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RESEARCH ARTICLE

Strengthening Competitive Advantage via Absorptive Capacity and Knowledge Sharing: Supply Chain Agility as a Mediator in Digitalized SMEs

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ARTICLE INFO	ABSTRACT
	This study investigates the importance of absorptive ability and information sharing in improving the competitive advantage of small and medium-sized firms (SMEs) in the digital era, using supply chain agility (SCA) as a mediator. In today's increasingly dynamic business climate, digitalized SMEs must constantly adapt to market developments and client expectations. Organizations can improve their supply chain agility and competitive posture by employing absorptive capacity—the ability to absorb, assimilate, convert, and apply new knowledge. Knowledge sharing adds to this process by synchronizing internal and external procedures, encouraging collaboration, and allowing faster responses to market changes. This study uses a mixed-methods approach that combines qualitative interviews and quantitative analysis to show that both absorptive capacity and information sharing benefit supply chain agility, which mediates their implications for competitive advantage. These findings are helpful for SMEs looking to improve their competitiveness in the digital arena by strategically leveraging knowledge resources and agile supply chain management.

INTRODUCTION

The culinary industry in Indonesia has increased from 2020 to 2021 by 2.54 percent to IDR 775.1 trillion. The Central Statistics Agency (BPS) reported the gross domestic product (GDP) of the national culinary industry at current prices (ADHB) of IDR 1.12 quadrillion in 2021. Food and beverage processing is one of the most mature industries in Indonesia. Although several large companies dominate the market, most businesses are small or micro. Indonesia's food and beverage industry will experience significant consolidation. The development of the culinary industry on a national scale also impacts the regional scale, such as in DIY, Central Java, and West Java. BPS noted that the contribution of the culinary industry to GDP has consistently increased every year. However,

2020 there was a decline, although not too significant (Kartiraharjo & Isfianadewi, 2021; Isfianadewi & Anindityo, 2022; Linando et al., 2023).

In today's dynamic business landscape, small and medium-sized enterprises (SMEs) continue to adapt and innovate to maintain a competitive advantage. So, SMES needs to design strategies to increase its competitive advantage. Previous research shows that organizational core competencies, business model innovation, and strategic orientation play an essential role in improving competitive advantage and organizational performance (Agha et al., 2012; Anjaningrum & Rudamaga, 2019; Anwar, 2018; Aziz & Samad, 2016; Chahal & Bakshi, 2015; Dickinson & Sommers, 2012). In addition, other studies highlight the importance of dynamic capabilities and creativity in shaping sustainable competitive advantage. Entrepreneurial orientation and organizational ability to manage risk are also considered important in dealing with uncertainty in the market (Ernest & Sule, 2020; Ferreira et al., 2020; Godfrey et al., 2020; Puspita et al., 2020).

One strategic approach is to utilize absorptive capacity, referring to a firm's ability to recognize, assimilate, and apply external knowledge for commercial gain. Effective knowledge-sharing practices combined with absorptive capacity can foster the development of new capabilities and improve a firm's overall competitiveness (Baporikar et al., 2016). The second approach focuses on the development of absorptive capacity and knowledge-sharing models, which serve as the key to improving the absorptive capacity of information and knowledge in organizations (Ganguly et al., 2020; Isfianadewi et al., 2022; Janus, 2016; Kurniawan et al., 2020; Le & Lei, 2019; Nham et al., 2020). This research also examines how knowledge sharing can foster collaborative innovation and efficiency in SMEs (Ganguly et al., 2020; Janus, 2016; Kartiharjo & Isfianadewi, 2022; Kurniawan et al., 2020; Le & Lei, 2019; Nham et al., 2020).

However, realizing these benefits depends on the company's ability to respond quickly to changing market conditions. Supply chain agility plays an important mediating role, enabling SMEs to quickly reconfigure processes, resources, and routines to change customer demands and environmental changes. Recent studies highlight the importance of supply chain agility in fostering trust and commitment in supply networks, strengthening the capacity of companies to adapt and evolve (Mukhsin & Suryanto, 2021).

In addition, the moderating role of supply chain agility in strengthening the relationship was also analyzed, where supply chain agility contributes to the ability of SMEs to respond to market changes more quickly and efficiently (Braunscheidel & Suresh, 2009; Chatchawanchanchanakij & Arphonpisan, 2021; Gligor et al., 2013; Isfianadewi & Anindityo, 2022; Khan K et al., 2009; M. Gligor, 2014; Martinez-Sanchez & Lahoz-Leo, 2018; Swafford et al, 2008; Tisnasasmita Bisma Jatmika and Muafi, 2023) in SMEs engaged in business digitalization.

In addition, research shows a significant relationship between IT integration, supply chain flexibility, and the achievement of supply chain agility, leading to improved competitive business performance (Swafford et al., 2008). As SMEs transform business models digitally, the synergistic interaction between absorption capacity, knowledge sharing, and supply chain agility becomes increasingly essential. In the face of rapid environmental and technological changes, SMEs have supply chain agility. Unfortunately, the optimized application of absorptive capacity and knowledge-sharing models has not supported the digital era to increase competitive advantage and sustainable performance. Currently, SMEs widely apply absorptive capacity and knowledge sharing. However, there is still research on applying adaptive capacity and knowledge-sharing models to increase competitive advantage in SMEs that have digitalized their business, primarily when associated with competitive advantage strategies that will achieve sustainable performance.

There is no configuration of the absorptive capacity model, knowledge sharing, and supply chain agility to increase the competitive advantage of SMEs that do business digitalization. So, SME owners

and managers need strategies to improve their competitive advantage using the absorptive capacity model and knowledge sharing with the mediatizing supply chain agility in SMEs that do business digitalization. So the problems to be solved in this study are as follows: How is the design of strategies to increase competitive advantage and the absorptive capacity model and knowledge sharing with the mediating effect of supply chain agility on SMEs that do business digitalization?

The problem-solving approach in the research consists of two approaches, namely a theoretical approach to designing strategies for increasing competitive advantage (Agha et al., 2011; Anjaningrum & Rudamaga, 2019; Anwar, 2018; Aziz & Samad, 2016; Chahal & Bakshi, 2015) and developing models of absorptive capacity (Isfianadewi et al., 2022; Kocoglu et al., 2015; Noblet et al., 2011; Foss et al., 2022; Chandrashekar et al., 2017) and knowledge sharing (Ganguly et al., 2020; Kartiraharjo & Isfianadewi, 2021; Nham et al., 2020; Le & Lei .2019; Janus, 2016; Kurniawan et al., 2020) as well as the effect of the moderating role of supply chain agility **(**Chatchawanchanchanakij & Arphonpisan, 2021; Braunscheidel & Suresh, 2009; Gligor, 2014; Gligor et al., 2013; Khan et al., 2009; Martinez-Sanchez & Lahoz-Leo, 2018) on SMEs digitalizing business.

Although research on absorptive capacity, knowledge sharing, and supply chain agility on increasing competitive advantage continues to experience significant development, no research has been found that relates to the design of strategies to increase competitive advantage through the absorptive capacity model, knowledge sharing mediated by the role of supply chain agility in SMEs. So, research and knowledge must emerge about the findings of the design of competitive advantage strategies and the absorptive capacity model and knowledge sharing mediated by supply chain agility at the SME level. It is also a novelty and originality of research.

LITERATURE REVIEW

The process of adopting digitalization in serving market needs and demands is an effort by businesses to develop competitiveness (Ambe, 2010; Arsawan et al., 2022; Dickinson & Sommers, 2012; Ferreira et al., 2020), maintain markets, and gain new market shares (Agha et al., 2012; Anjaningrum & Rudamaga, 2019). For companies to survive in increasingly fierce competition, the proper competitive advantage is needed (Anwar, 2018; Aziz & Samad, 2016; Chahal & Bakshi, 2015; Dickinson & Sommers, 2012; Ferreira et al., 2020; Godfrey et al., 2020).

Competitive ability is obtained by how companies play individually and how the supply chain network works (Ambe, 2010; Wu et al., 2017). Companies with their supply chain networks need to continuously improve the ability to respond to market changes quickly, done by updating knowledge and technology to keep growing (internal knowledge and external knowledge) (Cai et al., 2012; MacCarthy et al., 2016; Paton & McLaughlin, 2008; Wu et al., 2017). Three primary sources are essential for a company's competitive advantage, namely absorptive capacity, knowledge sharing, and supply chain agility (Isfianadewi et al., 2022; Isfianadewi & Anindityo, 2022; Kartiharjo & Isfianadewi, 2022).

Absorptive Capacity and Competitive Advantage

Absorptive capacity refers to a company's ability to acquire, assimilate, transform, and utilize new knowledge to enhance its dynamic capabilities (Chang et al., 2019; Dobrzykowski et al., 2015; Lis & Sudolska, 2015; Liu et al., 2014). This concept comprises four main dimensions: Acquisition, Assimilation, Transformation, and Exploitation (Chandrashekar & Mungila Hillemane, 2018; Foss et al., 2009; Isfianadewi et al., 2022; Kocoglu et al., 2015; Noblet et al., 2011). The company's absorptive capacity illustrates its competence in managing, expanding, and leveraging its knowledge base, enhancing its competitive advantage (Noblet et al., 2011). As a company's absorptive capacity grows, so does its competitive edge, driven not only by market position but also by the uniqueness and inimitability of its knowledge assets (Isfianadewi et al., 2022; Kurniawan et al., 2020). These knowledge capabilities, seen as rare and non-replaceable, are crucial for sustaining long-term

competitive advantage (Liao et al., 2017; Lo & Tian, 2020; Pangarso et al., 2020). Absorptive capacity thus plays a pivotal role in enhancing organizational performance by effectively utilizing internal and external information (Sripada, 2020). Empirical studies have consistently shown that absorptive capacity significantly contributes to competitive advantage (Pangarso et al., 2020; Chang et al., 2019; Liao et al., 2017; Lo & Tian, 2020). Chang et al. (2019) expanded this concept to include cloud-based absorptive capacity, further highlighting its impact on competitive strength.

Additionally, absorptive capacity influences innovation ambidexterity—a balance between exploitative and exploratory innovation. Research shows that absorptive capacity positively impacts innovation ambidexterity, enhancing sustainable competitive advantage. Moreover, innovation ambidexterity mediates the relationship between absorptive capacity and sustainable competitive advantage (Pangarso et al., 2020). Another investigation reaffirmed the link between absorptive capacity and competitive advantage, providing further evidence of its strategic importance (Liao et al., 2017). Therefore, the following hypothesis is formulated:

H1: Absorptive capacity has a positive and significant effect on competitive advantage.

Knowledge Sharing and Competitive Advantage

In addition to absorptive capacity, knowledge sharing is equally critical for achieving competitive advantage (Arsawan et al., 2022). Knowledge sharing has enhanced a company's competitiveness (Liao et al., 2017; Lo & Tian, 2020). It goes beyond merely transferring information, encompassing social interactions and processes that facilitate the exchange of knowledge (Eidizadeh et al., 2017; Ganguly et al., 2020). This process involves two key activities: collecting, where individuals gather and organize knowledge, and donating, where this knowledge is shared with internal and external stakeholders (Balle et al., 2020; Janus, 2016; Le & Lei, 2019). Research shows that knowledge sharing influences absorptive capacity (Kurniawan et al., 2020; Rafique et al., 2018; Song et al., 2020), and together, these elements drive competitive advantage (Kartiharjo & Isfianadewi, 2022; Lo & Tian, 2020). Godfrey et al. (2020) define competitive advantage as an organization's ability to achieve superior performance compared to its rivals. Anwar (2018) describes it as a strategic edge that allows firms to outshine their competitors in the same industry.

Several studies have demonstrated the positive impact of knowledge sharing on competitive advantage (Eidizadeh, 2017; Arsawan et al., 2020; Lo & Tian, 2020), confirming its crucial role in enhancing organizational performance. Empirical findings suggest that knowledge sharing can foster an innovation culture, further contributing to sustainable competitive advantage (Arsawan et al., 2020). Additionally, complex models incorporating variables such as knowledge sharing, innovation capability, absorptive capacity, and competitive advantage have shown that these factors enhance company performance. Specifically, absorptive capacity mediates the relationship between knowledge sharing and innovation capability, ultimately affecting competitive advantage (Lo & Tian, 2020). Therefore, the following hypothesis is formulated:

H2: Knowledge sharing has a positive and significant impact on competitive advantage

Absorptive Capacity and Supply Chain Agility

Supply chain management encompasses various activities such as product development, procurement, planning, control, operations, and distribution (Pedroso & Nakano, 2009; Tisnasasmita et al., 2023; Yadav, 2013). Within this domain, companies adopt strategies like supply chain agility to stay competitive (Braunscheidel & Suresh, 2009; Chatchawanchanchanakij & Arphonpisan, 2021; Pandey & Garg, 2009). Supply chain agility refers to a firm's ability to quickly adapt to market changes

and meet customer demands (Khan K et al., 2009; M. Gligor, 2014; Martinez-Sanchez & Lahoz-Leo, 2018). It emphasizes a customer-centric approach (Bottani, 2009; Wu et al., 2017) and is characterized by features such as market sensitivity, virtual integration, process integration, and network integration (Balaji et al., 2015; Güner et al., 2018; Iskanius, 2007). These characteristics are crucial to implementing an agile supply chain strategy within business processes (Isfianadewi & Anindityo, 2022; Swafford et al., 2008).

Dobrzykowski et al. (2015) conducted a study in South Carolina focusing on the role of information within the supply chain. The research highlights that information is crucial, especially as companies face increasing customer demand for innovative products. Based on information processing theory, the study investigates how absorptive capacity (AC) links strategy to firm performance. It found that AC fully mediates the relationship between responsive strategy and business performance, indicating that AC is essential for firms aiming to offer innovative products to customers. Similarly, Chatchawanchanchanakij & Arphonpisan (2021) examined the mediating role of absorptive capacity in the relationship between supply chain agility and firm performance. Their findings suggest that a high absorptive capacity enhances supply chain agility's benefits, improving overall corporate performance. Therefore, the following hypothesis is formulated:

H3: Absorptive capacity has a positive and significant effect on supply chain agility

Knowledge Sharing and Supply Chain Agility

Companies can adopt strategies like supply chain agility (SCA) to remain competitive (Braunscheidel & Suresh, 2009; Chatchawanchanchanakij & Arphonpisan, 2021; Pandey & Garg, 2009). Supply chain agility refers to the ability of a company to rapidly adapt to market fluctuations and evolving customer demands (Khan K et al., 2009; M. Gligor, 2014; Martinez-Sanchez & Lahoz-Leo, 2018), with a focus on customer-oriented actions (Bottani, 2009; Wu et al., 2017). The main features of supply chain agility include market sensitivity, virtual integration, process integration, and network integration (Balaji et al., 2015; Güner et al., 2018; Iskanius, 2007), which guide companies in implementing agility strategies within their business processes (Isfianadewi & Anindityo, 2022; Swafford et al., 2008).

Supply chain agility works with knowledge sharing to enhance flexibility and innovation. Through practical knowledge sharing, companies can leverage information from partners to create new knowledge, enabling them to build a more responsive supply chain. Studies have shown that strong relationships with suppliers and a high level of information sharing are critical factors in achieving supply chain agility, reflecting the positive impact of knowledge sharing (Pedroso & Nakano, 2009). Further empirical evidence confirms that knowledge sharing positively influences supply chain agility by facilitating the exchange of valuable information between suppliers and buyers, ultimately strengthening supply chain relationships (Kim & Chai, 2017; Rajabion et al., 2019; Mehdikhani & Valmohammadi, 2019). Therefore, the following hypothesis is formulated:

H4: Supply chain agility has a positive and significant impact on competitive advantage

Supply Chain Agility and Competitive Advantage

Companies face challenges in their supply chains due to the dynamic nature of the business environment, increasing competition, and unpredictable customer demand. To navigate these fluctuations, companies must enhance their agility, the ability to quickly adapt to market changes and evolving customer preferences, serving as a source of competitive advantage (Wu et al., 2017). Supply chain agility (SCA) is a critical tool that enables businesses to outperform competitors. Koç et al. (2022) investigated how SCA contributes to developing competitive advantage, particularly in uncertain or rapidly changing conditions. Additionally, Ambe (2010) explored the relationship between SCA and competitive advantage, reinforcing that greater agility within the supply chain

significantly strengthens a company's competitive position. Therefore, supply chain agility positively and substantially impacts competitive advantage, helping firms remain resilient and responsive in dynamic markets.

H5: Supply chain agility has a positive and significant impact on competitive advantage

Supply chain agility mediates the relationship between absorptive capacity and competitive advantage

Supply chain agility consists of four key characteristics: market sensitivity, virtual integration, process integration, and network integration. These attributes represent a company's agility strategy within its business processes (Braunscheidel & Suresh, 2009; Hu et al., 2022; Yuwen et al., 2023). A strong absorptive capacity allows companies to integrate their supply chain processes with partners better, enabling them to respond effectively to market changes. Absorptive capacity, defined by a company's ability to acquire, assimilate, transform, and exploit new knowledge, is crucial in enhancing supply chain agility and positively impacting competitive advantage. Research indicates that absorptive capacity enables organizations to leverage the latest knowledge, fostering the development of dynamic capabilities essential for competitive advantage (Pangarso et al., 2020; Chang et al., 2019; Liao et al., 2017; Lo & Tian, 2020; Lumidao et al., 2024). Chang et al. (2019). Companies must continually understand consumer needs, market dynamics, and internal processes in this context. A high level of absorptive capacity allows firms to stay informed with current supply chain knowledge, enabling quicker adaptation to market shifts and customer demands. Companies can enhance their supply chain agility by being more responsive to market changes and ultimately gain a competitive edge. Therefore, supply chain agility mediates absorptive capacity and competitive advantage, helping companies achieve superior performance.

H6: Supply chain agility mediates the relationship between absorptive capacity and competitive advantage

Supply chain agility mediates the relationship between knowledge sharing and competitive advantage

Hu et al. (2022) emphasized the importance of developing sustainable supply chain agility, highlighting that organizations must focus on this agility to anticipate dynamic market changes and fluctuating consumer demand effectively. Effective management of existing knowledge is crucial for this process. Companies that efficiently apply their knowledge resources across the organization are better positioned to remain competitive. The study also underscores the role of knowledge sharing in aligning supply chain processes, which enhances supply chain agility and competitive advantage. Thus, integrating knowledge sharing into organizational strategies is essential for greater competitiveness. In this context, supply chain agility mediates the relationship between knowledge sharing and competitive advantage, helping organizations leverage knowledge to strengthen their market position.

H7: Supply chain agility mediates the relationship between knowledge sharing and competitive advantage

METHODS

This research uses a mixed-method approach. This research used a two-step approach: (1) qualitative study and (2) quantitative study. The qualitative study was used to explain the results of the quantitative study. The qualitative approach began with interviews and FGDs with critical informants who genuinely understand the business digitization process in SMEs with more than 500 Instagram followers.

Table 1: Variables, Operational Definitions, and Measurement

No	Variable and Source	Operational Definitions	Measurement Scales	Indicator/Items
1	*Absorptive Capacity* (Lo & Tian, 2020; Kurniawan et al., 2020; Isfianadewi et al., 2022)	An organization's ability to acquire, assimilate, and then exploit information to improve company performance.	Likert scale of 1 (strongly disagree) to 5 (strongly agree)	1. Employees and management in our SMEs often discuss and exchange opinions. 2. Employees and management in our SMEs often discuss and exchange opinions in informal activities such as lunch. 3. We like to share experiences with colleagues 4. Our SME has clear job descriptions and responsibilities for employees.
2	*Knowledge Sharing* (Janus, 2016; Lo & Tian, 2020; Kurniawan et al., 2020)	The process of exchanging skills, experiences, and knowledge, both explicit and implicit, among employees in an organization	Likert scale of 1 (strongly disagree) to 5 (strongly agree)	Donating: 1. When we get new information, we share it with colleagues. 2. When we gain new knowledge or skills, we share and teach them to colleagues 3. When we gain new work-related experience, we share it with colleagues Collecting: 1. When our colleagues get new information, they share it with us. 2. When our colleagues gain new knowledge or skills, they share and teach it to us 2. 3. When our colleagues gain new work-related experience, they share it with us 4. We like to learn and seek information from our coworkers
3	*Supply Chain Agility* (**Chatchawanchanchanakij** &**Arphonpisan, 2021;** Martinez-Sanchez & Lahoz-Leo, 2018; Isfianadewi & Anindityo, 2008)	Ability to quickly respond to market changes and customer demands and focus on customer-oriented measures	Likert scale of 1 (strongly disagree) to 5 (strongly agree)	1. Our SMEs maintain business relationships with customers based on the development of core competencies 2. Information about our SC SMEs is accessible to all SC agents 3. Our SMEs have no barriers to coordination and knowledge exchange between departments 4. Our SME uses performance measures based on customer satisfaction

| 4 | *Competitive Advantage* (Lo & Tian, 2020; Godfrey et al., 2020; Puspita et al., 2020) | Competencies of an organization that can produce better performance than competitors in the industry. | Likert scale of 1 (strongly disagree) to 5 (strongly agree) | 1. Overall, our SMEs have a better reputation than similar competing companies
2. Our SMEs continuously develop new and unique programs
3. Our SMEs can always have better research performance than the same competing companies
4. Our SMEs can always have a better relationship with the industry than the same competing companies. |

<div align="center">Sourced: Processed data, 2024</div>

Informants were selected using purposive sampling methods. Informants/respondents are owners or managers of SMEs that are business digitalization actors in the Yogyakarta, Central Java, and West Java province's culinary industry. The target respondents were 600 SME owners or managers. Qualitative analysis is used to (1) explore the level of digital adoption in SMEs in the success of digital transformation to strengthen the absorptive capacity and knowledge sharing of SMEs that do business digitalization to be more competitive and have sustainable performance. The research framework illustrating the relationships between absorptive capacity, knowledge sharing, supply chain agility, competitive advantage, and sustainable performance is presented in Figure 1. This research model explains how these variables are interconnected within the context of business digitalization in SMEs in the culinary industry.
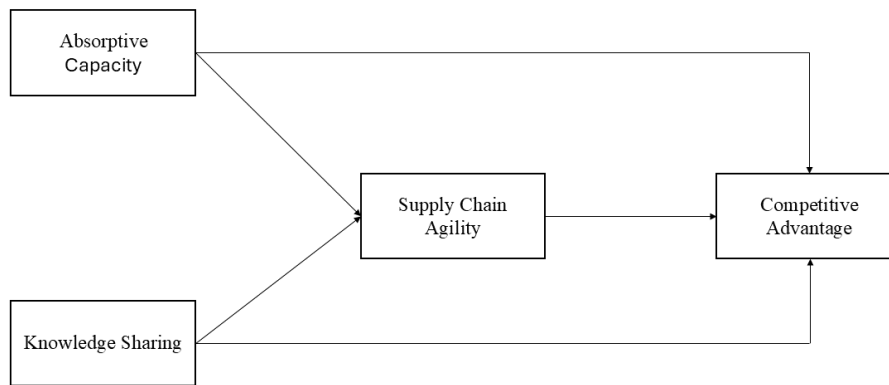

Figure 1: Research Model

The quantitative approach began with primary data collection using questionnaires that had been tested for validity and reliability. Quantitative analysis is used to (1) analyze the configuration of the absorptive capacity model and knowledge sharing and supply chain agility in increasing the competitive advantage of SMEs in business digitalization, (2) analyze the effect of the contribution of supply chain agility, absorptive capacity and knowledge sharing of SMEs in business digitalization on sustainable performance and increasing competitive advantage.

A quantitative approach used in this research is structural equation modeling (SEM) with AMOS 24 as statistical software. The number of students involved was four students. This study uses operational definitions, indicators, and variable measurements, as seen in Table 1.

RESULT

Respondent Demographics

The following is the distribution of respondents based on region

Table 2: Respondent Demographics

Region	District/City	Level of Digital Adoption	Questionnaires Returned	Valid Data
Yogyakarta	Sleman	The intermediate	150	140
	Kota Yogya	The presence of digital devices	115	105
Central Java	Semarang	The intermediate	100	92
	Tegal	The presence of digital devices	90	88
West Java	Cirebon	The presence of digital devices	83	83
	Bandung	The intermediate	95	92
Total			633	600

Sourced: Processed data, 2024

Table 2 in the column explains the results of FGDs with owners or managers of SMEs that are business digitalization actors in the culinary industry in the provinces of Yogyakarta, Central Java, and West Java. It is illustrated that the level of adoption of digitalization in culinary SMEs in each region varies greatly. These variations are grouped based on the level of digital adoption.

The measurement of digital adoption level was based on criteria at three levels of digital adoption, namely (Deloitte Access Economics, 2015):

1.   The presence of digital devices such as a computer or smartphone and access to the internet indicates the primary level.

2.   The intermediate level entails direct engagement in a social network, providing live chat or thread features to attract customers.

3.   Sophisticated connection, integrated social networks, and e-commerce business ability indicate an advanced level.

Validity and Reliability

Researchers analyzed data from 600 respondents obtained through distributed questionnaires. They used Pearson's correlation coefficient and significance level as validity test standards. An item was considered valid if the Pearson correlation value was ≥ 0.5 and the significance level was ≤ 0.05. IBM SPSS 27 software was used to conduct this validity test.

Table 3: Validity Test

Variable	Indicators	*Loading Factor*	*Cut Off*	Description
AC	X1.1	0,976	0,5	Valid
	X1.2	0,984	0,5	Valid
	X1.3	0,962	0,5	Valid
	X1.4	0,981	0,5	Valid
KS	X2.1	0,961	0,5	Valid
	X2.2	0,984	0,5	Valid
	X2.3	0,769	0,5	Valid

	X2.4	0,920	0,5	Valid
	X2.5	0,758	0,5	Valid
	X2.6	0,927	0,5	Valid
	X2.7	0,988	0,5	Valid
SCA	Z1.1	0,829	0,5	Valid
	Z1.2	0,941	0,5	Valid
	Z1.3	0,874	0,5	Valid
	Z1.4	0,973	0,5	Valid
CA	Y1.1	0,961	0,5	Valid
	Y1.2	0,953	0,5	Valid
	Y1.3	0,992	0,5	Valid
	Y1.4	0,970	0,5	Valid

Sourced: Processed data, 2024

Table 3 presents the results of the validity test, which shows that 19 question items are considered valid and appropriate for use as measuring instruments in this study. After that, a reliability test was conducted to evaluate the consistency of the questionnaire items and ensure that respondents gave stable responses to different questions. The reliability was measured using IBM SPSS Statistics 27. It is reliable if it achieves a Cronbach's alpha value of 0.5 or higher. As shown in Table 4, all variables in this study met this threshold, confirming their reliability and making them suitable for analysis.

Table 4: Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
.728	19

Sourced: Processed data, 2024

Measurement Model Test

At this stage, the feasibility of variables is carried out using various criteria, the following being The criteria for assessing Goodness of Fit and the Cut-off value used by the variables:

Table 5: Goodness of Fit

Variable	*Chi-Square*	*Probability*	*CMIN/DF*	RMSEA	GFI	NFI	CFI
AC	5,060	0,080	2,530	0,051	0,996	0,999	0,999
KS	5,955	0,051	2,978	0,057	0,997	0,999	0,999
SCA	0,414	0,520	0,000	1,000	1,000	1,000	1,000
CA	1,670	0,196	1,670	0,033	0,999	1,000	1,000

Source: Processed data, 2024

The Goodness of Fit (GoF) index results for the tested model variables (AC, KS, SCA, and CA) are presented in Table 5. All variables fit adequately with the data based on the Chi-Square values and corresponding probabilities. In particular:

Adaptability (AC) has a Chi-Square value of 5.060 and a probability of 0.080, which exceeds the threshold of 0.05, indicating a good fit for the model. The CMIN/DF value of 2.530 remained within the acceptable range (≤3), and the RMSEA value of 0.051 was below 0.08, indicating a good fit between the model and the population. In addition, the GFI, NFI, and CFI values exceeded 0.90, confirming the excellent fit.

Knowledge Sharing (KS) shows a Chi-Square of 5.955 with a probability of 0.051, which is marginally acceptable as it is close to the 0.05 threshold. The CMIN/DF value of 2.978, below 3, indicates an adequate fit, while the RMSEA value of 0.057 supports this fit as it is below the 0.08 threshold. In addition, the GFI, NFI, and CFI values, all above 0.99, confirm a strong fit with the model.

Supply Chain Agility (SCA) has a meager Chi-Square value of 0.414 and a probability of 0.520, well above the 0.05 benchmark, indicating an excellent fit. The CMIN/DF value of 0.000 indicates a perfect model fit. Although the RMSEA value of 1.000 may seem strange, it isn't essential due to the other fit indices (GFI, NFI, and CFI), which all reach the ideal value of 1.000, confirming a perfect fit.

Competitive Advantage (CA) shows a Chi-Square value of 1.670 and a probability of 0.196, which indicates a good fit as the likelihood exceeds 0.05. The CMIN/DF value of 1.670 is within the acceptable range. In addition, the RMSEA value of 0.033 further confirmed the model's fit, and the GFI, NFI, and CFI values (0.999, 1.000, and 1.000, respectively) indicated an excellent model fit.
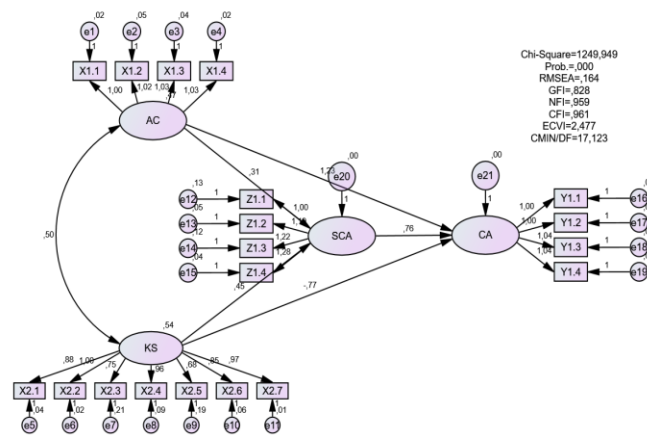

Figure 2: Structural Model Test

Overall, the GoF results indicated that the structural model provided an acceptable to excellent fit to the data across the variables, with most indices exceeding the acceptable fit threshold. It suggests that the model is suitable for further analysis and interpretation.

Hypothesis Testing

CA ← AC: With a coefficient of 1.234 and SE of 0.091, the relationship between AC and CA is powerful. The CR of 13.584 (***, $p < 0.001$) indicates that AC significantly contributes to CA.

CA ← KS: The coefficient value of -0.774 with SE 0.145 indicates a significant negative relationship between KS and CA. The CR value of -5.340 (***, $p < 0.001$) suggests that an increase in KS hurts CA, which may reflect other factors that affect accountant performance despite high system quality.

SCA ← AC: The coefficient value of 0.314 with a standard error (SE) of 0.027 indicates a significant positive relationship between AC and SCA variables. The highly substantial CR (Critical Ratio) value of 11.593 (***, $p < 0.001$) suggests that AC contributes positively to SCA.

SCA ← KS: The coefficient estimate value of 0.445 with SE 0.028 indicates that KS also has a significant favorable influence on SCA. A significant CR of 15.706 (***, $p < 0.001$) suggests that an increase in KS positively impacts SCA.

CA ← SCA: The coefficient of 0.763 with SE 0.285 indicates a significant positive relationship between SCA and CA. The CR of 2.676 ($p = 0.007$) suggests that SCA contributes positively to CA, although the significance is not as high as the previous relationship.

Table 6: Recapitulation of Hypothesis Test

	Estimate	SE.	CR.	P	Label
SCA←AC	,314	,027	11,593	***	par_19
SCA ← KS	,445	,028	15,706	***	par_20
CA ← AC	1,234	,091	13,584	***	par_16
CA ←KS	-,774	,145	-5,340	***	par_17
CA ← SCA	,763	,285	2,676	,007	par_18

Source: Processed data, 2024

Mediation Testing

Parameter estimation for the mediation test can be done with the Sobel Test as follows:

Input:		Test statistic:	Std. Error:	*p*-value:
a 0.314	Sobel test:	2.60895572	0.09183061	0.0090819
b 0.763	Aroian test:	2.59984402	0.09215245	0.00932661
s_a 0.027	Goodman test:	2.61816389	0.09150764	0.00884043
s_b 0.285	Reset all	Calculate		

Figure 3: Sobel Test Results AC to CA Relationship through SCA as a Mediator Variable, *Source: Processed data, 2024*

The results of the Sobel test calculation obtained a t-value of 2.609 because the t-count value of 2.609> t-table 1.97 with a p-value of 0.009 <0.05, proving that SCA can mediate KS on CA.

Input:		Test statistic:	Std. Error:	*p*-value:
a 0.445	Sobel test:	2.63999834	0.12861182	0.00829064
b 0.763	Aroian test:	2.63493116	0.12885915	0.00841543
s_a 0.028	Goodman test:	2.64509486	0.12836402	0.0081668
s_b 0.285	Reset all	Calculate		

**Figure 4: Sobel Test Results of the Relationship between KS and CA through SCA as a Mediator Variable*.*

Source: Processed data, 2024

The results of the Sobel test calculation obtained a t-count value of 2.640 because the t-count value of 2.640> t-table 1.97 with a p-value of 0.008 <0.05, proving that SCA can mediate the effect of KS on CA.

DISCUSSION

Absorptive Capacity and Competitive Advantage (CA←AC)

The relationship between AC and CA is solid, with a coefficient of 1.234 and SE of 0.091. The CR of 13.584 (***, p < 0.001) indicates that AC contributes significantly to CA. The finding of Lis & Sudolska (2015), which states that absorptive capacity has a favorable and considerable impact on competitive advantage, is also supported by this. In addition, this supports the research findings of Chatchawanchanchanakij & Arphonpisan (2021) and Isfianadewi et al. (2022), who reported that Absorptive Capacity has a favorable and significant impact on Supply Chain Agility.

Knowledge Sharing and Competitive Advantage (CA←KS)

The coefficient value of -0.774 with SE 0.145 indicates a significant negative relationship between KS and CA. The CR value of -5.340 (***, p < 0.001) suggests an increase in KS hurts CA. This result follows

the research of Isfianadewi et al. (2022). However, in contrast to the research results from (Azeem et al., 2021; Hu et al., 2022), This reflects other factors that affect accountant performance despite high system quality. One contributing factor is knowledge-sharing hostility, where individuals or groups in the organization tend to manipulate or hide knowledge (Cai & Ma, 2022). It occurs when employees feel that sharing knowledge can reduce their competitiveness, especially if the knowledge is critical or tactical. Research found that knowledge manipulation, where employees share knowledge selectively or even intentionally mislead, can reduce organizational performance, including in new product development and innovation (Lee et al., 2023). Furthermore, research by Cai & Ma (2022) found that hiding knowledge can reduce creativity and innovation performance, hurting the company's competitive advantage. Thus, although knowledge sharing is theoretically expected to improve organizational performance, in practice, factors such as an unsupportive work environment or tensions between individuals can reverse its impact.

Absorptive Capacity and Supply Chain Agility (SCA←AC)

The results of this study indicate that Absorptive Capacity (AC) has a positive and significant influence on Sustainable Competitive Advantage (SCA), with a coefficient value of 0.314, a standard error of 0.027, and a Critical Ratio (CR) value of 11.593. This finding is consistent with previous research, which reveals that absorption capacity is vital in increasing the company's competitive advantage (Flatten et al., 2011; Lichtenthaler, 2009). Other studies also confirm that an organization's ability to absorb and utilize external knowledge enhances innovation capabilities (Sohu et al., 2024), sustainably strengthening the company's competitiveness (Hussein et al., 2024).

Recent research also shows that Absorptive Capacity allows companies to adapt to changes in the external environment, strengthening competitive advantage in the long run. It is in line with studies that AC plays a crucial role in creating innovation, especially in companies that focus on developing organizational capabilities through enhancing learning capabilities (Pangarso et al., 2020). However, some literature indicates that innovation capabilities may mediate this relationship, thus showing the complexity of the path between AC and SCA depending on the strategy and industrial context of the company (Pangarso et al., 2020). Therefore, the results of this study reinforce the view that AC not only directly impacts SCA but also extends a firm's ability to maintain competitive advantage through effective knowledge management and innovation.

Knowledge Sharing and Supply Chain Agility (SCA←KS)

The coefficient estimate value of 0.445 with SE 0.028 indicates that KS also has a significant favorable influence on SCA. A significant CR of 15.706 (***, p < 0.001) suggests that an increase in KS positively impacts SCA. It aligns with the study from (Dewi & Hermanto, 2024). when combined with logistics integration and partner collaboration, KS can increase supply chain agility. KS helps smooth the information flow between partners, improving coordination and speeding up responses in the supply chain. Other studies are also in line (Kim & Chai, 2017; Rajabion et al., 2019). At the same time, different research results were found by Isfianadewi et al. (2022). This difference in results suggests that industry contexts and methodological approaches, such as sample size and analytical tools, can influence the extent to which KS impacts SCA, which is essential to discuss further in this article.

Supply Chain Agility and Competitive Advantage (CA←SCA)

The coefficient of 0.763 with SE 0.285 indicates a significant positive relationship between SCA and CA. The CR of 2.676 (p = 0.007) suggests that SCA contributes positively to CA. The findings of this study are consistent with the findings of Ambe (2010), Isfianadewi et al. (2022), and Wu et al. (2017), who found that supply chain agility contributes to competitive advantage. In a more specific context, SCA enables companies to adjust operations quickly to market dynamics, such as customer demand or supply disruptions, ultimately contributing to increased competitiveness. Previous research findings by Koç et al. (2022), who found a positive and substantial relationship between supply chain

agility and competitive advantage, also reinforce this conclusion. This study emphasizes that companies that can improve supply chain agility can be more responsive to demand fluctuations and technological changes, thereby gaining a competitive advantage.

Supply chain agility mediates the relationship between absorptive capacity and competitive advantage (CA⬅SCA⬅AC)

The results of the Sobel test calculation obtained a t-value of 2.609 because the t-count value of 2.609> t-table 1.97 with a p-value of 0.009 <0.05, proving that SCA can mediate KS to CA. It aligns with the dynamic capability theory, emphasizing that supply chain agility allows companies to adapt quickly to dynamic market changes. This result also corroborates the findings of Abourokbah et al. (2023) and Isfianadewi & Anindityo (2022), who stated similar results.

Supply chain agility mediates the relationship between knowledge sharing and competitive advantage (CA⬅SCA⬅KS)

The results of the Sobel test calculation obtained a t-count value of 2.640 because the t-count value of 2.640> t-table 1.97 with a p-value of 0.008 <0.05, proving that SCA can mediate the effect of KS on CA. It does not follow the research of Isfianadewi et al. (2022). However, the results of other studies state that SCA can mediate the effect of KS on CA (Koç et al., 2022; Tuan, 2016).

CONCLUSION

Based on the findings of this study, it is evident that absorptive capacity (AC) and knowledge sharing (KS) play crucial roles in enhancing supply chain agility (SCA), which in turn strengthens the competitive advantage (CA) of SMEs undergoing digitalization. The positive and significant relationship between AC and SCA and KS and SCA demonstrates that improving the ability to absorb external knowledge and fostering effective knowledge sharing are essential strategies for increasing supply chain responsiveness. Furthermore, the strong relationship between AC and CA suggests that absorptive capacity directly enhances competitive advantage. In contrast, the negative impact of KS on CA indicates the potential presence of other moderating factors. Nonetheless, supply chain agility significantly mediates the influence of both AC and KS on CA, as confirmed by the Sobel test results. This mediation highlights the pivotal role of agility in translating knowledge-related capabilities into tangible competitive advantages. Therefore, SMEs focusing on business digitalization should prioritize both absorptive capacity and knowledge sharing while fostering agility in their supply chains to sustain long-term competitiveness in dynamic markets.

The managerial implications of this study suggest that SME owners or managers must quickly capture relevant information from the business environment and immediately share it with employees and suppliers to maintain supply chain agility, which positively impacts competitive advantage. However, managers should be cautious about potential information manipulation by employees, which could harm the company. This study has several limitations, particularly in the scope of SME digitalization, which is still limited to the culinary industry in West Java, DI Yogyakarta, and Central Java, with most SMEs still using social media as part of their digital transformation. Competitive advantage (CA) focuses on low-cost strategies. It is hoped that with digitalization, SMEs can progress from a Low-Cost strategy to Differentiation, enhancing competitiveness and reducing operational costs. The level of digital transformation among respondents also varies. Therefore, it is recommended that future research expands the geographical and industrial scope and refines the respondent criteria, focusing on SMEs that have reached a more advanced stage of digital transformation.

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