

IDENTIFICATION OF FACTORS INFLUENCING INFORMATION TECHNOLOGY CAPABILITIES ON COMPETITIVE ADVANTAGE IN MSMES: A SYSTEMATIC REVIEW OF LITERATURE

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Abstract

Information technology is developing very rapidly and is widely used by SMEs in Indonesia. However, why is the role of information technology still not a factor that influences competitive advantage for SMEs? By taking 12 main articles that have been published in the Scopus, and Google Scholar taken from 2004 to 2021, researchers want to conduct systematic observations on the influence of information technology capability factors on competitive advantage in SMEs. Several studies have shown that the role of technological capabilities influences competitive advantage, but there are also research results that show that competitive advantage cannot be achieved through information technology capabilities. Through this article, researchers try to explain what information technology capability factors must be achieved by SMEs in order to have an influence on competitive advantage.

Keywords: Information Technology Capability, Competitive Advantage, SMEs, Systematic Literature Review

INTRODUCTION

Micro, Small and Medium Enterprises are one of the pillars of the economy in Indonesia. According to data from the Ministry of Cooperatives and SMEs in 2019, there were already more than 65 million SME units, and they continue to grow every year. With the large number of SME units and other business actors, market competition is increasing and the success of SMEs in winning the competition is important. Porter said that competitive advantage is an important factor for organizational performance to grow, and those who are competitive will be able to create customers and defend themselves from competitive market pressures (Davies & Ellis, 2000) (Suliyanto, 2001). In this case, information technology capability is one of the factors that can increase competitive advantage.

The benefits of information technology such as digital marketing and e-commerce have been felt by many MSMEs in Indonesia who are able to use it well. However, there are still many MSMEs who have not utilized information technology optimally (Savitri, Suliyanto, & Setyanto, 2022). Information Technology Capability can be defined as the ability of business actors to utilize digital media/information technology to support business operations, and information technology that is useful in producing, processing and disseminating information is able to provide support for company operations. (Qosasi, et al., 2019).

Competitive advantages that can be achieved by MSMEs through several approaches, the first is how they can recognize and exploit new business opportunities, especially in situations that are not supportive (Yaghoobi & Bakhshimazdeh, 2014). One way that MSMEs can do this is by being able to move forward in responding to market changes and creating business opportunities through various channels (Rakshit, Mondal, Islam, Jasimuddin, & Zhang, 2021). Second, MSMEs must be able to develop and implement new ideas, especially in adopting the latest technology and practices (Tidd & Bessant, 2010). Third, MSMEs must be able to compete aggressively in exploring the market by

adopting innovative and proactive strategies (Clauss, Kraus, Kallinger, Bican, & Brem, 2021), although to increase process-focused innovation sometimes we have to pay attention to customer orientation factors (Suliyanto, Novandari, & Suwaryo, The Influence of Market Orientation on Marketing Performances in Micro Small and Medium-Sized (MSMEs) Coconut Sugar Enterprises: The Role of Innovation, 2019). Novandari's research shows that there are 4 factors that encourage MSMEs to cooperate with external parties in several activities to develop their own products. The four factors are; orientation of deeper market insight, orientation of increasing capabilities, orientation of expanding networks and orientation of ideas generated (Novandari, Suliyanto, & Kartawan, 2018). And fourth, MSMEs must be able to allocate organizational resources, including budget and workforce, intelligently to maximize competitive advantage. This can include increasing investment in areas that support these advantages (Korsakiene, 2004). The investment of resources made certainly has the potential to increase the company's profit. Increased company profits will increase the company's stock price and vice versa, when the company's profit decreases, the company's price will also decrease (Mahesa & Banani, 2019).

Although several researchers have stated through articles that technological capability is an important key to competitive advantage, there is still much debate, especially in the MSME sector (Neirotti & Raguseo, 2016). Therefore, this study aims to investigate the extent to which information technology capabilities can influence competitive advantage in MSMEs. Through a systematic review of the literature, this study contributes to the theoretical understanding of the relationship between information technology capabilities and competitive advantage.

In this study, a number of research questions have been designed to systematically guide the process of data collection and analysis. These questions aim to explore various factors that influence Information Technology Capability on Competitive Advantage. By answering these questions, the researcher attempts to provide a comprehensive picture of the influence of Information Technology Capability on Competitive Advantage. These research questions are also expected to reveal existing challenges and limitations, as well as open up opportunities for further research in this field. The research questions formulated in this study are as follows:

- RQ1 : How can Information Technology Capability affect the Competitive Advantage of MSMEs?
- RQ2 : What are the Information Technology Capability factors that have the most influence on the Competitive Advantage of MSMEs?
- RQ3 : What are the challenges and limitations faced by MSMEs in increasing Competitive Advantage through Information Technology Capability?
- RQ4 : How can MSMEs optimize the use of Information Technology Capability to increase Competitive Advantage?

By answering the previously formulated research questions, this study aims to provide a meaningful contribution to an in-depth understanding of the influence of Information Technology Capability on Competitive Advantage in the MSME sector.

LITERATURE REVIEW

Information Technology Capability can be defined as the ability of business actors to utilize digital media/information technology to support business operations, and information technology that is useful in producing, processing, and disseminating information is able to provide support for company operations (Qosasi, et al., 2019). One of the things that must be considered regarding Information Technology Capability is the existence of information technology infrastructure. Information technology infrastructure includes networks, management and provision of large-scale computing, electronic data exchange, integrated databases, and research and development to identify the emergence of new technologies (Davenport, Hammer, & Metsisto, 1989).

Information technology capabilities must be configurable across all hardware, devices, peripherals, software, and all resources (networks, databases, system suites, processes, applications, technology and computing resources, telecommunications, automation, multimedia resources, and

data management systems) aimed at producing and using information that is operationalized in different ways and used in the production of goods and services, with the aim of leading the company to achieve its organizational goals (Buabeng-Andoh, 2018) (Laudon & Laudon, 2011) (Shaikh & Karjaluoto, 2015).

Technology assets that form the information technology infrastructure, such as networks and databases, can be easily obtained from the market (Mata, Fuerst, & Barney, 1995), but combining hardware and software assets to create a flexible and sophisticated IT infrastructure that cannot be imitated is certainly not easy. Because, to create such an infrastructure requires technology components that are carefully integrated according to the needs and priorities of the company (Duncan, 1995). In addition to sophisticated infrastructure, skilled human resources, relationships between IS departments and user departments, and IS managerial knowledge are valuable resources (Ross, Beath, & Goodhue, 1996).

Meanwhile, regarding competitive advantage, Barney said that a company has a competitive advantage if it can implement a strategy of adding value to products and services before other competitors (Barney, 1991). There are several indicators related to competitive advantage, the first is how they can recognize and exploit new business opportunities, especially in situations that are not supportive (Yaghoobi & Bakhshimazdeh, 2014). Second, MSMEs must be able to develop and implement new ideas, especially in adopting the latest technology and practices (Tidd & Bessant, 2010). Third, MSMEs must be able to move forward in responding to market changes and creating business opportunities through various channels (Rakshit, Mondal, Islam, Jasimuddin, & Zhang, 2021). And fourthly, MSMEs must be able to compete aggressively in exploring the market by adopting innovative and proactive strategies (Clauss, Kraus, Kallinger, Bican, & Brem, 2021).

RESEARCH METHODS

This study used the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach to conduct a systematic review of the literature. The PRISMA approach was chosen because it provides a structured framework for identifying, evaluating, and synthesizing relevant research in a transparent and replicable manner. This is important so that this study can provide a comprehensive and accurate picture of the topic being studied. To ensure that this systematic review includes the most relevant and high-quality studies, inclusion and exclusion criteria must be carefully formulated. These criteria are designed to filter literature that is in line with the focus and objectives of the study, while eliminating studies that are irrelevant or that do not meet the established methodological standards.

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Study that discusses the influence of Information Technology Capability on Competitive Advantage.	Studies that do not focus on topics outside of Information Technology Capability and Competitive Advantage
Articles published in peer-reviewed journals or scientific conferences in the last 5 years	Articles that do not provide verifiable data or findings.
Studies written in Indonesian and English.	Non-peer-reviewed studies, including opinion articles, editorials, and unverified industry reports.
Research that includes empirical analysis, theoretical studies, or case studies that are relevant to the research topic.	Publications that are incomplete or only available in abstract form without full text.

To ensure that this literature review is comprehensive and relevant, various credible and influential data sources have been used. The main databases used in this study include Scopus, and Google Scholar. The search in these databases was conducted using a combination of relevant

keywords, such as "information technology capability", "competitive advantage", "UMKM", "small and medium enterprises", and others.

The literature screening and selection process was carried out in stages, starting with checking the title and abstract to determine its relevance to the topic, followed by reading the full manuscript to evaluate the eligibility of the study based on the previously determined inclusion and exclusion criteria. Data extracted from studies that met the criteria included information related to the author, year of publication, research objectives, methodology, main findings, and conclusions. The study selection process in this literature review was guided by the PRISMA guidelines, ensuring transparency and optimal reproducibility. The stages include four main interrelated steps: identification, screening, eligibility assessment, and inclusion.

In the identification stage, a literature search was conducted in various databases using a combination of relevant keywords. In the screening stage, the titles and abstracts of all identified studies were examined to determine their relevance to the topic. Studies that were not relevant or did not meet the inclusion criteria were excluded. The next step was the eligibility assessment, where the full texts of the studies that passed the screening were thoroughly examined to evaluate their suitability to the predetermined inclusion and exclusion criteria. Studies that met the criteria were included in the inclusion stage for data extraction and synthesis.

To ensure the quality and accuracy of this systematic review, the data extraction and analysis process was carried out carefully and comprehensively. Data extracted from studies that met the criteria included information related to the authors, year of publication, research objectives, methodology, main findings, and conclusions.

The data extraction results were then synthesized narratively to answer the previously formulated research questions. Narrative synthesis was chosen because it allows for presenting research findings in descriptive and analytical forms, as well as identifying patterns, trends, and existing research gaps. In addition, narrative synthesis also allows for integrating various perspectives and methodologies used in the reviewed studies, so as to provide a more comprehensive understanding of the topic being studied.

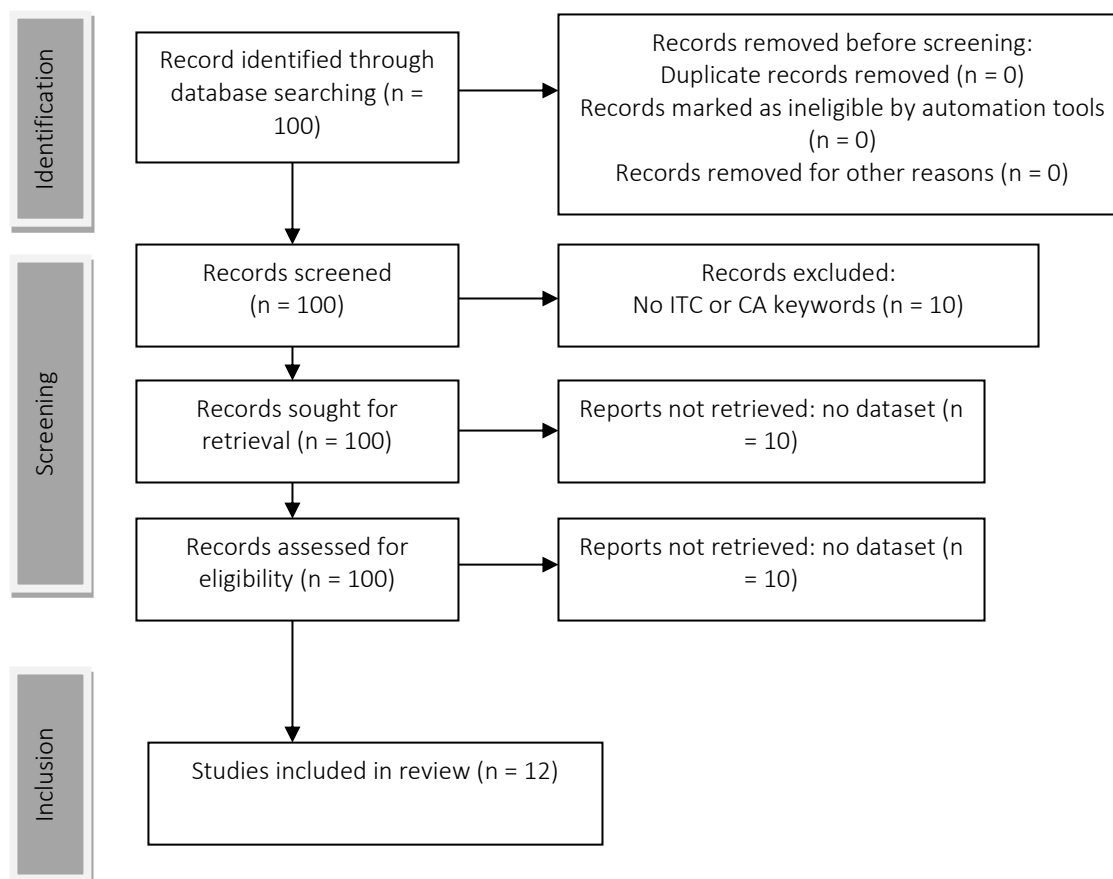


Figure 1. Prism Flowchart

RESULTS AND DISCUSSION

There are several factors related to Information Technology Capabilities such as Information Technology Infrastructure, Data Management Capabilities, Application Development Capabilities, Information Security Capabilities, and Technology Innovation Capabilities.

IT infrastructure includes hardware, software, networks, and databases that support business operations. According to Bhatt and Grover, a strong IT infrastructure enables MSMEs to integrate various business processes, improve operational efficiency, and reduce costs (Bhatt & Grover, 2005). A relevant case example is an SME in the manufacturing sector that uses an ERP (Enterprise Resource Planning) system to manage its supply chain and production. A study by Qosasi et al. showed that MSMEs with good IT infrastructure were able to increase productivity by up to 20% (Qosasi, et al., 2019).

Data management capabilities include the ability to collect, store, and analyze data to support decision making. Dehning and Stratopoulos found that SMEs that are able to leverage data for business analysis have a greater competitive advantage (Dehning & Stratopoulos, 2003). For example, SMEs in the retail sector that use data analytics to understand customer behavior can develop more effective marketing strategies. A study by Chen and Tsou also showed that data management capabilities contribute significantly to service innovation and competitive advantage (Chen & Tsou, 2007).

Application development capabilities include the ability to design, develop, and maintain applications that support business operations. According to Neirotti and Raguseo, SMEs that have these capabilities can respond more quickly to market changes and customer needs (Neirotti & Raguseo, 2016). A relevant case example is an MSME in the service sector that develops mobile applications to facilitate customers in making transactions. A study by Mata et al. showed that application development capabilities contributed to increased customer satisfaction and loyalty (Mata, Fuerst, & Barney, 1995).

Information security is an important factor in today's digital era. MSMEs that are able to protect business data and information from cybersecurity threats have a greater competitive advantage. Piccoli and Ives found that MSMEs that have a good information security system are able to reduce the risk of data loss and increase customer trust (Piccoli & Ives, 2005). A relevant case example is an MSME in the financial sector that implements data encryption to protect customer information.

Technology innovation capabilities include the ability to adopt and implement new technologies to support business operations. Lovely et al. found that MSMEs that are able to innovate in technology have a greater competitive advantage (Lovely, Ottemoesoe, & Devie, 2021). For example, MSMEs in the agricultural sector that adopt IoT (Internet of Things) technology to monitor crop conditions can increase productivity and efficiency. The study by Makhloufi et al., also shows that technological innovation capabilities contribute significantly to sustainable competitive advantage (Makhloufi, Yaacob, Laghouag, Sahli, & Belaid, 2021).

Table 2. Result Research

Authors	Title	Methods	Result
Bhatt, G.D., & Grover, V. (2005)	Types of Information Technology Capabilities and Their Role in Competitive Advantage: An Empirical Study (Bhatt & Grover, 2005)	Evaluating with empirical data on IT factors and the company's Competitive Advantage	IT Infrastructure Quality has no positive effect on CA. Higher levels of IT business experience have a weak positive effect on CA. Higher Relationship Infrastructure Quality has a significant positive effect on CA.
Achsanul Qosasi, Erna Maulina, Margo Purnomo, Anang Muftiadi, Erwin Permana, Fajri Febrian (2019)	The Impact of Information and Communication Technology Capability on The Competitive Advantage of Small Businesses (Qosasi, et al., 2019)	Partial Least Squares Approach to Structural Equation Modeling Constructing reliability tests using composite reliability and Cronbach's Alpha	ICT capability has no significant effect on CA. ICT capability has a significant effect on Entrepreneurial Orientation and Organizational Agility. Organizational Agility and Entrepreneurial Orientation have a significant effect on CA. ICT capability can create CA when combined with Entrepreneurial Orientation and Organizational Agility.
Neirotti, P., Raguseo, E. (2016)	On the contingent value of IT-based capabilities for the competitive advantage of SMEs: Mechanisms and empirical evidence	Using a survey conducted on a population of 5000 SMEs. Using financial data collected from the AIDA database.	Externally oriented IT-based capabilities have a greater impact on firm performance. Internally oriented IT-based capabilities have a

	(Neirotti & Raguseo, 2016)	Linear regression model to analyze the relationship between IT-based capabilities and Company Performance.	negative impact on profit differentials.
Dehning, B., Stratopoulos, T.	Determinants of a sustainable competitive advantage due to an IT-enabled strategy (Dehning & Stratopoulos, 2003)	Regression model in finding the influence of IT-enabled strategy on SCA	IT managerial skills are positively related to sustainability. Competitors' knowledge of CA is negatively related to sustainability. IT technical skills and IT infrastructure are not sources of sustainable competitive advantage.
J.S. Chen, H.T. Tsou (2007)	Information technology adoption for service innovation practices and competitive advantage: the case of financial firms (Chen & Tsou, 2007)	Least Squares Regression	Adoption of information technology improves service innovation practices and CA. Service process innovation has a positive impact on CA.
Gabriele Piccoli, Blake Ives (2005)	Review: IT-Dependent Strategic Initiatives and Sustained Competitive Advantage: A Review and Synthesis of The Literature (Piccoli & Ives, 2005)	A structured conceptual approach to exploring the literature	IT capabilities can increase competitive advantage.
Francisco J. Mata, William L. Fuerst, Jay Barney (2014)	Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis (Mata, Fuerst, & Barney, 1995)	The research methodology used in this article involves resource-based analysis to explore the relationship between Information Technology (IT) and sustainable competitive advantage.	Not all factors in IT Capability have an impact on sustainable competitive advantage.
Renata Korsakiene (2004)	Determining Competitive Advantage: The Analytic Hierarchy Process (Korsakiene, 2004)	The methodology in this study uses the Analytic Hierarchy Process (AHP)	IT capabilities have an important role in competitive advantage.

Lovely, Ridhotama Shanti D. Ottemoesoe, Devie (2021)	Information Technology Capabilities, Organizational Agility, and Competitive Advantage: A Study of Micro, Small, and Medium Enterprises in Indonesia (Lovely, Ottemoesoe, & Devie, 2021)	This research method uses partial least squares structural equation modeling (PLS-SEM) in SmartPLS 3.0 software.	IT capabilities are useful for competitive advantage.
Lahcene Makhloufi, Noorulsadiqin azbiya Yaacob, Abderrazak Laghouag, Fateh Bélaïd (2021)	Effect of IT capability and intangible IT resources on sustainable competitive advantage: Exploring moderating and mediating effect of IT flexibility and core competency (Makhloufi, Yaacob, Laghouag, Sahli, & Belaid, 2021)	The research methodology in this study involves the use of Partial Least Square (PLS) as a statistical tool to predict and assess measurement and structural models.	IT capabilities have a positive and significant impact on core competence and sustainable competitive advantage.
Fawwaz Awamleh, Ahmet Ertugan (2021)	The Relationship Between Information Technology Capabilities, Organizational Intelligence, and Competitive Advantage (Awamleh & Ertugan, 2021)	The research methodology used in this study is descriptive and correlational. This study describes the variables that influence the main problem and the correlation between them.	IT capabilities and Organizational Intelligence have an important role in increasing competitive advantage.

A study by Qosasi et al. showed that MSMEs that adopt information and communication technology (ICT) have a higher competitive advantage compared to those that do not (Qosasi, et al., 2019). Data from this study shows that 70% of MSMEs that adopt ICT experience increased sales and operational efficiency. Case examples in Indonesia show that MSMEs that use e-commerce platforms such as Tokopedia and Bukalapak can reach a wider market and increase their income significantly.

Neirotti and Raguseo added that technology adoption is not only limited to hardware and software, but also involves changes in business processes and organizational culture. They found that MSMEs that successfully integrate technology into their business processes tend to have a more sustainable competitive advantage. For example, MSMEs in the manufacturing sector that adopt automation technology can reduce production costs and improve product quality (Neirotti & Raguseo, 2016).

Service innovation is another factor that contributes to the competitive advantage of MSMEs. Chen and Tsou argue that IT adoption enables MSMEs to develop new services that are more innovative and responsive to customer needs. For example, MSMEs in the financial sector that adopt

mobile banking technology can offer faster and more accessible services to customers, which ultimately increases customer satisfaction and loyalty (Chen & Tsou, 2007).

Research by Lovely et al., shows that strong IT capabilities enable MSMEs to respond more quickly to market changes and customer needs. Data from this study shows that MSMEs that focus on service innovation have higher growth rates compared to those that do not. Case studies in Indonesia show that MSMEs in the tourism sector that adopt virtual reality (VR) technology to offer virtual tours can attract more customers and increase their revenues (Lovely, Ottemoesoe, & Devie, 2021).

Makhloufi et al., found that service innovation supported by IT capabilities can improve the competitiveness of MSMEs in the global market. They stated that MSMEs that adopt cloud computing technology can develop new services at lower costs and faster times. Case studies in the logistics sector show that MSMEs that use cloud technology to manage their supply chains can improve operational efficiency and reduce costs (Makhloufi, Yaacob, Laghouag, Sahli, & Belaid, 2021).

IT flexibility is another important factor that influences the competitive advantage of MSMEs. Dehning and Stratopoulos suggest that IT flexibility enables MSMEs to adapt more quickly to market and technological changes. They found that MSMEs with flexible IT systems tend to be more innovative and responsive to customer needs (Dehning & Stratopoulos, 2003).

Research by Piccoli and Ives shows that IT flexibility can improve the ability of MSMEs to develop more adaptive and responsive business strategies. Data from this study shows that MSMEs that have flexible IT systems can reduce response time to market changes by up to 30%. Case examples in the retail sector show that MSMEs that use flexible point of sale (POS) technology can quickly adjust prices and promotions based on real-time sales data (Piccoli & Ives, 2005).

Mata et al., added that IT flexibility also allows MSMEs to more easily integrate new technologies into existing systems. They found that MSMEs with flexible IT systems tend to be more successful in adopting new technologies and developing innovative services. Case studies in the healthcare sector show that MSMEs using flexible IT systems can quickly integrate telemedicine technology to offer remote healthcare services (Mata, Fuerst, & Barney, 1995).

Discussion

The relationship between IT capabilities and competitive advantage has been widely discussed in the literature. Bhatt and Grover stated that IT capabilities can improve operational efficiency, reduce costs, and improve product or service quality (Bhatt & Grover, 2005). The study by Qosasi et al. also showed that IT capabilities contribute significantly to increasing productivity and competitiveness of MSMEs. However, this relationship is not always linear and can be influenced by various factors such as company size, industry sector, and level of technology adoption (Qosasi, et al., 2019).

Through the answers to the research questions raised in this paper, the researcher wishes to present the results of his observations.

RQ1. How can Information Technology Capability affect the Competitive Advantage of MSMEs?

Information technology capability can affect the competitive advantage of MSMEs in various ways. According to Bhatt and Grover, IT Capability includes the ability to integrate information technology into business processes, which can improve operational efficiency and reduce costs. For example, the use of IT-based inventory management systems can help MSMEs reduce storage costs and increase the speed of response to market demand (Bhatt & Grover, 2005).

In addition, IT Capability also allows MSMEs to access a wider market through e-commerce platforms. Qosasi et al., found that MSMEs that utilize information technology for online marketing tend to have a wider market reach and can compete with larger companies. Data from the Central Statistics Agency (BPS) shows that MSMEs that use information technology in their operations experience a 20% increase in sales compared to those that do not use information technology (Qosasi, et al., 2019).

Furthermore, IT Capability can improve the ability of MSMEs in product and service innovation. Neirotti and Raguseo stated that MSMEs that have good IT capabilities tend to be more innovative and able to create new products or services that meet market needs. For example, an MSME in the food and beverage sector can use information technology to develop an online ordering application that makes it easier for customers to place orders and pay (Neirotti & Raguseo, 2016).

However, it is important to note that the influence of IT Capability on competitive advantage is not always positive. Dehning and Stratopoulos warn that improper implementation of information technology or a lack of understanding of how to optimize the technology can result in wasted resources and even reduce operational efficiency (Dehning & Stratopoulos, 2003).

Overall, IT Capability can provide various benefits for MSMEs in achieving competitive advantage, but the success of its implementation is highly dependent on how the technology is integrated into the company's business processes and strategies.

RQ2. What are the Information Technology Capability factors that have the most influence on the Competitive Advantage of MSMEs?

There are several IT Capability factors that have the most influence on the competitive advantage of MSMEs. First, the ability to integrate information systems. According to Bhatt and Grover, the ability to integrate various information systems in one platform can improve operational efficiency and facilitate decision making. For example, integration between inventory management systems and sales systems can provide real-time information on stock and sales, making it easier to manage inventory (Bhatt & Grover, 2005).

Second, data analysis capabilities. Lovely et al., showed that the ability to collect, analyze, and utilize data can provide valuable insights for MSMEs in understanding market trends and consumer behavior. For example, MSMEs in the retail sector can use data analysis to identify products that are most in demand by customers and adjust their marketing strategies (Lovely, Ottemoesoe, & Devie, 2021).

Third, technological flexibility. Makhoulfi et al. stated that flexibility in adopting and adapting new technologies is very important for MSMEs to remain competitive. MSMEs that have high technological flexibility can quickly adapt to market and technological changes, so they can maintain their competitive advantage (Makhoulfi, Yaacob, Laghouag, Sahli, & Belaid, 2021).

Fourth, information security capabilities. Chen and Tsou emphasize the importance of information security in maintaining customer trust and protecting business data. MSMEs that have a good information security system can reduce the risk of data leaks and cyber attacks, which can damage the reputation and trust of customers (Chen & Tsou, 2007).

Fifth, human resource training and development capabilities. Mata et al., showed that human resource training and development in the use of information technology is very important to maximize the benefits of IT Capability. MSMEs that invest in employee training to master information technology tend to be more successful in implementing the technology and achieving competitive advantage (Mata, Fuerst, & Barney, 1995).

By understanding and optimizing these factors, SMEs can improve their IT Capability and achieve sustainable competitive advantage.

Neirotti & Raguseo also highlighted the importance of information technology capabilities for the competitive advantage of MSMEs. They found that certain mechanisms, such as information system integration, collaboration with suppliers and customers, and the use of cloud technology, can provide significant added value for MSMEs in competing in the market. By understanding and optimizing their information technology capabilities, MSMEs can create sustainable competitive advantages (Neirotti & Raguseo, 2016).

In the context of MSMEs in Indonesia, Lovely, Ottemoesoe, & Devie found that information technology capabilities, organizational agility, and competitive advantage are interrelated. They highlighted the importance of information technology flexibility and intangible competencies in creating sustainable competitive advantage for MSMEs. By paying attention to these aspects, MSMEs

in Indonesia can improve their competitiveness in an increasingly complex market (Lovely, Ottemoesoe, & Devie, 2021).

Moderating factors such as firm size, industry sector, and technology adoption rate can influence the relationship between IT capabilities and competitive advantage. Dehning and Stratopoulos found that SMEs in the high-tech sector have greater competitive advantages compared to SMEs in the traditional sector. A study by Neirotti and Raguseo (2016) also showed that larger SMEs tend to have better IT capabilities and are better able to leverage technology to achieve competitive advantage (Dehning & Stratopoulos, 2003).

From the results of the existing research, it can be concluded that MSMEs need to optimize the use of information technology capabilities to improve their competitive advantage. This can be done by continuing to develop existing information technology capabilities, integrating information systems efficiently, and utilizing technology to improve efficiency and productivity. The theoretical and practical implications of the relationship between information technology capabilities and competitive advantage in MSMEs are that investment in information technology can provide significant results in improving competitiveness and business growth.

RQ3. What are the challenges and limitations faced by MSMEs in increasing Competitive Advantage through Information Technology Capability?

Although IT Capability offers various benefits, MSMEs often face challenges and limitations in increasing competitive advantage through information technology. One of the main challenges is limited financial resources. According to research by Qosasi et al., many MSMEs have difficulty in allocating budget for information technology investment due to limited capital. This hampers their ability to adopt new technologies and improve IT Capability (Qosasi, et al., 2019).

The second challenge is the lack of technological skills and knowledge. Lovely et al., found that many MSMEs do not have a workforce with adequate technological skills, making it difficult for them to implement and manage complex information systems. This limitation often results in suboptimal use of technology and even failure in IT projects (Lovely, Ottemoesoe, & Devie, 2021).

The third challenge is resistance to change. According to Neirotti and Raguseo, many MSME owners and employees are reluctant to adopt new technologies because they are afraid of change and uncertainty. This resistance can hinder the digital transformation process and reduce the effectiveness of IT Capability in increasing competitive advantage (Neirotti & Raguseo, 2016).

The fourth challenge is the issue of information security. Chen and Tsou point out that MSMEs are often targeted by cyber attacks due to the lack of adequate security systems. Cyber attacks can result in significant financial losses and damage a business's reputation, reducing its competitive advantage (Chen & Tsou, 2007).

The fifth challenge is the limited technological infrastructure. According to Dehning and Stratopoulos, many MSMEs operate in areas with inadequate technological infrastructure, such as slow or unstable internet connections. These limitations can hinder the ability of MSMEs to access and utilize information technology effectively (Dehning & Stratopoulos, 2003).

IT implementation in SMEs does not always run smoothly and often faces various challenges. According to Chen and Tsou, the main challenge faced by SMEs in IT implementation is limited resources, both in terms of finance and human resources (Chen & Tsou, 2007). In addition, the lack of knowledge and skills in managing IT is also a barrier. A study by Piccoli and Ives showed that MSMEs often have difficulty integrating IT with existing business processes, which can hinder the achievement of competitive advantage (Piccoli & Ives, 2005).

To overcome the challenges in IT implementation, MSMEs need to adopt various strategies. Lovely et al., suggested that MSMEs conduct training and skills development for employees to improve their ability to manage IT (Lovely, Ottemoesoe, & Devie, 2021). In addition, MSMEs can also utilize IT services provided by third parties to reduce cost burdens and increase efficiency. A study by Makhoulfi et al., showed that collaboration with educational and research institutions can also help MSMEs in adopting new technologies and improving IT capabilities (Makhoulfi, Yaacob, Laghouag, Sahli, & Belaid, 2021).

By identifying and addressing these challenges, MSMEs can improve their IT Capability and achieve better competitive advantage.

RQ4. How can MSMEs optimize the use of Information Technology Capability to increase Competitive Advantage?

MSMEs can optimize the use of ITC by:

1. Investing in Training: Developing employee skills through training and professional development (Bhatt & Grover, 2005).
2. Collaboration with Third Parties: Working with technology providers and consultants to adopt and implement new technologies (Qosasi, et al., 2019).
3. Focus on Innovation: Developing a culture of innovation that encourages the use of technology to create new products or services (Chen & Tsou, 2007).
4. Risk Management: Implementing strict security measures to protect data and information systems (Piccoli & Ives, 2005).

CONCLUSION

Contains research conclusions, implications, limitations, and suggestions for future research. Implications are practical suggestions from the results of the study. The limitations of the study include all aspects that can be considered by the researcher to improve future research. Meanwhile, research suggestions are suggested for further research based on limitations that cannot be carried out by researchers in their research.

This study identifies various IT capability factors that influence competitive advantage in MSMEs through a systematic literature review using the PRISMA model. These factors include IT infrastructure, data management capabilities, application development capabilities, information security capabilities, and technological innovation capabilities. The relationship between IT capabilities and competitive advantage is influenced by various moderating factors such as company size, industry sector, and level of technology adoption. IT implementation in MSMEs faces various challenges, but can be overcome through various strategies such as employee training, collaboration with third parties, and government support. The policy implications of this study are the importance of government support in improving MSMEs' IT capabilities to achieve competitive advantage.

Theoretical and Practical Implications

The theoretical implications of the relationship between ITC and CA include a deeper understanding of how technology can be a source of competitive advantage, strengthening the Resource-Based View (RBV) theory which states that unique and difficult-to-imitate resources can provide sustainable competitive advantage (Mata, Fuerst & Barney, 1995). Practically, these findings can help MSMEs to formulate effective technology strategies and allocate resources more efficiently (Lovely, Ottemoesoe, & Devie, 2021).

The policy implication of this study is the importance of government support in improving the IT capabilities of MSMEs. The government can provide incentives in the form of subsidies or financial assistance for the purchase of IT equipment and employee training. In addition, the government can also provide adequate IT infrastructure, such as fast and stable internet networks, to support MSME operations. The study by Awamleh and Ertugan shows that government support contributes significantly to improving the IT capabilities and competitive advantages of MSMEs (Awamleh & Ertugan, 2021).

Future Research

Future research could include:

1. Longitudinal study to understand the long-term impact of ITC on CA of MSMEs.
2. Qualitative research to explore MSMEs' experiences in adopting new technologies.
3. Comparative analysis between MSMEs in various industrial sectors to identify specific factors influencing ITC success (Makhloufi, Yaacob, Laghouag, Sahli, & Belaid, 2021).

Research on the impact of specific technologies such as AI and blockchain on CA of MSMEs (Awamleh & Ertugan, 2021).

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