“Role of supply chain management in improving competitive advantage of Indonesian small and medium enterprises”

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ROLE OF SUPPLY CHAIN MANAGEMENT IN IMPROVING COMPETITIVE ADVANTAGE OF INDONESIAN SMALL AND MEDIUM ENTERPRISES

Abstract

Global competition has forced companies, including small and medium enterprises (SMEs), to improve their competitive advantage. Supply chain management practices are the ways to improve the competitive advantage, particularly in the global competition context. However, there is still doubt SMEs can compete globally, considering they face limited resources, skilled workforce, and business networks. Therefore, this study aims to examine the influence of supply chain management practices, covering cross-functional integration, partnership, responsiveness, and resilience. Moreover, this study has examined which practices dominate in improving competitive advantage. The quantitative study involved 445 SMEs located in East Java, Indonesia. The respondents are supervisors or higher levels and work in departments related to supply chain management, as they can provide the relevant information and possess complete knowledge of management practices. The data were collected via a questionnaire designed with a five-point Likert scale. The responses were analyzed using SmartPLS software 4.0. The results show that cross-function integration improves supply chain partnership, responsiveness, and resilience (β = 0.705, 0.382, 0.324; t-value = 25.177, 6.697, 5.783). Supply chain partnerships affect supply chain responsiveness, resilience, and competitive advantage (β = 0.327, 0.257, 0.249; t-value = 5.933, 4.536, 5.651). Moreover, supply chain responsiveness improves supply chain resilience and competitive advantage (β = 0.285, 0.106; t-value = 5.690, 2.099). Supply chain resilience improves competitive advantage (β = 0.435 and t-value = 8.987). SMEs can enhance their competitive advantage by integrating their internal cross-functional integration and adopting supply chain partnership, responsiveness, and resilience.

Keywords East Java, Indonesia, small and medium companies, resource-based view, Smart-PLS, supply chain management

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INTRODUCTION

Global competition has forced small and medium enterprise (SME) companies to build their competitive advantage. In Indonesia, SMEs face competition from China, Vietnam, and other ASEAN countries. Similarly, the competition is even fiercer when domestic SMEs export products and compete with other SMEs in different countries. The competition covers not only domestic but also imported products. This situation is one consequence of Indonesia ratifying the World Trade Organization (WTO) agreement. Besides, domestic SMEs also face supply chain networking challenges when importing raw materials or components, particularly during supply chain disruption.

Nayak et al. (2023) indicated various studies initiated on how to create a competitive advantage, such as customer orientation, alliance port-

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folio, firm resources, firm performance, entrepreneurial orientation, and dynamic capabilities. In its development, the resource-based view theory has been extended to account for the significant degree of uncertainty, volatility, and ambiguity that businesses face in a competitive market, giving rise to dynamic capabilities. According to Nayak et al. (2023), alliance portfolios, such as the supply chain partnership, integrating the company's internal functions with its external partners contribute to creating a competitive advantage. However, an efficient internal system and functions are required to support the company's strategy. One of the most adopted strategies for synchronizing internal functions is sophisticated information technology (Birasnav & Bienstock, 2019). Internal integration makes it easier for management to determine appropriate strategies to improve company performance (Bag et al., 2023).

Moreover, cross-functional integration enables external partnerships with suppliers and customers (Eriksson, 2015). Efficient cross-functional integration enables successful supply chain partnerships (Tarigan et al., 2021) because management can understand the actual conditions and determine appropriate decision-making (Nenavani & Jain, 2022; Abeysekara et al., 2019; Freije et al., 2022). In addition, cross-functional integration can improve supply chain responsiveness to cope with customer demand change (Yu et al., 2019). Still, the company's ability to optimize cooperation with external partners can reduce the risks (Asamoah et al., 2020). Besides, external collaboration benefits companies by improving flexibility and supply chain resilience to improve performance (Pu et al., 2023).

Supply chain resilience is the company's ability to overcome instability and return to normal conditions in case of any disruption (Hosseini et al., 2019). Meanwhile, supply chain responsiveness is the company's ability to adapt quickly to market change (Chunsheng et al., 2020). Then, enhancing supply chain responsiveness to market needs will improve competitiveness and operational performance (Yu et al., 2019). Supply chain responsiveness improves competitive advantage and aids in outperforming the competitors (Sujatha & Maheswari, 2023; Vafaei-Zadeh et al., 2020; Nenavani & Jain, 2022; Hohenstein et al., 2015; Abeysekara et al., 2019).

Cross-functional integration, supply chain partnership, responsiveness, and resilience are critical issues in the current global competition. However, SMEs' adoption of supply chain management has always remained an open issue, including in Indonesia. SMEs have difficulty adopting supply chain practices as they face challenges and constraints, such as a lack of resources, skilled human resources, and information technology.

1. LITERATURE REVIEW AND HYPOTHESES

According to Wernerfelt (2020), organizational resources and products go hand in hand, and resources drive performance, which helps develop those products. Successful companies in the marketplace are also better at nurturing and nourishing resources than their rivals (Ireland et al., 2003; Khan et al., 2024). Therefore, the core of dynamic capability (DC) is detecting the surroundings and taking advantage of chances to get a competitive edge (Li & Liu, 2014). Cross-functional integration in corporate organizations is a form of coordination between departments within the company that uses information technology to connect activities quickly for efficient operational processes (Chunsheng et al., 2020; Yu et al., 2019). Integration between functions within the company removes communication and coordination barriers (Tarigan et al., 2021; Siagian et al., 2022). Information systems enable cross-functional integration and make data interfaces between functions in real time (Tarigan et al., 2021). Cross-functional integration can eliminate data duplication and asynchronous reports (Jambulingam & Kathuria, 2020). Cross-functional integration allows continuous internal coordination and creates value for customers (Tseng & Liao, 2015).

Supply chain partnership aims to build intensive communication and coordination between two or more partners in the supply chain network (Frankowska & Cheba, 2022). Companies

can build relationships by sharing company goals and information with corporate partners (Hui et al., 2015) and involving suppliers in determining production planning and new product development by building knowledge sharing (Shan et al., 2023). One benefit of a supply chain partnership is the company's ability to engage suppliers to perform continuous performance improvement (Khan et al., 2022; Srivastava et al., 2017; Nenavani & Jain, 2022). Vendors can control inventory levels by paying attention to customer demand through supplier-buyer relationships as a form of partnership (Mutlu & Çetinkaya, 2020; Panahifar et al., 2018; Rezaei et al., 2018). Besides, the company can involve customers in demand management, sales, and operations planning (Pu et al., 2023; Tsanos & Zografos, 2016). The measurements used for strategic partnerships are information sharing, building long-term relationships, collaboration, and developing supplier partners (Tarigan & Siagian, 2021; Pu et al., 2023). Shan et al. (2023) and Kumar and Rahman (2016) determined that the supply chain partnership consists of trust, commitment, and contract.

The company's ability to respond to customers' demands has implications for flexible supply chain responsiveness (Chunsheng et al., 2020). Supply chain responsiveness is also the ability of companies and partners to respond to changes in the uncertain business environment (Yu et al., 2019). The company, therefore, should organize its internal operation and supplier network responsiveness to meet changing customer needs (Acquah et al., 2024). Supply chain responsiveness needs support from internal processes and suppliers in the production process and cycle time (Nenavani & Jain, 2022). Supply chain responsiveness always focuses on customers' needs for sustainable competitive advantage (Sujatha & Maheswari, 2023). The response to customers involves all components in the internal operation systems and logistics process (Górska-Warsewicz, 2024; Asamoah et al., 2021). Yu et al. (2019) determine that indicators in supply chain responsiveness are faster responses to customers' needs, strategy changes, and new products according to the market demand.

Moreover, supply chain resilience enables a quick response in making changes so that company conditions quickly return to normal during disruption (Orlando et al., 2022). Companies must eliminate the risk of disruption and survive in any conditions of sudden change (Hosseini et al., 2019; Abeysekara et al., 2019). The company must eliminate obstacles to keep all activities and operations running well (Tarigan et al., 2021; Tan et al., 2022). The company's ability to understand risks that have and have not occurred and identify problems can minimize risks (Munir et al., 2020). Companies' capability to survive, return to normal quickly, and even increase performance is a form of supply chain resilience (Bag et al., 2023). The steps set by the company to anticipate problems that will occur in the future, be aware of all changes that determine the company's processes, and be agile in dealing with changes are a form of firm resilience (Li et al., 2017). Liu and Lee (2018) stated that measurement items for supply chain resilience are overcoming and anticipating external changes, adapting quickly to problems that arise, providing a quick response, and maintaining the situation.

Meanwhile, companies have an advantage when cost, quality, and delivery are better than those of their competitors (Nenavani & Jain, 2022). Companies should build a superior product that is difficult for their competitors to imitate in the long term (Yu et al., 2019). SMEs can also involve suppliers, internal companies, and distribution companies to produce production processes and products efficiently to offer relatively low costs (Pu et al., 2023). Integration in the company makes efficient operations and can create added value that benefits customers and provides a sustainable advantage (Tarigan et al., 2021). Rajaguru et al. (2022) determine business performance to generate competitive advantage with sales volume increase measurement items, market share growth, growth in net profit, growth in return on investment, and performance compared to competitors. Compared with the other competitors, company performance is a form of competitiveness with indicators of growth in sales, return on sales, growth in return on sales, growth in profit, growth in market share, and return on investment (Liu et al., 2021).

In addition, cross-functional integration is a form of integration between departments to provide information exchange that can be shared with partners (Tarigan et al., 2021). Integrating activities in

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the functions can help partners overcome complexity and uncertainty (Eriksson, 2015). Using technology and information enables cross-functional integration to improve supplier-company relationships (Ambekar et al., 2021). Information sharing between companies and partners as trading partners can provide value for the company (Vafaei-Zadeh et al., 2020). The ability to develop strategic planning and actively collaborate externally improves rapid response to changes in the business environment (Yu et al., 2019). However, the responsiveness of the operation system requires integrated information provided by cross-functional integration (Acquah et al., 2024). Therefore, companies can anticipate demand uncertainty when the cross-functional system plays a good role in generating supply chain responsiveness (Nenavani & Jain, 2022).

Cross-functional and external integration improves financial performance and supply chain resilience (Chunsheng et al., 2020). Besides, internal operational coordination with real-time data access and good coordination between departments can affect supply chain resilience, as illustrated by increased production capacity during disruption (Siagian et al., 2022). Similarly, information-sharing effectiveness influences the increase of supply chain resilience with visibility and flexibility on an ongoing basis (Tan et al., 2022). Sharing information with company partners and supply chain partnerships can increase responsiveness related to production planning to produce production outcomes (Youn et al., 2013). The relationship between partners in the supply chain can adapt to the company's environment and operations as a form of responsiveness (Frankowska & Cheba, 2022). Partnerships positively influence supply chain resilience (Tarigan et al., 2021). Coordination through demand management makes it easier for companies to understand demand and overcome emerging problems to increase supply chain resilience (Tsanos & Zografos, 2016). In addition, supplier-buyer relationships built for long-lasting cooperation can maintain supply chain resilience and sustainability and improve benefits for the company (Maleki et al., 2023).

Besides, supply chain responsiveness, defined as the company's ability to adjust production capacity quickly in response to variations in customer demand, affects supply chain resilience to return soon to its original state after disruption and respond to anticipated disruptions quickly (Munir et al., 2022; Siagian et al., 2021). The ability of SMEs to produce products that meet customer needs related to color, features, product size, and product specificity can provide company endurance in maintaining customer satisfaction (Nenavani & Jain, 2022). Hence, the operating system responsiveness of the company in responding quickly to changes in volume and product mix requested by customers affects the logistics process to survive in maintaining warehouse capacity to cope with changes in demand (Asamoah et al., 2021).

Partnerships with external suppliers enable the company to meet order flexibility and carry out activities to impact sustainable performance (Tarigan et al., 2021). Moreover, supply chain partnership between two company components in marketing and sales, production, purchasing, and logistics enhances competitive advantage (Rezaei et al., 2018; Srivastava et al., 2017). In addition, strategic partnerships by collaboration and sharing information improve operational performance (Tarigan & Siagian, 2021; Pu et al., 2023). However, the company should select appropriate suppliers that support the protection of environmental and economic performance as dimensions of sustainable performance (Kumar & Rahman, 2016; Freije et al., 2022; Lii & Kuo, 2016). Supply chain responsiveness is a step determined by companies in adjusting demand and supply by reducing lead time, increasing on-time delivery, and reducing throughput time for customers, which can affect firm financial performance as a form of competitive advantage that is difficult to imitate (Li et al., 2017). Supply chain responsiveness consists of operations system and supplier network responsiveness, which affects competitive advantage by increasing firm performance (Acquah et al., 2024). Responding quickly to new product needs and customer demand allows the company to win the competition (Asamoah et al., 2021). The company's ability to utilize big data in the company's supply chain resilience provides competitiveness (Bag et al., 2023). Based on the literature review, the relationship of all five variables is illustrated in Figure 1. Each arrow indicates the causal relationship between each of the two variables.

This study focuses on small and medium enterprises in Indonesia located in East Java Province to examine the role of cross-functional integration, supply chain partnership, responsiveness, and re-

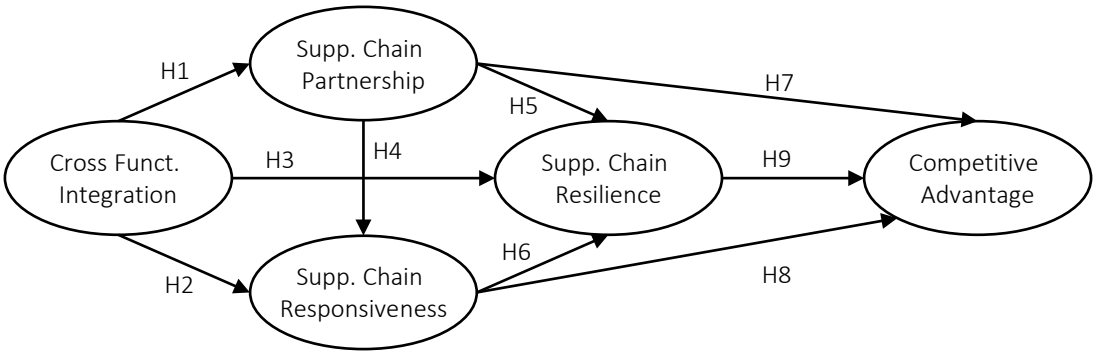

Figure 1. Research model

silience in enhancing competitive advantage. The following hypotheses are proposed:

H_1: *Cross-functional integration affects supply chain partnership.*

H_2: *Cross-functional integration affects supply chain responsiveness.*

H_3: *Cross-functional integration affects supply chain resilience.*

H_4: *Supply chain partnership affects supply chain responsiveness.*

H_5: *Supply chain partnership affects supply chain resilience.*

H_6: *Supply chain responsiveness affects supply chain resilience.*

H_7: *Supply chain partnership affects competitive advantage.*

H_8: *Supply chain responsiveness affects competitive advantage.*

H_9: *Supply chain resilience affects competitive advantage.*

2. METHOD

The sample consists of 445 small and medium enterprises (SMEs) with the predetermined criteria of 20 employees in the East Java region. The database was obtained from the Bureau of Statistics of East Java Region, domiciled in Surabaya City. They cover different industries, including wood pulp and paper (124), consumer goods (123), plastic and packaging (63), electronic and telecommunication (50), machine and automotive (45), and garment and textile (40). The respondents are supervisors or those in higher positions who have at least worked as permanent employees for one year. Data were collected online and offline for sixteen months, from June 2022 to October 2023. Questionnaires designed with a five-point Likert scale were distributed offline and online by deploying 50 officers who were rewarded. The direct distribution questionnaire (offline) comprised 40 respondents to get an overview of the supply chain integration process. Online data were collected by distributing questionnaires using Google Forms links via email, WhatsApp groups, and other social media. Finally, 445 respondents were considered valid for analysis.

Cross-functional integration is assessed by adopting previous findings consisting of a five-item scale. It includes data integration between departments is running well (CF1), inventory data integration with all departments is running well (CF2), real-time operating data for all departments (CF3), periodic interdepartmental meetings for all departments (CF4), and cross-functional team for development process and product (CF5) (Liu et al., 2021; Tarigan et al., 2021; Vafaei-Zadeh et al., 2020; Jambulingam & Kathuria, 2020).

Supply chain partnership used five-item scale: companies sharing resources with partners (SCP1), companies sharing information with partners (SCP2), companies sharing best practices with partners (SCP3), suppliers helping companies solve problems (SCP4), and companies involving partners in work teams (SCP5) (Kumar & Rahman, 2016; Tarigan & Siagian, 2021; Mutlu & Çetinkaya, 2020; Xie et al., 2022; Pu et al., 2023).

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Supply chain responsiveness is measured using a five-item scale: companies can respond quickly to changes in demand (SCR1), companies quickly adjust capacity to cope with changes in demand (SCR2), companies rapidly produce a variety of products to cope with changes in demand (SCR3), companies accommodate customer requests specifically (SCR4), and companies deliver quickly to changes in demand (SCR5) (Asamoah et al., 2021; Nenavani & Jain, 2022; Yu et al., 2019).

Supply chain resilience adopted a four-item scale: companies can restore production flow quickly (SCRe1), production capacity can be restored quickly (SCRe2), companies can adapt to new processes according to changes (SCRe3), and the ability to quickly maintain the desired level of control over structure and function (SCRe4) (Tarigan et al., 2021; Munir et al., 2022; Liu & Lee, 2018; Chunsheng et al., 2020; Abeysekara et al., 2019).

Competitive advantage is assessed using a five-item scale: product sales have increased compared to competitors (CA1), product quality has a strong reputation compared to competitors (CA2), companies have flexibility in providing product volumes (CA3), the accuracy of company product delivery is reliable (CA4), and company profits have increased (CA5) (Rajaguru et al., 2022; Abeysekara et al., 2019; Tarigan et al., 2021; Yu et al., 2019).

Data analysis uses the partial list square (PLS) employing professional SmartPLS software version 4.0. This technique is used because it can process complex models; the model, in this case, involves five variables and 24 indicators.

3. RESULTS

Table 1 illustrates the composition of respondents. Most respondents are in the manager-level position (head of department), 145 (33%), followed by the supervisor position, 232 (52%). Most respondents are also in charge of departments dealing with operations and supply chains, such as engineering, production planning, production, purchasing, and warehouse.

Table 1. Respondents' profile

Measurement Item	Description	Frequency	%
Department	Engineering	71	16
	Finance and Accounting	14	3
	Marketing	35	8
	Production Planning	49	11
	Production	148	33
	Purchasing/Procurement	90	20
	Warehouse	38	9
Current position in the company	Owners	34	8
	Director/General Manager	11	2
	Manager	145	33
	Superintendent	23	5
	Supervisor	232	52

As Shiau et al. (2019) indicate, validity assessment uses the factor loading value, while reliability uses Cronbach's alpha and composite reliability (Table 2).

Table 2. Goodness of fit

Item	Factor Loading	Composite reliability	Cronbach's alpha	R-Square
Cross-functional integration		**0.862**	**0.845**	**0.000**
CF1	0.866			
CF2	0.840			
CF3	0.845			
CF4	0.799			
CF5	0.569			
Supply chain partnership		**0.787**	**0.784**	**0.497**
SCP1	0.611			
SCP2	0.735			
SCP3	0.795			
SCP4	0.708			
SCP5	0.810			
Supply chain responsiveness		**0.783**	**0.788**	**0.429**
SCR1	0.784			
SCR2	0.779			
SCR3	0.727			
SCR4	0.743			
SCR5	0.634			
Supply Chain Resilience		**0.749**	**0.715**	**0.526**
SCRe1	0.599			
SCRe2	0.698			
SCRe3	0.777			
SCRe4	0.821			
Competitive advantage		**0.757**	**0.740**	**0.530**
CA1	0.585			
CA2	0.801			
CA3	0.693			
CA4	0.712			
CA5	0.668			

Table 3. Discriminant validity

Fornell-Larcker	1	2	3	4	5
Competitive Advantage (1)	**0.695**				
Cross-Functional Integration (2)	0.643	**0.791**			
Supply Chain Responsiveness (3)	0.537	0.612	**0.735**		
Supply Chain Partnership (4)	0.624	0.705	0.596	**0.735**	
Supply Chain Resilience (5)	0.679	0.658	0.601	0.634	**0.729**

Those findings indicated that all factors loading values exceed the minimum recommended value of 0.500. Hence, all indicators are considered valid for convergent validity requirements. This study used composite reliability and Cronbach's Alpha to assess the reliability using the value of 0.70 as the minimum requirement. The result indicates the value of each variable above 0.70. In addition, the predictive relevance (*Q* square) is used to assess the goodness of fit of data and the research model, which is measured using the formula $Q2 = 1- [(1-0.497) x(1-0.429) x(1-0.526)x(1-530)] = 0.936$. These results show that 93.6% of data could represent the model. The model could be used to predict the competitive advantage.

Discriminant validity is assessed using the Forner-Larcker criterion, as shown in Table 3. All numbers in bold should be greater than others on the left-hand side and below the bold number. This result indicates that all indicators are qualified for validity and reliability.

Further analysis is the hypothesis examination, as shown in Table 4. The hypothesis is empirically supported if the *t*-statistic value exceeds 1.96, which is based on the significant level of 0.05, and rejected if it is below 1.96 or the *p*-value exceeds 0.05.

All path coefficients are positive in the range of 0.106 and 0.705. In addition, the *t*-values are in the range of 2.099 and 25.177, which means the data significantly support all hypotheses.

4. DISCUSSION

Globalization entails SMEs competing with a superior competitive advantage. The competition is crucial not only in other countries where SMEs export but also in domestic markets. The competition can be based on various factors, such as responsiveness to customer demand change, the ability to recover from any disruption, and adopting a partnership strategy, which is required when doing global competition. SMEs play an essential role in Indonesia's economic growth. According to Indonesia Investment Report (The Indonesian Chamber of Commerce and Industry, 2024), Republic of Indonesia, SMEs contribute 61.07% of the Gross Domestic Product (GDP). SMEs also absorb up to 97% of the total domestic workforce. The SME sector in Indonesia is diverse; it covers different industries, including wood pulp and paper, consumer goods, plastic and packaging, and electronic and telecommunication.

The study examines the role of supply chain management in improving SMEs' competitive advantage in Indonesia. Supply chain management focuses on cross-functional integration, supply chain partnership, supply chain responsiveness, and supply chain resilience. The results indicated the relevance of supply chain management for SMEs in Indonesia. First, cross-functional integration positively affects supply chain partnerships. Real-time data integration between departments will support sharing information with partners to

Table 4. Hypotheses testing

	Hypothesis	Path Coefficient	t-statistics	p-values	Result
H_1	Cross-Functional Integration → Supply Chain Partnership	0.705	25.177	0.000	Supported
H_2	Cross-Functional Integration → Supply Chain Responsiveness	0.382	6.697	0.000	Supported
H_3	Cross-Functional Integration → Supply Chain Resilience	0.324	5.783	0.000	Supported
H_4	Supply Chain Partnership → Supply Chain Responsiveness	0.327	5.933	0.000	Supported
H_5	Supply Chain Partnership → Supply Chain Resilience	0.257	4.536	0.000	Supported
H_6	Supply Chain Responsiveness → Supply Chain Resilience	0.249	5.651	0.000	Supported
H_7	Supply Chain Partnership → Competitive Advantage	0.285	5.690	0.000	Supported
H_8	Supply Chain Responsiveness → Competitive Advantage	0.106	2.099	0.036	Supported
H_9	Supply Chain Resilience → Competitive Advantage	0.435	8.987	0.000	Supported

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achieve common goals. This study supports previous studies (Chunsheng et al., 2020; Yu et al., 2019; Tarigan et al., 2021; Siagian et al., 2022; Birasnav & Bienstock, 2019; Dhaigude et al., 2021; Tsanos & Zografos, 2016; Ambekar et al., 2021; Freije et al., 2022; Vafaei-Zadeh et al., 2020). Second, cross-functional integration has a positive effect on improving supply chain responsiveness. Periodic meetings by all departments enable responsiveness through the ability to respond quickly to changes in market demand. The results also confirm previous research (Chunsheng et al., 2020; Yu et al., 2019; Acquah et al., 2024; Nenavani & Jain, 2022; Munir et al., 2022; Liu et al., 2021). Third, cross-functional integration enhances supply chain resilience in the Indonesian SME industry. Supply chain resilience defines the ability of SMEs to recover from any supply chain disruption. Cross-functional integration enables SMEs to restore production capacity in case of disruption. This study supports previous findings (Tarigan et al., 2021; Chunsheng et al., 2020; Munir et al., 2020; Siagian et al., 2022; Tan et al., 2022).

Fourth, supply chain partnership improves supply chain responsiveness. External collaboration, which involves work team partners, enhances supply chain responsiveness. The partnership enables SMEs to respond to market demand changes through collaboration and support from suppliers or distributors. This study reinforces the past findings that supply chain partnership has a positive effect on increasing supply chain responsiveness (Tsanos & Zografos, 2016; Frankowska & Cheba, 2022; Mutlu & Çetinkaya, 2020; Acquah et al., 2024; Nenavani & Jain, 2022). Fifth, supply chain partnership positively affects supply chain resilience. SMEs can survive, quickly restore production activities, and find new ways to meet changing conditions. The results support past studies (Tarigan et al., 2021; Tsanos & Zografos, 2016; Shan et al., 2023; Maleki et al., 2023). Sixth, supply chain responsiveness affects supply chain resilience. Responding to changes in demand by adjusting production capacity and product variations improves supply chain resilience. Resilience enables overcoming external changes by adapting to new processes. The results coincide with past studies (Munir et al., 2022; Nenavani & Jain, 2022; Asamoah et al., 2021).

Seventh, supply chain partnership significantly affects competitive advantage. The SMEs' production flexibility in providing reliable product volumes and on-time delivery of products will satisfy the customer, which leads to a competitive advantage. Each company needs support from the external side through partnership. The results confirm previous evidence (Tsanos & Zografos, 2016; Freije et al., 2022; Lii & Kuo, 2016; Birasnav & Bienstock, 2019; Tarigan et al., 2021; Xie et al., 2022; Shan et al., 2023; Rezaei et al., 2018; Srivastava et al., 2017; Youn et al., 2013; Tarigan & Siagian, 2021). Eight, supply chain responsiveness positively affects competitive advantage by generating competitive products and accurately delivering products. This study supports the literature (Li et al., 2017; Yu et al., 2019; Acquah et al., 2024; Asamoah et al., 2021; Munir et al., 2022). Ninth, supply chain resilience positively affects competitive advantage. The company's resilient supply chain quickly restores production capacity and can adapt to new processes if necessary. SMEs try to be better than competitors by increasing flexibility and providing product volume as a competitive advantage. The outcomes confirm other researchers (Munir et al., 2022; Tarigan et al., 2021; Bag et al., 2023; Munir et al., 2020).

These results contribute practically to the SME industry by optimizing the application of information technology, enabling cross-functional integration. SME managers are enlightened in building partnerships with external suppliers and customers. Production managers can control the production process and tailor product quality to customer demands based on product specifications. The theoretical contribution enriches the theory of resources-based view in competitive advantage by using information technology integration in building supply chain integration, partnership, responsiveness, and resilience.

CONCLUSION

This study has examined the role of supply chain management in improving the competitive advantage of SMEs in Indonesia. Supply chain management focuses on cross-functional integration, supply chain partnerships, resilience, and responsiveness. The result demonstrated that supply chain man-

agement can enhance the competitive advantage of Indonesian SMEs. Cross-functional integration is essential for SMEs to establish partnerships and improve supply chain responsiveness and resilience. Cross-functional integration enables the organization to improve supply chain resilience by quickly restoring production flow and adapting to new processes. Supply chain partnerships, responsiveness, and resilience lead to excellent competitive advantage. The company's ability to increase flexibility improves supply chain resilience. The company can respond quickly to changes in demand and capacity adjustments to accommodate customer demand and increase its competitive advantage. Supply chain resilience affects competitive advantage by rapidly restoring production flows and adapting to new production methods.

AUTHOR CONTRIBUTIONS

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Formal analysis: Hotlan Siagian, Sautma Ronni Basana, Zeplin Jiwa Husada Tarigan.
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