

THE URGENCY OF DIGITALIZATION IMPLEMENTATION IN BEKASI'S MSMEs

Tri Hadi Sulistyanto^{1*}, Kartini Ratna Puri², Rd. Nurvitasari Idawati³, Indri Putri Utami⁴, Nur Izzati⁵

¹⁻⁵ STIE Wibawa Karta Raharja, Indonesia

*Email corresponding author: tri.sulistyanto@gmail.com

Abstract

The MSME industry in Bekasi is growing rapidly and has shown resilience to various challenges. Along with developments in the business world, digitalization has penetrated into various aspects of business. Digitalization referred to in this study is the use of technology in the implementation of daily activities by MSME, including in the management of raw material and finished product, sales data management, financial management, and marketing strategies. This study is a qualitative research that aims to explore the urgency of digitalization in MSMEs, to understand the challenges and factors that influence its adoption, and to identify strategies that can be implemented to support digital transformation. Data was obtained through interviews with the Chairperson, Secretary, and Education & Training Section of the MSME Association in Bekasi. Text analysis was performed using VOSviewer to identify relationships between keywords that appeared in the interviews. The findings show that digitalization is crucial for Bekasi's MSMEs to enhance efficiency and competitiveness, yet challenges like limited infrastructure, low digital literacy, and a lack of skilled personnel hinder its implementation. The implication is that government, MSME associations, and the private sector must support digital transformation through infrastructure, literacy training, and tech adoption. Future research should use quantitative methods to assess digitalization's impact, identify affected sectors, or compare regional implementation for deeper insights

Keywords: Business Competitiveness; Digital Literacy; Digital Transformation; Digitalization; MSMEs

INTRODUCTION

The MSME industry in Bekasi is experiencing rapid development (Purwanti & Fatmawati, 2023) and has shown resilience to various economic challenges (Sang, 2022). Digitalization has become an important aspect of the business world (Rachinger et al., 2019), covering the application of technology ranging from the simple to the more complex management systems (Zamasari et al., 2023). Digitalization in this paper refers to the use of technology in the implementation of daily activities by MSME players, including the management of raw material (Dossou et al., 2022) and finished products inventory (Staegemann et al., 2019), recording sales data (Radicic & Petković, 2023), financial management (Telukdarie et al., 2022), and marketing strategies (Yang et al., 2023).

Although the benefits of digitalization are increasingly recognized globally (Rachinger et al., 2019), many MSMEs in Bekasi still face various obstacles in adopting digital technology (Apriani et al., 2021; Hidayat et al., 2024; Perdana et al., 2024). The main barriers to the implementation of digitalization include limited technological infrastructure, low digital literacy, and lack of human resources skilled in technology (Kwarteng et al., 2022). These barriers constrain the optimization of digitalization in improving operational efficiency and expanding the market reach of MSMEs.

This research aims to explore the urgency of digitalization in MSMEs at Bekasi, understand the challenges and factors affecting digitalization adoption, and identify strategies that can be implemented to support digital transformation. This study utilized a qualitative method by collecting data through interviews with the Chairperson, Secretary, and Education & Training Section of an MSME Association ("Paguyuban UMKM") in Bekasi. Analysis of the interview transcripts was

conducted using VOSviewer to identify the relationships between keywords that appeared in the interviews.

The results of this study are expected to provide valuable insights for stakeholders, including the government, MSME associations, and the private sector, in supporting the digital transformation of MSMEs. This research also highlights the importance of providing technological infrastructure, digital literacy training, and assistance in the implementation of technology to improve the competitiveness of MSMEs in the digital economic era.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

Digitalization in the Business World

Digitalization is the process of integrating digital technology into various aspects of business operations, which aims to improve the efficiency, productivity, and competitiveness of a company (Borowski, 2021). In recent decades, digitalization has grown rapidly in line with advances in information and communication technology (Matalamäki & Joensuu-Salo, 2022), allowing businesses to automate processes (Gritsenko et al., 2022), improve customer interactions (Ndekwa et al., 2023), and expand access to global markets (Halida & Wilantini, 2022).

The implementation of digitalization can be found in many industrial sectors, both large and small scale (Buer et al., 2021). In the manufacturing industry, the concept of Industry 4.0 has brought about changes with the use of technologies such as the Internet of Things (IoT) (Pereira & Romero, 2017), artificial intelligence (AI) (Kim et al., 2022), and big data analytics (Wang et al., 2022, 2023). In the retail sector, e-shopping has changed the way consumers shop by offering digital-based services such as e-payments (Aldaas, 2021), data-driven marketing (Camilleri, 2020), and more efficient supply chain management (Mondol, 2021). Digital transformation is also seen in the financial sector with digital banking and financial technology (fintech) (Tsindeliani et al., 2022), which provide easy access to financial services (Chanas et al., 2019) for the wider community.

Digitalisation in MSMEs

MSMEs are a sector that has an important role in the economy, especially in developing countries such as Indonesia (Arifin et al., 2021). As the digital economy grows, MSMEs are beginning to adopt digital technology to improve their operational efficiency and extend their market reach (Alfarizi et al., 2024). Digitalisation in MSMEs involves various aspects, from recording transactions digitally (Arner et al., 2022), to utilising social media for marketing (Jayadatta & Shivappa, 2023), to building e-commerce platforms for selling products (Meidyasari, 2024).

Previous studies have shown that digitalization has a positive impact on MSMEs financial performance (Arner et al., 2022; Indriastuti & Kartika, 2022), innovation in the achievement of SDG (Gromova et al., 2020; Radicic & Petković, 2023; Setyaningrum et al., 2025), economic growth (Meidyasari, 2024), economic transformation (Ramachandran & Chandramohan, 2024), develop new business models (Hawani & Suraya, 2022), enhance performance (Bellakhal & Mouelhi, 2023; Falentina et al., 2021; Grooss et al., 2022).

While there are many benefits, digitalisation in MSMEs still faces various obstacles, such as: limited technology infrastructure (Telukdarie et al., 2022), as many MSMEs do not have access to adequate digital infrastructure, especially in remote areas (Vandita & Jaiswal, 2023), Lack of digital literacy, knowledge & skills among MSME players (Yuwono et al., 2020), MSMEs struggle to hire or train workers who are skilled in digital technology (Cueto et al., 2022) and purchasing technology equipment, software, & digital training is often considered a costly investment for MSMEs with limited capital (Handayati et al., 2024).

RESEARCH METHODS

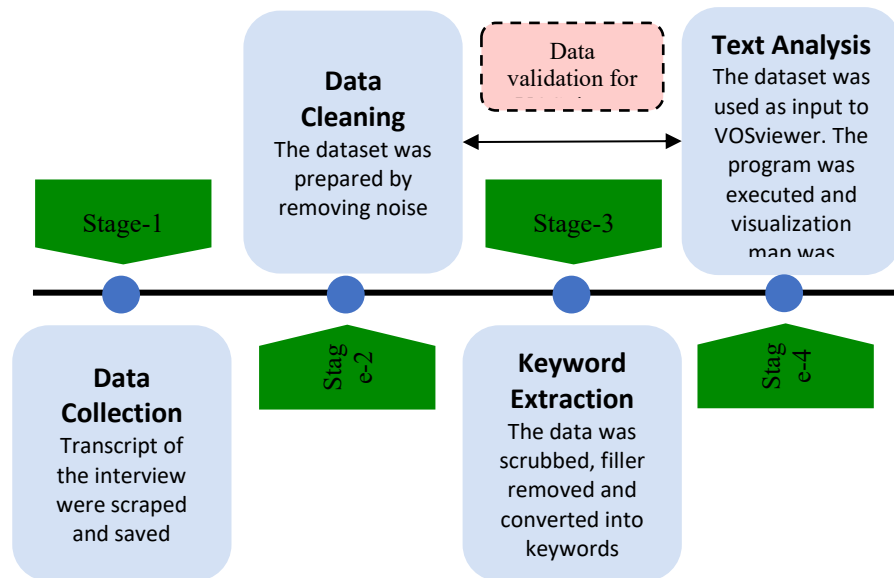
This research used a qualitative method with interview techniques to collect data (Denzim & Lincoln, 2018; Neuman, 2011). The informants in this study consist of three administrators from the

Bekasi MSME Association, including the Chairperson, the Secretary, and the Head of Education & Training. These individuals were selected based on their extensive experience, having been actively engaged as MSME entrepreneurs for more than 10 years. Furthermore, their strategic roles within the association provide them with valuable insights into the challenges and opportunities associated with the digital transformation of MSMEs in Bekasi. Their perspectives are crucial for understanding the current state of digital adoption and for formulating effective strategies to support MSMEs in their transition toward digitalization.

This study used the source triangulation method (Corbin & Strauss, 2015) to enhance the validity of the research findings by double-checking the data from the three informants. This research was carried out in February 2024. By using this approach, the study seeks to better understand the opportunities and difficulties MSMEs encounter when embracing digitalization.

In terms of the urgency of digitalization, informants were asked about the development of digitalization among Bekasi MSMEs, how important digitalization is in improving competitiveness, and the main benefits that have been experienced by MSME players who have adopted digital technology. In terms of implementation challenges, the interviews explored the main obstacles faced by MSMEs in adopting digital technology, the status of digital literacy among MSME players, infrastructure barriers that affect digital transformation, and the availability of a skilful digital workforce. Furthermore, in terms of strategies to accelerate digitalization, informants were asked to identify steps that can accelerate digital adoption, including the role of MSME associations, government interventions, and programs or training that have been or need to be conducted to improve the digital literacy of businesses. Finally, the interviews also covered recommendations and expectations for MSMEs that would like to start the digitisation process, the potential role of the private sector in supporting digitisation, and insights on the future of MSME digitisation in Bekasi. The interviews were analysed using VOSviewer software to identify keyword relationships and thematic patterns based on that emerged in the discussions the guideline provided by Bukar et al. (2023).

The data obtained was analysed using text analysis with keyword mapping using Visualization of Similarity (VOS) viewer software. The obtained data was converted into Research Information System (RIS) files to be used with the VOSviewer software. The 'Create Based on Text Data' menu was used to generate a term co-occurrence map. The data was processed using 'binary counting,' with a minimum term occurrence of 3 (three), all of which were used to produce a network visualization. In this research, the text interview data was analyzed using VOSviewer software to explore patterns and relationships between themes relevant to the scope of the study. This process included several important steps, from data transcription to visual analysis: (1) Data Transcription, consist ofThe transcription process began by carefully converting the interview recordings into text. The researcher ensured accuracy by re-listening, verifying specific terms with interviewees and relevant documents, and double-checking the transcripts to avoid errors or missing information (2) Data cleaning, performed after the transcription is complete by removing irrelevant elements such as repetition, filler, and phrases without significant meaning, so that the final result is more focused and relevant (3) Keyword Extraction, this process captures key words or phrases that represent the core information from the interview. The author conducts data scrubbing by removing irrelevant elements such as punctuation and conjunctions. The keywords selected are nouns, main verbs, or phrases with specific value in the interview (4) Text Analysis, this step consists of processing text data from interviews with sources to get certain patterns or correlations with data-based analysis techniques. The interview text data in this research is used as input for VOSviewer software so that it can produce a visualization map of the relationship between keywords. The process conducted at the beginning of data analysis using VOSviewer software is intended to prepare text-based analysis data in VOSviewer software, as suggested by Bukar et al. (2023) in the following figure.



Source: Bukar et al. (2023)

Figure 1. Step-by-Step Text Analysis with VOS

The researchers manually collected data from informants and stored it in an RIS document. To accommodate the extensive text within the records, the dataset attributes were reformatted to align with VOSviewer’s requirements.

RESULTS AND DISCUSSION

Data processing based on interview results using pre-designed questions resulted in 33 keywords which are shown in the following Table 1. Digitalization has the highest number of links at 31, indicating that it is highly connected to other terms in the network. The total link strength is 113, demonstrating a strong relationship between digitalization and other concepts. The number of occurrences is 13, showing that this term appears frequently in the processed data

Table 1. List of Terms in the Digitalization Network Analysis of SMEs

id	label	C	W1	W2	W3	id	label	C	W1	W2	W3
1	access	1	28	63	7	18	form	2	19	29	3
2	area	3	19	30	3	19	government	2	23	40	4
3	association	1	26	53	5	20	infrastructure	3	20	44	4
4	bekasi	3	25	79	8	21	internet access	3	23	52	5
5	benefit	1	15	20	3	22	lack	2	28	65	6
6	business	3	29	85	8	23	marketing	3	25	71	7
7	challenge	2	30	111	11	24	mentoring program	3	17	27	3
8	digital financial application	1	21	38	4	25	private sector	1	17	28	3
9	digital literacy	2	23	52	5	26	sme	3	30	76	9
10	digital marketing	2	18	24	3	27	smes	1	32	157	18
11	digital payment system	1	17	22	3	28	smes association	2	20	29	3
12	digital platform	1	21	44	5	29	smes entrepreneur	2	25	55	6
13	digital technology	2	30	88	9	30	social medium	1	25	69	8
14	digitalization	1	31	113	13	31	system	2	26	47	5
15	e commerce platform	2	21	28	3	32	technology	1	32	108	12
16	example	2	21	31	3	33	training	1	32	119	12
17	experience	1	19	33	4						

C: Cluster; W1: weight<Links>; W2: weight<Total link strength>; W3: weight<Occurrences>

Source: Research Data (2025)

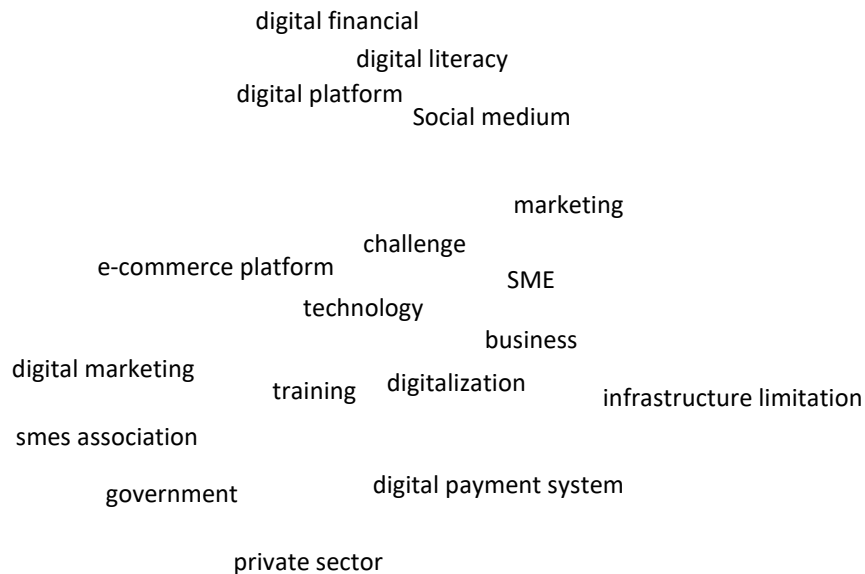
There are three clusters that represent key aspects of digital transformation, as shown in Table 1. The first cluster focuses on digitalization and technology adoption, where elements such as digitalization, technology, digital platforms, and social media are key factors in encouraging MSMEs to utilize digital technology. This cluster is closely related to the availability of access to digital technology and supporting resources that enable MSMEs to transform digitally. The findings of this study are in line with the conclusions that have been put forward by several researchers. According to Fauzi & Sheng (2022) the digitalization of MSMEs depends on the use of digital platforms, such as e-commerce, social media, and digital financial applications that facilitate financial transactions and records. Digital payment systems and digital financial applications make it easier for MSMEs to manage cash flow (Arner et al., 2022), receive payments from customers (Yuwono et al., 2020), and access banking services (Ratnawati & Soelton, 2022) without the need for face-to-face meetings. Support from the private sector such as technology service providers and digital platforms is instrumental in helping MSMEs adopt new technologies (Loo et al., 2023). MSME associations act as intermediaries in disseminating information, providing training, and connecting MSME players to wider digital opportunities (Sutrisno, 2023). The success of digitization depends on the technology available and on the ability of MSME players to use the technology (Rahayu et al., 2023). Training and improving digital literacy are also important factors in supporting this successful adoption (Nikou et al., 2022).

The second cluster illustrates the main challenges in digitizing MSMEs, including limited infrastructure, limited internet access, and low digital literacy among businesses. In addition, the government's role in supporting digitalization still needs to be improved to be more effective in overcoming these barriers. MSME players still experience difficulties in learning and implementing digital technology in their operations. This lack of digital skills can lead to the low adoption of digital platforms, making it difficult for MSMEs to compete in an increasingly digitized market. The clusters revealed in this study reinforced the findings of earlier investigators. According to Kusumaningtyas et al. (2022) many countries have introduced regulations to encourage MSME digitization, there is still a gap in the implementation of policies and available support. But Some MSMEs do not receive sufficient incentives or assistance from the government, which hinders them from effectively adopting digital technologies (Khan, 2022; Tsuruta, 2020). Digital marketing is an important aspect of MSME digitalization, but many businesses still struggle to use effective digital marketing strategies. This can be due to a lack of understanding of social media, lack of funds for digital advertising, and difficulty in managing content that appeals to customers.

Meanwhile, the third cluster focuses on business growth and market development through digitalization, where digital marketing, mentoring, and collaboration between the private sector and MSME associations are key in expanding business opportunities. One of the challenges in digitizing MSMEs, according to Telukdarie et al. (2022) especially in remote or developing areas, is the limited technology infrastructure and internet access. Many MSMEs still experience difficulties in getting a stable and accessible internet connection, which is a major obstacle in adopting digital technology. The analysis of this study shows that business location also affects the success of digitalization. MSMEs in Bekasi and urban areas tend to have better access to digital infrastructure compared to MSMEs in rural areas. Following the findings of Vandita & Jaiswal (2023) digitization strategies need to be tailored to the local situation of each region. The marketing aspect also plays an important role in MSME digitization (Halida & Wilantini, 2022). The success of digital marketing depends on MSMEs' ability to understand the trend of the market (Wanof & Gani, 2023), use the right promotional strategies (Sutrisno et al., 2023), and adjust the business model in line with digital developments (Aminullah et al., 2024).

The digitalization of MSMEs requires a holistic approach, encompassing infrastructure strengthening, digital literacy improvement, and technology-based marketing strategies to ensure sustainable growth in the digital ecosystem. Digitalization has a strong connection with SMEs and technology, confirming that digital transformation is a key factor in the development of SMEs. The term training is also closely linked to digitalization, indicating that training plays a crucial role in digital

adoption among SMEs. The term challenge holds a significant position, suggesting that while digitalization is considered important, various challenges still exist in its implementation as shown in the Figure 1 below.



Item: digitalization | Links: 31 | Total link strength: 113 | Occurrence: 13 | Cluster: 1

Figure 1. Network Visualization of Digitalization and Its Related Terms in SMEs

Digitalization has become a fundamental aspect in the development of Micro, Small and Medium Enterprises (MSMEs). From the analysis of the relationship between terms in the MSME digitalization network in this study, it can be seen that digitalization is closely related to various fundamental aspects, including: technology, access, training, marketing, and support from the government and private sector. Digitalization has a very strong connection with technology, training, and social media, indicating that technology adoption and human resource capacity building are key elements in the transformation of MSMEs. The findings of this study align with earlier studies, that the application of technologies such as digital platforms (Xie et al., 2022), digital payment systems (Najib & Fahma, 2020), and digital financial applications (Thathsarani & Jianguo, 2022) is needed so that MSMEs can be more competitive. Furthermore, the success of digitalization also depends on the availability of human resources in operating the technology, which makes training programs an important aspect that needs to be considered (Kmecová et al., 2021). The findings in this study also in line with report by the United Nations Economic and Social Commission for Asia and the Pacific (Arner et al., 2022). The adoption of digital platforms and payment systems can significantly enhance MSMEs' financial inclusion, addressing long-standing financing gaps and fostering economic resilience. Additionally, the UN report states that investing in human resource development through digital literacy and training programs is essential for maximizing the benefits of digitalization and ensuring the sustainable growth of MSMEs.

Although digitalization offers many benefits, MSMEs face a number of significant challenges. Infrastructure limitation, internet access and challenges faced by businesses are factors that can inhibit the digitalization process. In a similar way, unequal access and lack of support from the government and private sector also contribute to the slow adoption of digital by MSMEs. This study shows that digital transformation efforts depend on the MSME players' readiness, and require policy interventions and support from various sides. The findings in this study are similar to those stated by Telukdarie et al. (2022) who has explored the opportunities and barriers of digitalization for SMEs in

South Africa. Although SMEs are critical to economic growth and innovation, they face barriers to digital adoption, such as limited time, skills, and financial resources. A suitable, integrated digital solution is required rather than a fragmented system to better support SMEs' digital transformation. A study by Rupeika-Apoga & Petrovska (2022) has also investigated barriers to sustainable digital transformation faced by MSMEs. The two researchers identified seven main challenges: IT security issues, shortage of experts, low digital skills of employees, limited funding, internal resistance to change, lack of managerial knowledge, and uncertainty about future digital standards. IT security and the shortage of experts were the most crucial barriers. The study emphasizes the importance of education, funding, and stakeholder collaboration to help MSMEs overcome these barriers and achieve sustainable digital transformation.

Digitalization was found to be closely related to marketing, mentoring programs, and smes. This indicates that digitalization is not only limited to the use of technology, but also relates to marketing strategies, business guidance, and business sustainability of MSMEs. Digital marketing is an important aspect in improving the competitiveness of MSMEs, especially in reaching a wider market through social media and digital platforms. Furthermore, collaboration with smes associations and smes entrepreneurs can provide added value in developing a digital-based business ecosystem. Purbasari et al. (2021) have highlighted the key actors and factors influencing the digital transformation of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia and identified various actors including government agencies, digital entrepreneurs, telecommunication operators, universities, digital consumers, banking institutions, and investors, as well as factors such as digital platforms, infrastructure, digital content, fintech, and digital literacy. The findings highlight the importance of collaboration among these actors to improve the digital ecosystem, recommending that MSMEs improve digital literacy, while governments provide access to investment and regulate retail activities. A digital entrepreneurship ecosystem is needed to support and encourage the growth and sustainability of MSMEs in the evolving digital economy.

CONCLUSION

Based on the results of the analysis of the MSME digitalization network obtained from this research, it can be concluded that digitalization is a key factor in the modernization of the MSME sector. However, the success of digitalization still depends on technology adoption, and requires policy support, infrastructure improvement, and human resource capacity strengthening. With synergy between the government, private sector, and MSME community, digitalization can be a major accelerator in promoting the growth and the competitiveness of MSMEs in the digital economy age.

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