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Marketing Performance and Big Data Use During the COVID-19 Pandemic: A Case Study of SMEs in Indonesia*

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Abstract

The outbreak of the COVID-19 pandemic, which began in 2020, had a significant impact on the economy and business activities worldwide. Large companies, as well as small businesses were affected, many of them had to scale down or divert their businesses, and some even had to stop. This extraordinary situation requires business people to make innovations and adjustments to survive during a pandemic. Entering the digital era, business players are helped by the ease of internet access, which will make it easier for SME players to get data from their consumers. Business actors can use this data to innovate and create new creations to improve business performance during this pandemic. This research aims to identify how small and medium enterprises can take advantage of Big Data to improve marketing performance through innovation and value creation. The research methodology used the in this research is quantitative method. The respondents are SME producers of food and beverage, with a total of 150 respondents. The results in the study indicate that all the proposed hypotheses are accepted. The most significant influence is found on the relationship of Big Data to value creation. The lowest effect was obtained from the relationship between Big Data and marketing performance through the mediation variable and innovation capability.

Keywords: Big Data, Value Creation, Innovation Capability, Marketing Performance

JEL Classification Code: M31, M13, L66, L26

1. Introduction

The COVID-19 outbreak is a disaster that cannot be avoided. Since the emergence of a creature named Coronavirus (COVID-19) in Wuhan, China, in December 2019, the COVID-19 pandemic, in general, has changed the world where all social life arrangements have changed, and businesses are no exception. All aspects of life are affected, and economy, culture, and education have become paralysed. It is because Coronavirus at the same time is spreading to all countries in the world, including in Indonesia. Business and economy have become poles against each other with the efforts to prevent the outbreak. On the one hand, the epidemic requires government authorities to impose restrictions on social activities. On the other hand, these restrictions impact business activities and stagnate the wheels of the economy. Even though the world of business and digital marketing has triumphed in the past 5 years, the pandemic signals a different reality (Panjaitan et al., 2021). Inevitably, according to statistical data of West Java Province, as many as 58,263 small and medium enterprises (SMEs) throughout West Java were affected by COVID-19 (Rep-Pun., 2020).

According to data from the Ministry of Cooperatives and Micro, Small, and Medium Enterprises of the Republic of Indonesia, the demand for herbal food and beverages increased by 200%, along with the increasing demand for the health products and necessities (Rahma, 2020).

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Based on other data sourced from the Central Statistics Agency of West Java Province, it shows that the food and beverage sector, especially those of SMEs, contributes at least 60% to the economy in West Java. There has been a significant impact of COVID-19 on micro and small businesses, a study that focuses on marketing performance and Big Data marketing is needed because marketing performance can be used to identify the company's ability to achieve competitive advantage through a series of business strategies and activities. This makes marketing performance a priority for business entities, and all components need to be improved to improve marketing performance (Wibowo et al., 2020).

Big Data is the data generated from information technology tools, social media services, and corporate information systems with structured, unstructured, semi-structured data and can manage and utilize it so that businesses can face challenges (Chen et al., n.d.). Based on the impact data and opportunities for micro and small businesses, it is essential to immediately be able to adjust the direction of their businesses to survive and reclaim the market. Value creation is an essential factor in maintaining the sustainability of a business. This is because value creation can help companies to maximize profits and increase revenue (Rehman et al., 2016). Next, innovation capability is defined as aspects that affect an organization's ability to manage innovation (Saunila, 2014). The research was conducted during the COVID-19 pandemic with all its limitations but seeks to produce a study that fully describes the relationship between the ability to use Big Data marketing to create value creations and the ability of innovation capabilities for stability and improvement of marketing performance in SMEs in West Java.

2. Literature Review

2.1. Big Data

Big Data includes information collected from the social media, data from internet-enabled devices including smartphones and tablets, machine data, video and voice recording, and structured and unstructured data preservation and logging (Ekbia et al., 2015). Big Data refers to dynamic volume data, large and different data made by humans, tools, and machines; it requires new, innovative, and scalable technologies to collect, host, and analytically process the vast amounts of data collected for real-time business insights relating to enhanced consumer, risk, profit, performance, productivity management and shareholder value. Various scientists identify Big Data as a big thing; the fourth paradigm of knowledge; a frontier for innovation, competition, productivity; and the next management revolution; Big Data that brought the science and technology revolution (Sen et al., 2016). If we go by the definitions of the Big Data in several recent journals, it is a series of structured, unstructured, and semi-structured data which provides a lot of information for human needs. (Bello-Orgaz et al., 2016; Chen et al., (n.d), Hashem et al., 2016; Yaqoob et al., 2016). In line with this, (Erevelles et al., 2016) study classifies Big Data into unstructured data, structured data, and semi-structured data to analyse how it impacts value creation which has implications for competitive advantage.

2.2. Value Creation

Respondents interpreted value creation to solve customer problems with better knowledge and a broader market perspective, enabling firms to make better decisions and innovations (Guenzi & Troilo, 2006). The forms of value creation are customer solutions, meeting customer needs, and sharpening relationships with customers (Anderson, 1995; Grönroos, 2011; Harmsen & Jensen, 2004; Lusch & Vargo, 2006; Matthyssens et al., 2016; Srivastava & Singh, 2010; Vargo & Lusch, 2004, 2008; Wieland et al., 2016). Other research states that value creation dimensions are functional value, hedonic value, and social value (Zhang et al., 2017). Functional value refers to the instrumental and functional aspects of social media, and it relates to information seeking. Information seeking shows that consumers evaluate information based on their perceptions of information, that is, the ingenuity and accessibility of information (Al-azzam & Al-mizeed, 2021). If the information that consumers get is what they are looking for, it will undoubtedly have an effect on the value that consumers feel. The hedonic value dimension comes from experiences and feelings of pleasure that are directly related to consumers' emotions and feelings and the process when customers interact with other consumers. Meanwhile, the social value dimension is a social element of the core of social media. The social function of social media lies in consuming it completely satisfying to have real social interactions in the world.

2.3. Innovation Capability

According to (Kulangara et al., 2016) research, innovation ability is the company's ability to offer new or enhanced products or services and implement new or better processes. In other studies, it is also stated that innovation is the creation of the development and implementation of new goods, processes, and services to increase competitive advantage (Jong et al., 2003).

Traditional small and medium enterprises (SMEs) had few resources to measure their performance or problems related to innovation capabilities (Thaher et al., 2021) (Table 1). Previous research conducted by (Pekkola et al., 2014) has shown that the measurement of innovation capability issues are unsatisfactory in Finland SMEs. This is reinforced by the results of another study by (Forsman & Annala, 2011), which states that most SMEs are biased

Table 1: Advantages and Disadvantages of Small Businesses to Innovate

No	Advantages	Disadvantages
1	Making quick decisions	Lack of formal systems to control time and costs
2	Informal culture	Lack of access to financial resources
3	Community with quality relationships such as ease of information	Lack of expertise and experience
4	Vision is clear and easy to share	Lack of long and mid -term strategy and mentor
5	Flexible and agile	Lack of structure and succession planning
6	The spirit of entrepreneurship and risk-taking	Low risk management skills
7	Spirit energy and passionate for innovation	Lack of application in detail and integrated systems
8	Has internal and external networks better	Lack of access to resources

Source: (Tidd & Bessant, 2009).

towards the development of genuine innovations that result in various types of innovation: products, services, processes, production methods, and single functions (Forsman & Annala, 2011; Pekkola et al., 2014).

2.4. Marketing Performance

Marketing performance is the most important thing for all business circles, including SMEs (Lamprinopoulou & Tregear, 2011). The marketing performance in terms of finance can be evaluated from the turnover rate, contribution margin, and profit. Turnover of money, contribution margins, and high profits indicate that the company has good marketing performance. From a competitive market perspective, it can be seen how a company can get a more significant market share than its competitors through its promotions. From the viewpoint of consumer behaviour, a company with good marketing performance will have consumers behave loyally towards the products or services offered by the company. In another research, it is explained that marketing performance is the recognition of a measure of the effectiveness of the overall collaboration (Zhao & Priporas, 2017). This research also illustrated that marketing performance consists of two categories, namely downstream and upstream. Nwokah's (2009) research uses six dimensions including Finance, Competitive Market, Consumer Behaviour, Consumer Intermediaries, Direct Customer, Innovativeness. Meanwhile, (Pugna et al., 2016) research uses two dimensions: internal and external, in the form of financial resources level, human resources, and business sector.

2.5. Hypotheses

From the results of Rehman et al. (2016) regarding the reduction of the Big Data framework to create value for business sustainability, it can be seen the importance of Big Data in creating value. In this study, the reduction of the Big Data framework can help companies optimize profits and maximize company revenue through value creation for customers (V2C) or for companies (V2F). The relationship between innovation capability and marketing performance (Pekkola et al., 2014) can be seen their research, which reveals the relationship between innovation capability and performance moderated by the measurement effect explains that innovation ability is something very important for a company. These innovations can be in the form of new products or services, new production processes, or new structures or administrative systems. Therefore, the company should improve innovation capabilities to enhance marketing performance which is expected to have implications for its existence in running business competition. Innovation capability is the capacity of company which is based on processes, systems, and organizational structures used in product or process innovation (Chen et al., n.d.; Teguh et al., 2021; Vicente et al., 2015). Therefore, this study examines whether Big Data can improve marketing performance directly and through the mediation of value creation and innovation capabilities in small micro enterprises. This study will be based on the following hypotheses:

H1: *Big Data has a positive and significant effect on value creation.*

H2: *Value Creation has a positive and significant effect on marketing performance.*

H3: *Big Data has a positive and significant effect on innovation capability.*

H4: *Innovation capability has a positive and significant effect on marketing performance.*

H5: *Big Data has a positive and significant effect on marketing performance.*

H6: *Big Data has a positive and significant effect on marketing performance through value creation.*

H7: *Big Data has an indirect effect on marketing performance through innovation capability.*

Based on the hypotheses above, the conceptual framework of this study is displayed in Figure 1.

3. Research Methodology

This research is a quantitative study that uses a questionnaire as a medium for data collection. The population and sample of this study were the SME owners who were scattered in the area of West Java, Indonesia. This study used a non-probability sampling technique with accidental type, and Partial Least Square (PLS) was used for data analysis.

4. Results and Discussion

The research was conducted on 150 micro and small business actors whose main products are herbal medicines and/or pharmaceuticals in West Java. Table 2 shows the value of Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE).

Based on the results of Table 2, it can be said that the model used is reliable because the Cronbach's Alpha value on each variable is more than 0.6 (>0.6), and the Composite Reliability value for each variable is more than 0.7 (>0.7). The AVE value measures the validity of the research model. In Table 2, the AVE value for each variable is above 0.5 (>0.5), so that it can be said that the research model is valid.

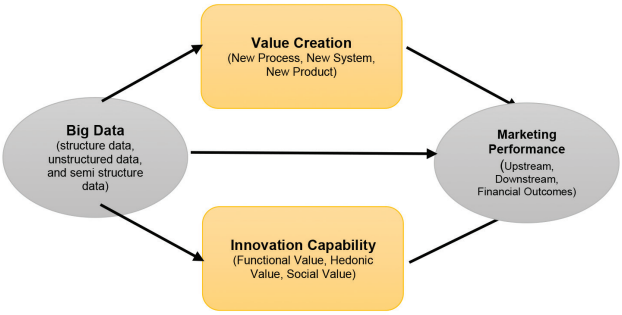

Figure 1: Research Model

Table 2: The Result of Cronbach's Alpha, Composite Reliability, and Average Variance Extract

Variables	CA	CR	AVE
Big Data	0.921	0.937	0.681
Value Creation	0.946	0.955	0.702
Innovation Capability	0.894	0.934	0.825
Marketing Performance	0.913	0.933	0.700

Furthermore, the *R* test was carried out on the research model. If the *R*-square value is above 0.670, it is said to be strong, 0.33 is said to be moderate, and 0.190 is said to be weak (Sarwono & Narimawati, 2015).

The results in Table 3 indicate that variable value creation and innovation capability have moderate *r*-square effects and marketing performance variable has a strong *r*-square result. Table 4 and Figure 2 show the results of the path coefficients and *P*-Values on the models that Smart PLS Bootstrapping has tested.

Based on the bootstrapping test results shown in Table 4, all hypotheses proposed in the study are accepted.

The test results on the first hypothesis (H1) show that Big Data has a positive and significant effect on value creation, with a path coefficient value of 0.608, with a *t*-statistic value of 6,743 which is greater than *t*-table 1.96 (*t*-statistic> *t*-table) and *p*-values of 0.000 (<0.05). This shows that for every 100% increase in Big Data variables, the value creation will increase by 60.8%. This statement is appropriate that the reduction of the Big Data framework aims to create value and optimize profits and maximize company revenue through value creation for customers (V2C) or companies (V2F) (Rehman et al., 2016).

The results of the second hypothesis testing (H2) show that value creation has a positive and significant effect on marketing performance, with a path coefficient value of 0.500, with a *t*-statistic value of 5.403 greater than *t*-table 1.96 (*t*-statistic > *t*-table) and *p*-values of 0.000 (<0.05). This shows that for every 100% increase in variable value creation, the marketing performance will increase by 50%. This statement is appropriate that reducing the Big Data framework to create customer value is associated with the development of new solutions by customers, increasing returns, both input, and output, leading to appropriate and desired outputs (Srivastava & Singh, 2010).

The results of the third hypothesis testing (H3) show that Big Data has a positive and significant effect on innovation capability, with a path coefficient value of 0.586, with a *t*-statistic value of 6,974 greater than *t*-table 1.96 (*t*-statistic > *t*-table) and *p*-values of 0.000 (<0.05). This shows that for every 100% increase in the Big Data variable, the innovation capability will increase by 58.6%. This statement is appropriate for technical innovation capability and non-technical innovation capability to make an impact on the

Table 3: The Result of *R*-Square

Variables	*R*-Square
Value Creation	0.369
Innovation Capability	0.344
Marketing Performance	0.725

Table 4: Path Coefficient

Path	Original Sample (*O*)	*T* Statistik (|O/STDEV|)	*P*-values
Big Data → Value Creation (H_1)	0.608	6.743	0.000
Value Creation → Marketing Performance (H_2)	0.500	5.403	0.000
Big Data → Innovation Capability (H_3)	0.586	6.974	0.000
Innovation Capability → Marketing Performance (H_4)	0.282	3.623	0.000
Big Data → Marketing Performance (H_5)	0.204	2.410	0.016
Big Data → Value Creation → Marketing Performance (H_6)	0.304	3.812	0.000
Big Data → Innovation Capability → Marketing Performance (H_7)	0.165	3.171	0.002

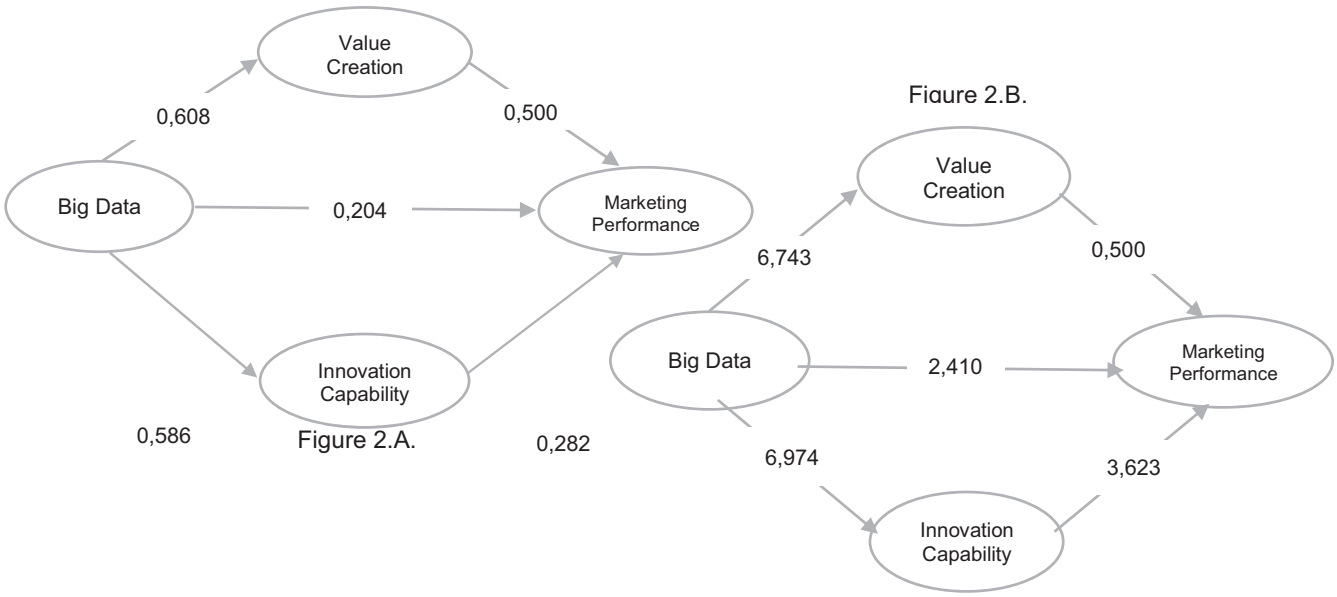

Figure 2: A Result for Outer Model; B Result for Inner Model

complex demographics on company loyalty and reputation (Foroudi et al., 2016). The innovation capability dimension consists of implementing or creating technology applied to new systems for the organization. These two dimensions have indicators that adequately represent other indicators, namely the ability to innovate policies, programs, products, tools, processes, and service innovations (Lin et al., 2010).

The results of the fourth hypothesis testing (H4) show that innovation capability has a positive and significant effect on marketing performance, with a path coefficient value of 0.282, and a *t*-statistic value of 3,623 greater than *t*-table 1.96 (*t*-statistic > *t*-table) and *p*-values of 0.000 (<0.05). This means that for every 100% increase in variable innovation capability, the marketing performance will increase by 28.2%. This statement is appropriate that the relationship between innovation capabilities and marketing performance can be seen in the research which reveals that the relationship between innovation capabilities and performance is moderated by the measurement effect explains that innovation capability is something important for a company where innovations can be in the form of a new product or service, a new production process, or a new structure or administrative system (Pekkola et al., 2014).

The results of the fifth hypothesis testing (H5) show that Big Data has a positive and significant effect on the marketing performance, with a path coefficient value of 0.204, and a *t*-statistic value of 2.410 greater than *t*-table 1.96 (*t*-statistic > *t*-table) and *p*-values of 0.016 (<0.05). This means that for every 100% increase in Big Data variables,

marketing performance will increase by 20.4%. This reveals the importance of the Big Data as one of the keys to the success of an organization or corporation. This is because Big Data can provide relevant information at the right time. Thus, Big Data helps organizations or corporations make real-time and accurate decisions (Alemany Oliver & Vayre, 2015; O'Sullivan et al., 2009).

The results of the sixth hypothesis testing (H6) show that Big Data has a positive and significant effect on marketing performance through mediating variable value creation, with a path coefficient value of 0.304, with a *t*-statistic value of 3,812 greater than *t*-table 1, 96 (*t*-statistic > *t*-table) and p-values of 0.000 (<0.05). This test proves that the value creation statement is interpreted by respondents as the ability to solve customer problems with better knowledge and a broader market perspective, which enables the company to make better decisions and innovations. The dimensions of value creation are functional value, hedonic value, and social value. Functional value refers to the instrumental and functional aspects of social media and information seeking. Information seeking shows that consumers evaluate information based on their perceptions of information, that is, the ingenuity and accessibility of information. If the information that consumers get is what they are looking for, it will undoubtedly affect the value perceived by consumers (Guenzi & Troilo, 2006).

The results of the seventh hypothesis testing (H7) show that Big Data has a positive and significant effect on marketing performance through variable mediation innovation capability, with a path coefficient value of 0.165, with a *t*-statistic value of 3.171 greater than *t*-table 1.96 (*t*-statistic > *t*-table) and *p*-values of 0.002 (<0.05). This test proves that the statement of innovation capability is the ability to continuously transform knowledge and ideas into new products, processes, and systems to benefit the company and its stakeholders (Pekkola et al., 2014).

On the results of the indirect effect, it can be seen that the indirect effect of Big Data on marketing performance through value creation has a more significant effect than the indirect effect of Big Data on marketing performance through innovation capability. This shows that value creation has a greater influence than innovation capability on the relationship of Big Data to marketing performance.

5. Conclusion

Based on the results of the above research, it can be concluded that the application of Big Data in SME producers of food and beverage made from herbal ingredients in West Java during the COVID-19 pandemic to improve marketing performance has had good results, both through value creation mediation and the innovation capability. Value creation has a more significant influence than innovation capability in its role as a mediating variable on the effect of Big Data on marketing performance. Big Data on value creation has the greatest influence compared to other direct and indirect effects. Big Data has a positive and significant effect on value creation, with a path coefficient value of 0.608, with a *t*-statistic value of 6,743 greater than *t*-table 1.96 (*t*-statistic > *t*-table) and *p*-value of 0.000 (<0.05).

Big Data on marketing performance through variable mediation innovation capability has the slightest effect compared to other direct and indirect effects, but the results are still significant. Big Data has a positive and significant impact on marketing performance through the mediation variable of innovation capability, with a path coefficient value of 0.165, with a *t*-statistic value of 3.171 greater than *t*-table 1.96 (*t*-statistic> *t*-table) and *p*-values of 0.002 (<0.05). The results of this study can be used as a reference for researchers to do further studies related to Big Data, marketing performance, value creation, and innovation capability.

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