MSMEs' Technology Readiness: Indicator and Index in Adopting Digital Marketing

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ABSTRACT

The presence of e-commerce accompanied by online shopping trends has excellent potential to move and drive the economy of micro, small and medium enterprises (MSMEs). Digital marketing utilises electronic media to promote products or services to attract customers' attention and allow customers to know more about the brand through a digital platform. For that reason, MSMEs must be able to switch from a conventional marketing system to a digital marketing system and ready to run their business with it. Therefore, the authors develop MSMEs' technology readiness to adopt digital marketing technology extending from the readiness indicators. The result obtained 21 indicators to measure MSMEs' technology readiness to adopt digital marketing platforms. Digital marketing platforms such as e-commerce and social media are relatively accepted and ready to be adopted by MSMEs for their existence and business progress in the digital era.

Keywords: Technology readiness, small and medium enterprises, digital marketing.

1. INTRODUCTION

Digitalization has now become a phenomenon that affects all aspects of individual life, organizational operations, and society [1]. Advances and utilization of technology are beneficial to improve competitiveness and the quality of services and products. Digital marketing utilizes electronic media to promote products or services to attract customers' attention and allow customers to know more about the brand through digital media [2]. The presence of e-commerce, accompanied by online shopping trends has excellent potential to move and generate the economy of micro, small and medium scale enterprises (MSMEs), including in Indonesia. The use of digital marketing technology for MSMEs is critical to increasing their competitiveness in the global market [3]. The digital era has expanded the potential for business development, including for MSMEs to sell their products more widely. In the context of agricultural and food products, [4] said that as many as 21% of e-commerce users stated that they had used the platform for shopping for their daily needs. Therefore, MSMEs should have changed from a traditional marketing system to a digital one. However, MSMEs are currently still facing problems in terms of marketing [5]. These limitations include using digital technology to increase business competitiveness [6].

The previous research found that the readiness of MSMEs to adopt e-commerce technology is at a moderate level [7]. This research used the TRI version 1.0 approach as a method. However, in 2015, the TRI 1.0 was refined to become TRI 2.0 by [8]. The development of TRI 2.0 is a demand for changing current conditions, which causes several points to be corrected and reviewed to be more relevant. Changes in the technological environment have caused something previous to become a necessity, one of which is the smartphone [8]. Nevertheless, the readiness indicators updated by [8] are still general, either for the user as a subject or for technology as an object, this approach is hard to immediately applied to test certain technologies for specific user categories such as MSMEs in context to implement digital marketing platforms on their business.

Nowadays, few studies refer to the readiness index for digital marketing technology adoption at the MSMEs level in developing countries, such as Indonesia [9]. To bridge that gap, this study aims to reveal the MSMEs' readiness indicators to adopt digital marketing platforms (such as Grab food, Go-Food, Shopee, Bukalapak, and Tokopedia) and how ready they are to implement it. In

addition, the contribution of this research is to develop indicators of TRI for the application of MSMEs. Furthermore, this study can use as a reference in developing an e-commerce platform for MSMEs. So, the business capacity of MSMEs in the food sector can be increased and strengthened to face business competition in the digital era.

2. LITERATURE REVIEW

2.1. Digital Marketing

A digital platform is a device (hardware and software) of a centralized technology system that provides core functionality [10]. In terms of marketing in the digital era, we will find several terminologies such as e-markets, e-commerce, and digital marketing. e-Market is a centralized single-sided or multi-faceted platform, which provides the functionality to support the transaction phase of the economy fully or partially [11]. Meanwhile, [12] defined e-commerce as an electronic tool that supports the stages of economic transactions. This can occur through digital platforms or e-markets, either multilaterally or bilaterally (e.g electronic data exchange where documents are communicated directly between two companies). Then, digital marketing will cover all activities to promote products or services using digital advertising [13].

In other sources, different etymologies will be found, such as e-marketplace [14] [15] or marketplace [16], as well as digital market [12]. However, all these words still have the same meaning as electronic markets or e-markets. Furthermore, according to [12] e-markets provide two things: First, e-markets as a single and centralized platform that provides a functional platform to support all phases of economic transactions (information, contact, and settlement) fully or partially. Second, e-markets are decentralized if there are no intermediaries, so in this case, e-markets are not considered platforms.

Even though digital platforms refer to sophisticated information technology, it seems that technology itself is not the main obstacle [10] [12]. Among the many digital marketing platforms, MSMEs need to sort and choose the right one according to their product and business characteristics, such as service reliability in accuracy, speed, and the ability to reach a broader range of consumers. There is also a dynamic and consistent innovation to attract target consumers by conducting promotions and offers [17]. The goal is to provide the best service and maximum satisfaction for its customers. Another important thing that needs to be considered is the terms and conditions from the developer, which are acceptable and do not burden MSMEs so that both parties benefit proportionally.

2.2 Technology Readiness

Developments in technology and the emergence of various new concepts in the business world require that people, both personally and in organizations, need to be prepared to adapt to these novelties. The process of adaptation from traditional methods to a digital direction requires many considerations such as individual character, level of understanding of technology and information, the size of the company's organization, and environmental conditions [18]. Technology Readiness Index (TRI) is a method used to determine and measure a person's tendency to accept and use technology to achieve a specific goal [19]. Changes in the technological environment that occur cause something previously unfamiliar until now to become a necessity, one of which is one such as a smartphone. For this reason, [8] then refined and adjusted the indicator items on the TRI according to the most current conditions, in the future known as TRI 2.0.

A person's ability to use technology can be influenced by four dimensions of character: optimism, innovation, discomfort, and Insecurity [19]. The variables of optimism and innovation are contributory dimensions that give a positive value to the technology adoption process. The contributor dimension encourages people to adopt the technology by building a positive perspective. Meanwhile, the discomfort and insecurity variables are inhibitor dimensions that negatively affect the technology adoption process. The inhibitor dimension is an obstacle to adopting technology. The readiness index is built from the four variables into three categories as follows:

1. Low Technology Readiness Index
   User readiness is considered in the low category if the readiness index obtained in the TRI calculation is equal to or less than 2.89 (TRI = < 2.89);
2. Medium Technology Readiness Index
   User readiness is considered in the medium category if the readiness index obtained in the TRI calculation is between 2.90 to 3.51 (2.90 =< TRI =< 3.51);
3. High Technology Readiness Index
   User readiness is considered high if the readiness index obtained in the TRI calculation is more than 3.51 (TRI > 3.51).

3. METHODOLOGY

This study was conducted in Yogyakarta, Indonesia, from February to July 2021. The respondent is an owner or manager of micro, small and medium-scale enterprises (MSMEs) focusing on food the sector. The food sector was chosen because food products have unique characteristics (bulky, voluminous, perishable) and require more complex handling than non-food products. The sample size is one of the essential and first steps in designing the research [20]. According to Roscoe, analysis can be feasible if a sample size ranges from 30 to 500 [21]. This study collected 177 samples selected

using purposive random sampling (non-probabilistic sampling) at a 95% confidence level.

The data collected were tested for the level of validity and reliability. Validity and reliability tests were carried out using SPSS software tools. Furthermore, valid and reliable data were analyzed using the Technology Readiness Index (TRI) 2.0 method. The main construction in the TRI 2.0 method is based on four-variable from potential users, namely optimism, innovativeness, discomfort, and insecurity [8]. The optimism variable helps capture positive feelings towards technology, while innovation describes the tendency to adopt new technology when faced with challenges. In contrast, the variable of discomfort represents feelings of anxiety when dealing with new technology, and the variable of insecurity measures the level of distrust of new technology [19].

The questionnaire instrument was prepared concerning the indicators set by [8] with several adjustments according to the research's conditions, situation, and direction. Referring to these references, indicators for each variable of MSMEs' readiness to implement a digital marketing platform are compiled, as shown in Table 1. The indicators consist of 21 points with the following details: five indicators for the Optimism variable, six indicators for the Innovation variable, four indicators for the Discomfort variable, and six indicators for the Insecurity variable.

3. RESULTS AND DISCUSSION

further improve their competitiveness by innovating and developing creativity to keep up with the times. The use of the internet in business has changed from its function as a tool for the electronic exchange of information to becoming a tool for applying business strategies, such as marketing, sales, and customer service. MSME actors have digital connectivity using social media and E-Commerce as information and promotion centers. Social media such as Whatsapp, Tiktok, and Instagram provide direct connectivity between potential buyers and business actors to meet each other virtually. In addition, by using social media, business actors can promote all forms of products or services that they want to offer to a broader market. Business actors also take advantage of various existing e-commerce such as Tokopedia, Shopee, Bukalapak, Lazada, Blibli, and JD.ID. The profile of respondents is presented in Table 2. Regarding Table 2, The number of samples in each category is the same as the percentage of the population, where the number of micro-businesses is 65%, small-businesses are 29%, and medium-businesses are 5%. So, this data can describe and represent the actual MSME population.

Based on the research results, as many as 91% of MSMEs already use e-commerce, such as Grab food, Go-Food, Shopee, Bukalapak, and Tokopedia, to promote and offer their product to the customer. Almost all MSMEs in the food processing sector have adopted digital marketing to promote and offer their product to the consumer. They were utilizing digital marketing to make a profit and as a strategy to communicate with

Table 1. MSMEs' technology readiness indicator to adopt a digital marketing platform (DMP).

Variables	Indicator	Code	Reference
Optimism	DMP contributes to the sale of a product	Opt 1	Parasuraman and Colby (2015)
	DMP provides many alternatives to transact	Opt 2	Parasuraman and Colby (2015)
	DMP can provide more flexibility and control	Opt 3	Parasuraman and Colby (2015)
	DMP can make businesses more productive and efficient	Opt 4	Parasuraman and Colby (2015)
	DMP platform provides convenience to consumers	Opt 5	Sellappan and Shanmugam (2020)
Innovativeness	DMP can be a solution for own business	Inn 1	Parasuraman and Colby (2015)
	DMP is easy to implement in own business	Inn 2	Parasuraman and Colby (2015)
	DMP can execute without the help of others	Inn 3	Parasuraman and Colby (2015)
	DMP is part of technology development	Inn 4	Parasuraman and Colby (2015)
	DMP can execute without many obstacles	Inn 5	Sellappan and Shanmugam (2020)
	DMP is a response to consumer behavior in the digital era	Inn 6	Sellappan and Shanmugam (2020)
Discomfort	DMP only benefits certain parties	Disc 1	Parasuraman and Colby (2015)
	DMP is not easy to understand	Disc 2	Parasuraman and Colby (2015)
	DMP does not suit business needs	Disc 3	Parasuraman and Colby (2015)
	DMP is too complicated to implement	Disc 4	Parasuraman and Colby (2015)
Insecurity	DMP can create dependence on technology	Insc 1	Parasuraman and Colby (2015)
	DMP can lead to dangerous situations	Insc 2	Parasuraman and Colby (2015)
	DMP can reduce direct social interaction	Insc 3	Parasuraman and Colby (2015)
	DMP cannot be trusted just like that	Insc 4	Parasuraman and Colby (2015)
	DMP can be a doorway to misuse of essential data	Insc 5	Sellappan and Shanmugam (2020)
	DMP can cause harm to businesses	Insc 6	Sellappan and Shanmugam (2020)

3.1 Profile of MSMEs

As part of the national economy in today's digital era, micro, small and medium enterprises (MSMEs) must

millions of people about their products and create new market opportunities [22]. In terms of business established, most MSMEs are less than five years. This means that most of them are start-ups.

Table 2. Profile of MSME

Profile of MSME		Number
Age of Owner/Manager	< 29 years ("Z" Generation)	40
	29-41 years ("Y" Generation)	52
	> 41 years ("X" Generation)	85
Business category	Micro	119
	Small	48
	Medium	9
Business established	< 5 years	114
	5-10 years	29
	> 10 years	34
Marketing Platform	Social Media	103
	e-Commerce	16
	Social media & e-Commerce	58

Meanwhile, the mature position became the second-largest number. Ripe is a company that has been around for a long time and aims for maximum efficiency [23]. On the other hand, it is essential to look at the age of the owner or manager who is the respondent. Respondents over 41 years of age are Generation X who are not directly in touch with a digital marketing platform. Respondents with ages between 29 – 41 years are Generation Y. Respondents aged under 29 years are Generation Z. The latter have been in touch from the beginning with the digital marketing system from an early age. Although the number of Generation Z is not very large, their efforts have adopted a digital marketing platform.

3.2 Indicator of MSMEs' readiness

The use of digital marketing technology for MSMEs is essential to increase competitiveness in the global market [24]. It allows for fast and cost-effective sending and receiving offers and supports paperless transactions. To determine the level of the MSMEs for implementing the digital marketing platform, it is necessary first to determine the readiness indicators. Validity and reliability tests are fundamental to ensure that each indicator that has been designed in Table 1 is correct and accurate. The validity test measures the level of validity of the indicators used and the reliability test measures the level of accuracy or accuracy of the indicators used.

Based on Table 3, the Pearson-Correlation (r-count) value on each indicator item is greater than 0.2787 (r-table), with a significance value of 95%. Therefore, it said that all status indicators are valid. Then the Cronbach's Alpha value is above 0.70, which means that all indicators have high reliability [25]. Thus, all the indicators can measure MSMEs' readiness for digital marketing technology.

3.3 MSMEs Readiness Index

The readiness index of food MSMEs to implement digital marketing in running their business was 3.55 (on a 1-5 Likert scale). The index value is obtained from the

Table 3. Validity and reliability of the readiness indicator

Variables / Indicators	Pearson-Correlation	Sig. (2-tailed)	Cronbach's Alpha	Result
Optimism (Opt)				
Opt 1	0.569	0.000	0.752	Valid, Reliable
Opt 2	0.525	0.000		Valid, Reliable
Opt 3	0.793	0.000		Valid, Reliable
Opt 4	0.801	0.000		Valid, Reliable
Opt 5	0.801	0.000		Valid, Reliable
Innovativeness (Inn)				
Inn 1	0.478	0.000	0.738	Valid, Reliable
Inn 2	0.762	0.000		Valid, Reliable
Inn 3	0.807	0.000		Valid, Reliable
Inn 4	0.620	0.000		Valid, Reliable
Inn 5	0.719	0.000		Valid, Reliable
Inn 6	0.531	0.000		Valid, Reliable
Discomfort (Disc)				
Disc 1	0.728	0.000	0.736	Valid, Reliable
Disc 2	0.665	0.000		Valid, Reliable
Disc 3	0.837	0.000		Valid, Reliable
Disc 4	0.770	0.000		Valid, Reliable
Insecurity (Insc)				
Insc 1	0.447	0.001	0.740	Valid, Reliable
Insc 2	0.717	0.000		Valid, Reliable
Insc 3	0.780	0.000		Valid, Reliable
Insc 4	0.610	0.000		Valid, Reliable
Insc 5	0.668	0.000		Valid, Reliable
Insc 6	0.709	0.000		Valid, Reliable

calculation of the readiness index value of each variable. The value of each variable is obtained by calculating the Likert scale value for each statement multiplied by the stated value. The index value can be categorized as low (index value: equal to or lower than 2.89), medium (index value between 2.89 and 3.52), and high (index value: equal to or greater than 3.52). The index value is medium to high. The index cannot be separated from the optimism of MSMEs, as shown in Table 4. Of the four variables

measured, optimism has the highest contribution compared to others, 30.7%. In other words, most MSMs have confidence, that the presence of digital marketing technology can increase the control, flexibility, and efficiency of their business.

Table 4. Readiness index of MSMEs.

Dimension	Variable	Index	Percentage
Contributor	Optimism	1,09	30,70%
	Innovativeness	0,84	23,66%
Inhibitor	Discomfort	0,88	24,79%
	Insecurity	0,74	20,85%
Total readiness index		3,55	100.00%

The optimism variable helps capture positive feelings towards technology, while innovation describes the tendency to adopt new technology when faced with challenges. Both are contributors to the acceleration of the adoption of digital marketing. The variable of discomfort represents feelings of anxiety when dealing with new technology and insecurity to measure the level of distrust of new technology. Discomfort and insecurity are variables that slow down or prevent adopting digital marketing processes at MSMEs of food processing. In terms of readiness, contributors get the dominant portion with a total percentage of 54.36%. Optimism and innovation are contributors that give a positive value to the technology adoption process. Therefore, contributors will encourage people to adopt the technology by building a positive perspective. Meanwhile, discomfort and insecurity are inhibitors that negatively value the technology adoption process. Therefore, the inhibitor is an obstacle to adopting technology. Based on Table 3, it can be said that MSMEs tend to have a positive attitude toward digital marketing technology. Currently, MSMEs are relatively accepting and ready to adopt digital marketing technology, such as e-commerce and social media, for their business's existence and progress in the digital era.

4. CONCLUSIONS

The readiness of MSMEs to adopt digital marketing technology can be measured using 21 indicators that describe the variables of optimism, innovativeness, discomfort, and insecurity. The variable of Optimism and Innovation, which are contributors to readiness, have 5 and 6 indicators, respectively. Furthermore, the variable of Discomfort and Insecurity, which are inhibitors to readiness, have 5 and 6 indicators, respectively. Based on these indicators, it is known that in the adoption of digital marketing technology, MSMEs are at medium to high level of readiness with an index of 3.55. Optimism has the most dominant contribution to the achievement of the readiness index, so it can be said that MSMEs have confidence that digital marketing technology can increase their business's control, flexibility, and efficiency. It shows that currently, MSMEs are relatively ready to adopt digital marketing technology, such as e-commerce and social media, for the existence and progress of their business in the digital era.

AUTHORS' CONTRIBUTIONS

The first author contributed to drafting and designing the research framework, analysing and interpreting the data, and writing the paper. The second author contributed to the collecting and processing of data. Finally, the third, fourth, and fifth authors are responsible for the methods and depth of the research.

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