motifs produced by Batik Cimahi. Cimahi Batik has been recognized as part of the Cimahi City Culture and tourism icon since 2009, since it was launched by the Tourism and Culture Office of the Cimahi City Government.

2.2. Digital-Based Economic Transformation in Industrial Revolution 4.0

Currently, MSMEs are faced with the challenge of digital-based economic transformation which is the main solution for MSMEs to survive and win the competition in the Industrial Revolution 4.0 era. The adoption of information and communication technology is absolutely a must for MSMEs, giving rise to a new concept known as MSME 4.0. MSME 4.0 is a concept that focuses on MSME efforts to carry out digital-based business transformation, namely using the internet to support business operational activities, especially in terms of promotion and marketing. This is important considering that in the era

of the Industrial Revolution 4.0, not only the operational activities of business actors have changed, but also changes in consumer shopping habits from offline to online [5]. In short, in this era the trend of the industrial world and people's lifestyles has changed towards the use of automation technology and cyber technology.

To be able to survive in today's business competition, business actors are required to be more creative and innovative by utilizing existing technological developments, for example utilizing IoT (Internet of Things). IoT is defined as a technology that allows humans to connect machines, equipment, and other physical objects with network sensors and actuators to obtain data and manage their own performance. This definition is the definition put forward by the McKensey Global Institute [5]. In the business world itself, the use of IoT has an impact on changes in the company's operational activities, for example related to issues of interoperability, information transparency, and independent decisions.

Some examples of digital-based economic transformations that have occurred in Indonesia could be explained in the retail business, transportation, finance, health and many more sectors. In the retail sector, for example, currently the use of marketplaces such as Tokopedia, Shopee, Lazada, Bukalapak. In the field of transportation, it is shown by our ease in utilizing online applications to take advantage of the transportation services that we will use, for example through the gojek and grab applications. Still related to the field of transportation such as purchasing plane or train tickets, we can use platforms such as Traveloka which not only provides convenience in accessing ticket purchases, but also hotel reservations as we can do through booking.com, agoda.com, or travel. pegipegi.com. Likewise in the field of finance and health, the birth of applications such as Halodoc or Financial Technology (FinTech) greatly facilitates consumers in meeting their desired needs.

3. SMEs e-Readiness and Influencing Factors

There are several definitions of e-readiness defined by several experts. Hartman et al. (2000) defines e-readiness as a measure of a company's readiness to exploit external opportunities arising from changes in the economic order. E-readiness as the capacity possessed by companies to participate in the global digital economy [8]. E-readiness is also defined as the level of readiness of a company to operate in an e-business and e-commerce market share. In general, we might define that e-readiness indicates the level of readiness of a business to participate in the digital economy [10].

To be able to participate in a digital-based economy, the success of e-readiness practices requires the readiness of every party involved in a company's value chain, and of course companies that adopt e-commerce and e-business must invest in increasing the readiness of the company partners involved. E-commerce adoption might be done through the use of several types of online facilities in the company's operational activities such as registering orders, making company advertisements, payment by electronic systems, electronic marketing, as well as deliveries that might be tracked online, to customer service support. While the implementation of e-business might be done through the use of several online facilities such as company operational activities to communicate and coordinate with suppliers and customers, for example related to production planning decisions, production scheduling, outsourcing, and other business processes.

There are several factors that are considered important in supporting the readiness of MSMEs to carry out digital-based business transformation, including infrastructure and technology, human capital, and information security. Internet infrastructure and technology is a very important factor, especially with regard to the implementation of e-business and e-commerce companies. This is due to the internet technology infrastructure is the main resource and potential source in supporting the company's business activities so as to increase the company's competitiveness. In fact, it is undeniable that MSMEs still face difficulties in accessing the right technology infrastructure due to the large investment required and limited human resources in mastering the required technology.

Human capital is related to the knowledge and skills possessed by the workforce. Labor is a capital resource that requires a fairly high investment as well. For example, when companies, in this case MSMEs, decide to adopt e-business and e-commerce, they need the support of a specialist in the

field of information and communication technology. In this case, knowledge, skills, work ethics are absolute qualifications that must be possessed by the workforce to support and improve the company's readiness to carry out digital-based business transformation.

With regard to information security, it is undeniable that the internet was developed to ensure the availability of data that can be accessed easily so that information security tends to be very lacking. This is a challenge for companies that decide to carry out digital-based business transformations, especially with regard to consumer data protection when they will conduct transactions with their companies. An example is how companies can guarantee that consumer financial data information will not fall into the hands of irresponsible parties.

4. Methodology

4.1. Research Object and Its Business Profile

This research was conducted on Batik Sekar Putri which is located on Jl. Permana Timur D-21, Citeureup Village, Kec. Cimahi- Cimahi City, West Java with the owner Mrs. Hj. Rienny Yuniarti, SP, M.MPd.. Based on the Company Profile, the company was founded in 2011 with the products produced include fabrics, clothes, pants, skirts, and crafts. Batik Sekar Putri has 10 permanent employees and 10 freelance employees when they started the business. Its types of business fields include batik and craft production, fashion (boutique), batik training and workshops. The business sectors are confection, trade, services and tourism. Batik Sekar Putri already has business legality as a sole proprietorship. The area where Batik Sekar Putri is located includes the office (which is behind the gallery and the main house), the gallery (a showroom for various products), the front and back rooms (which function as a cafe business under the name Pawon Batik), production room, prayer room, a place for ablution and toilets, and a two-story building at the very back which is planned to function as a mini museum.



Figure 1. Administration Office

Source: Site Visit

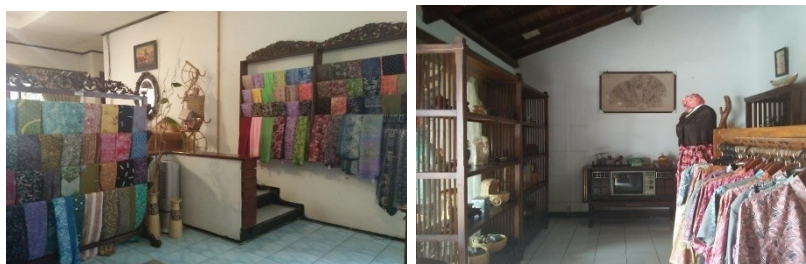


Figure 2. Gallery or Showroom

Source: Site Visit

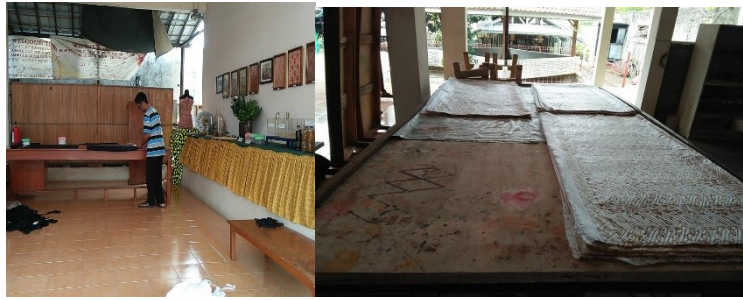


Figure 3. Production Room

Source: Site Visit



Figure 4. Production Process

Source: Site Visit



Figure 5. Rest Area and Play Ground

Source: Site Visit



Gambar 6. Front and Back Room (Saung)

Source: Site Visit

The main product produced by Batik Sekar Putri is batik cloth, both stamped and written batik, each of which has its own characteristics, uniqueness, and quality according to the standards set by business actors. Five superior motifs are in accordance with the Cimahi Batik motif, namely the Cirendeu, Ciawitali, Curug Cimahi, Pusedik, and Kujang motifs. The selling price is around IDR 80 thousand to IDR 2 million depending on the level of difficulty in making the batik pattern. In an effort to develop these batik motifs, Batik Sekar Putri has obtained more than 25 Intellectual Property Rights (HAKI) and several certificates of appreciation. Figure 7. shows an example of the Award Charter and the UMKM Award that Batik Sekar Putri has.



Figure 7. MSME Award

Source: Site Visit

Currently, Batik Sekar Putri has a total of 11 employees consisting of 3 administrative staffs, 3 production staff, 1 finance department staff, 1 gallery staff, and 2 marketing staff. The production staff are from Central Java, the owner provide them a place to live and eat. The production staff recruit from other region due to the difficulties in finding employees with the skills and expertise needed. The average education of employees is D3 and S1 depending on their placement, and employees are recruited based on references from other parties. In the previous recruitment process, Batik Sekar Putri relied on the job-street, however the problem arise was the high employee turnover rate.

Batik Sekar Putri has five superior motifs, namely Ciawitali Bamboo, Rereng Kujang, Sampeu Cirendeu, Military Education Center and Cimahi/Water Waterfall which are elements that are always present in Sekar Putri Batik. Batik Sekar Putri has produced 65 stamped batiks and 15 written batiks which still maintain the five characteristics of Cimahi batik. Some of the new Cimahi Batik motifs that have been successfully developed include Sekar Butterfly Ngibing, Sekar Hanjuang, Sekar Kembang Baros, Sekar Kembang Melati and Sekar Awi Ligar for written Batik. As for the Batik stamps, they are Sekar Daun Sampeu Cirendeu, Sekar Awi Alit and Sekar Pakarang and Sekar Kujang Liris. The average selling price of Sekar Putri Batik is IDR 130 thousand to IDR 5 million [1].

Data collected through in-depth interviews with business owners, Mrs. Hj. Rienny Yuniarti, SP, M.MPd. Table 1 shows the profile of business owners, and Table 4.2 describes the business profile of Batik Sekar Putri.

Table 1. Informat Profile

Name	Hj. Rienny Yuniarti, SP, M.MPd.
Address	Jl. Permana Timur D-21 Kelurahan Citeureup, Kec. Cimahi- Kota Cimahi, Jawa Barat
Education	Master Degree
Status	Owner
Email	official.sekarputri@yahoo.com batiksekarputri@gmail.com

Source: Data Proceed

Table 2. Business Profile

Company name	Puri Batik Sekar Putri
Owner	Rienny Yuniarti
Company Address	Jl. Permana Timur D-21, Kel Citeurep Kec. Cimahi Utara, Kota Cimahi, Provinsi Jawa Barat, Indonesia
Website and social media	Website = www.batiksekarputri.wordpress.com , www.puribatiksekarputri.com Instagram = Batik Sekar Putri Facebook = Batik Sekar Putri Twitter = @SekarputriBatik Whatsapp = 0812 1433 8045
Type of business	Batik craft, fashion, training and workshop
Business Field	Convection, trade, service and tourism
Legal aspect	Individual
IPR	IDM000295107
Batik Mark	BMI-12.14.124 & BMI12.14.125
Established since	2011
Business equipment	Batik and craft showroom, workshop, batik and non batik convection, educational training and batik tourism
Product Category	Batik Fabric = Written batik, printed batik, stamped batik
	Craft = Accesories, shoes and sandals, wallets, bags, handphone case, bed sheets, pillow and bolsters case, headscarves, dolls etc
	Store = Muslim clothing, headscarves, shirts and pants, skirts, kebaya, children's clothing, teenagers and adults
	Convection = Procurement of uniforms for batik and non-batik cloth made from silk, cotton, polyester etc. for schools, companies, institutions, agencies, offices, clubs, certain community groups and the general public.
	Training = Educational training and batik tourism for schools, companies, institutions, agencies, offices, clubs, certain community groups and the general public
	Non Batik = Batik combination shirts, t-shirts, jackets, uniforms, sports, hats, blues
Portofolio	Yayasan Al-Irsyad Kabupaten Bandung Barat Yayasan Darul Hikmah, Kota Cimahi Yayasan Alamy, Kabupaten Subang, Yayasan Widya Dharma, Kota Medan PT Freeport, Kota Jayapura PT Hitachi, Kalimantan Timur RS. Beureu, Kalimantan Timur Lativi, TV One, Kota Jakarta Sinemart, MD Entertainment Kota Jakarta Yayasan Taruna Mandiri, Kota Cimahi

	Yayasan Cipta Cendikia Indonesia, Kota Cimahi Yayasan Bunda, Kota Jakarta Yayasan Ar Rahman, Kota Cimahi PT Sorber, Kota Jakarta Gemilang Mutaqin, Kabupaten Bandung Barat Dinas Pendidikan Kota Cimahi Mojang Jajaka Tingkat Kota Cimahi 2013 Mojang Jajaka Tingkat Provinsi Jabar 2013 Wardrobe Putri Indonesia Provinsi Jabar dan Nasional Wardrobe Putra Putri Nasional Honda AHM SMK Indramayu Koperasi Aliansi Syariah, dll
Location Area	Office, Gallery, Front and Back Saung, Rest Court, Rest Room, Musholla, Canteen, Toilet and Wudlu Place

Source: Company Profile

4.2. Data Collection Method

The data used is primary data and secondary data. Secondary data was obtained through a literature study, while primary data was collected through interview with the owner of the Batik Sekar Putri, Mrs. Rienny Yuniarti. A subsection

4.3. Data analysis technique

This study used descriptive statistical analysis techniques to analyze research data. The description of a set of data visually is done through an essay in tabulation and writing or text. This paper consists of important sections that describe the contents of the data as a whole.

4. Data Analysis Results

Table 3 discusses the situation analysis of Batik Sekar Putri which was obtained based on the results of interviews with informants. Based on the situation analysis summarized in Tabel 3, it could be concluded that the MSMEs are still managed in a simple way and there are several problems, especially related to aspects of human resources, finance, production, marketing and organizational management. As additional information, in the current pandemic conditions, another problem that arises is the temporary suspension of production and sales to reduce operational costs. Sales by opening a gallery or showroom are made based on an appointment with prospective buyers to reduce MSME operational costs. Under these conditions, in order to maintain the viability of the business, the owner sells part of the assets owned to claim the shortage of operational costs.

Table 3. Analysis of Situation

ORGANIZATIONAL ASPECTS

1	GENERAL	
	a. Business field b. Commodity c. Established d. Location e. Building area for business (Please describe the use of the building, eg production process room, administration)	Convection, Trade, Services and Tourism Batik and craft, fashion (boutique), batik training and workshops.. 2011 Jl. Permana Timur D-21, Kel Citeurep Kec. Cimahi Utara, Kota Cimahi, Provinsi Jawa Barat, Indonesia house (Gallery, Workshop)
2	FINANCIAL	
	a. Owner's equity b. Loan capital c. Fixed capital/investment d. Working capital e. Average sales per month f. Average operating costs per month g. Average loss/profit per month	House (Gallery, Workshop) IDR 1,2 billion House Opetasional 40-100million (normal condition) 50 % to 70 % of total sales Profit = 20-35% Loss = 10 % (kondisi tidak ada pembeli)
3	MARKETING	
	a. Sales volume per month b. The basis for determining the selling price c. Product distribution (local/domestic/international), Please mention..... d. Marketing channel	60%, product price IDR 130.000 40% product price > IDR 500.000 Local and domestic (seminar, organization dll) Social Media
4	PRODUCTION	
	a. Material b. Main supplier c. Alternative supplier d. Product quality e. Equipment f. Average production volume per month g. Produced production time	Fabrics, dyes, wax Pekalongan Yogyakarta Lowest (price IDR 130k), Medium (price IDR 200-300k), High (price >IDR 5 million) <i>Canting, kompor, endar (wajan), drum</i> Regular 10 per day or 300-400 per month Written Batik (4 months), Stamp (2 days with 2 workers)

	h. Quality control carried out	Manual control by owner
5	ADMINISTRATION Administration room Production room Storage room Show room: Internet facility	Available/not available Available Available Available Available Available (joins personal use)
6	MANAGEMENT a. Planning b. Task division c. Controlling	Available Available Available /CCTV
7	PERSONALIA a. Employee's average education b. Number of employee c. Basis of recruitment d. Employee Training and Development e. Employee placement f. Employee turnover g. Regeneration	SMA, D3, S1 11 Reference Not available Based on employee's educational background High enough Not available
8	BUSINESS PROBLEMS AND OBSTACLES Please explain briefly, what are the main problems and obstacles (related to aspects of human resources, finance, operations, marketing, administration, and business management that are considered to be prioritized to ensure business continuity:	
	Human Resource	Difficulty finding workers from the surrounding the MSME's location Recruitment of workers through job vacancies is often considered ineffective due to the high level of turnover is Difficulty in recruiting employees who have batik skills
	Financial	Bookkeeping is still done traditionally There is no separation between personal and business assets Difficulty getting access to funding
	Operation	The lack of funds causes the ability to buy equipment is slow so it is difficult to add motives There is no professional quality control yet Production scheduling and inventory control have not been carried out yet
	Marketing	There is a marketing department that is responsible for working in the field and online however it has not been used optimally.
	Administration	Simple administration
	Business Management	Family business
	Others	The need of skill and competency development, especially with regard to mastery of digital technology so that its use can be optimized for marketing activities

Source: Data Proceed

The answers to statements related to digital technology readiness, readiness to adopt e-commerce, and readiness to adopt e-business based on perceptions of business actors are summarized in Table 4. Based on the answers obtained, the level of readiness for digital technology adoption is still low, for the level of readiness for e-commerce adoption, business actors provide neutral and high answers for readiness to make sales to consumers via the internet. In practice, business actors have used Instagram and Facebook to market their products, however since the pandemic the two accounts have not been operated due to the temporary suspension of production activities and temporary gallery closures. For visitors who will come can make appointments directly with business actors. Regarding the level of readiness for e-business adoption, business actors gave a neutral answer.

Table 4. Level of Digitalization Readiness

Statements	Q L	L	N	H	QH
Digital Technology Readiness Level					
MSME is ready to use digital technology to manage production planning		√			
MSME is ready to use digital technology to manage inventory		√			
MSME is ready to use digital technology for collaboration			√		
MSME is ready to use digital technology for production scheduling		√			
MSME is ready to use digital technology for outsourcing activities			√		
E-Commerce Adoption Readiness Level					
MSME is ready to accept purchases from consumers via the internet			√		
MSME is ready to make online sales to consumers via the internet				√	
MSME is ready to offer consumer services via the internet			√		
E-Business Adoption Readiness Level					
Consumers are ready to interact via electronics			√		
Suppliers are ready to interact via electronic			√		

Source: Data Proceed

In relation to several open-ended questions of the factors contributing to the readiness of business actors to adopt information technology and technology, the answers given by business actors are summarized in Table 5.

Table 5. Factors Contributing to MSMEs E-readiness

Level of readiness for business transformation	
Technology infrastructure	Internet facilities are available and used for business purposes
Human capital	The employee who master information technology is still limited
Information security	-
Efforts to overcome the problem of resistance to change	
Persuasive support and encouragement for human resources to develop skills and capabilities, especially with regard to the use of digital technology	
The role of business owners in digital business transformation	

Efforts to provide facilities that support the digital-based business transformation process so that business development can be carried out
An important factor to support the improvement of MSMEs in carrying out digital-based business transformation
The availability of funds and the ability of human resources are very important in determining the success of MSMEs in carrying out digital-based business transformations

Source: Data Proceed

Discussion

Based on the data obtained from interviews with business actors, some information was obtained regarding various problems faced by business actors, especially those related to problems in the fields of human resources, finance, marketing, production and business management which is run quite simply. In fact, business actors have quite qualified business experience in their fields, it could be seen from the awareness of business actors in patenting their products and the importance of copyright in providing excellence and increasing the competitiveness of their products. Another reason could be seen from the planning of business development towards batik education tourism through the plan to build a mini museum which is being pioneered and the development of other business units engaged in the culinary field, which are currently being implemented but not yet fully as planned.

Specifically, it could be explained that the main problem faced by business actors related to the field of human resources is the difficulty in recruiting new employees due to the lack of interest of the current young generation regarding the batik industry so that employee turnover is quite high. To overcome these problems, business actors decide to recruit based on the recommendations of known people or recruit people from outside the region such as Central Java who may be more familiar with the batik industry.

Regarding the financial sector, the main problem faced by business actors is that their financial records are still simple and business actors have not separated personal assets and business assets so that in conditions where demand is minimal, business actors must be willing to sacrifice their assets to finance their business operational costs. In the field of production, the main problem faced is related to human resource problems, namely the difficulty of getting skilled workers so that the development of motifs and product designs is very slow, in addition to the limited working capital to buy stamps and add variations to batik motifs is also very limited.

In relation to the marketing aspect, the main problem faced by the company is the lack of mastery of technology so that the use of digital technology in marketing products is also still limited. In relation to organizational management, the main problem faced is the simplicity of the organizational structure owned by business actors. In other words, the organizational structure that is owned is a traditional organizational structure where all decisions and responsibilities lie with the business owner. The traditional organizational structure is advantageous in terms of speed of decision making, however it will be a problem if the company has grown into a larger business, the burden will be heavier on the business [8]. Overall, it can be concluded that the level of readiness of MSME Batik Sekar Putri in conducting digital-based business transformation is still quite low or at a moderate level. The main factor that must be considered to realize the success of business transformation efforts is

a large amount of capital, both in terms of funding and mastery of skills and knowledge of all parties involved in MSME operational activities [1].

5. Conclusion

Conclusions that can be summarized from the results of this study are: 1) The level of readiness of Batik Sekar Putri in utilizing information and communication technology in its business operations is still at a moderate level or has not been used optimally. For example, the use of social media such as Instagram and Facebook that has not been optimally used and the web that has not been used optimally as well. 2) In relation to the first conclusion, it could be concluded that the level of readiness of Batik Sekar Putri in facing digital-based business transformation is also considered to be at a moderate level, considering that there is no workforce specifically responsible for issues related to the company's information system. 3) The factors that are considered to have the most significant contribution to the success of the digital-based business transformation process are the mastery of capital and the readiness of human resources both related to knowledge and skills about digital technology itself.

To be able to adapt to changes that occur and carry out digital-based business transformation, the main thing that needs to be done is to find solutions to internal problems faced, especially limited resources. The main solution is related to limited funding, MSME is advised to be more proactive in collaborating with external parties such as banks, while for the solution to limited resources related to knowledge and skills, business actors can cooperate with external parties both in the same industry or in the same industry. from universities as knowledge producers through knowledge transfer activities from universities to MSMEs. Future research can focus on developing a model of MSME readiness in responding to digital-based economic transformation as well as a model for the effectiveness of knowledge transfer from universities to MSMEs.

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