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The Effects of Business Digitalization and Knowledge Management Practices on Business Performance: Findings from Indonesian Micro, Small, and Medium Enterprises

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Abstract. Studies analyzing the link between business digitalization, knowledge management practices, and business performance are rare, especially within the context of Indonesian Micro, Small, and Medium Enterprises (MSMEs). As such, this study investigates the effects of business digitalization and knowledge management practices on the performance of MSMEs. It thus offers novel insight into the mediative influence of knowledge management on the digitalization and performance of MSMEs. Primary data, collected from 95 entrepreneurs involved in MSMEs, were used to test four hypotheses regarding the effect of business digitalization on knowledge management practices and business performance using a structural equation model. This study finds that digitalization has a positive and significant effect on the knowledge management practices and business performance of MSMEs. It also finds that knowledge management practices have a positive and significant effect on business performance, as it partially mediates the influence of digitalization on business performance. This mediative influence, thus, is an important factor that should be considered when attempting to accurately describe the link between business digitalization and performance. These findings indicate that MSMEs in Indonesia should better explore the potential benefits of digitalization. Likewise, entrepreneurs and managers should attempt to better understand, adopt, and implement digital business and knowledge management practices. These practical recommendations stem from the theoretical findings of this study, i.e., that knowledge management plays an important role in the digitalization of business activities, thereby improving business performance.

Keywords: Digitalization, Business performance, Knowledge management, MSMEs, Indonesia

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play an important role in the Indonesian economy. Law No. 28 of 2008 regarding Micro, Small, and Medium Enterprises defines MSMEs as enterprises with annual sales of no more than Rp 300 million and assets worth no more than Rp 50 million (micro), annual sales of between Rp 300 million and Rp 2.5 billion and assets worth between Rp 50 million and Rp 500 million (small), and sales of between Rp 2.5 billion and Rp 50 billion with assets worth between Rp 500 million and Rp 10 billion (medium). According to Lokadata (2020), in 2018 MSMEs contributed 60.34% of Indonesia's Gross Domestic Product (GDP), a 3.26% increase over the previous year (57.08%); in 2019, this share decreased to 60%. In 2020, MSMEs represented 99% of all Indonesian businesses, accounted for 95% of jobs, and contributed 60% of the nation's GDP (BPS 2020; Jayani, 2020). A study by CISCO (2020) suggested that, through digitalization, Indonesian MSMEs would be able to increase sales by 16% and improve productivity by 14%, thereby contributing an additional US$164 billion to the nation's GDP by 2024. McKinsey and Company, meanwhile, estimate that the digitalization of Indonesian MSMEs would increase Indonesia's GDP by US$140 billion by 2030.

MSMEs' contribution to the national economy may be increased through digitalization. In 2020, the Mandiri Institute surveyed 230 Indonesian entrepreneurs involved in MSMEs (Pusparisa, 2020a; Budiarto et al., 2018). It found that digital and internet technologies were used most heavily within the accommodation (75%), service (55%), and mercantile (47%) sectors. Only 11% of MSMEs involved in construction relied on internet channels. Most MSMEs relied on digital and internet technologies for their

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everyday business activities. A survey conducted by the Katadata Insight Center (Pusparisa, 2020b; Qosasi, et al., 2019), meanwhile, found that 60.2% of MSMEs relied on internet-based social media platforms to market their products; 34% of enterprises used online marketplaces for this purpose. Digitalization improves MSME performance for several reasons (Szopa & Cyplik, 2020; Shettima & Sharma, 2020). The adoption of digital technologies and online sales of goods and services can provide MSMEs with access to new domestic and international markets, thereby giving them significant opportunities to grow and expand (Fauzi & Sheng, 2020).

Digitalization also provides MSMEs with flexibility in space and time, facilitating them in delivering their products and providing customer-based services (Shen, Sun & Ali, 2021; Parviainen et al., 2017). Digitalization can also reduce costs and increase efficiency, as digital trade platforms ease the management of transactions even as they provide access to clients around the world (Eduardsen, 2018; Gruia et al., 2020). Through digitalization, MSMEs can strengthen customer engagement and improve service delivery (Schroeder, 2015), as it provides insight into customers' needs and wants that can be used to develop new products. In other words, digitalization allows MSMEs to engage with customers and rapidly develop new products that can easily and efficiently be marketed and sold (Szopa & Cyplik, 2020).

Rapid advances in digital technology have promoted a revolution in business activities (Agostini & Nosella, 2020; Jordão & Novas, 2017; Rivza, et al., 2020). MSMEs, therefore, must adopt digital technologies and expand their markets to remain competitive (Spivak, 2019). Entrepreneurs with the skill to use digital technology efficiently have proven more competitive (Szopa & Cyplik, 2020; Nwaiwu, Duduci, & Chromjakova, 2020). Digitalization improves business performance, increases production, and provides access to new markets, as it eases businesses' efforts to increase production, identify market opportunities, and communicate with customers (Nwaiwu et al., 2020; Crupi et al., 2020; Perez-Soltero & Leal-Soto, 2017). As such, digitalization is an important factor in the success of MSMEs, as it increases competitiveness and expedites value creation (Perez-Soltero & Leal-Soto, 2017; Ferreira, Coelho, & Weersma, 2019).

Although digitalization has significant benefits for MSMEs, it poses a significant obstacle to many entrepreneurs—especially in Indonesia (CISCO, 2020). Entrepreneurs in Indonesia have had difficulty adopting new technologies as they tend to act reactively to changing market trends (CISCO, 2020). MSMEs that produce traditional clothing, for example, have been unable to optimally use digital technology because they fail to promote their products digitally (Faizurrohman, Baga & Jahroh, 2021). Another obstacle to MSMEs' implementation of modern and digital technologies is the limited availability of resources. Due to their lack of resources, MSMEs cannot readily embrace the dynamic concept of open innovation (Brodny & Tutak, 2022; Saini & Bhargava, 2020)—which underpins the free exchange of ideas and solutions as well as collaborative efforts to apply innovative (digital) technologies (Genest & Gamache, 2020). Unlike larger corporations, for whom the adoption of digital technology has been a relatively simple matter, MSMEs have yet to achieve optimal results (Perez-Soltero & Leal-Soto, 2017). Generally speaking, MSMEs poorly understand the potential benefits of using digital technologies for business activities, and this hinders their efforts to employ said technologies (Fauzi & Sheng, 2020; Byukusenge & Munene, 2017).

The challenges faced by MSMEs in the digital environment are heavily informed by the business environment. As noted by Brody and Tutak (2022), digital maturity—as measured by the absorption of digital technology—differs significantly between developed and developing nations. The absorption of digital technologies is influenced by several factors, including innovation and knowledge (Saini & Bhargava, 2020; Bouncken, Kraus & Roig-Tierno, 2021). To benefit maximally from digitalization, companies must employ diverse forms of knowledge to develop business models suited to the digital environment; it is this element that is provided by knowledge management practices (Bouncken, Kraus & Roig-Tierno, 2021). As a means of identifying, using, and disseminating digital technology, knowledge management can help MSMEs develop the business innovations they require to navigate the digital environment (Ode & Ayavoo, 2020; Abbas, et al., 2020).

The importance of knowledge management in business digitalization was previously underscored by Perez-Soltero and Leal-Soto (2017), who emphasized that knowledge can only be effectively utilized if it is managed properly. Knowledge management can help MSMEs increase their competitiveness by improving efficiency, stimulating innovation, and optimizing customer service (Huusko, Kuusisto-Niemi, & Saranto, 2017). In light of previous studies of business digitalization and performance, it is evident that digitalization necessitates a good model for business performance. MSMEs' ability to digitalize themselves and improve their performance is heavily informed by these businesses' ability to apply knowledge management (Al-Emran et al., 2018; Huusko et al., 2017; Junior et al., 2020). As MSMEs have limited resources, they are frequently unable to employ knowledge management optimally, even though proper knowledge management is ultimately more important for MSMEs than it is for their larger brethren (Ferreira, Coelho, & Weersma, 2019).

Several empiric studies have highlighted the importance of digitalizing MSMEs (Agostini & Nosella, 2020; Gruia et al., 2020; Hånell, Nordman, & Mattsson, 2020; Wang, Wang, & Horng, 2010; Sousa & Rocha, 2019). However, few have investigated this topic, especially in Indonesia. As such,

this study's primary goal is to investigate the link between digitalization and business performance among Indonesian MSMEs—a topic on which the current literature is sorely lacking (Verhoef et al., 2021; Bican & Brem, 2020). Referring to Mizintseva and Gerbina, (2018), knowledge management is a central part of digitalization, as it enables MSMEs to expedite the process and optimize their performance. Within an Indonesian context, understandings of knowledge management's influence on business continue to evolve, and thus further research is necessary to obtain deeper insight. Consequently, the second goal of this study is to analyze the mediative role played by knowledge management in the digitalization and performance of MSMEs.

This study provides several contributions. First, it identifies business owners' perceptions of digitalization and its influence on the performance of their MSMEs (Agostini & Nosella, 2020; Garzoni, Turi, Secundo, & Vecchio, 2020; Viswanathan & Telukdarie, 2021). Studying the influence of business digitalization is necessary to obtain insight into the process in nations such as Indonesia, where 99.99% of businesses are MSMEs (Maksum, Rahayu & Kusumawardhani, 2020; ADB, 2020). Second, this study highlights perceptions regarding the role of knowledge management (be it undertaken knowingly or not) in MSMEs. Third, this study shows the policy challenges faced by Indonesia in its efforts to promote the digitalization of MSMEs as well as research and development programs. Indonesia's MSMEs have limited resources, and thus digitalization requires particular strategies (ADB, 2020).

Business Digitalization

Business digitalization is understood as a breakthrough process through which enterprises adopt new means of doing business. Through this process, businesses shift away from conventional technologies in favor of new ones that facilitate innovation, model development, and service provision (Joshi et al., 2021; Szopa & Cyplik, 2020). Business digitalization may also be defined as the adoption and application of digital technologies by businesses in their business activities, thereby fostering connectivity between organizations and individuals (Lee, Falahat & Sia, 2020; Martinez, 2019; Gruia et al., 2020). Business digitalization emphasizes the conversion of analog information into digital information, as a result of which businesses can become more competitive, create and exploit new opportunities, and expand their operations (Ilcus, 2018; Martinez, 2019; Rivza et al., 2020). Business digitalization is characterized, among other things, by rapid response to market shifts and customer tastes (Szopa & Cyplik, 2020). For MSMEs, digitalization offers the potential to reduce costs, introduce new products and services, collaborate better with other entities, and reach wider markets (Bokša, Šaroch & Bokšová, 2020; Quinton et al., 2018). Enterprises may also use business digitalization to process information and maintain social relations with customers. When customer relations are practiced through social media, customers can become more involved in the development of products and services, thereby enabling greater innovation (Cheng & Shiu, 2019). Digitalization also refers to the continued adoption of digital technology by enterprises, thereby enabling them to automate their business processes, optimize operations, and increase efficiency, thereby increasing competitiveness (Garzoni et al., 2020). Lukonga (2020) emphasizes the importance of technology (particularly digital platforms) in the modern economy.

The use of digital platforms provides entrepreneurs with the opportunity to overcome size-based challenges and improve profitability, thereby accessing new markets, sourcing channels, and networks (OECD, 2021). At the same time, digitalization provides businesses with a more efficient environment in which they may expand their networks, thereby increasing competitiveness and productivity (Lukonga, 2020). Around the world, studies of digital technology and its adoption by businesses have underscored the importance of digitalization. OECD (2021) analyzed the digitalization of MSMEs in six countries—Australia, Denmark, France, Korea, New Zealand, and the United Kingdom—vis-à-vis these businesses' online platform usage, transaction costs, information asymmetries, effects, customer bases, global reach, and innovation opportunities during the COVID-19 pandemic. It found that online platforms have made it possible for MSMEs to reduce transaction costs and information asymmetries, create direct and indirect network effects, increase customer bases and global reach, overcome size-based challenges, and create innovation opportunities. Through digitalization, MSMEs (particularly hotels, restaurants, taxis, and retailers) can increase their productivity.

Cenamor, Parida, and Wincent (2019) write that using digital platforms makes it possible for MSMEs to improve their ability to communicate with external partners and practice information management. Ultimately, businesses' ability depends heavily on the capacity of their networks. Their study of MSMEs in Sweden considered several variables: digital platform capability, network capability, performance, and exploitation orientation, found that MSMEs' digital platform capability enables them to increase efficiency and promote innovation through integrated processes and continued reconfiguration of interactions with external partners. However, the potential benefits of digitalization are ultimately limited by MSMEs' ability to improve their usage of digital platforms and networks.

Lukonga (2020) studied the practice of business digitalization by MSMEs in 21 countries in the Middle East and Northern Africa, as well as Afghanistan and Pakistan (MENAP), finding that digital technology has the potential to improve productivity and expedite businesses' integration into the digital economy. Lukonga (2020) argued that, to become effective mechanisms for inclusive growth, MSMEs must

reconsider their development strategies and prioritize business digitalization. Big data, cloud computing, the Internet of Things, artificial intelligence, and machine learning can increase efficiency, reduce expenditures and operational costs, and facilitate international transactions. Broadband internet and digital technology likewise help companies develop more rapidly, create jobs, and increase business output.

Business Performance

Entrepreneurs' ability to digitalize their business activities will strongly influence the performance of their enterprises (Domi, Capelleras & Musabelliu, 2020; Cenamor, Parida, & Wincent, 2019; Aydiner, et al., 2019). Digitalization, where conducted through the adoption of business analytics, can create additional value for companies as it provides a means of increasing market competitiveness (Aydiner, et al., 2019). Business is a complex and multidisciplinary process, one that requires specific knowledge of all operations and resources as well as a means of analyzing business interactions and identifying potential spaces for improvement. Only when these elements are present can decisions be made to optimize business process performance (BPER) and firm performance (FP) (Aydiner et al., 2019). One study of 204 mid-level managers in Turkey investigated the most product-intensive MSMEs involved in the manufacturing and service sectors. In the manufacturing sector, MSMEs included producers of foods and beverages, durable goods, chemicals, pharmaceuticals, plastics, electronics, machines, textiles, leather goods, and clothing. In the service sector, meanwhile, MSMEs included those involved in investment, banking, finance, transportation, telecommunications, media, information technology, construction, real estate, health and social services, and retail facilities. Aydiner et al. (2019) concluded that the adoption of business analytics positively influences BPER and FP, through the effect is more marked in businesses of a certain size.

Business digitalization can improve business performance, particularly amongst MSMEs, as digital processes make it simpler for companies to orient themselves toward consumers (Domi, Capelleras & Musabelliu, 2020). Such a customer orientation drives MSMEs to develop unique approaches to meeting customers' needs, increasing sales, and maximizing profits. It also enables MSMEs to cultivate a culture of innovation while developing new products and services. The more companies focus on the desires and needs of their customers, the more likely they are to develop innovative approaches. This has been supported by a study of 211 Albanian MSMEs active in the tourism sector, which found that digitalization serves to increase customer orientation, which correlates positively not only with MSME performance but also with entrepreneurs' innovativeness and innovation behavior. The influence of innovation on business performance depends heavily on the type of innovation and the aspect of performance under consideration. Most studies of innovation and performance have focused on the link between technological innovation (particularly in product development) and business growth (particularly in sales) (Exposito & Sanchis-Llopis, 2018). Per this discussion, if MSMEs conduct business digitalization, they should be able to enhance their performance. Accordingly, the following hypothesis is proposed:

Hypothesis 1: Business digitalization positively influences business performance

Knowledge Management Practices

Digitalization requires knowledge, a cornerstone of innovativeness (Abbas, et al., 2020; Hassan & Raziq, 2019). Knowledge makes it possible to ascertain the success of digitalization and increase business performance using a knowledge-based view (KBV) (Yli-Renko, Denoo, & Janakiraman, 2020; Viswanathan & Telukdarie, 2021). According to KBV, knowledge creates innovation and maximizes competitiveness (Yli-Renko, Denoo, & Janakiraman, 2020; Herden, 2020; Damanpour, Walker, & Avellaneda, 2009). KBV holds that knowledge is foundational for business activities, as it provides companies with a competitive advantage over similar ventures (Klein et al., 2010). MSMEs that develop knowledge-based approaches can distinguish themselves from their competitors through appropriate knowledge management strategies (Im, Kim & Bond III, 2020). Knowledge, be it tacit knowledge, explicit knowledge, or embedded knowledge, promotes innovation within MSMEs (Walker, 2017; Gubbins & Dooley, 2021).

The empirical literature has highlighted the importance of knowledge management in promoting a strategic orientation and improving performance (Abbas, et al., 2020; Hassan & Raziq, 2019; Massaro et al, 2016). Knowledge refers to the process through which knowledge is managed and utilized, both within and without an organization, to optimally achieve an organizational goal (Ode & Ayavoo, 2020; Abbas, et al., 2020). It is understood as a motor for the growth and development of knowledge capital (broadly defined), occupying a central role for all subjects and contributing to the formulation and development of organizational strategies for accumulating intellectual capital (Jordão & Novas, 2017). As such, knowledge management provides businesses with a competitive edge that enables them to optimize profits (Hassana & Raziq, 2019). It helps businesses identify solutions to problems, develop dynamic training programs, and make decisions. Knowledge management practices enable companies to maximize their innovativeness, be it directly or indirectly (Al-Emran et al., 2018; Xie, Zou, & Qi, 2018).

From another perspective, Hussain et al. (2019) argue that knowledge management refers to a strategy used by companies to create knowledge, values, and metrics, as well as map, index, transport, store, distribute, and share them. By applying knowledge

management, businesses can employ a systematic framework for employees to share and communicate their knowledge with others, thereby optimizing business performance (Tan & Ramayah, 2018; Shahzad, 2020). As with Tan and Ramayah (2018), Junior et al. (2019) define knowledge management as the process through which knowledge is stored. They argue that it must not only be comprehensive but also explicit, as only explicit knowledge can be properly stored in digital information management systems and operating manuals. This thus necessitates the coding, organization, and externalization of tacit knowledge, which may prove to be a significant challenge for any organization. Briefly, knowledge management is important for all business organizations, as it makes it possible for enterprises to survive and thrive (Byukusenge & Munene, 2017; Bouncken, Kraus & Roig-Tierno, 2021). A study by Junior et al. (2019) emphasized that digitalization makes businesses more effective in coding, organizing, and externalizing their tacit knowledge and achieving the desired performance increases. Junior et al. (2019) investigated the application of digital Knowledge Management Systems (KMS) by 33 MSMEs in Brazil, producing taxonomic insight into these enterprises' strategies for using knowledge management systems. Noting a reciprocal link between knowledge management tools and practices, they concluded that MSME initiatives designed to implement said tools and practices are better able to increase their efficiency and productivity.

As for developing nations, Byukusenge and Munene (2017) investigated the link between business digitalization, knowledge management, and business performance. Taking as their sample 377 MSMEs in Kigali City, Rwanda, they considered the mediative effect of knowledge management and business performance using the variables of knowledge management (acquisition, sharing, and application/responsiveness), business performance, and innovation. This study confirmed that innovation fully mediates the link between knowledge management and business performance in MSMEs. A study of MSMEs in Pakistan by Najma and Raziq (2019) found that, through knowledge management, companies can hone their competitive edge. This study, which considered the link between knowledge management and innovation, found a positive correlation between knowledge management processes and radical innovation. This, in turn, provides clear evidence that knowledge management processes and radical innovation play a vital role in the creation of management values and the realization of competitive advantage through innovation. Furthermore, they showed that knowledge acquisition contributes significantly to firm performance and innovation. When more ideas are extracted and exploited from internal and external sources, employees are better able to transform existing resources into new knowledge that can lead to innovation. In other words, the ability to draw knowledge from multiple sources enables companies to be more competitive.

The important role of digitalization and knowledge management in business performance has also been found in developed nations. Salojarvi et al. (2005) investigated 108 MSMEs in Finland to ascertain the correlation between sustainable sales growth and knowledge management activities. They found that annual sales growth is strongly correlated with knowledge management awareness and that higher levels of knowledge management are positively associated with sustainable sales growth in companies that have implemented a more comprehensive approach.

Knowledge management practices are always claimed and positioned as improving the performance of businesses through their innovation capability (Chatchawanchanchanakij & Kittisak Jermsittiparser, 2020; Lai et al., 2022; Cardoni et al. 2020). A study by Chatchawanchanchanakij and Kittisak Jermsittiparser (2020) of 520 MSMEs in Thailand found that knowledge management practices are positively correlated with business performance. Proper management improves business performance through mediation and innovation. This study not only found that MSMEs in Thailand are interested in applying technological innovations, but also that these companies' employees require sufficient knowledge to improve their employees' abilities and business performance. The elements contained within knowledge management practices make it possible for enterprises to explore and exploit tacit knowledge, thereby making innovation possible (Lai et al., 2022). According to Lai et al (2022), systems that implement knowledge management efficiently are better able to innovate and perform. A study of 157 Taiwanese companies involved in the finance, retail, and transportation industries found that knowledge management involves codified values, trust, and knowledge, thereby improving innovativeness and business performance.

The link between knowledge management and innovation was also identified by Cardoni et al (2020). Based on a study of 219 mid-sized Italian enterprises involved in knowledge-reliant industries, Cardoni et al. (2020) conclude that knowledge management practices can improve business performance when companies have adequate performance measurement systems (PMS) in place. MSMEs, many of which still operate in the informal sector, generally make decisions as though they were family enterprises rather than professional enterprises. Where MSMEs have implemented appropriate knowledge management practices, PMS enables them to optimize their business activities.

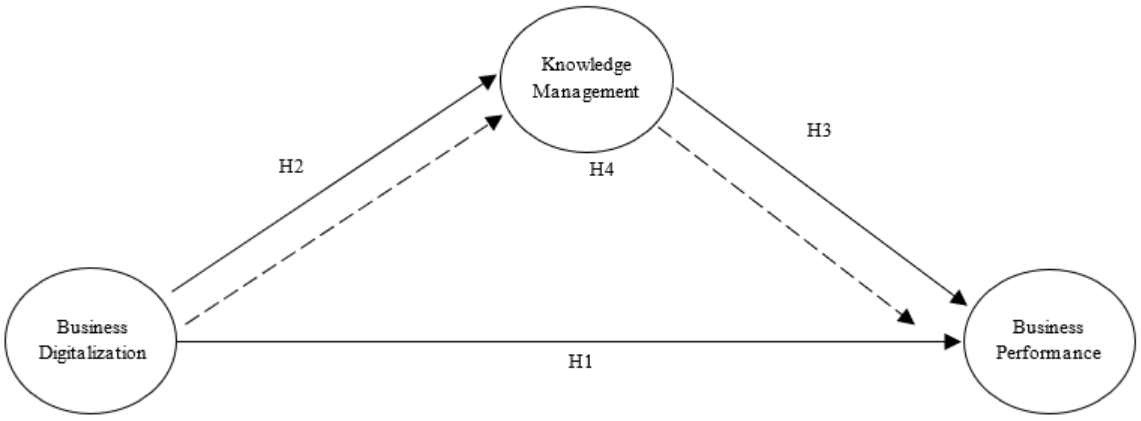
Based on the above, the following hypotheses are proposed:

Hypothesis 2: Business digitalization has a positive effect on knowledge management.

Hypothesis 3: Knowledge management practice has a positive effect on business performance.

Hypothesis 4: Knowledge management practice mediates the positive effect of business digitalization on business performance.

Figure 1: The Conceptual Model



RESEARCH METHOD

Respondents and data collection

To ensure representativeness, any sample must consist of entrepreneurs from diverse demographic and geographic backgrounds. Before sample selection, the contact information (email addresses, telephone numbers, and physical addresses) of potential respondents was collected with the assistance of the Ministry of Trade, Republic of Indonesia. A staff member distributed the survey instrument to the owners and operators of MSMEs throughout Indonesia. The survey instrument, a questionnaire distributed through Google Forms, was available for completion between March and October 2021. As shown in Table 1, this questionnaire was completed by entrepreneurs in fourteen provinces, with the most respondents coming from the Jakarta Capital District, Central Java, and West Java.

Table 1. Composition of sample by province.

	Province	Number of Respondents	(%)
1	DKI Jakarta	26	27.4
2	Jawa Tengah	17	17.9
3	Jawa Barat	14	14.7
4	Jawa Timur	9	9.5
5	Banten	8	8.4
6	Sulawesi Tengah	7	7.4
7	Bali	5	5.3
8	Nusa Tenggara Barat	3	3.2
9	Bangka Belitung	1	1.1
10	Kalimantan Barat	1	1.1
11	Lampung	1	1.1
12	Sulawesi Tenggara	1	1.1
13	Sumatera Selatan	1	1.1
14	Sumatera Barat	1	1.1
	Total	95	100

A total of 95 entrepreneurs completed the survey. The vast majority of these respondents (82, or 86.3%) operated MSMEs with fewer than ten employees. Of these MSMEs, 71.6% had sales of less than Rp 300 million (Table 2) and 63.2% had been established less than three years previously (63.2%). Many (63.2%) relied primarily on Instagram for their sales. Most respondents (57, or 60%) were women. In terms of education, 51 respondents (53.7%) had completed an undergraduate degree at a university. As mentioned above, the majority of MSMEs (86.3%) had fewer than ten employees. Another nine MSMEs (9.5%) had 11 to 30 employees, while the remaining four (4.2%) employed more than thirty people.

Table 2. Profile of respondents

	Category	Frequency	%
Gender	Male	38	40,0
	Female	57	60,0
		95	100.0
Total number of employees	≤ 10	82	86,3
	11 – 30	9	9,5
	> 30	4	4,2
		95	100.0
Sales per year	Maximum IDR 300 million	68	71,6
	> IDR 300 million – IDR 2.5 billion	21	22,1
	> IDR 2.5 billion – IDR 50 billion	6	6,3
		95	100.0
Education	Senior High School	22	23,2
	Diploma (D1-D4)	11	11,6
	Bachelor degree)	51	53,7
	Master (S2)	10	10,5
		95	100.0
Firm age	Less than 3 – 5 years	60	63,2
	6 – 10 years	18	18,9
	> 10 years	17	17,9
		95	100.0
Social media platform	Facebook	35	36,8
	Instagram	60	63,2
		95	100.0

A plurality of the MSMEs covered in this study (44.2%) were involved in the food and beverage industry. Another 9.5% of enterprises were involved in the clothing industry. Other industries were less represented, averaging only 1%.

Table 3. MSMEs by industry/sector

Business Field	N	(%)
Food	42	44.2
Clothes	9	9.5
Daily needs	1	1.1
Leather product manufacture	1	1.1
Phone credit	1	1.1
Craft	4	4.2
Livestock and related products	4	4.2
Photocopy	1	1.1
Furniture	2	2.1
Imported children's toys	1	1.1
Medical (dental clinic)	1	1.1
Coffee powder production	3	3.2
Beverages	3	3.2
Metal trading	1	1.1
Design and construction	6	6.3
Textile	3	3.2
Agriculture	2	2.1
Accessories (craft)	8	8.4
Beauty treatment product and services	2	2.1
	95	100

Table 4. Survey items

Constructs	Items	Reference
Business digitalization (BD)	1. My MSME uses the internet for administrative purposes. 2. My MSME conducts sales online using an e-commerce website/application. 3. My MSME uses the internet to publish and transmit invoices. 4. My MSME uses the internet to interact with suppliers. 5. My MSME uses the internet to interact with customers. 6. My MSME uses the internet to interact with other partners. 7. My MSME uses the internet to receive orders.	Szopa dan Cyplik, 2020; Tan & Ramayah, 2018; Byukusenge & Munene, 2017; Lukonga, 2020; Garzoni, Turi, Secundo & Vecchio, 2020
Knowledge Management Practices (KM)	1. My MSME seeks knowledge of new products/services. 2. My MSME seeks knowledge of new products/services from suppliers. 3. My MSME seeks knowledge of new products/services from competitors. 4. My MSME seeks knowledge of ways to increase efficiency. 5. My MSME uses new knowledge. 6. My MSME has a means of protecting its innovations/knowledge. 7. My MSME has clear strategies for storing knowledge. 8. My MSME has a means of distributing and presenting information to employees. 9. My MSME has a system for recognizing employees who distribute knowledge.	Abbas, et al., (2020), Gubbins dan Dooley (2021), Hassan dan Raziq (2019) dan Massaro et al, (2016).
Business performance (BP)	1. My MSME improved its sales after offering online services. 2. My business administration became more efficient after implementing internet-based information systems. 3. My MSME experienced high cash flow after embracing the internet and digital business technologies. 4. The quality of my products was improved by the innovations made possible by internet technology and information systems. 5. I was able to reduce costs after implementing internet technologies and digital business networks. 6. My MSME was able to improve its sales targets after using information technology systems to initiate online sales. 7. My MSME was able to improve its profits after using information technology systems to initiate online sales.	Aydiner et al., (2019); Domi, Capelleras dan Musabelliu (2019) Exposito dan Sanchis-Llopis (2018), Ali, Gongbing dan Mehreen (2020).

Variables and Measurements

This study takes business performance as its dependent variable, business digitalization as its independent variable, and knowledge management practices as its mediator variable. All of these variables are measured using items derived from previous studies, with all responses using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Business digitalization was measured based on MSMEs' application and adoption of digital technology for everyday business operations. Standards were based on previous studies (Szopa & Cyplik, 2020; Tan & Ramayah, 2018; Byukusenge & Munene, 2017; Lukonga, 2020; Garzoni, Turi, Secundo & Vecchio, 2020). Items considered businesses' adoption of technology for business administration, internal communication, and external communication with outside stakeholders (clients, suppliers, and partners). Meanwhile, business performance was measured using the items developed by Aydiner et al., (2019); Domi, Capelleras, and Musabelliu (2019); Exposito and Sanchis-Llopis (2018); and Ali, Gongbing, and Mehreen (2020). The items contained in these articles were deemed capable of measuring MSMEs' ability to compete in and adapt to changing business environments.

Knowledge management practices were operationalized through four elements (Abbas, et al., 2020; Hussain et al., 2019; Odea & Ayavoob, 2020; Gubbins & Dooley, 2021; Kasˇćela et al., 2020; Ngah & Wong 2019; Hassan & Raziq, 2019; Massaro et al, 2016). The first element was MSMEs' ability to obtain and retain knowledge (i.e., discovery, capture, and storage) by recognizing needs and by acknowledging existing resources and processes. Also considered were companies' ability to acquire and create knowledge, as well as their capacity to share and transfer it (Odea & Ayavoob, 2020; Balasubramanian, Al-Ahbabi & Sreejith, 2019). Also important is the relevance and transfer of knowledge, as well as the application of knowledge and maintenance of balance (Balasubramanian, Al-Ahbabi & Sreejith, 2019; Shahzad, 2020; Tan & Ramayah 2018).

Analytical Technique

This study is quantitative, with analysis conducted using the multivariate Structural Equation Model (SEM). According to Hair, Matt, and Howard (2020), SEM is a statistics-based modeling technique that tests the link between a construct and the latent variables that constitute the system. SEM enables researchers to statistically model complex theories (Schuberth et al., 2020). SEM can also be used for causal modeling, as it enables researchers to analyze the causal link between constructs and variables (Ruben et al., 2020; Lowry & Gaskin, 2014) and predict critical constructs (Cepeda-Carrion, Cegarra-Navarro, & Cillo, 2019).

SEM was also selected because of the exploratory nature of this study, which seeks to identify the potential ties between variables, i.e., the effect of business digitalization on the performance of MSMEs, which is suspected to be mediated by the application of knowledge management practices. Inductive reasoning was used, with the PLS-SEM model created through productive dialogue between theory and data (reality) to better identify and explore the association between these variables (Hair, Matt, & Howard, 2020; Schuberth et al., 2020). The use of this method is appropriate, as the research model offered can be further developed to explain and predict the association between variables (Hair, Matt, & Howard, 2020; Cepeda-Carrion, Cegarra-Navarro, & Cillo, 2019). Furthermore, PLS-SEM analysis was used because it does not require the analyzed data to have a normal

distribution (Hair, Matt, & Howard, 2020).

PLS-SEM analysis was conducted in two stages, i.e., Measurement Model Analysis (MMA) and Structural Model Analysis (SMA) (Hair, Matt, & Howard, 2020). MMA was used to verify the convergent validity, discriminant validity, and reliability of the model. Convergent validity was measured based on the size of the average variance extracted (AVE) and loading factor. Discriminant validity, meanwhile, was measured using the Fornel–Larcker criteria as well as heterotrait–monotrait (HTMT) comparison (Cepeda-Carrion, Cegarra-Navarro, & Cillo, 2019; Henseler, Ringle & Sarstedt, 2015). Reliability testing was conducted by measuring the composite reliability (CR) value. SMA was conducted during the second phase, during which the researcher examined the coefficient of determination (R^2), conducted multicollinearity testing using the variance inflation factor (VIF), and evaluated the predictive relevance using cross-validated redundancy (Q^2), effect size (f^2), path coefficient, and the fitness of the model.

Knowledge management was positioned as a mediator variable in this study, and thus analysis also investigated the mediative influence of this variable. According to Hair, Matt, and Howard (2020), two criteria must be met before a variable is found to have a mediative role in SEM. First, the direct influence of variables must be significant without including the mediator variable. Second, the indirect influence of variables with the mediator variable included must be significant. In such cases, the direct effect between variables will be reduced after including the mediator variable, even as the coefficient remains significant at all stages. Finally, the extent of the mediative effect must be ascertained based on the variance accounted for (VAF). A VAF of less than 20% indicates no mediation; a value between 20% and 80% indicates partial mediation; and a value of greater than 80% indicates full mediation (Jung, 2021; Wong, 2016; Na-Nan; Kanthong & Joungtrakul, 2021).

RESULT AND DISCUSSION

Measurement Model Analysis

The measurement model was examined using composite reliability (CR) and Cronbach Alpha values. The CR values of all constructs meet applicable standards if they are greater than zero, indicating that the reliability criterion has been fulfilled. The Cronbach Alpha value must be at least 0.7 (Hair, Matt, & Howard (2020), and the CR value may range between 0 and 1; a CR value of between 0.6 and 0.7 indicates an acceptable level of reliability, while a CR value of between 0.7 and 0,9 indicates a successful level of reliability. The outer model was subsequently analyzed to ascertain convergent validity, based on Average Variance Extracted (AVE), with a value greater than 0.5. The AVE value for each of the Business Digitalization, Business Performance, and Knowledge Management constructs was greater than 0.5, indicating that all of the indicators and latent variables contained within the model were valid convergently and constructed well.

Table 5. Reliability and validity criteria for the constructs

Construct	AVE	Composite reliability	Cronbach's Alpha
Business Digitalization (BD)	0,707	0,923	0,893
Business Performance (BP)	0,649	0,928	0,909
Knowledge Management (KM)	0,743	0,963	0,957

Referring to Hair, Matt, and Howard (2020), the minimum value for convergent validity is 0.6; a loading factor of 0.6 indicates that the construct is good and valid, while a loading factor of 0.7 or greater indicates that the constructs can explain 50% of the variance in the indicators. Table 6 indicates that each indicator has a loading factor of greater than 0.6, indicating convergent validity for each construct.

Table 6. Convergent validity using loading factor

Constructs	Items	Loadings
Business Digitalization (BD)	BD1	0,779
	BD4	0,884
	BD5	0,884
	BD6	0,934
	BD7	0,701
Business Performance (BP)	BP1	0,804
	BP2	0,760
	BP3	0,764
	BP4	0,841
	BP5	0,764
	BP6	0,805
	BP7	0,891
Knowledge Management	KM1	0,865
(KM)	KM2	0,894
	KM3	0,895
	KM4	0,869
	KM5	0,885
	KM6	0,822
	KM7	0,847
	KM8	0,859
	KM9	0,816

Next, discriminant validity was conducted to ascertain whether the constructs used differed from the other constructs within the model (Hair, Matt, & Howard, 2020). The discriminant validity of the constructs was examined using the Fornell-Larcker Criterion (Hair, Matt, & Howard, 2020). As shown in Table 7, the root AVE for each construct was larger than the correlation value of the other constructs. As such, it may be concluded that business digitalization, business performance, and knowledge management are unique constructs, and discriminant validity has been ensured.

Further testing was conducted using the heterotrait–monotrait ratio (HTMT) (Hair, Matt, & Howard, 2020). The HTMT value shows the heterotrait-monotrait correlations of all constructs by comparing the mean and average of the correlation indicators for the

Table 7. The Discriminant validity

	BD	BP	KM
BD	**0,841***		
BP	0,788	**0,805***	
KM	0,782	0,741	**0,862***

Note: *Average Variance Extracted (AVE) square root in bold.

same construct (Hair, Matt, & Howard, 2020). If the HTMT approaches 1, the construct has low discriminant validity. As such, to ensure discriminant validity, the HTMT value should be less than 0.9 (Hair, Matt, & Howard, 2020). Results of HTMT are shown in Table 8. The results show that the HTMT value for all constructs is less than 0.9, indicating an acceptable level of discriminant validity.

Table 8. Heterotrait–monotrait (HTMT)

	BD	BP	BKM
BD			
BP	0,872		
KM	0,837	0,780	

Note: HTMT < 0,85 (Kline, 2011), HTMT < 0,90 (Gold et al., 2001).

Structural Model Analysis

In PLS-SEM, the inner structural model is tested by considering (1) collinearity at the construct level using the variance inflation factor (VIF) value; (2) explained variance R^2, (3) predictive relevance through cross-validated redundancy (Q^2), (4) effect size (f^2), and (5) path coefficient (Hair, Matt, & Howard, 2020; Benitez, 2020). Collinearity indicates that two independent constructs may be correlated. It may be detected by calculating the VIF value. Hair, Matt, and Howard (2020) indicate that, within the context of PLS-SEM, the VIF value should be below 5. A VIF value greater than 5, but less than 10, indicates that multicollinearity exists but is not a serious concern (Kennedy 2008; Kutner, Christopher & Neter, 2004). When variables are highly correlated, the constructs are not orthogonal and thus the model has limited predictive ability. VIFs of constructs are shown in Table 9. All VIFs are found < 5, therefore the collinearity issue is not present between constructs.

Table 9. Collinearity test

Constructs	Items	Variance Inflation Factor (VIF)
Business Digitalization (BD)	BD1	1,901
	BD4	3,515
	BD5	3,341
	BD6	5,292
	BD7	1,761
	KM1	4,454
Knowledge Management (KM)	KM2	6,026
	KM3	6,066
	KM4	4,504
	KM5	4,541
	KM6	5,072
	KM7	6,575
	KM8	4,177
	KM9	3,549
	BP1	2,989
Business Performance (BP)	BP2	4,059
	BP3	3,696
	BP4	2,929
	BP5	2,336
	BP6	3,034
	BP7	4,424

Assessing the R^2

The coefficient of determination (R^2) is used to evaluate the structural model (Hair, Matt, & Howard, 2020; Garson, 2016) and thus serves an explanatory function. R^2 consists of three thresholds, i.e., 0.75, 0.50, and 0.25. A value of 0.75 or greater is substantial; 0.5 is moderate; and 0.25 is weak (Hair, Matt, & Howard, 2020). The R^2 value for the business performance variable is 0.661, indicating that the business digitalization and knowledge management variables can explain 66.1% of variations in business performance; the remaining 33.9% are explained by variables other than the ones analyzed in this research. In other words, the exogenous latent variables have a moderate ability to predict changes in business performance. Business digitalization has an R^2 of 0.612, indicating a moderate influence on knowledge management. Finally, business performance can explain 61.2% of variations in knowledge management, with the remaining 38.8% attributed to variables other than those considered in this study.

Assessing the Effect Size (f^2)

The effect size (f^2) provides a means of quantifying how the coefficient of determination (R^2) changes when the exogenous latent variables are removed from the model. As such, it provides a means of measuring how each exogenous construct contributes to the R^2 (Garson, 2016; Verma & Naveen, 2021). If f^2 is less than 0.02, influence is minimal; an f2 of 0.15 indicates a moderate influence; and an f^2 of 0.35 indicates a significant influence (Reyes-Mercado, 2018; Garson, 2016). Table 10 shows that business digitalization significantly influences MSMEs' performance. Knowledge management, meanwhile, has little influence on the endogenous construct of business performance. The construct of business digitalization, meanwhile, has a moderate influence.

Table 10. *f2* Effect size

	BP	KM
BP	-	-
BD	0,331	1,576
KM	0,117	-

Hypothesis Testing

T-testing was conducted to ascertain the significance of influence between variables, using the bootstrapping method as well as re-sampling in SmartPLS (Reyes-Mercado, 2018; Ringle et al., 2015). If the t-statistic value produced by bootstrapping is larger than the t-table, the connection between variables may be deemed significant (Ringle et al., 2015). In this study, the t-table value was set using a level of confidence of 95% ($\alpha = 5\%$), two-tail and degree of freedom = 95 – 3 = 92. The t-table value was thus established to be 1.986. Testing H1 (Table

11), it was found that business digitalization has a significant effect on performance in MSMEs, (β = 0,532) (t-statistics = 4,173). The standardized coefficient value for H1 (0.532) indicates a positive correlation, as hypothesized, and thus H1 is supported. When MSMEs are digitalized, their business performance improves.

Digitalization also has a significant direct influence on performance (β = 0.780) and t-statistics (11.707); as such, H2 is accepted. Business digitalization has a positive influence on knowledge management; when digitalization occurs, MSMEs are better able to manage knowledge. This study also finds that knowledge management practices have a direct and positive effect on business performance, with β = 0.325 and t-statistics of 2.789. As such, H3 is also accepted. In other words, knowledge management practices are positively correlated with business performance; when knowledge management practices are improved, so does business performance.

Mediation Analysis

Knowledge management was positioned in this study as a mediator variable; as such, in H5, it was hypothesized that knowledge management serves to mediate the influence of business digitalization on business performance. To analyze such mediative influences, it is necessary to test the direct effect of the exogenous variable on the endogenous variable, which must be significant even without the mediative influence of a third variable (Baron & Kenny, 1986; Hayes, 2018). As noted earlier, H1 was supported; business digitalization has a direct and significant influence on business performance, as shown by t-testing. Mediative influence can then be shown by including the mediator variable (knowledge management) in the PLS channel to test the indirect influence. If the mediator variable is found to have a significant role, it is proven to influence the process through several channels. Testing indicated that knowledge management serves as a significant mediator, with β = 0.254 and t-statistics of 2.692.

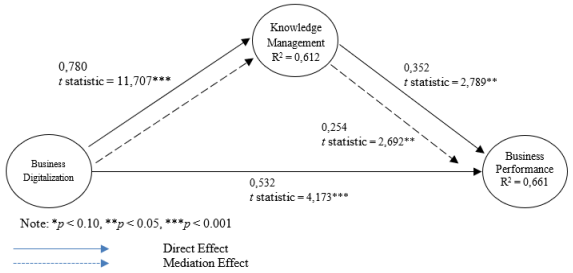
To ascertain the number of channels through which the mediator variable (knowledge management) influences the association between the other variables, it is necessary to calculate the variation accounted for (VAF) (Meule, 2019; Wong, 2016; Hair, Matt, & Howard, 2020) using the formula VAF = (indirect effect/total effect (direct effect + indirect effect). According to Hair, Matt, and Howard (2020), a VAF of less than 20% indicates no mediation; a value between 20% and 80% indicates partial mediation; and a value of greater than 80% indicates full mediation. In this case, the VAF for the direct effect of business digitalization on performance (0.532) was written as a; the direct effect of business digitalization on knowledge management (0.780) was written as b, and the direct effect of knowledge management on business performance (0.325) was written c. Calculations were thus conducted using the formula b x c = d, or 0.780 x 0.325 = 0.2535; a + d = e or 0.532 + 0.2535 = 0.7855.

Table 11. Hypotheses testing and structural relationships

Hypotheses/Path		Path coefficients	*t* statistic	Decision
H1	BD -> BP	0,532	4,173	Supported
H2	BD -> KM	0,780	11,707	Supported
H3	KM -> BP	0,325	2,789	Supported
H4	BD -> KM -> BP	0,254	2,692	Supported

Note: *p < 0,10; **p < 0,05; ***p < 0,001; BD = Business Digitalization
BP = Business Performance, KM = Knowledge Management

Figure 2. Structural relationship



The VAF value was thus 0.2535/0.7855)*100 = 67.72. This analysis thus found that knowledge management partially mediates the effect of business digitalization on business performance.

According to Benitez et al. (2020), one approach to measuring model fit through PLS modeling is the Standardized Root Mean Square Residual (SRMR), an index of the average of standardized residuals between the observed and the hypothesized covariance. SRMR has a value of between 0 and 1, with model fitness indicated by a value of less than or equal to 0.05 (Kock, 2020). The smaller the SRMR value, the better the fitness of the model being analyzed. As shown in Table 12, the SRMR for the model under consideration is 0.05, indicating good fitness.

Table 12. Results of the model fit

SRMR	0.05
d_ULS	1.39
d_G	0.46
NFI	0.84
Chi-Square	894.53

Discussion

This study seeks to investigate the influence of business digitalization and knowledge management practices on the performance of MSMEs. PLS-SEM was used to analyze the direct and indirect effects of business digitalization, as mediated by knowledge management practices, on the performance of MSMEs. This study finds that digitalization has a positive and significant influence on the performance of MSMEs (H1). Business digitalization is shown to have a positive and significant influence on knowledge management (H2), and knowledge management is found to affect performance (H3) positively and significantly. Knowledge management is also found to mediate the effects of business digitalization on the performance of MSMEs (H4). As such, the empirical analysis of this study has supported the current theory on business digitalization's influence on business performance. This study has highlighted the importance

Table 13. Uses of information and technology in the MSMEs' business

	Category	N	%
1	Computer and internet network	65	68.4
2	Wi-Fi	60	63.1
3	Email	60	63.1
4	E-commerce	52	54.7
5	Website/platform usaha	22	23.1
6	Customer Relationship Management (CRM) software	4	4.2
7	Enterprise Resource Planning (ERP) software	2	2.1
8	Supply Chain Management (SCM) software	1	1.0

of business digitalization for MSMEs, thereby supporting earlier research by Aydiner et al., (2019). Both relatively minor digitalization, for instance, the adoption of email communications, and advanced digitalization efforts such as the implementation of business analytics and the creation of e-commerce platforms, can improve performance (Aydiner, 2019). It may be surmised that the digitalization efforts undertaken by Indonesian MSMEs have increased their customer orientation and enabled them to develop an innovative business culture (Domi, Capelleras, & Musabelliu, 2020).

A survey of MSMEs found that most of the enterprises (65 of 95) contained within the sample had embraced digitalization by adopting computer and internet technologies. Many (60) used Wi-Fi to access the internet, and many more (60) used email for their business correspondence. Of the 95 MSMEs surveyed, 52 had begun selling their goods and services through e-commerce platforms; however, only 22 had developed their own websites. The MSMEs included in this survey appeared unprepared for more advanced digitalization activities such as employing customer relationship management (CRM), enterprise resource planning (ERP), or supply chain management (SCM) software; fewer than 5% of respondents had adopted such software platforms.

Through digitalization, entrepreneurs have become more innovative in developing their products. MSMEs have thus been able to reduce costs, improve product quality, and increase sales significantly (Exposito & Sanchis-Llopis, 2018). Digitalization's importance for business performance also lies in its ability to introduce integrated management systems and improve administration, thereby increasing business performance (Cenamor, Parida & Wincent, 2019). Belitski et al. (2022) showed that MSMEs have increasingly adopted digital technology during the COVID-19 pandemic. Such an increase is also noted in this study, which notes that Indonesian MSMEs have embraced digital technology to deal with the pandemic. As explained by one informant in responding to an open-ended question "because it is the age of digital information, during which information can prove a blessing, it is thus very important for me to combine my business with the digital world and introduce my products to general society." (Respondent #2). Similarly, Respondent #4 noted, "the offline situation right now [during the COVID-19 pandemic] is really bad for sales, so we have had to use digital technology maximally for our marketing and branding."

Table 14. Uses of information and technology by the MSMEs' business field

Business field	N	%
Purchase by customer	51	53.7
Advertising/promotion	33	34.7
Payment by customer	29	30.5
Delivery	21	22.1
Production	15	15.8
General administration	15	15.8
Procurement	7	7.4
Distribution	6	6.3
After-sales	5	5.3

Table 14 shows that the industry/sector in which MSMEs are involved influences their use of digital information. Business digitalization was most common among MSMEs from which clients made purchases directly, i.e., in 51 of 95 MSMEs, as digital technologies made it simpler for these businesses to interact with their clients. MSMEs frequently used digital technology (including social media) for advertising; 33 of the 95 MSMEs surveyed indicated that they had used social media—primarily Instagram (63%)—for advertising purposes. Digital technologies were also employed to receive payments from customers, as well as for shipping, production, and general administration. Some MSMEs (10%, also used information technology for procurement, distribution, and after-sales activities.

Consistent with previous studies, such as that of Garzoni et al., (2020), digitalization enables MSMEs to become more flexible and decentralized, thereby bringing them closer to customers and making them better equipped to make decisions ideally (Garzoni et al, 2020). The positive effect of digitalization on MSME performance, previously noted by OECD (2021) and Garzoni et al. (2020), was also noted by one informant, who mentioned that "because, through digitalization, I've been able to expand my reach and customer basis while increasing brand awareness" (Respondent #24). Digital businesses can perform better, as they can use technology to expand their reach and broaden their markets (OECD, 2021; Lukonga, 2020). As noted by Respondent #35, "Digitalization enables MSMEs to 1) reach their target markets, 2) introduce the products sold/produced, and 3) see their competitors' standing in the market."

This study also provides evidence that digitalization is also correlated with knowledge management, as it equips MSMEs to adapt to new conditions and thereby improve their knowledge management practices (Buntak, Kovačić & Martinčević, 2020). The adoption of innovative technologies drives enterprises to create and share organizational knowledge more effectively and efficiently (Alvarenga et al., 2020). Improved knowledge management then contributes significantly to further digitalization (Alvarenga et al., 2020). It also fosters a positive exchange of

knowledge, thereby facilitating innovative collaboration (Crupi et al., 2020).

Based on the above discussion, it is clear that knowledge management practices serve to improve business performance, as shown by previous studies. Knowledge management and innovation are closely correlated and crucially influence businesses' ability to adapt to changing situations and improve their performance (Ode & Ayavoo, 2020; Abbas et al., 2020; Ngah & Wong, 2019). When MSMEs implement knowledge management, they are better equipped to create and exploit knowledge and thus gain a competitive edge (Ngah & Wong, 2019; Aydiner et al., 2019; Parviainen et al., 2017)

CONCLUSION

Business digitalization and its effect on performance have long been investigated by organizations seeking to improve their performance. This study contributes to this literature by exploring the influence of digitalization on performance as mediated by knowledge management practices. It finds that business digitalization has a significant and positive effect on the performance of Indonesian MSMEs. Likewise, business digitalization has a significant and positive effect on knowledge management practices. Knowledge management practices also have a significant and positive effect on business performance, acting to mediate the influence of digitalization. Referring to the digital technologies used by MSMEs, most have conducted digitalization by using information technologies and systems such as Wi-Fi and email for their business operations. Most MSMEs utilized these technologies to communicate with customers, advertise their goods/services, and receive payments.

The findings of this study have important implications for the policies and practices of MSMEs in Indonesia. Entrepreneurs should consider the potential benefits of digitalization, especially as related to the areas in which their businesses have yet to expand optimally. At the same time, recognizing that business digitalization was found to positively influence knowledge management, entrepreneurs should improve their managerial activities. Likewise, as knowledge management was found to positively influence the performance of MSMEs, entrepreneurs should seek to optimize their activities in this area. Knowledge management was found to partially mediate the link between business digitalization and performance, and thus entrepreneurs must use it to improve their performance. As a practical implication, Indonesian MSMEs should not only recognize the importance of digitalization for their business activities but also explore other potential benefits.

As with most studies, this research has had several limitations that offer opportunities for future investigation. First, this study has used quantitative analysis, relying on cross-sectional data, to investigate the correlation between business digitalization, knowledge management, and business performance. Recognizing that cross-sectional studies produce conclusions that are only valid for certain points in time, future research should employ a longitudinal approach to make more general findings. Second, this study has focused its analysis primarily on the influence of business digitalization on MSME performance. As such, future studies should consider how the specific processes of digitalization affect business performance. Third, this study has shown that knowledge management has a significant effect on business performance. However, the components of knowledge management may not affect performance equally; therefore, it is necessary to investigate how business performance is influenced by the specific mechanisms of knowledge management.

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