Supply Chain Operational Capability and Supply Chain Operational Performance: Does the Supply Chain Management and Supply Chain Integration Matters?

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Abstract- The aim of the study is to recognize the pattern of the interactive association between SC operational capability and corporate competitive capability for improving performance. Moreover, the study is based on analyzing the influence of SC integration on the interactive relation as a strategic lever. There is a need to consider potential implications of efficient relation between SC operational capability and corporate competitive capability to develop integrated and coherent strategies for the strategic role of SCM. The decisions linked with the sourcing of products, planning capacity, conversion into final products, distribution, communication, demand management, and delivery is regarded as SC operational capability. The study has opted the SEM-PLS for the analysis of the data, which is among the most recent and robust data analysis technique especially for the structural issues in social sciences. The data is collected with the aid of a questionnaire which was developed basing on the prior studies. It has been stressed by previous studies on manufacturing strategy and SCM that the decisions of SCM must be aligned and strategic with the business strategy of the firm. However, consistent results have not revealed by previous literature about the shape of the interactive association between SCM strategy and corporate strategy. There are several implications of this study for theory developers and academicians. The previous frameworks of supply chain practices based on the context of developed countries have been extended by this research by incorporating various dimensions of SCI practices in the context of a developing country. The study has focused on manufacturing firms in Indonesia.

Keywords; *Supply chain, Operational capability, Indonesia.*

1. Introduction

These are the processes involved in the production of a product/service for the company. However, it is crucial to link these business processes with the overall capability of a business. Strategic capabilities must be developed by a firm to manage its supply chain. The strategic capabilities should be based on the overall capabilities of corporation and specific operating capabilities should be formulated for every process in the supply chain [1]. There is a need to understand the pattern of the association between operational capability of SC and corporate competitive capability. The decisions of SCM should be strategic and aligned with the capability and strategy of a firm. There is no consistency in previous literature about the share of association between operational capability of SC and corporate competitive capability. This lack of consistency is because of failure to study empirically the role, existence, and expected benefits of SC operational capabilities and corporate competitive capabilities to improve the probability of firm's success.

Some moderating variables can influence the relation between SC operational capability and corporate competitive capability. These moderating variables must be incorporated to study their influence. It has been posited in this research that SC integration may moderate the relation between SC operational capability and corporate competitive capability. It is meant by the above proposition that SC integration can help in attaining the benefits of interactive relationship between SC operational capability and corporate competitive capability. There is a need for a firm to focus on SC integration in order to create an effective relationship between corporate capabilities and SC capabilities. Integration of internal business activities is required by SC practical capabilities to improve performance in terms of quality, cost, delivery performance, and

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flexibility. Moreover, SC practical capabilities required external integration with customers and suppliers for attaining benefits [2].

It has been recognized that there may be different scope and focus of these capabilities in SC integration. The benefit and role of SC integration for the interactive association between SC operational capability and corporate competitive capability might be different based on the level of development of SC integration [3, 4]. It was asserted by [3]; [5] that with the movement of integration stage from functional integration and independent operation to internal and external integration, there is a shift in the focus of corporate capabilities from tactical and operation to strategic level.

In order to achieve this objective, the following principal questions have been considered by this research paper:

- Which competitive capabilities are suitable with which SC operational capabilities?
- What is the shape and influence of alignment between SC operational capability and corporate competitive capability?
- What is the influence of SCI capability on improving performance based on the development level of SC integration?

2. Hypothesis

The strengths developed as a response to the environmental strategies result in competitive benefits for the firm. These strengths are the processes, which support the use of firm's assets in an effective, competitive, and efficient way. These assets could be tangible or intangible. Considering this aspect, the business potential to achieve specific objectives through focusing on deployment is represented as capabilities. The process of designing and developing desired capabilities of an organization represents choices made for achieving long-term competitive strategies [5].

The strategic implementation and complicated interactions of resources, which are owned by a firm, result in emergence of organizational capabilities [6]. According to Winter [7], a high level routine based on intentionally learned behaviors, which are quasi repetitious or repetitious and part of tacit knowledge, is regarded as a capability. Previous studies in the field of strategic management have worked on the refining and development of various capabilities of an organization. The competitive advantage and performance of firms may be different because of the difference in operating these capabilities based on internal and external factors [8]. The firms should be stable to offer value in a unique way through adaptability and agility to change the processes based on the demand and environmental situation. There is a difference between ordinary and dynamic capabilities, which is well documented. Rent

differentials and competitive advantages can be developed in incomplete markets because of the difference in the capabilities of firms. The capabilities supporting a firm to earn revenue in short term are regarded as operational capabilities [6,7]. Marketing and technological capabilities are two important operational capabilities. Marketing capabilities are required for dealing with the needs of customers and technological capabilities are required for manufacturing. However, when there is high uncertainty in the market, volatility, and dynamics, it is questionable to know about the influence of operational capabilities in providing competitive advantage [8]. The focus of the firm must be shifted to improve the capacities and re-adjust the operational capabilities when market is volatile and uncertain. In order to answer the identified research gap, the dynamic capabilities view has been used as firm's RBV theory. The focus is made on redeveloping or renewing the current capabilities to respond towards dynamics is regarded as dynamic capabilities. These capabilities could be a source of achieving competitiveness for a firm [7]. Accordingly, the capabilities used to change, extend, alter, modify and recreate operational capabilities are referred as dynamic capabilities [7,5,8,9].

The significance of relation between functional and corporate level strategies for business performance has been emphasized by the alignment between SC operational capability and corporate competitive capability. It has been revealed by research that there could be different performance levels of firms conducting operations in the same market sector [9, 10]. This difference in the performance is because of the difference in strategies and capabilities at the functional and corporate level. There are differences in the resource allocation and capabilities of firms even using similar strategies, which result in distinct performances [10, 11]. The corporate performance could be inferior because of poor strategic alignment at the functional and corporate level [4]. There is significant alignment between competitive capability and supply chain capability at the corporate and functional level, respectively [13,14].

It was emphasized by [11] that an important role is played by SCM function in shaping the firm's competitive capability in the market. It was noted by [4] that operational capabilities and supply chain strategies must be used to strengthen business strategies and attain firm's competitive capabilities. It was discussed by [12] that supply chain capabilities are the building units for formulating supply chain strategy and achieving competitive advantage. It was asserted by [13] that firms could achieve competitive capabilities and high business performance by managing their resources and SCM capabilities in an efficient manner.

It was asserted by the logistics competency approach that with scarce, inimitable, and valuable SC capabilities and resources, firms could acquire

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competitive capabilities [14]. It was empirically established that when logistics capabilities are aligned with specific competitive capabilities, the firm achieves superior performance. It was asserted by [15] that the competitive capabilities of a firm are based on its ability to integrate and access specialized knowledge linked with SCM. Therefore, the literature supports the above arguments. A meaningful implication was suggested by [11] for the relation between corporate competitive capabilities and SC operational capabilities. It was argued that supply chain function focuses on minimization of cost in cost leadership strategy. In this strategy, the firm aims at controlling its cost. In a similar way, when the purpose of competitive strategy is to offer customers with good quality products, the operational capabilities and supply chain strategy should have its focus on quality. The importance of logistics cost reduction was emphasized by [16] for cost leadership capability. Moreover, it requires controlling quality of logistics activities for improving quality at the firm level.

Some specific implications were provided by [17]. The researchers claimed that when focus of firms is on minimization of cost, they emphasize on administrative and structural capability with a centralized structure of an organization. However, when the focus of firms is on differentiating capability for providing maximum value to the customers, they work on logistical and technological capabilities. The technological/logistics capabilities play a crucial role in ensuring delivery of value-added products and supporting in quick response to the requests of new customers and dynamic markets. It has been suggested by the above-stated arguments that there must be a match between SC operational capability and a specific competitive capability. When a suitable SC operational capability supports competitive capability, significant influence is created in terms of performance improvement. The following hypothesis has been formulated based on this perspective:

The operational competency is improved from the horizontal perspective of an integrated supply chain. The operational competency is enhanced in terms of logistics services including the ability of a firm to offer services such as just in time and inventory management to make the easy availability of products to the customers. Moreover, it helps in adapting quickly to the distribution network to fulfil demand [18]. Some other operational competencies include design, cost, and delivery. The cost competency involves the ability to reduce and control cost. The design competency is the ability of a firm to make changes in product design and introduce new products. The delivery competency is the ability to offer products with faster delivery. The findings of this research are in line with the findings of literature (e.g., [19]. The literature suggests that competitive advantage can be directly influenced by supply chain practices. The network theory indicates

a relation between operational capability and SCI. The focus of the network perspective is on the interaction among several parties in the organization. The competencies, resources, and capabilities of individual firms are enhanced by the coordination strategies and efforts. The competitive capability of enterprises could be improved with activity and internal decision making between the firm and its external partners [20]. Moreover, it is suggested by RBV that a firm develops non-substitutable, path-dependent and inimitable capability with time, which is operational capability. Operational capability helps a firm to achieve and sustain competitive advantage. For implementation of SCM by a firm, there is need for close collaborative relation with suppliers [21-23]. It was pointed by [24] that the sphere of activities is influenced by the long-term strategic relationships of the firm. Moreover, it was reported by [25] that a new avenue could be offered by supplier integration for increasing the internal operational competencies. The capability of a firm to make profits and integrate its supply chain is positively influenced by this strategic task. It also influences the competitive capability of the manufacturer [26].

Market competitiveness and continued growth is ensured through effective consumer integration in terms of value addition. The strategies of value creation including development of close customer relationships, are based on the firm's operational capability. It was accentuated by [27] that the organizational relationship with its customers can help in achieving improved business performance and competitive advantage. Evidence was shown that there is a close link of customer relationship management with the operational capability. This relation is in terms of cooperation. Moreover, a company's manufacturing function may act as a corporate milestone or competitive weapon. The base of the competitive advantage of a company is manufacturing. The business strategy is far above than the expectations of customers in world class manufacturing [28]. It was identified by [29] that some practices of manufacturing participation influence operations of a firm.

In a similar way, different types of collaborative inventory management can improve profits and reduce the cost of operation. From the horizontal and vertical perspectives, an integrated supply chain improves the level of firm's performance. There is an interaction in the above stated SCI practices. Operational capabilities can hold together an organization and influence its operational performance [18, 30-32]. Moreover, it influences the firm's ability to compete and sustain in the market. Therefore, the empirical evidence suggests a positive relationship between SCI and operational performance. It indicates that there is an association between supply chain practices and the development of operational capabilities for improving operational performance. This results in improved performance

of the business. Based on the above discussion, the following research hypotheses could be developed:

H1: SCOPC has significant impact on the SCOP.

H2: SCHM has significant impact on the SCOP.

H3: SCHIN has significant impact on the SCOP.

H4: SCOPC has significant impact on the SCHM.

H5: SCOPC has significant impact on the SCHIN.

H6: SCHM mediates the relationship between SCOPC and SCOP.

H6: SCHIN mediates the relationship between SCOPC and SCOP.

3. Methodology

The study was carried out to examine the structural relationship between and among the latent variables. Basing on the novel research objectives the study has chosen the survey methodology, which according to the previous studies is among the suitable method of finding questions of our study. The simple random sampling is used to choose the sample over given populations: the manufacturing firms in the merging ASEAN economy namely the Indonesia. The response rate of the current study is 53.4 percent, which is considerably higher than the minimum response rate of 30 percent. The study has opted the SEM-PLS for the analysis of the data, which is among the most recent and robust data analysis technique especially for the structural issues in social sciences. The data is collected with the aid of a questionnaire which was developed basing on the prior studies.

4. Results

The structural equation through PLS is comprised of two steps namely the measurement model and the structural model. The measurement model explains the reliability, and validity of the conceptual model developed in the study, whereas the structural model is the one which explains the path coefficients between and among the latent variables. The current study has followed these two steps. The measurement model if the current study is shown in the figure 1 below
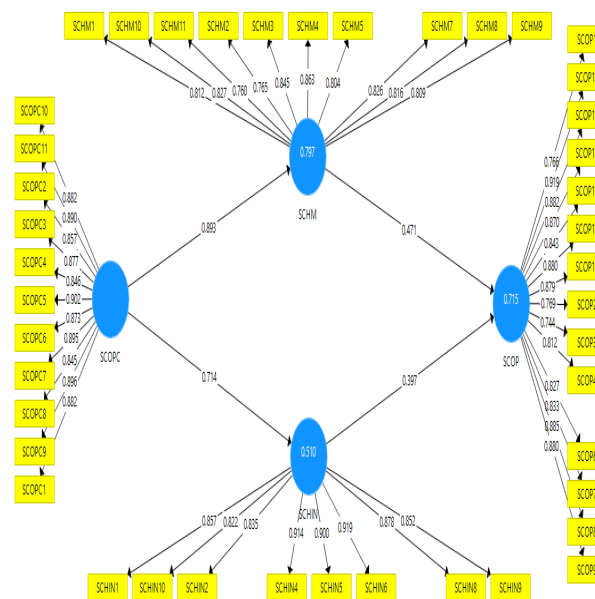

Figure 1. Measurement Model

Convergent validity of the current model is explained in the table 1. The outer loadings of all the item is above the 0.70, which is threshold value [33].

Table 1. Outer Loading

	SCHIN	SCHM	SCOP	SCOPC
SCHIN1	0.857			
SCHIN10	0.822			
SCHIN2	0.835			
SCHIN4	0.914			
SCHIN5	0.900			
SCHIN6	0.919			
SCHIN8	0.878			
SCHIN9	0.852			
SCHM1		0.812		
SCHM10		0.827		
SCHM11		0.760		
SCHM2		0.765		
SCHM3		0.845		
SCHM4		0.863		
SCHM5		0.804		
SCHM7		0.826		
SCHM8		0.816		
SCHM9		0.809		
SCOP1			0.766	
SCOP10			0.919	
SCOP11			0.882	
SCOP12			0.870	
SCOP13			0.843	
SCOP14			0.880	

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SCOP15			0.879	
SCOP2			0.769	
SCOP3			0.744	
SCOP4			0.812	
SCOP6			0.827	
SCOP7			0.833	
SCOP8			0.885	
SCOP9			0.880	
SCOPC10				0.882
SCOPC11				0.890
SCOPC2				0.857
SCOPC3				0.877
SCOPC4				0.846
SCOPC5				0.902
SCOPC6				0.873
SCOPC7				0.895
SCOPC8				0.845
SCOPC9				0.896
SCOPC1				0.882

The reliability analysis which comprises of the cronbach's alpha , composite reliability and the AVE is shown in the tale 2 below. All the values in the given table are higher than the threshold values and confirm that, there is no issue of reliability in our study.

Tale 2. Reliability

	Cronbach's Alpha	rho_A	CR	(AVE)
SCHIN	0.955	0.957	0.962	0.762
SCHM	0.943	0.945	0.951	0.661
SCOP	0.969	0.970	0.972	0.712
SCOPC	0.970	0.971	0.973	0.769

The discriminant validity is examined using [34] criterion and results shows that, all the diagonal values are significantly higher than the threshold values and all the diagonal values are higher than the lower values.

Table 3. Validity

	SCHIN	SCHM	SCOP	SCOPC
SCHIN	0.873			
SCHM	0.865	0.899		
SCOP	0.819	0.827	0.844	
SCOPC	0.714	0.893	0.730	0.877

After examining the reliability and validity of the study, the next step is to examine the path

coefficient between and among the variables used in the current study. The structural model of the currents study is shown in the figure 2 below.
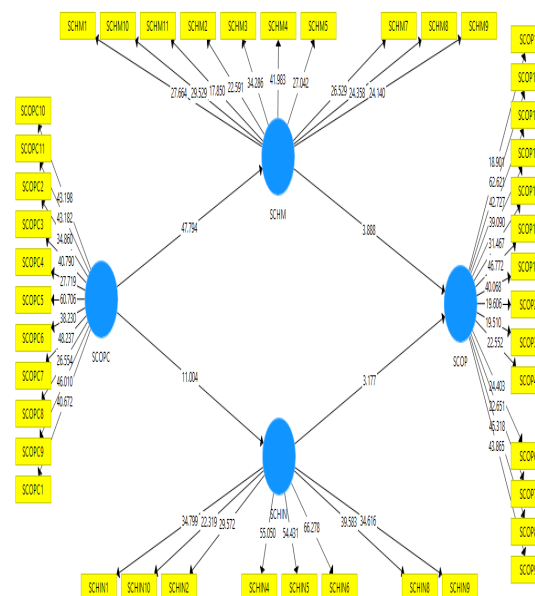

Figure 2. Structural Model

The bootstrapping procedure is used to examine the direct and indirect relationship between and among the variables used in the current study. The results of all the direct paths SCHIN -> SCOP, SCHM -> SCOP, SCOPC -> SCHIN, SCOPC -> SCHM, and SCOPC -> SCOP are significant.

Table 4. Direct Relationship

	(O)	(M)	(STDEV)	(|O/STDEV|)	P Values
SCHIN -> SCOP	0.397	0.401	0.125	3.177	0.001
SCHM -> SCOP	0.471	0.470	0.121	3.888	0.000
SCOPC -> SCHIN	0.714	0.716	0.065	11.004	0.000
SCOPC -> SCHM	0.893	0.894	0.019	47.794	0.000
SCOPC -> SCOP	0.705	0.708	0.047	15.005	0.000

It has been stressed by previous studies on manufacturing strategy and SCM that the decisions of SCM must be aligned and strategic with the

business strategy of the firm. However, consistent results have not revealed by previous literature about the shape of the interactive association between SCM strategy and corporate strategy. Further, there is no conclusive agreement about the relation between SC operational capability and corporate competitive capability. This is because of the lack of previous studies to empirically investigate the potential advantages and role of SCI, which can be used by SC operational capabilities as a strategic lever to improve the chances of success for a firm. Some moderating variable could have an influence on the interaction association between SC operating capability and corporate competitive capability. It has been hypothesized in the study that SC integration may influence SC operational capability and corporate competitive capability. The study reveals that there is a moderating influence of SCI on the relation of two variables. This results in practical implication about the features and attributes of SCI. It means that a firm has excellent SC operational capabilities and corporate competitive capabilities with higher SCI. Moreover, development of a close association between the partners in the supply chain helps the firm in improving its performance. When a firm does not possess power and enough size to control the functional and corporate SC capabilities, this strategic integration, or alignment could be serious. It is not easy to develop a strategic and collaborative relationship with partners in the supply chain. It is not ensured that the development of collaborative relationships with suppliers can improve the competitiveness and performance of the firm.

The result of the mediation analysis is shown in the tale 5 below. The findings indicates that the all the indirect paths SCOPC -> SCHIN -> SCOP, and SCOPC -> SCHM -> SCOP are significant.

Table 5. Mediation

	(O)	(M)	(STDEV)	(|O/STDEV|)	P Values
SCOPC -> SCHIN -> SCOP	0.284	0.288	0.096	2.971	**0.001**
SCOPC -> SCHM -> SCOP	0.421	0.420	0.109	3.845	**0.000**

The R-square value of the current model is shown in the table 6. The findings indicate that the R-square value of the study are greater than 0.15.

Table 6. R-square

	R Square
SCHIN	0.510
SCHM	0.797
SCOP	0.715

Another criterion to determine the predictability of the model is the Q-square value. The blindfolding procedure is followed in determining the predictability of the model. The blindfolding results are mapped in the figure 3 below.
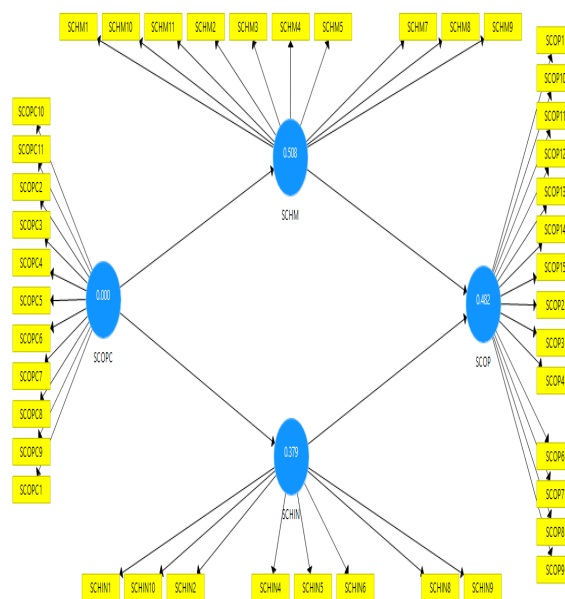

Figure 3. Blindfolding

Table 7. Q-square

	SSO	SSE	Q² (=1-SSE/SSO)
SCHIN	1736.000	1077.570	0.379
SCHM	2170.000	1067.941	0.508
SCOP	3038.000	1575.190	0.482
SCOPC	2387.000	2387.000	

5. Conclusion

There are several implications of this study for theory developers and academicians. The previous frameworks of supply chain practices based on the context of developed countries have been extended by this research by incorporating various dimensions of SCI practices in the context of a developing country. The study has focused on manufacturing firms in Indonesia. It has been argued by the research data that the focus of researchers should be on supplier integration, customer integration and integration of internal functions altogether for successful SCI. This research determines the relation between operational capabilities and SCI through the use of a rigorous approach, i.e. SEM. There is a positive influence of SCI practices on the operational capabilities of a firm. The role of

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learning has been stressed by this relationship for implementing supply chain practices with time [35]. Firms are supported by learning to develop capabilities, which create value and not easy to imitate. Moreover, the study has some practical implications, which can be used by practitioners and managers.

Difficulties are faced by manufacturing firms in the selection of suitable and effective methods and concepts of SCM [36]. Evidence has been found by the study for some progressive and varied SCI practices among manufacturing firms. Managers are provided with useful equipment for evaluation of SC practices. Moreover, it offers efficient and effective practices, which are crucial for functioning of supply chain and improving operational capabilities. The findings of the study support the fact that implementation of SCI influences the Manufacturing firms ' operational capabilities in Indonesia. A general overview can b obtained by managers about the implementation of suitable practices of SCI for improving operational capabilities. It has been suggested by results that OC is a crucial capability. A competitive differentiation strategy could be developed by a firm through investment in not just this capability rather a combination of capabilities. This may incur more cost, but it can yield more significant benefits for the company. Managers must not only focus on the development of internal capabilities that are unique but identify the collective influence of SCI practices on operational capabilities.

There are considerable risks for the firm and its partners because of a lack of capability to monitor and control the supply chain. Such risks may include loss of bargaining ability, lack of investments in physical or human assets. The use of current technologies and facilities possessed by partners in the supply chain through contract or short-term lease is recommended rather than investing in assets related to transaction with partners. The level of strategic alignment with SC partners is controlled by the approach of market exchange integration in a flexible manner based on the behavior of administration and organization. This approach is effective as compared with the operational integration approach depending on technological investments. This may not ensure long-term advantages due to the cost involved in retention of the relationship. When knowledge is accumulated to monitor and control the entire corporation, long-term consideration can be given to technical integration by making new investments in transaction-specific assets such as human power, technology, and facility [37]. The competitive capability of the corporation is accelerated through technical integration.

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