Uncertain Supply Chain Management 7 (2019) 553–566

Contents lists available at GrowingScience

Uncertain Supply Chain Management

homepage: www.GrowingScience.com/uscm

The mediating role of technology and logistic integration in the relationship between supply chain capability and supply chain operational performance

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C H R O N I C L E

Article history:
Received September 21, 2018
Accepted November 7 2018
Available online
November 7 2018

Keywords:
Supply chain capability
Supply chain operational performance
Technology integration
Logistic integration

A B S T R A C T

The purpose of this paper is to explore the link between supply chain capability and supply chain operational performance. In addition, the current study investigates the mediating role of technology integration and logistic integration between supply chain capability and supply chain operational performance. The firms in Tin industry of Indonesia are chosen as the sample of the study. To achieve the objectives of the current study, structural equation modeling is used using smart PLS. Data is collected through mail and telephonic survey. The responses are collected through the postal and electronic mail, questionnaire survey. According to the direct results, it is shown that all hypotheses were meaningful (α = 5%). The mediation effect of technology integration and logistic integration in the relationship between Supply Chain Capability and Supply Chain Operational Performance (SCOP) was examined. The results of mediation show that for logistic integration mediation hypothesis, the results was meaningful (α = 5%), whereas for the technology integration the results was not significant. The results of the study are useful for policymakers, practitioners, operation managers in understanding the link between human resource management and operational management.

1. Introduction

It is said that the way companies compete these days have changed much. The customer loyalty which is still important in firm overall strategic fit but gradually the firms are shifting their focus away from the customer focus to production focus and efforts are being made to broaden the operational scope. There has been a shin for producing high-quality products at a reasonable cost, but this trend has also lost its lure in gaining competitive advantage. Today the emphasis has been much on delivering products to customers at the right time and at the right place and at the right price. Other writers elaborate this further by describing the primary role of firms to meet customer's requirements in terms of providing them with the right product of the right quality and the right quantity with appropriate technology (Chan et al., 2001; Boubekri, 2001).

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doi: 10.5267/j.uscm.2018.11.001

Supply chain management (SCM) has emerged as one of the key strategies for operational success. The SCM has also emerged as universal strategy, which integrates, all stakeholders, such as a sellers, buyers, and consumers in a chain type structure, through partnership, shared planning and sharing of information. The effectiveness of supply chain management is entirely based on its capability of reducing cost, enhancing production flexibility, bringing innovation, strengthening the relation and satisfying the buyer (Banomyong & Supatn, 2011; Castorena et al., 2014; Purnama, 2014; Chielotam, 2015; Luna-Maldonado et al., 2016; 2018; Crainic & Laporte, 2016; Stevens & Johnson, 2016; Wang et al., 2016; Malarvizhi et al., 2018, Le et al., 2018). SCM is an organizational network, which connects each and every segment of organization and adds value at each and every step of strategic operations (Santhi and Gurunathan, 2014; Anyanwu et al., 2016; Wang et al., 2016; Jones & Mwakipsile, 2017; Mosbah et al., 2017; Kucukkocaoglu & Bozkurt, 2018; Maldonado-Guzman, et al., 2018). Crainic and Laporte (2016) argued that SCM is a coordinated set of activities staring from procurement to production and ends at consumers. According to them, an effective supply chain is the one which helps firms in making informed decisions at every link of this chained network. Many prior authors discussed the supply chain as a function of flow of information through and from the organization and argued that this efficient flow of information optimize the flow of material and minimizes the cost arising because of delay in information or poor flow of information (Banomyong & Supatn, 2011; Crainic & Laporte, 2016; Stevens & Johnson, 2016; Wang et al., 2016; Albasu and Nyameh, 2017; Mowlaei, 2017; Maroofi et al., 2017; Maldonado-Guzman et al., 2018; Kucukkocaoglu & Bozkurt, 2018). Increasing the role of information technology is playing a synergic role in the development and advancement of supply chain processes through gearing the flow of information. The extended supply chain network moves beyond the individual firm to inter-organization functions, including suppliers, customers, trading partners, service providers, retailers, manufacturers, and transporters.

The supply chain is an important component of world trade. However, a supply chain itself is not enough; it is more critical to understand its features and the role played by each function in the overall supply chain to work efficiently and effectively (Janvier-James, 2012). Since SCM has been considered as the strategic and systematic coordination of traditional business activities, firms are starting to pay more attention to their supply chain to increase competitive advantages (Flynn et al., 2010). As the twenty-first century begins, SCM has not only turned into a significant strategic instrument for firms to reduce costs, but also enables firms struggling to enhance quality, improves customer service, and increases competitiveness. Supply chain and SCM have played important roles in the firm efficiency and have attracted scholars' attention in recent years (Janvier-James, 2012). The real contribution of SCM not only attracted scholars' attention but also received attention from practitioners.

The concept of SCM is originally derived from the logistical concept since 1950 and matured in 1970 (Habib & Jungthirapanich, 2008). The logistical concept is slowly evolving into the SCM concept and has initiated the SCM concept since 1980, and the first publication took place in 1982 (Habib & Jungthirapanich, 2008). The concept of SCM started to emerge in the manufacturing industry since 1985 (Habib & Jungthirapanich, 2008). In the early 1990s, scholars and industry practitioners start to place attention on agile manufacturing. This is followed by the service industry initiated the SCM in their business operations in 1995 (Habib & Jungthirapanich, 2008). The development and continuing evolution of the SCM role are obvious in the last decade, which gained an incredible attention from both academics and practitioner's community since 2000. This has led the SCM to enter the education industry since 2007 (Habib & Jungthirapanich, 2008).

The supply chain operational performance is defined as an outcome of effective, and efficient of flow of material and information to and from the organization in the form of processed goods and services (Christopher, 2011). The supply chain management is also having a significant impact on international trade. Though supply chain is a concept, it is more appropriate to treat it like a phenomenon, which is subject to many sub phenomena and factors such as logistic, agility, lean, operation, etc. In recent decades, the supply chain has emerged as a key tool of sustainable competitive advantages. The supply chain has contributed in both the theory and practice, which in turn has attracted the attention of both the scholars and practitioner.

The Indonesian tin industry is among the biggest contributor in GDP. Indonesian firms are exporting, tin to China, Malaysia, UK, Singapore, and other highly industrialized countries. The supply chain of the tin industry is one of the subjects of greatest interest. The operations of tin industry are complicated therefore the supply chain operations as weel. Supply chain operational performance is defined as the result of systematic, strategic, and efficient coordination of the conventional business functions within and across the organization which involves actions and processes associated with transforming material inputs into finished goods (Christopher, 2011). In the context of this research, four elements including supply chain reliability, supply chain responsiveness, supply chain agility, and supply chain costs are consolidated in measuring supply chain operational performance in order to provide a complete performance measurement throughout the study. Asset management is excluded in the measurement list of supply chain operational performance variable. This is because operational performance does not emphasize on financial performance since asset management in the definitions of the SCOR model is more to return on investment. In this study, supply chain reliability is defined as the quality of the supply chain in performing and maintaining the perfect order fulfillment, which delivers needs as per stated requirements. Besides, supply chain responsiveness is defined as the speed of a supply chain, which provides products, services, or information to members of the supply chain. Furthermore, supply chain agility is defined as the ability to quickly adjust the tactics and operations of the supply chain in responses to market changes. Moreover, supply chain costs are defined as the costs associated with operating the supply chain.

2. Literature review

2.1. Supply Chain Operational Performance

Supply chain performance is usually determined in terms of reliability, responsiveness, flexibility, cost, and asset management (Agami et al., 2012). Since this study is focused on supply chain operational performance, thus reliability, responsiveness, flexibility, and cost would become the dimensions in measuring the performance. However, asset management in the definitions of the SCOR model is more to return on investment and operational performance is focused on non-financial performance. Therefore, asset management is excluded from the measurement list of supply chain operational performance variables. Basically, the ultimate goal of a supply chain is to efficiently deliver goods and services to customers in minimum time, minimum total cost, and higher quality. According to Wu et al. (2014) firms are doomed to failure if they are not aware of the reality of the success factor in the supply chain which is low costs (i.e., supply chain costs), high quality (i.e., supply chain reliability), flexible (i.e., supply chain agility), and quick response (i.e., responsiveness). The ultimate goal of SCM also can be summarized to increase the financial and operational performance of each partner and of the global supply chain (Dominguez et al., 2010; Duru & Chibo, 2014; Jaya & Verawaty 2015; Nze, et al., 2016; Kimengsi & Gwan, 2017; Wireko-Manu & Amamoo, 2017; Chowdhury et al., 2018; Kucukkocaoglu & Bozkurt, 2018).

The role of performance measurement is essential for both firms and supply chain to improve performance (Bocci, 2004). While, performance measurement systems (PMSs) are performance assessment tools used in the stage of monitoring the supply chain performance (Lei et al., 2011). Generally, performance measurement can be defined as “a process of quantifying the efficiency and effectiveness of actions". Whereas, the performance measurement system can be defined as "a set of metrics used to quantify the efficiency and effectiveness of actions” (Lohman et al., 2004). It also acts as a key to detect any potential problems and gaps for improvement in a supply chain. These systems enable users to realize the status of the performance in the supply chain such as strengths, weaknesses, and the levels of current performance in order to allow companies to make informed decisions towards the opportunities and threats. Organizations are able to take appropriate actions at the right time (Christopher, 2011) to effectively improve their performance (Nasiri et al., 2010; Solomon et al., 2014; Castorena et al., 2014; Dim & Ezeabasili, 2015; Angbre, 2016; Wang & Lu, 2016; Purnama, 2014; Nazal, 2017; Tanoos, 2017; Maldonado-Guzman, et al., 2018; Taqi et al., 2018).

Efficiency and effectiveness are used to describe the standard of the performance. Efficiency is used to describe an internal standard of performance, while effectiveness is used to describe the external standard of performance. Efficiency and effectiveness in modern SCM are crucial concerns for firms (Wu et al., 2014). According to Ip et al. (2011), effectiveness and efficiency can be measured by six components, which are product reliability, employee fulfillment, customer fulfillment, on-time delivery, profitability, and work efficiency. For example, efficiency is achieved through Just-in-Time production, while effectiveness is achieved through customer or supplier orientation and innovation. However, performance measurement systems are varying substantially from firm to firm (Li et al. 2006). Previously, firms' performance measurement concentrated solely on a firm's costs and profits. Nowadays, as the global demand of goods and services have languished, firms have been relying on their SCM skills to drive cost out of their supply chains, while improving revenues and quality (Deshpande, 2012).

In addition, the performance can also be viewed from two categories which are financial and non-financial performance measures (Agami et al., 2012). However, the SCOR model is employed in this study (Khare et al., 2012). SCOR model encompasses all the activities of all market interactions, customers, suppliers, and material flows (Georgise et al., 2016). It has five keys performance attribute, including (1) reliability refers to delivery and order fulfillment, (2) responsiveness refers to speed, cycle time, and order fulfillment, (3) agility refers to flexibility responding to market, (4) costs containment refers to processing costs, warranty costs, and return processing costs, and (5) asset management refers to inventory, return on fixed asset, and working capital. Scott Stephens, chief technology officer of the Supply Chain Council mentioned that the main goal of the SCOR model is to enhance competitiveness in three characteristics, which minimize costs, maximize revenue, and enhance the efficiency of asset management (Dibenedetto et al., 2007). Besides, it can be explained with the supply chain relationship level, human, culture, infrastructure, and ICT capability issues (Georgise et al., 2016). Therefore, the component of the SCOR model has been chosen to measure supply chain performance in this study with an exception for asset management. This is because of this study is focused on operational performance, while financial performance is not included.

2.2. Supply Chain Capabilities and Supply Chain Operational Performance

RBV researchers assume that every firm holds diverse resources and capabilities that competitors find costly and difficult to duplicate and implement (Lim et al., 2012). In today's global marketplace, to achieve competitive advantage, an organization's ability is to be responsive to competition by a focus on four competitive characteristics; namely cost, quality, speed, and flexibility (Javanmardi et al., 2012). Besides, supply chain relational capability is critical important factors on supply chain operational performance (Ramayah & Omar, 2010). Meanwhile, IT capability (Arumugam & Mojtahedzadeh, 2011) and organizational culture capability (Braunscheidel et al., 2010) are equally important. In SCM study, several researchers found that supplier partnership (Seyda, 2013; Sukwadi et al., 2013), customer relationship (Seyda, 2013), information sharing (Sukati et al., 2012), and information quality (Qrunfleh, 2010; Charkaoui et al., 2012) improved supply chain operational performance. The higher level of supplier partnership, customer relationship, and information sharing can lead to optimizing supply chain costs (Dominguez et al., 2010; Thatte et al., 2013), improved supply chain reliability (Sukati et al., 2011: Thatte et al., 2013), enhanced supply chain responsiveness (Sukati et al., 2011; Thatte et al., 2013), and flexibility in managing uncertainties in supply and demand (Dominguez et al., 2010).

Supplier partnership is critical for Tin companies since it can provide quick response to a rapidly changing market (Sukwadi et al., 2013). This finding is supported by the study of Fynes et al. (2005) and Srinivasan et al. (2011). The most basic benefit of partnering with suppliers is the buyer can assure quality materials consistently and timely deliveries from suppliers (Amad et al., 2008). For instance, the partnership of Procter and Gamble (P&G) and Wal-Mart, P&G as an information and capital rich manufacturer, while Wal-Mart as an information and capital rich retailers get a win-win cooperation of information sharing across their mutual supply chain and achieve mutual benefits and enhanced both supply chain performance. In short, Rashed et al. (2010) concluded that a good partnership with suppliers positively impacts on the operational performance of the organization. Inversely, the low dependency on supplier partnership is led to the worst in the supply chain performance.

IT Capability and Supply Chain operational Performance IT capability are considered as major factors in SCM and critical factors to improve supply chain performance. IT capability has significant direct relationship with supply chain performance (Zhang & Wang, 2011). Specifically, several researchers observed that IT infrastructure was the most significant factor to minimize costs (Hassan et al., 2013), enhanced operational agility (Lu & Ramamurthy, 2011). Besides, IT infrastructure not only positively affects transparency, but also reduces corruption at the same time (Khoo, 2013). In the organizational perspective, IT personnel acts as an important enabler of key IT products and services for smoothening the business operation flow. An appropriate technical solution is proposed by the IT personnel to solve business problems related to IT applications. Basically, IT personnel has utilized the flexibility of IT infrastructure in suggesting the solution to the management (Byrd & Turner, 2000). Therefore, IT personnel exhibit a direct and positive effect on an organization's agility performance (Fink & Neumann, 2007).

Organizational culture has been proved to be critical factors of organization's performance for many years (Baker & Sinkula, 1999). Generally, culture has a direct effect on an organization's success or failure. Several researchers demonstrated that organizational culture must align with organizational goals (Christensen & Gordon, 1999; Braunscheidel et al., 2010). This is because the organizational culture has a significant and positive effect on supply chain performance (Sukwadi et al., 2013), specifically improved flexibility and enhanced responsiveness of global SCM. The study of Christopher (2011) found that organizational culture had a significant effect on the supply chain performance of Malaysia SMEs. Furthermore, the study of Braunscheidel et al. (2010) which included 218 responses from the supply chain professionals listed in New York's Institute of Supply Management (ISM) indicated that organizational culture had a positive direct relationship with supply chain performance.

2.3. Technology Integration and Supply Chain Operational performance

Technology integration can be defined as "environmental practices of the use of technology tools taking place between a buyer and supplying organization regarding activities such as product development, process re-engineering, and technical training" (Wu, 2013). The term technological is defined broadly to include not only structural aspects such as product and process related changes, but it also includes managerial techniques and expertise (Vachon & Klassen, 2007).

The technology integration in green supply chain activities is becoming a necessity in most industries due to rapid movement in green technology (Nidumolu et al., 2009). The innovation of green technology is the key driver to achieve sustainable development and aims to decrease the bad impact of product lifecycle toward environment (Dangelico & Pujari, 2010). Although technology integration is an important part of the GSCI, it is always hard to obtain the latest green manufacturing technologies (Wu, 2013). Furthermore, apart from being a costly affair, integration of technology is also challenging and need to be carried with exhaustive pre-analysis. Due to this situation, manufacturers are more likely to lack the knowledge of green technology. Therefore, the manufacturer should make an effort to acquire information across the supply chain internally and externally through assistance and training as a result of inadequate professional knowledge about processes or new products (Koufteros et al., 2005).

The previous study by Huber et al. (2007) shows that the use of technology in the supply chain contributes to effective communication, unique product identification, and real-time information. A plethora of technologies having customer-centric features and information-intensive provide enormous benefits like reduced costs, increased flexibility, and enhanced coordination. The technology integration in green supply chain management should be able to help to track the progress of green initiatives practiced in an organization, which automatically increases the possibility to achieve environmental goals (Bushar et al., 2014). However, the technology integration still requires involvement from supplier and customers in terms of product design, training, and assistance to improve the company's economic, environmental, and social performance (Vachon, 2003). The relationship between technology integration and performance are interconnected as shown by several empirical studies (Huber et al., 2007: Bushar et al., 2014). However, to the best knowledge of the author, to date, there is still no investigation linking between the technology integration from the SCM scope and organizational operational performance via three dimensions of economy, environmental, and social. There are still limitations on GSCI conceptualization by leaving out technology integration (Wu, 2013). This requires further investigation of the association between technology integration and operational performance.

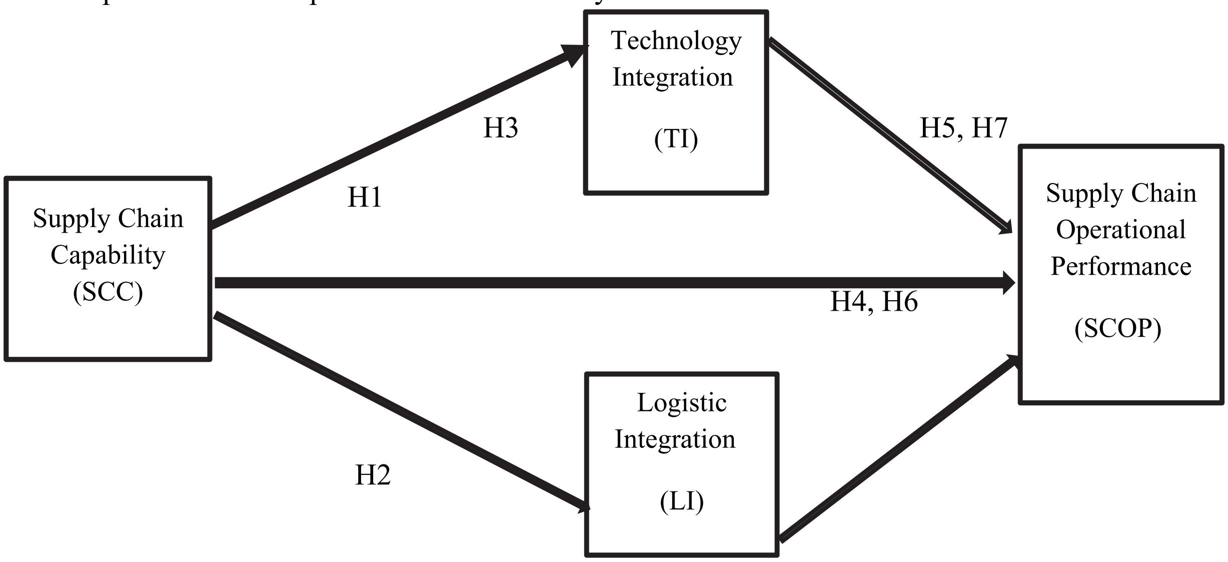
2.4. Logistics integration and supply chain operational performance

Logistics integration is "environmental management practices of the planning, implementing, and controlling of goods or service to the point the consumer or customer is served" (Kamthunzi, 2014). Vachon (2003) defined logistic integration in GSCM scope as integration in adopting green supply chain management practices that relate to the supplier and the customer in terms of managing information and material flow along supply chain management. Logistic can be further understood as a movement process of material or people from point a to point but taking into account the flow of information too, an example of a water bottle putting in mind that water is life, the whole process from the point the water is drawn from its source until it reaches the consumer is critical. There are many things to be taken care of as it needs to be transported at the right time, to the right place, and in the right condition. Under the scope of green practices, every process of material and information movements needs to be carried within environmental requirements.

The adoption of operational performance management requires a good flow of information in the supply chain to ensure great decisions made by the managers (Lee & Saen, 2012). Traditionally, supply chain performance and logistics focus on time, cost, and accuracy (Shaw et al., 2010). In other words, the logistic integration involving the supplier and the customer lead to time efficiency, cost reduction, and accuracy of information exchange (Lee & Saen, 2012). Unfortunately, one of the main causes that may hinder the organizational operational performance goals is logistical and technological integration (Hervani et al., 2005). For many manufacturers, achieving operational performance goal through logistics is a tough challenge to overcome without strong collaboration or cooperation among green supply chain partners.

Logistics management and environmental operational performance linkage is still a new phenomenon. A recent study by Paulraj et al. (2017) found that green logistics management improves operational efficiencies, reduces waste, conserves resources, and satisfies social expectation for environmental protection. Similarly, Pazirandeh and Jafari (2013) characterize green logistics as that "which is designed not to only be environmentally friendly, but also economically functional". In addition, Lee and Sean (2012) also found that selection of optimized transportation channels can simultaneously reduce environmental impacts and achieve cost. This notion proves that environmental practice via logistics increases the operational performance of business firms. This literature also has a common key message that green logistic is reducing organization's environmental impact while improving the efficiency of operation including better resource utilization and cost savings.

The main role played by logistic integration involving manufacturers, suppliers, and customers are important in determining effective green logistics management (Hervani et al., 2005). The collaboration among the supply chain partners mainly on material and information flow may be able to predict organizational operational performance. The resource-based view is used as an underpinning theory for the development of a conceptual model of this study.



H1: Supply Chain capability has a significant impact on Supply Chain Operational Performance
H2: Supply Chain capability has a significant impact on Logistic Integration.
H3: Supply Chain capability has a significant impact on Technology Integration.
H4: Employee performance has a significant impact on Supply Chain Operational Performance.
H5: Technology Integration has a significant impact on Supply Chain Operational Performance.
H6: Technology Integration mediates the relationship between supply chain capability and Supply Chain Operational Performance.
H7: Logistic Integration mediates the relationship between supply chain capability and Supply Chain Operational Performance.

3. Data Collection and Response Rate

Data is collected through mail and telephonic survey. According to Cooper and Schindler (2007), the data collected from the questionnaires survey was subject to examine the demographic variables through descriptive analysis. The total of 215 responses received from the total of 376 questionnaires distributed through mail and courier. Out of 215 questionnaires, 197 were found complete. Thus, the response rate is 53.3 percent.

4. Research Analysis

Structural equation modeling is one of the most acceptable techniques in social science. It is the most acceptable technique to test different hypotheses as it is recommended by different prominent studies (Hair et al., 2014). Therefore, this study adopted PLS SEM to analyze the data. Analysis of the study was divided into two major parts. Part one is based on an outer model assessment in which reliability and validity were examined. The second part is based on an inner model assessment in which hypotheses were tested (Ul-Hameed et al., 2018, 2019). First part is mandatory to proceed for inner model assessment. In the first part, convergent validity and discriminant validity was examined.

Convergent validity was examined through composite reliability, factor loadings and average variance extracted (AVE). According to the literature, the value of factor loading for each item should be more than 0.4 (Hair et al., 2010), composite reliability should be more than 0.7 and average variance extracted (AVE) should not be less than 0.5. Before testing the hypothesis, data reliability and validity were scrutinized. These steps were taken through PLS 3. It is revealed in Fig. 2 which shows that factor loading is more than 0.5, average variance extracted (AVE) is more than 0.5 and composite reliability is also more than 0.7. Therefore, it is revealed that the current study attained convergent validity.

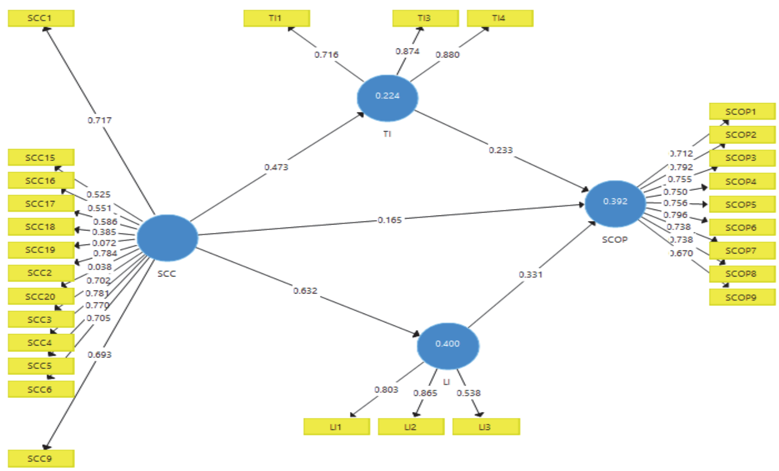


Fig. 1. Outer model assessment

Discriminant validity is shown in Table 1, it was examined by the square root of average variance extracted (AVE). Measurement of discriminant validity through average variance extracted (AVE) was suggested by Fornell-Larcker (Samander et al., 2017; Basheer et al., 2015, 2017, 2019). Discriminant validity is attained through the square root of average variance extracted (AVE). It is shown in Table 1 that square root in bold form is more than all other values.

Table 1
Convergent and Discriminant Validity

	Composite	Discriminant Validity			
		LI	SCC	SCOP	TI
LI	0.887	0.749			
SCC	0.868	0.632	0.613		
SCOP	0.919	0.580	0.484	0.746	
TI	0.865	0.621	0.473	0.516	0.827

After confirmation of reliability and validity, the SEM has used to analyse the hypothesis. The direct and indirect effect were examined. Indirect effect was examined to check the mediation. In this process, the p-value was considered. While analyzing the data, 0.05 minimum level of p-value was considered to test the hypothesis. According to the direct results, it is shown that all hypotheses maintained a p-value less than 0.05. Therefore, H1, H2, H3, H4, and H5 are accepted.

Table 2
Direct Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
LI → SCOP	0.331	0.373	0.094	3.514	0.000	Supported
SCC → LI	0.632	0.615	0.059	10.632	0.000	Supported
SCC → SCOP	0.484	0.478	0.075	6.468	0.000	Supported
SCC → TI	0.473	0.514	0.073	6.454	0.000	Supported
TI → SCOP	0.233	0.168	0.083	2.797	0.000	Supported

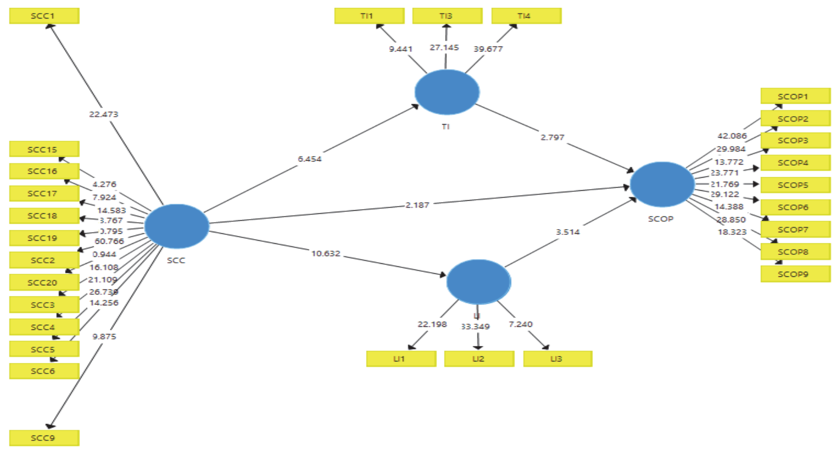


Fig. 3. Inner model assessment

Table 4 highlights the mediation effect of logistics integration and technology integration in the relationship between Supply Chain Capability and Supply Chain Operational Performance (SCOP). These results of mediation show that for logistic integration mediation hypothesis, the t-value is above 1.96 and p-value is below 0.05, whereas for the technology integration the value is below 1.96 which rejects the hypothesis. Thus, the hypothesis H6 is accepted whereas the H7 is not accepted.

Table 3
In-Direct Effect through Mediation

	Specific Indirect Effects
SCC → LI → SCOP	0.209
SCC → TI → SCOP	0.110

Moreover, variance extracted is shown in Table 5. Q-square value is 0.196, which is moderate according to Hair et al. (2014). It indicates that all the independent variables are expected to describe 19.6% changes in a dependent variable, namely; Supply Chain Operational Performance (SCOP).

Table 5
Expected Variance

	Q^2
Supply Chain Operational Performance (SCOP)	19.6%

5. Conclusion

The increasing complexity in the global supply chain has necessitated the needs for manufacturers to focus more on supply chain performance. Supply chain capabilities have been identified as the most important factors on performance improvement. However, some of the organizations did not realize the importance of supply chain capabilities and thus, did not focus and fully utilized the capabilities that they had. Based on the results of the literature review, relational capability, IT capability, and organizational culture capability were the main components of supply chain capabilities in supply chain performance improvement. In SCM, the relational capability was one of the common practices in business activities. Sezen (2008) pointed out that information sharing is a common approach to increase supply chain performance. This is further supported by Fawcett et al. (2007), Zhang et al. (2009), Ramayah and Omar (2010), and Gilaninia et al. (2011). Zhang et al. (2009) noted that information sharing is one of the key enablers for Tin SCM in improving supply chain performance. While, the study of Charkaoui et al. (2012) identified that information sharing, and information quality were influenced more for the improvement of supply chain performance. Ramayah and Omar (2010) revealed that operational and strategic information exchange could significantly impact on supply chain performance, which improved, at least, 50% of the performance. The contribution of supplier partnership (Sukwadi et al., 2013) and customer relationship (Omar et al., 2006) was also critical for Tin organizations to be a rapid response in the quick-change market. Several researchers have concluded that relational capability namely, information sharing, information quality, supplier partnership, and customer relationship had a significant relationship with supply chain 149 performance (Sukati et al., 2012). It is totally matched with the current Tin business environment of Indonesia. Based on market conditions, relational capability such as the high quality of information sharing between apparel manufacturers, tin producers, fibers suppliers, and fashion retailer is needed to provide an agile and responsive supply chain, since the industry is no longer lean (Christopher, 2011). Moreover, the relational capability enables Li and Fund, Hong Kong-based trading company, successfully managed their supply chain around the world and meet the requirements of almost any customer.

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