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DOES SOCIAL MEDIA AFFECT PERFORMANCE IN E-COMMERCE BUSINESS? THE ROLE OF CUSTOMER MANAGEMENT

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Abstract

Technological innovation can help a business gain maximum profits. Previous studies have proven that social media is vital for improving performance, but research gaps remain. This research aims to examine the influence of social media on enhancing performance and analyze the moderating role of customer management. The unit of analysis in this research is micro-scale e-commerce businesses in Indonesia. This business is exciting to study because most households in Indonesia depend on this business for their livelihood. This business has also saved the Indonesian economy from recession. The data used in this research is secondary data totalling 11,077 units and was processed using the STATA 17 application. Because the dependent variable in this research is dichotomous, this research uses binary logistic regression analysis. The research results show that social media has a positive effect on performance. However, customer management was unable to moderate the relationship. These findings support the Resource-Based View theory by highlighting the importance of technological innovation in the form of social media, which can be built in such a way as to achieve sustainable competitive advantage and ultimately increase performance. Practically, this research can be a reference for entrepreneurs to optimize the use of social media and improve customer management so that maximum profits can be realized.

Keywords: performance, micro-scale e-commerce businesses, social media, customer management, binary logistic regression

1. Introduction

The main objective of establishing a business unit is to obtain maximum profits. To achieve long-term success, a company must always focus on improving performance by taking advantage of various existing opportunities. Moreover, in Indonesia, most households depend on micro and small-scale businesses to earn income (Trinugroho et al., 2022). Micro and small companies have saved the Indonesian economy from recession, including during the Covid-19 pandemic (Sulastri, 2022). Micro and small businesses are significantly able to absorb labour (Rahman et al., 2017), able to adapt quickly to market changes (Hillary, 2017), and help diversify the economy and increase economic inclusion (Haryono, 2022).

Micro-businesses' success as an economic buffer during the pandemic is driven by the role of technology (Papadopoulos et al., 2020). By utilizing digital solutions such as e-commerce, social media, and online platforms, micro-businesses can stay connected with customers, expand market reach, and run operations efficiently. Technology also enables them to adopt new business models, such as online delivery, last-mile services, and electronic payments, thereby increasing competitiveness and growth opportunities amidst physical restrictions. Suppose a business unit does marketing by utilizing the internet; even though payment and delivery systems are still

manual, this business unit is included in the e-commerce business unit category (BPS, 2021; OECD, 2013). Several studies have shown the importance of technology for micro, small, and medium enterprises in increasing competitiveness and performance, including (Charoensukmongkol & Sasatanun, 2017; Jung & Shegai, 2023; Trinugroho et al., 2022; Zhou et al., 2019).

Technology helps humans work more efficiently in many fields, including business. Social media is a form of technological innovation widely applied in the business world. This media suits micro-scale firms because it is easy and cheap. Micro businesses can reach more consumers through social media than traditional or manual media. Denicolai et al. (2021) emphasized that business units that were run traditionally with a relatively limited geographic reach were no longer relevant to current developments. In Indonesia, social media widely used by micro businesses is Facebook, Instagram, Twitter, and others (BPS, 2021). The use of social media is essential, especially for companies that target customers who are social media users (Charoensukmongkol & Sasatanun, 2017).

Indonesia provides excellent potential for e-commerce businesses to develop. A British media company, "We Are Social," reported that internet users in Indonesia as of January 2023 were 212.9 million, or 77 percent of Indonesia's population. The number of internet users with active social media accounts has reached 167 million. They access the internet via cellular telephone devices with an average access time of 7 hours and 42 minutes daily (Ahmad, 2023). With this enormous potential, companies must adapt to changes in consumer behaviour by adopting digital marketing innovations (Jung & Shegai, 2023).

Social media such as Facebook and Instagram allow micro businesses to reach audiences in a wide area, even outside a particular geographic area, at an affordable cost (Montgomery et al., 2012; Nunes Cruz et al., 2019). This process can occur like this. When someone clicks "like" on a company's Facebook page or leaves a comment, the company can view that person's profile and access the information it shared on its Facebook page. This function is similar to Instagram; A business can view a person's profile after clicking "follow" on the company's Instagram page. The customer information companies obtain from social media is not limited to a person's basic demographic information. It also includes their lifestyle and personal preferences through status updates and photos they post on publicly shared pages. Then, companies use this information to create customer databases (Charoensukmongkol & Sasatanun, 2017).

The Central Statistics Agency reported that in 2020, there were 2,361,423 e-commerce business units in Indonesia (BPS, 2021). However, this business is dominated by micro businesses with annual online revenues of less than 300 million rupiah at 93.49%. If we look at its performance, micro-scale e-commerce businesses experienced an increase in online revenue compared to the previous year, only 26.89%. The Central Statistics Agency also reported that the lack of demand for goods and services dominated the main obstacle experienced in carrying out business activities during 2020. Another problem is that e-commerce businesses are still run less professionally. This is reflected in only 23.45% of businesses having financial reports. If you don't have financial statements, it will be difficult for a business unit to develop because, without financial reports, you cannot know cash inflows and outflows. The extent of the profits and losses cannot be known with certainty. Another important role of financial reports is that they are a tool for evaluating business performance so that business units can more easily receive cash injections for business development (Stuebs et al., 2022).

The Central Statistics Agency reported that in 2020, 63.69% of micro-scale e-commerce businesses in Indonesia used social media. Only 36% of companies carry out customer management using the internet. This shows that micro businesses are less aware of the importance

of customer management. In fact, business units face extraordinary challenges in this digital era, such as intense competition between business units, unpredictable changes in consumption trends, and more sophisticated customer demands (Jung & Shegai, 2023).

Another thing that might be the cause of e-commerce businesses not carrying out customer management is a lack of digital literacy. Ministry of Communication and Informatics or Kominfo (2022) launched the Indonesian digital society index score in 2022, reaching 37.8 out of a maximum score of 100. Moreover, micro-businesses in Indonesia are dominated by almost 75% of entrepreneurs with a high school education or less. Apart from that, micro businesses also have limited human resources. Micro companies often have one employee, who is also the business owner, so they generally carry out all their business activities alone (Charoensukmongkol & Sasatanun, 2017).

The importance of social media for improving company performance has been proven by previous researchers (Charoensukmongkol & Sasatanun, 2017; Jafari Sadeghi & Biancone, 2018; Jung & Shegai, 2023; Trinugroho et al., 2022; Wirdiyanti et al., 2022; Zhou et al., 2019). However, how to apply social media for customer management in micro businesses has not been explored adequately (Trainor et al., 2014). Also, the issue of whether the adoption of social media for CRM can be associated with better firm performance has not been explored previously. In addition, previous research has not considered the role of entrepreneurs and company characteristics (Charoensukmongkol & Sasatanun, 2017). The same thing was conveyed by Yuk & Garrett (2023), that only a few studies explain the interaction effect of customer participation on the relationship between corporate innovation orientation and financial performance.

With the many problems faced by Indonesian micro-scale e-commerce businesses, as explained above, and to fill the gaps in previous research, the formulation of the issue raised in this research is "Does social media influence performance, and what is the moderating role of customer management on relationships?". This information is valuable for building marketing strategies and strengthening customer management so that micro business units can move up to a higher business scale, namely, becoming medium-sized or even large companies. For a more in-depth analysis, this research will carry out three models. Model I is the full model, model II differentiates between businesses originating from Java and outside Java, and model III distinguishes between businesses originating from businesses in category G (Wholesale and Retail Trade, Repair and Maintenance of Cars and Motorbikes) and businesses not in category G.

The remainder of this paper is organized as follows. Section 2 describes the Literature Review and hypothesis development. Section 3 explains the research method. In sections 4 and 5, we present the research results and discussion. To conclude the article, in section 6, we present conclusions, limitations, and future research directions.

2. Literature Review and Hypothesis Development

2.1. Resource-Based View Theory

Barney (1991) sparked a theory of the *Resources-Based View*, which emphasizes that company value and profits are created based on its resources. These resources are "assets, capabilities, organizational processes, company attributes, information, knowledge, etc. (Elia et al., 2021). However, to achieve value and profit, some conditions must be met; namely, resources must be VRIO, namely (a) Valuable (valuable) because it can neutralize threats or seize opportunities, (b) Rare (rare) because a minority of existing and potential competitors have access to the same resources, (c) Imperfectly imitable, namely it cannot be imitated perfectly by the

competitor; and (d) Organization, namely a company that has been organized to capture resource value.

Furthermore, in his original contribution to the firm's RBV, Barney observed that "computers, or other types of machines, are part of the firm's physical technology and can usually be purchased across the marketplace" (Barney, 1991, p. 114). He commented that because any company could purchase machines, they were not a source of sustainable competitive advantage. However, he further elaborates that when devices and information processing systems are deeply embedded into formal and informal decision-making processes, they can be considered a potential source of sustainable competitive advantage.

Elia et al. (2021) provide a similar view, that innovation is very important in developing a company's internal resources and creating value for customers. In addition, managing resources effectively is very important for company survival (Crespo et al., 2023). In this case, the use of technology in resource management is very important (Ladeira et al., 2019).

Nigel Slack & Michael Lewis (2017) revealed in their book entitled *Operations Strategy* that in recent years, resource-based theory (RBT) has undergone refinement called Extended Resource Based Theory (ERBT). ERBT states that companies must integrate internal resources and relevant external factors. This means that businesses that want to survive must consider external factors to ensure that their internal resources are still relevant and can provide a sustainable competitive advantage.

2.2. Social media use and digital performance

In this digital era, businesses can be connected (Yovanof & Hazapis, 2008) and easily accessible to customers. Customers can compare product quality and prices more freely, creating increasingly fierce competition (O'Cass & Sok, 2014). Businesses that want to succeed in this environment must adapt, including in marketing (Jung & Shegai, 2023), by using social media as a form of digital marketing. In contrast to traditional marketing, such as television, radio, and billboard advertising, it can only reach a broad audience in some geographic regions (Nunes Cruz et al., 2019), digital marketing has the critical advantage of being able to get a specific target audience based on customer interests and behaviour (Montgomery et al., 2012).

Micro-businesses have the most minor resources compared to small and medium-scale businesses. Micro businesses have an income of only IDR 300,000 per year (Republic of Indonesia Law number 20 of 2008 article 6). With these small resources, it is not easy to attract large numbers of consumers if only using manual methods. However, by utilizing cheap technology such as social media, micro-businesses can introduce their products to consumers with an enormous reach, reaching the district, city, provincial, and even state levels. The costs required to create social media are also relatively cheap (Foreman-Peck, 2013; Va'zquez et al., 2001) because it only requires an internet quota and can be done using a smartphone, making it affordable for micro businesses. With the number of active social media users in Indonesia reaching 167 million people, micro-businesses can get them even with simple technology.

In line with the resource-based view theory, companies must fill their social media with exciting and unique content. In this way, social media can attract public interest and expand marketing targets. A business with good marketing skills can effectively explain to its target customers the benefits and advantages of its products or services, creating interest and demand that will ultimately lead to revenue and performance growth (Jung & Shegai, 2023).

Previous research has proven that digital marketing positively impacts companies by increasing customer satisfaction (Mashal, 2017). Chung et al.'s research (2014) proves that if a

company works hard in managing social media, the company can achieve high financial performance. The latest research from Jung & Shegai (2023) provides similar evidence that companies that carry out high levels of marketing innovation can achieve high performance because marketing becomes more effective in reaching the company's target audience. Based on the description above, the first hypothesis proposed in this research is

H1. Marketing using social media has a positive effect on increasing digital performance

2.3. The moderating role of customer management

Businesses must pay more attention to Customers who have made a first-time purchase. The more sales can be made, the more profits the company will make. So, customers can be said to be the heart of the business. Customer management is the best nurse for maintaining relationships with customers. CRM refers to using customer-related information or knowledge to deliver relevant products or services to consumers to increase customer retention through effective customer relationship management(Charoensukmongkol & Sasatanun, 2017). However, unfortunately, even though social media provides the opportunity to carry out CRM, how Mikto's business uses social media for CRM has not been documented (Charoensukmongkol & Sasatanun, 2017). In the context of micro-scale e-commerce businesses in Indonesia, as many as 63.69% use social media, but only 36% of the companies that carry out customer management use the internet (BPS, 2021).

According to Peppers & Rogers (2011), companies must follow four stages for successful customer management: identification, differentiation, interaction, and customization. CRM's first process, identification, involves collecting customer information, such as demographic characteristics, purchase history, and personal preferences. The second process, differentiation, aims to segment customers into groups based on similar needs and values. The third process, interaction, involves interaction and communication with customers to ensure that their expectations are well understood to help develop products and services that create long-term customer satisfaction. The fourth process of CRM, customization, involves customizing and customizing marketing offers for each customer according to their specific needs and preferences. The ultimate goal of CRM is to increase sales and brand loyalty(Vilela & Nelson, 2016).

Previous research has proven that CRM is able to bring high business performance satisfaction(Charoensukmongkol & Sasatanun, 2017). The company's ability to interact with customers and be able to customize their communications one by one allows the company to achieve customer satisfaction and gain commitment in the long term. Similar results were also proven by(Soltani et al., 2018),which confirms that CRM is the key to achieving high business performance. Thus, the second hypothesis proposed in this research is

H2. The influence of marketing using social media on digital performance will be even stronger when combined with customer management.

2.4 Open Innovation

Open Innovation refers to the use of knowledge from internal and external sources to improve internal innovation capabilities (Chesbrough, 2012). It is expected that open innovation provides value added to the firm value (Yun & Cho, 2014). Oduro (2019) provides evidence that open innovation in SMEs has positively correlation with firm performance. Open innovation have significant effect to the SMEs capabilities to compete and gain value added. Further, open innovation helps companies to get the higher competitive advantage in the competitive market

(Singh, Gupta, Busso, & Kamboj, 2021). Crema, Verbano, and Venturini (2014) also provide evidence the significant effect of interaction between firms strategy and open innovation to achieve better performance in the SMEs context. SMEs focus on development of technical skill and core competencies for their open innovation. A cross-country study by Ebersberger, Bloch, Herstad, and Velde (2012) shows that open innovation have strong effect on innovation performance. This impact become stronger with the broad based approach and collective open innovation systems in the markets. This result shows the importance of market for innovation. Vincenzi and da Cunha (2021) also shows that open innovation in the service sector also push companies to achieve better performance. Further, the ownership structure also have significant effect on the relation between open innovation and firm performance. Therefore, ownership structure is one of important aspect on the firm decision (Setiawan, Aryani, Yuniarti, & Brahmana, 2019). In case of Indonesia, the role of CEO also have significant effect on the firm innovation (Prabowo & Setiawan, 2021).

Rauter, Globocnik, Perl-Vorbach, and Baumgartner (2019) investigate the effect of open innovation practice in industrial firms to provide a higher probability of success firm. The result shows that collaboration with universities, customers, NGOs, and intermediaries has a positive effect to the firm value. The higher intensity of collaboration shows the higher performance of innovation and it will lead to improvement of the economic innovation performance. This result shows the importance of customer relations in the context of open innovation. Customers provide suggestion to the companies to achieve better quality. Valmohammadi (2017) shows that customer relation have positive effect to improve the innovation performance of the companies. Thus it is important to relate the customer relation management with the open innovation. Siakas and Siakas (2016) and Efstathiades and Papageorgiou (2019) also provide evidence the importance of integration with customer in the open innovation systems.

Overall, this research proposes two hypotheses, as described above, to test the influence of known social media on improving the performance of micro-scale e-commerce businesses in Indonesia and the moderating influence of customer management on social media relationships and performance. Thus, the conceptual model proposed in this research is as shown in Figure 1.

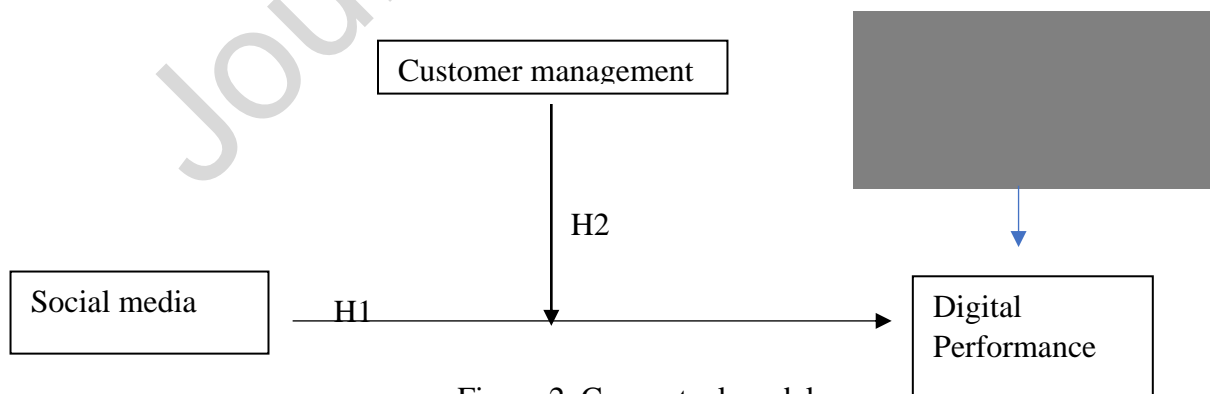


Figure 2. Conceptual model
Source: Author

3. RESEARCH METHODS

3.1 Research design

This research is quantitative research with an empirical case approach and is hypothesis testing. The data in this research is secondary data obtained from the Central Statistics Agency. If viewed from the time dimension, this research is a cross-sectional study, where data or information collection was only carried out in one time period, namely, 2020.

3.2 Population and sample, and sampling techniques

The population in this study includes all micro-scale e-commerce businesses in Indonesia in 2020 is about 1,980,525 units, with a research sample of 11,077 units. The sample frame for this survey comes from the 2016 Economic Census (SE2016) which is equipped with information on the number of businesses that use the internet for selling or purchasing goods and/or services. So, if a business in 2020 makes sales using the internet, then that business has met the criteria to be included in the businesses covered in this survey and is counted as part of the population.

For the sampling process, the Central Statistics Agency uses a multi-stage stratified sampling method through 3 stages. The first stage is to select a district/city. At this stage, stratification is carried out for districts/cities to ensure representation of the regional population due to differences in the number of e-commerce businesses. The selection of districts/cities in each stratum was carried out using the Probability Proportional to Size (PPS) method. The second stage selects a number of census blocks in each selected district/city. The selection of census blocks was carried out using systematic random sampling in each selected district/city with implicit stratification of the number of e-commerce businesses. The third stage selects the updated or listed e-commerce business unit by visiting all physical/census buildings in the census block area that is the assigned area. Stratification of e-commerce businesses is carried out based on the value of all income from sales of goods/services during 2020. Stratification of e-commerce businesses is divided into two strata: 1 for e-commerce businesses with an income value of < 2.5 billion rupiahs, and 2 for e-commerce businesses with revenue value \geq 2.5 billion rupiahs. In strata 1, a number of samples were carried out using systematic sampling, with implicit stratification according to the value of income from sales of goods/services during 2020. As for strata 2, all e-commerce business units were sampled (take all), with all priority starting from businesses with revenues > 50 billion rupiahs. If businesses with revenues > 50 billion rupiah have finished taking all, but the target sample still remains, then continue the business with an income of 2.5 to 50 billion rupiah.

3.3 Variable Measurement

Table 1 presents variable measurements where all data follows the availability of data from external parties, in this case, the Central Statistics Agency. Four types of variables were used to achieve the research objectives. The dependent variable is performance, reflected in the increase in online income. The independent variable is social media. The moderating variable in this research is customer management because customers are the primary basis for a business's development. The control variable in this research is operation intensity. Micro-scale e-commerce businesses sometimes don't operate routinely due to a lack of demand for goods and services (BPS, 2021). The next control variable is the factor entrepreneurs are the main actors in business. The entrepreneurial factors discussed are in terms of education and gender.

Table 1. Variable Measurement

No	Variable	Definition	Size	Data Type	Reference
(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:					
1	Digital Performance	The business unit experienced an increase in online revenue compared to the previous year	1 = yes, 0 = no	Nominal Data	(Wirdiyanti et al., 2022)
Independent Variable:					
1	Social media	If the business unit uses social media in sales	1 = yes, 0 = no	Nominal Data	(Elia et al., 2021)
Moderating Variables:					
1	Customer Management	Entrepreneurs carry out customer management (customer service, complaints, returns, etc.) using the internet	1 = yes, 0 = no	Nominal Data	(Denicolai et al., 2021)
Control Variables:					
1	Operation intensity	The number of operating months in a year	1 = complete (12 months), 0 = incomplete	Nominal Data	(Charoensukmongkol & Sasatanun, 2017)
2	Education	Entrepreneur education	1 = college, 0 = high school or less	Nominal Data	(Ramón-Llorens et al., 2017)
3	Gender	Gender of entrepreneur	1 = male, 0 = female	Nominal Data	(He & Xiao, 2022)

Source: Author

3.4 Data analysis technique

This research uses two analytical methods. Descriptive analysis is used to obtain a general overview of the description of e-commerce businesses in Indonesia, consisting of business scale, business distribution, business categories, and entrepreneur profiles.

Next, inferential analysis is used to find out how the independent variable influences the dependent variable, either directly or using moderation effects. The data in this study is dichotomous data, so the analysis used is binary logistic regression analysis and processed using Stata 17 software. Binary logistic regression is an analysis method with the dependent variable in the form of categorical data and is dichotomous (Hair et al., 2010). Several previous studies that

used binary logistic regression analysis techniques include: (Cassetta et al., 2020; Do et al., 2023; Elia et al., 2021; Trinugroho et al., 2022; Zastempowski, 2022).

In binary logistic regression analysis, the Hosmer-Lemeshow goodness-of-fit test is needed to ensure that the research model fits the data (Deng et al., 2022). Next, data interpretation is carried out using the odds ratio, which is a measure to see how much the independent variable tends towards the dependent variable. The odds ratio is the exponential of the coefficient. Odds ratio makes interpretation easier and better (Wang et al., 2021). The binary logistic regression model proposed in this research is as follows:

$$\ln \frac{p_i}{1-p_i} = \beta_0 + \beta_1 \text{social_media} + \beta_2 \text{operation_intensity} + \beta_3 \text{education} + \beta_4 \text{gender} + \varepsilon \quad \dots \dots \dots 1)$$

$$\ln \frac{p_i}{1-p_i} = \beta_0 + \beta_1 \text{social_media} + \beta_2 \text{customer_management} + \beta_3 \text{social_media} * \text{customer_management} + \beta_4 \text{operation_intensity} + \beta_5 \text{education} + \beta_6 \text{gender} + \varepsilon \quad \dots \dots \dots 2)$$

Where $\ln \frac{p_i}{1-p_i}$ is an opportunity for the company to achieve increased performance. Model 1 is used to test the hypothesis about the influence of the independent variable on the dependent variable, while model 2 is used to test the hypothesis that includes a moderating variable.

4. RESULTS

4.1. General Overview of E-Commerce Businesses in Indonesia

In 2020, there were 2,361,423 units of e-commerce business in Indonesia (BPS, 2021). However, this business is dominated by micro businesses with annual online revenues of less than 300 million rupiah by 93.49% (figure 2). Meanwhile, micro-scale e-commerce businesses experienced an increase in online revenue compared to the previous year of only 26.89%. This smallest-scale business has the characteristics of limited resources in terms of capital, number of employees, and marketing technology. In terms of human resources, as many as 74.95% of entrepreneurs only have a high school education or less, while in terms of gender, as many as 53.05% are female entrepreneurs, as much 32.50% only run alone, and as many as 32.92% are only run by two people.

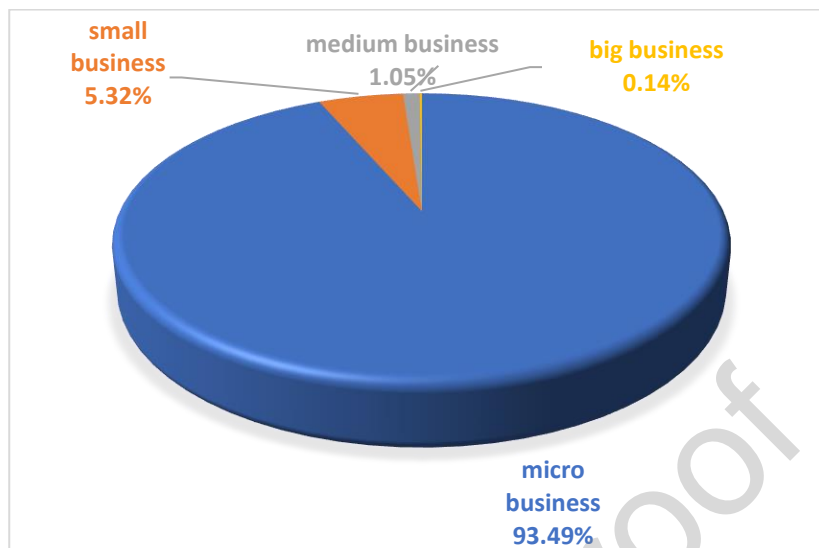


Figure 3. Percentage of E-Commerce Businesses Based on Business Scale
Source: 2021 E-Commerce Survey, BPS (processed data)

In 2020, micro-scale e-commerce businesses in Indonesia were concentrated on the island of Java, with 911,042 units (46%), as shown in the figure. There are several reasons why business tends to be focused on the island of Java in Indonesia. First, Java Island is the most populous island in Indonesia, with a large population. The existence of a vast and diverse market on the island of Java offers more significant opportunities for businesses to reach a wider audience. With a dense population, businesses can target more potential customers and earn more significant revenue. Second, Java Island has better infrastructure compared to other islands in Indonesia. Expanding transportation networks, including highways, railways, and international airports, make product distribution more efficient.

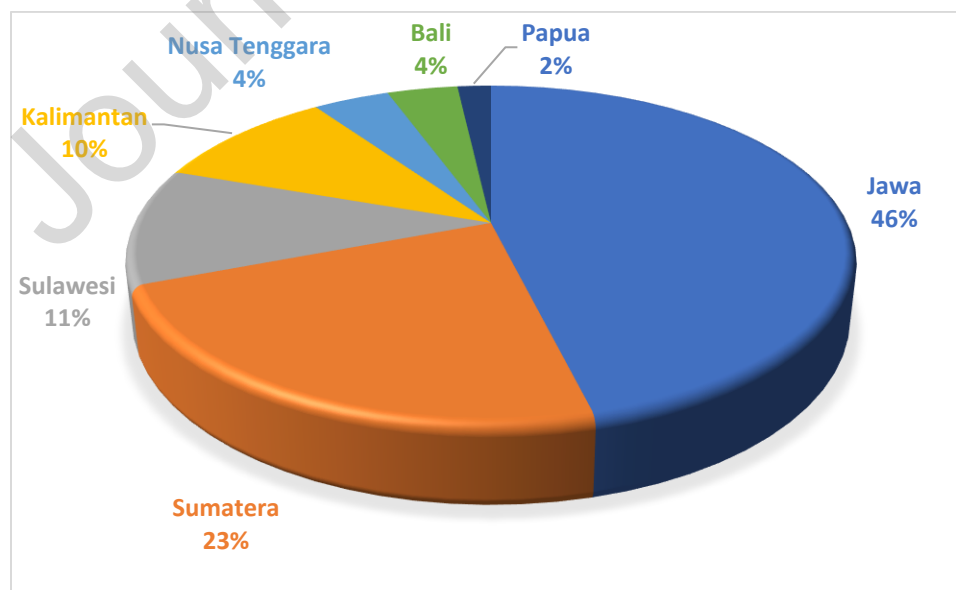


Figure 4. Percentage Distribution of Micro-scale E-Commerce Businesses in Indonesia
Source: 2021 E-Commerce Statistics Publication, BPS (processed data)

The trade and vehicle repair sector plays a significant role in micro-scale e-commerce businesses. According to BPS data, the percentage of micro-scale e-commerce businesses in the trade sector in 2020 reached 47.44%. This condition shows that many small and medium enterprises (SMEs) operating in the trade sector are switching to e-commerce platforms to sell the in Indonesian products. Trading via e-commerce platforms has become a rapidly growing trend in recent years. With technological advances and increasing internet access across the country, more and more SMEs are seeing opportunities in the digital world to expand their reach and increase their sales.

Apart from the trade sector, the processing industry also significantly contributes to micro-scale e-commerce adoption. Data shows that the percentage of micro-scale e-commerce businesses in this sector reached 17.43%. This condition shows that not only trading businesses but also manufacturing and processing companies in Indonesia are adopting e-commerce strategies to expand their markets.

Meanwhile, the food and beverage supply sector is also not left behind in adopting micro-scale e-commerce. The percentage of micro-scale e-commerce businesses in this sector reached 15.27%. Many restaurants, food stalls, and other culinary businesses are taking advantage of e-commerce platforms to increase their sales. Through food delivery apps or online ordering platforms, customers can easily order food and drinks from their favourite places (Hwang et al., 2019).

Table 2. Categories of E-Commerce Businesses on a Micro Scale in Indonesia
(sorted from largest proportion)

Business Category	Percentage
G -- Wholesale and Retail Trade, Repair, and Maintenance of Cars and Motorbikes	47.44%
C -- Processing Industry	17.43%
I -- Provision of accommodation and provision of food and drink	15.27%
S -- Other Service Activities	6.11%
A -- Information and Communication	3.87%
H -- Freight and Warehousing	3.49%
A -- Agriculture, Forestry, and Fisheries	3.30%
N -- Rental and Leasing Activities Without Option Rights, Employment, Travel Agents, and Other Business Support	1.45%
P -- Education (except those with formal status)	0.49%
M -- Professional, Scientific, and Technical Activities	0.42%
Q -- Public Health Activities and Social Activities	0.36%
R -- Arts, Entertainment and Recreation	0.36%
Total	100.00%

Source: 2021 E-Commerce Survey, BPS (processed data)

When viewed according to age, micro-scale e-commerce entrepreneurs in Indonesia show the diversity of generations involved in this sector. 2021 E-commerce Survey data shows that millennials are the dominant group among e-commerce entrepreneurs, with a percentage of 46.83%. Millennials are a generation born between 1981 and 1996. They are often known as a generation that is skilled in technology and familiar with using the internet. Their technological

support and deep understanding of digital trends enable them to easily adapt to e-commerce platforms and exploit their potential.

Apart from millennials, generation X also contributed with a percentage of 38.71%. Generation X's participation in micro-scale e-commerce shows that they can also adapt to technological changes and utilize them in running their business.

Although the percentage is smaller, baby boomers (born between 1946 and 1964) and Generation Z (born between 1997 and 2012) are also involved in micro-scale e-commerce in Indonesia. Baby boomers account for around 7.38% of the number of entrepreneurs, while Generation Z accounts for around 6.01%.

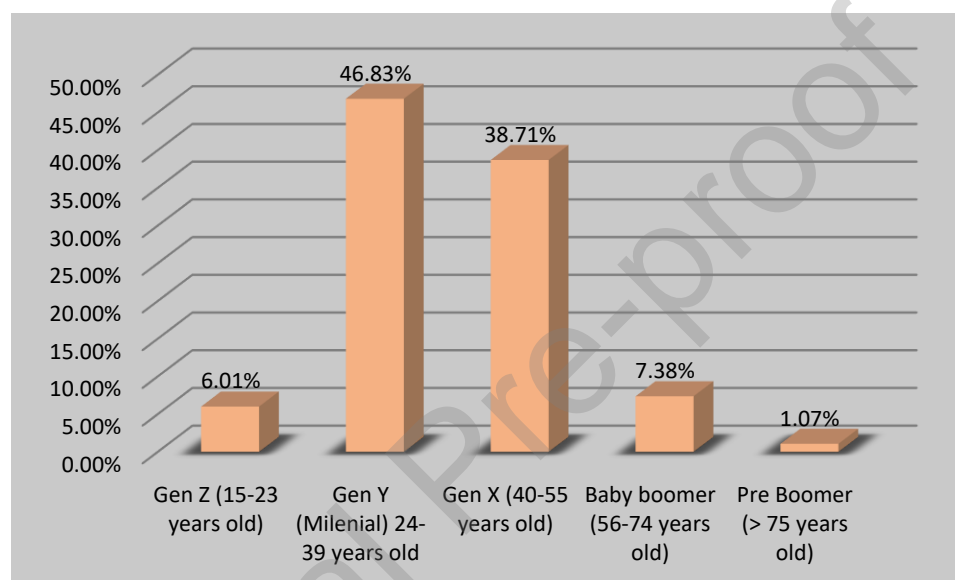


Figure 5. Percentage of micro-scale E-Commerce entrepreneurs by generation
Source: 2021 E-Commerce Survey, BPS (processed data)

4.2. Research result

This research uses logistic regression for the influence of social media on improving the performance of micro-scale e-commerce businesses in Indonesia by analyzing the moderating role of customer management. Based on the goodness of fit test, it can be seen that the Hosmer-Lemesow significance value is above 0.05, so the model is suitable for the data. Overall, the prediction accuracy in this full model is 73.11%, meaning that the estimate of the logistic regression model formed is relatively high.

Table 3. Results of binary logistic regression in the full model

Independent Variables and Control Variables		Model I: Full Model		
		Dependent Variable: Performance		
		Model I	Model II	Model III
social media	Coefficient	0.6253829	0.5715218	0.5771878
	Odds Ratio	1.868962	1.77096	1.781023
	p-value	0,000***	0,000***	0,000***

cos_man	Coefficient	0.0434145	0.0423809	0.05266
	Odds Ratio	1.044371	1.043292	1.054071
	p-value	0.335	0.350	0.519
social media#cos_man	Coefficient			-0.0148354
	Odds Ratio			0.9852741
	p-value			0.88
int_opr	Coefficient		0.3873031	0.3873506
	Odds Ratio		1.473003	1.473073
	p-value		0,000***	0,000***
educ	Coefficient		0.0893478	0.0893982
	Odds Ratio		1.093461	1.093516
	p-value		0.072**	0.072**
gender	Coefficient		-0.3298364	-0.329696
	Odds Ratio		0.7190413	0.7191423
	p-value		0,000***	0,000***
constant	Coefficient	-1,435,267	-1,531,089	-1,535,272
	Odds Ratio	0.2380518	0.2163	0.215397
	p-value	0,000***	0,000***	0,000***
data		11,077	11,077	11,077
goodness of fit		0.9686	0.8268	0.8268
Correct prediction		73.11%	73.11%	73.11%

This table presents the results of binary logistic regression analysis in the full model. Social media is the use of social media by e-commerce entrepreneurs, cos_man is customer management carried out by e-commerce entrepreneurs, int_opr is the intensity of operations carried out by e-commerce entrepreneurs (in this case, the unit used is the number of months the business operates), educ is the level of education of the entrepreneur, gender is the gender of the entrepreneur. The sign ***, **, or * indicates that the coefficient estimate is significant at the 1 %, 5 %, or 10 % level.

Table 3 displays the results of hypothesis testing covering all micro-scale e-commerce businesses in Indonesia (full model) using the binary logistic regression analysis method. Performance is measured by an increase in online revenue compared to the previous year. The results of the hypothesis test show that H1 is accepted, namely that social media has a direct effect on micro business performance in a positive direction- significance level below 1% or confidence level more than 99% (coefficient value marked ***). This table displays the results of the hypothesis testing of the moderating role of customer management on the relationship between e-commerce and performance. The results of the hypothesis test show that customer management is unable to strengthen the relationship between social media use and performance, so H2 is rejected. If we look at the direct influence of customer management and performance, this variable is unable to influence performance. This shows that customer management cannot be managed well by micro-scale e-commerce businesses in Indonesia. For the control variables, technology intensity and education have a positive effect on performance, meaning that if entrepreneurs run their business intensively throughout the year, performance will increase. Entrepreneurs with higher education will increase the opportunities for business units to improve performance. Women entrepreneurs are better able to improve business performance than men.

Table 4. Binary logistic regression results by region

Independent Variables and Control Variables		Model II: Based on Region					
		Java			Outside Java		
		Dependent Variable: Performance					
		Model I	Model II	Model III	Model I	Model II	Model III
social media	Coefficient	0.5426278	0.5161279	0.4661712	0.6308274	0.5689144	0.6618077
	Odds Ratio	1.720522	1.675527	1.59388	1.879165	1.766348	1.938293
	p-value	0,000***	0,000***	0,000***	0,000***	0,000 ***	0,000 ***
cos_man	Coefficient	0.0368856	-0.0277558	-0.0975623	0.1435169	0.1245999	0.3224012
	Odds Ratio	0.9637864	0.9726259	0.9070458	1.154326	1.132695	1.380439
	p-value	0.583	0.682	0.344	0.019 **	0.044**	0.016**
social media# cos_man	Coefficient			0.1226827			-0.2501056
	Odds Ratio			1.130526			0.7787185
	p-value			0.371			0.098*
int_opr	Coefficient		0.3255089	0.3255312		0.4273181	0.4275042
	Odds Ratio		1.384735	1.384766		1.53314	1.533426
	p-value		0,000***	0,000***		0,000***	0,000***
educ	Coefficient		0.0467674	0.0451567		0.0994318	0.0996973
	Odds Ratio		1.047878	1.046192		1.104543	1.104836
	p-value		0.571	0.585		0.113	0.112
gender	Coefficient		-0.3258256	-0.3277519		-0.3147035	-0.3145303
	Odds Ratio		0.721931	0.7205418		0.7300053	0.7301317
	p-value		0,000***	0,000***		0,000 ***	0,000***
constant	Coefficient	-1.441177	-1.490351	-1.461392	-1.405184	-1.538564	-1.615585
	Odds Ratio	0.236649	0.2252936	0.2319132	0.245322	0.2146891	0.1987743
	p-value	0,000***	0,000***	0,000***	0,000***	0,000 ***	0,000***
data		5,111	5,111	5,111	5,966	5,966	5,966
goodness of fit		0.7601	0.0835	0.0468	0.2502	0.3876	0.4323
classification table		76.29%	76.29%	76.29%	70.38%	70.38%	70.38%

This table presents the results of binary logistic regression analysis based on Java and outside Java. Social media is the use of social media by e-commerce entrepreneurs, cos_manis customer management carried out by e-commerce entrepreneurs, int_opr is the intensity of operations carried out by e-commerce entrepreneurs (in this case, the unit used is the number of months the business operates), educ is the level of education of the entrepreneur, gender is the gender of the entrepreneur. The sign ***, **, or * indicates that the coefficient estimate is significant at the 1 %, 5 %, or 10 % level, respectively.

For a more in-depth analysis, this research attempts to divide companies based on Java and outside Java. The reason is Indonesia's population, which is concentrated on the island of Java,

thereby increasing the company's opportunities to develop further. Apart from that, in general, the infrastructure on the island of Java is better than outside Java. The results of the hypothesis test in table 4 show that H1 is accepted, namely that social media has a direct effect on the performance of micro-businesses in a positive direction with a significance level below 1% or confidence level more than 99% (coefficient value marked ***), both in Java and outside Java. Additionally, this table shows surprising results that customer management was able to moderate the relationship between e-commerce and performance in e-commerce businesses outside Java. Still, these results do not apply to businesses on Java Island. Different results from the full model are also seen in the education level control variable, but the technology intensity and gender variables still show the same results.

Table 5. Binary logistic regression results based on business category

Independent Variables and Control Variables		Model III: Based on Business Category					
		The trade and vehicle repair sector ("G")			Non The trade and vehicle repair sector ("non-G")		
		Dependent Variable: Performance					
		Model I	Model II	Model III	Model I	Model II	Model III
social media	Coefficient	0.5796756	0.5192024	0.4732625	0.6410959	0.6043738	0.6609715
	Odds Ratio	1,785,459	1,680,687	1,605,223	189,856	1,830,106	1,936,673
	p-value	0,000***	0,000***	0,000***	0,000***	0,000***	0,000***
cos_man	Coefficient	0.085775	0.081252	-0.0166363	0.009305	0.0085453	0.0982628
	Odds Ratio	1,089,561	1,084,644	0.9835014	1,009,348	1,008,582	1,103,253
	p-value	0.186	0.214	0.902	0.882	0.892	0.34
social media# cos_man	Coefficient			0.1282205			-
	Odds Ratio			1,136,804			0.1428308
	p-value			0.406			0.273
int_opr	Coefficient		0.4425015	0.4423339		0.3365307	0.3374232
	Odds Ratio		1,556,596	1,556,335		1,400,082	1,401,332
	p-value		0,000***	0,000***		0,000***	0,000***
educ	Coefficient		0.0823868	0.0813162		0.0972267	0.0972097
	Odds Ratio		1,085,876	1,084,714		110.211	1,102,091
	p-value		0.233	0.239		0.175	0.176
gender	Coefficient		-	-0.2960239		-	-
	Odds Ratio		0.2962381	0.7437697		0.3570974	0.3543664
	p-value		0,000***	0,000***		0,000***	0,000***
constant	Coefficient	-	-	-1,507,959	-	-	-
	Odds Ratio	1,383,514	1,544,164	0.2213613	1,461,732	-149,982	-1,538,925
	p-value	0,000***	0,000***	0,000***	0,000***	0,000***	0,000***
data		5,255	5,255	5,255	5,822	5,822	5,822
goodness of fit		0.6778	0.6044	0.7899	0.444	0.1444	0.1453
classification table		71.55%	71.55%	71.55%	74.51%	74.51%	74.51%

This table presents the results of binary logistic regression analysis based on "G" and non- "G" business categories. Social media is the use of social media by e-commerce entrepreneurs, *cos_manis* customer management carried out by e-commerce entrepreneurs, *int_opris* the intensity of operations carried out by e-commerce entrepreneurs (in this case, the unit used is the number of months the business operates), *educ* is the level of education of the entrepreneur, *gender* is the gender of the entrepreneur. The sign ***, **, or * indicates that the coefficient estimate is significant at the 1 %, 5 %, or 10 % level.

Apart from dividing companies based on regions in Java and outside Java, this research also divides areas based on business categories. As explained above, micro-scale e-commerce businesses in Indonesia are dominated by the trade and vehicle repair sector. The results of the hypothesis test in table 5 show that H1 is accepted, namely that social media has a direct effect on the performance of micro-businesses in a positive direction with a significance level below 1% or confidence level more than 99% (coefficient value marked ***), both in the trading and non-trading sectors. In line with the full model, this table also shows that it is not capable of moderating the relationship between e-commerce and performance in e-commerce businesses, both businesses operating in the trade sector and non-trade sector. The control variables in the analysis based on business category are the same as the analysis based on region: education has no effect on performance, but technology intensity and gender do.

5. DISCUSSION

The results of this research show that the use of social media has a positive effect on improving the digital performance of micro-scale e-commerce businesses in Indonesia's Indonesian significance level below 1%. Thus, the first hypothesis is supported. The odds ratio value of 1.781023 means that business units that use social media have the opportunity to experience an increase in digital performance of 1.781023 times compared to business units that do not use social media. These results are in line with research (Trinugroho et al., 2022; Wirdiyanti et al., 2022) that technology adoption is very useful in increasing sales, including during the COVID-19 pandemic crisis. These results also support the research of Fraccastoro et al. (2021), which revealed that social media is very suitable for the conditions of micro-businesses that have limited capital to be able to dominate the market. A similar thing was expressed by (Appel et al., 2020) that social media is effective in giving customers deep confidence about the quality and uniqueness of their products so that customers are interested in making purchases.

Over the past few decades, web-based technologies widely used by entrepreneurs such as Facebook and Twitter have provided review columns and discussion forums where they share their purchasing experiences about a service/product. (Kumar et al., 2023). This new form of communication is widely referred to as electronic word of mouth or e-WOM (Huete-Alcocer, 2017). E-WOM is very important so that information about products can immediately spread widely.

Behind the advantages of social media, what companies need to be aware of is that there are many competitors who do the same thing. Therefore, companies must innovate so that their social media content is unique and better than other competitors. Furthermore (Caballero-Morales, 2021; Zhang & Zhang, 2022) explains that innovation using social media can be the main capital for micro-businesses that have the characteristics of limited resources to survive. This happens because innovation is able to answer changing customer needs and desires (Farida & Setiawan, 2022).

To get maximum benefits from using social media, companies must have digital marketing capabilities because this can improve business performance (Masrianto et al., 2022). With the rapid

evolution of technology and the internet, the way people consume information and make purchasing decisions is constantly changing (Verhoef et al., 2021). Companies must keep pace with the latest shopping style trends by continuing to learn to create interesting content. In this digital era, learning media is available in abundance for free on the internet, making it possible for micro-businesses with limited resources to keep up with the latest shopping trends and create content that can encourage new customers to make their first purchase.

The second hypothesis in this research is that customer management strengthens the relationship between social media use and digital performance. However, the results of the regression analysis state that the second hypothesis is rejected, meaning customer management in micro-scale e-commerce businesses in Indonesia is effective in customer management. This result is contradictory Yuk & Garrett (2023), that customer participation is able to moderate the relationship between a company's innovation orientation and cost-based financial performance.

The reason for the inability of customer management variables to moderate the relationship between social media and performance in the context of micro-scale e-commerce businesses in Indonesia is that in terms of quantity, only 68.42% of micro-scale e-commerce businesses carry out digital customer management. As explained above, there are four stages that must be carried out by companies so that customer management can be successful, namely identification, differentiation, interaction, and customization. All of these stages require time and special skills. Instead of having a management team to perform various business functions such as marketing and technology management, as medium and large companies do, micro business owners generally perform these activities themselves. For this reason, CRM implementation requires significant investments in information technology infrastructure, human resources, and knowledge. This is more suitable for medium and large companies, but this is difficult for micro businesses (Charoensukmongkol & Sasatanun, 2017).

In terms of digital competency, micro-scale e-commerce entrepreneurs in Indonesia are experiencing quite serious problems. The Central Statistics Agency reported that in 2020, only 7% of micro-scale e-commerce entrepreneurs received training related to the use of information technology for digital marketing. This is exacerbated by low educational background, about 75% of entrepreneurs only have a high school education or less. This causes a smaller ability to process information (Ramón-Llorens et al., 2017) and a lower ability to handle problems that occur in the field (Goll et al., 2007).

Another reason why customer management is difficult to do in the context of micro-scale e-commerce businesses in Indonesia is that carrying out customer management requires social skills (Charoensukmongkol & Sasatanun, 2017). Social competence is defined as "the ability to interact effectively with others based on discrete social skills" (Baron & Markman, 2003). This competency is essential for building trusting relationships with customers, presenting products in an attractive and trustworthy manner, communicating with customers honestly, and being enthusiastic in providing useful advice (Charoensukmongkol & Sasatanun, 2017). According to research, those who are socially competent generally perform better overall (Hochwarter et al., 2006). Even (Baron & Markman, 2003) advocate social competence as a basic ability that significantly influences entrepreneurial success.

The result of the study shows that customer management do not provide significant effect on the relationship between social media and performance. This result shows that micro-scale e-commerce in Indonesia needs to improve their customer management to achieve better performance. Therefore, this result do not confirm previous study such as Valmohammadi (2017), Siakas and Siakas (2016) and Efstathiades and Papageorgiou (2019) that find the importance of customer management to achieve better firm performance.

Control variables consisting of operating intensity and entrepreneur education have a positive effect on increasing income. Entrepreneurs who consistently run their business throughout the year have the opportunity to increase sales than entrepreneurs who do not do the same. Entrepreneurs with a tertiary education background have the opportunity to increase their income compared to entrepreneurs with a high school education or less. The gender of the entrepreneur has a negative effect on performance, meaning that female entrepreneurs have a greater opportunity to increase income in micro-scale e-commerce businesses in Indonesia.

6. CONCLUSION

This research examines the influence of digital marketing on the performance of e-commerce businesses in Indonesia, which is moderated by customer management in micro-scale e-commerce businesses in Indonesia. Practically, the results of this research prove that social media has a positive impact on business performance. This happens because digital marketing is able to reach a wide and targeted audience according to consumer interests or preferences. With the number of active social media users reaching 167 million people in Indonesia and the large amount of time people spend online, the opportunity for new customers to see products from a business unit is increasing. In addition, the results of this research indicate that customer management is unable to moderate the relationship between digital marketing and performance. From 1,980,525 micro-scale business units, Only 36% carry out customer management using the internet. A lack of digital literacy exacerbates this condition. Theoretically, this research contributes to supporting and enriching the literature on digital marketing and supports the application of RBV theory to companies.

6.1 Theoretical Implications

Theoretically, these findings support the Resource-Based View theory coined by Barney (1991). This research highlights the importance of technological innovation in the form of social media, which can be built in such a way that it becomes a VRIO (Valuable, Rare, Imperfectly Imitable, and Organization) resource in order to achieve sustainable competitive advantage resulting in increased performance. If the social media owned by the company is not managed well and is not VRIO in nature, it will be difficult for social media to become a resource capable of bringing sustainable competitive advantage (SCA).

6.2 Practical Implications

Our findings show that social media has a positive effect on performance. The latest research from Moghadamzadeh et al., (2020) showed similar results that through social media platforms, entrepreneurs can find out how consumers react to company service innovations. Thus, practically, this research can be a reference for entrepreneurs to optimize the use of social media to continuously update consumer expectations so that maximum profits can be realized. The policy recommendation for the government is to increase the level of digital literacy for micro-scale e-commerce entrepreneurs. Moreover, the number of entrepreneurs in this group is very large, reaching 93,49% of all e-commerce businesses. The government needs to conduct a lot of mass training for them. Moreover, the majority of entrepreneurs only have a high school education or less.

Another recommendation for entrepreneurs is to redesign customer management. This is very important to do because customers are the basis for a business to grow. Salamzadeh *et al.*, (2022) revealed that the emphasis on customization is an important keyword in consumer

behaviour. Entrepreneurs can present different plans and strategies to consumers based on age, gender, educational group, etc.

Considering that the main problem faced by micro-scale e-commerce entrepreneurs in Indonesia is the lack of demand for goods and services (BPS, 2021), this research recommends that the government provide guidance and training so that the quality of the products produced by e-commerce entrepreneurs is better. so that their products are increasingly in demand by buyers and are able to compete with products from medium and large scale companies.

6.3 Research Limitations and Suggestions for Future Research

In this digital era, technological innovation is significant to achieve improved business performance through profit maximization. Thus, how technology, especially social media, can improve performance and the moderating role of customer management is an exciting and vital thing to research. This research attempts to take the unit of analysis in the form of micro-scale e-commerce businesses with a very strategic position in the Indonesian economy. Despite its significant contributions, this study has several limitations and suggests suggestions for future research. First, due to data limitations, the dependent variable in this study is only nominal data. This happens because the data used is secondary data, but the advantage of secondary data is that the amount of data available is relatively large. In this research, the amount of data used reached 11,077 business units. Future research can develop its questionnaire so that performance variables can be explained in more detail. Second, Although technology brings many benefits to the business sector, it also brings trust issues. Future research could examine the negative impacts of technology and the things that business units must do to prevent this. Third, with the development of sophisticated technology, consumer demands are increasing, and entrepreneurs are obliged to follow consumer tastes to continue to exist. Therefore, entrepreneurs need quite a bit of capital to carry out technological innovation, which is not discussed in this research due to limited data. Future research could discuss sources of funds for a business unit. Future research could examine the negative impacts of technology and the things that business units must do to prevent this. Third, with the development of sophisticated technology, consumer demands are indeed increasing, and entrepreneurs are obliged to follow consumer tastes to continue to exist. Therefore, entrepreneurs need quite a bit of capital to carry out technological innovation, which is not discussed in this research due to limited data. Future research could discuss sources of funds for a business unit. Future research could examine the negative impacts of technology and the things that business units must do to prevent this. Third, with the development of sophisticated technology, consumer demands are indeed increasing, and entrepreneurs are obliged to follow consumer tastes to continue to exist. Therefore, entrepreneurs need quite a bit of capital to carry out technological innovation, which is not discussed in this research due to limited data. Future research could discuss sources of funds for a business unit. Due to limited data, entrepreneurs need a lot of capital to carry out technological innovation, which is not addressed in this research. Future research could discuss sources of funds for a business unit. Entrepreneurs need a lot of capital to carry out technological innovation, which is not addressed in this research due to limited data. Future research could discuss sources of funds for a business unit.

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Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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