

Exploring the Mediating Role of Supply Chain Flexibility and Supply Chain Agility between Supplier Partnership, Customer Relationship Management and Competitive Advantage

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Abstract- The key challenge of today's global marketplace is to respond to the competitive challenges and to develop along with to sustain the competitive advantage for the organization. This paper examines that how partnership of suppliers and customer relationship management affects competitive advantage. Moreover, mediating effect of supply chain flexibility, supply chain agility is being examined as well. The data for current research was collected from the customers of textile firms of Indonesia. For this reason, a structured questionnaire was formed by adapting items from past studies. For data analysis, Smart PLS 3.0 and Statistical Package for Social Sciences (SPSS) version 23 were used. The Partial Least Square Structural Equation Modeling (PLS-SEM) is a relatively new technique and a second-generation SEM which works well for models which consist of multiple latent variables and series of cause-and-effect associations. The research findings show that supply chain flexibility is not proven a significant mediator between suppliers' performance and competitive advantage. Also, the association between supply chain flexibility and competitive advantage is proven insignificant. As well, supplier partnership and supply chain agility association are also proven insignificant. All the other proposed hypotheses are proved to show significant relationships.

Keywords; Supplier Partnership, Customer Relationship Management, Supply chain flexibility, Supply chain agility, Competitive advantage, Textile firms Indonesia

1. Introduction

The key challenge of today's global marketplace is to respond to the competitive challenges and to develop as well as sustain the competitive advantage for the organization [40-42]. The scenario when the profit rate of the organization is more than average rate of the companies operating in the industry. Moreover, if the organizations sustain this difference of high profit for a

number of years, the organization is said to have sustained the competitive advantage. Several different perspectives are proposed by the researchers to gain the competitive advantage. By this way, organization should adopt strategy to conduct the activities of the business in several ways with reference to it's the competitors which ultimately provide competitive advantage to the organization [1]. The basic goal of the organization is to create competitive advantage based on its abilities and resources so the organization can create distinctive position and achieve competitive advantage in the market. It is the requirement of the organization to be sustainability different so they can gain competitive advantage after which they can change the customers with high price and get more revenue [2].

Organizations are adding flexibility in their operational strategies because uncertainty and diversity in the external environment are increasing. Competitiveness of the organization can mount up by offering flexibility in their processes. But most of the managers do not view the flexibility comprehensively. In order to improve the efficiency of the organization, supply chain flexibility (SCF) is reported as an important source. Moreover, it is important single measure by the supply chain performance can be measured [3].

The preferences of the customers are changing rapidly in the current business market. Moreover, the advantage gained by the organizations is temporary, the life cycle of the product is shortened and challenges regarding competitive advantage are raising. Because of dynamic capabilities, the agility of the organization enables the organization to respond to challenges, rise the competition and respond to events that are unforeseen. Organizations are able to operate freely because of agility. Agility is important for the organization because the external environment is instable and uncertain [4]. Agility is

basically the capability of the organization which operates through out the business and group together the processes of logistics, information system and organizational structure of the organization. The organizations who have the capability of agility can take advantage of the change in a better way and synchronize the demand with supply. Researchers noted that in a situation where there is intense pressure of competition, there exist high level of uncertainty and turbulence. Therefore, there is need of agility for the organization. furthermore, customer satisfaction, market share, speed to market, profitability, sales, operational performance and financials of the organizations can be improved through agility [5].

In order to respond to the needs of the customers, most of the organizations are trying to develop the partnership with customers and suppliers. The supply chains that can handle the uncertainty and complex situation in a better way have focus on supply and demand of the organization [7]. Establishing closer relationship with customer and partnering with supplier are two basis practices which are required by which integration across the supply chain can be gathered. In order to minimize the cost of production and enhance the quality of the products, partnership among the suppliers is the basic requirement. In order to minimize the cost and increase the effectivity of the operations, customer relationships can be enhanced through the insights which are gained through the establishment of strong customer relationships [6].

The bar of global textile industry is being raised by textile industry of Indonesia. Last year, the textile industry of Indonesia has generated the revenue of \$16 billion. The government of Indonesia have set the target to increase the exports by \$75 billion in next ten years. This shows that there exists high level of competition among the companies [8]. Therefore, the purpose of the present study is to examine the impact of supplier partnership, Customer Relationship Management to gain competitive advantage. Moreover, mediating impact of Supply chain flexibility, SCA is being examined as well.

2. Review of Literature

2.1. Supply chain flexibility (SCF)

Abrupt change in the environment that can be easily adapted is known as flexibility. More precisely, flexibility is the capacity of the organization to react or change having lesser loss in the context of cost, time, effort and performance. So, instead of reactive response that may become a reason of loss in the terms of cost, time, effort and performance, flexibility is a proactive feature that should be designed in the system of an organization [9]. Flexibility could also be considered as two distinct fundamentals, internal and external. Internally, it is describing the system behavior of the business and externally, it is viewed by the customers which analyze the performance of the organization. SCF is the

combination of the flexibility of the product, flexibility of the volume, flexibility of the new product, flexibility of the distribution and flexibility of the response. Scholars have worked on it and created a model that explains the relationship among design flexibility, sourcing flexibility, manufacturing flexibility and logistic flexibility. Studies explore flexibility and speed of manufacturing, sourcing and delivery as important components of SCF [10].

2.2. Supply chain agility (SCA)

The extent of the flexibility through which supply chain tackle with the needs of the customer is known as SCA. Internal supply chain of the organization responds to offer a strategic advantage by reacting according to the needs and uncertainty of the marketplace represents the SCA of the organization. Flexibility is the key element of an agile organization and the organizations having SCA are more able to work in the case of any uncertainty or in any unexpected situation [11]. SCA is the combination of the satisfaction level of the customer, improvement of the quality of the product, speed of the delivery, introducing new products, minimization of cost, improvement in the services and lead time reduction. As agility enables the organization to deal any accident or uncertain condition in the strategic process of decision making and improve the response level according to the changes in the environment so SCA permits the organization to make right decisions at right time in the condition of any conflict like delays in the delivery and unsatisfied customers. Reduction in the inventory, to act efficiently and effectively according to the needs of the market and responding according to the demands of the consumer and relation between supplier and the partner effectively could be enjoyed by the firm after achieving SCA [12].

SCA is also defined as the capability of an organization to accommodate operations and strategies quickly in its supply chain to work according to changes in the environment, threats and opportunities [12]. It allows the organization to introduce the services and products that are customer oriented through resources allocation and integration in the environment that is abruptly changing. SCA increase the capability of the whole supply chain to develop value as it is the main element to meet the demands of the customers in swiftly and rapidly. SCA is one of the fundamental parts of the competitive strategy of an organization [13].

2.3. Supplier Partnership

In the competitive world, one of the main concepts that enables the organization to deal with supply partner in effective manner so that good relation can be built that could run for long term is supply chain management. Greater flow of information, lesser chances of uncertainty and good performance of the firm are the results of supply chain partnership. To build and sustain strategic

partnership, management of the supply chain is the one of the most important mode [15].

[14] stated that companies that supply many kinds of the services and products to create value of the organization are important for the suppliers is called supplier base. Marked differentiation is directly related with the number of suppliers. As suppliers' number increase, marked differentiation also rise so that relationship among firms and suppliers gets complicated. In the management of the supply chain, strategic partnership results in more advantages for organizations. Supplier partnership is the interaction among two or more organizations to accommodate and facilitate one another in main areas like manufacturing, distribution, marketing and research.

2.4. Customer Relationship Management

Customer relationship effects SCM effectiveness which cause the organizations having supply chain amalgamation among suppliers and customers depicts the better performance of the organization. Literature depicts the relation among chain integration among financial performance and performance of customer service. CRM is defined in multiple ways [16].

Usage of people, information, technology and processes for the management of relationship among customer and the organization for entire life of the customer is known as Customer Relationship Management. It is also defined as combination of activities of an organization to manage relationship among customer with the firm to increase satisfaction level of the customer. To acquire, retain and parent some good customers to develop superiority value for the product from customers' viewpoint is also known Customer Relationship Management. It is combination of sales, supply chain functions, customer service and marketing to get efficient and effective product value for customer. CRM is an approach to influence and understand the behavior of the customer through communication to increase acquisition, retention, loyalty and profitability of the customer. The concept of CRM was operationalized on five activities that producers usually used to combine the operations that evaluates interaction with continuous customers, to provide immediate help to customers, to evaluate satisfaction and expectation level of the customer, to provide follow up and after sale services and to get involvement of the customers in new product designs [17].

2.5. Competitive advantage

Competitive advantage is defined as to attract the customer in comparison with its competitor from customers' point of view. Anything that can maximize the profit and increase profit over cost is considered as competitive advantage. It is also defined as good enough

value of the product of the organization so that customers regard the price paid for the product [18].

2.6. SCF and Competitive advantage

Past literature shows that flexibility is the ability of the organization to change the production so the demands can be met. Delivering flexibility is the ability of the organization to accept the change and deliver the demand of the consumer in the required time in short time. It shows company will be able to have better perception in the eyes of the customers if the company is better able to meet the demands of the customer in time [20]. By this way competitiveness of the organization is impacted. By improving the human resource of the organization and machine arrangements, flexibility among the organization can be achieved. The past studies have mentioned that performance and competitiveness of the organization is positively impacted by the SCF. Moreover, agility of the supply chain contributes a lot to achieve the success of the organization [19].

H1: SCF show significant relationship with Competitive advantage.

2.7. SCA and Competitive advantage

The partnership and integration among the partners of the organization is considered very important to solve the strategical and crucial issues of the organization, by this way organizations can gain competitive advantage. Two aspects of supply chain are important for the success of the organization [21]. The capabilities of the organization can be arranged in a hierarchy in which higher order capability of the organization can be developed through lower order capability. The members of the supply chain are the lower order capability which can play an important role to get high order capability. As a result, competitive advantage of the organization is directly impacted. One of the important features by which organizations can get competitive advantage is through SCA. In order to gain competitive advantage, it is important that organizations embrace the agility concept [4].

H2: SCA show significant relationship with Competitive advantage.

2.8. Supplier Partnership; SCF and SCA

In past literature, there are four dimensions of flexibility as proposed by the researchers [22]. These dimensions include delivery, production, product design and sourcing, therefore, internal collaboration is key for the flexibility of the organization. the internal collaboration among different departments of the organization and external suppliers like key suppliers are important. For this reason, there exists a link among SCF and supplier partnerships are very important. Partners of the supply chain work together for the better interest of the organization [23].

H3: Supplier Partnership show significant relationship with SCF.

Seamless link among the partners is created among trading partners by the supplier relationship management which allow exchange of information at a broad range, specification of product design is included, level of current inventory, delivery schedules, production schedules, invoice in real time and purchase order. The ability of the firm to achieve the objectives is impacted by the strategic sourcing which shows the ability of the firm to remain in the partnership relationship. The link among the focus of the strategic supply chain of the organization and its action is critical [24].

For the execution of strategy of supply chain successfully, these strategies are needed to be aligned with the tactics of supplier. The role of the supplier is to act as the buyer's extension, the ability of the supplier to perform according to the demands of the customers is the key determinant of the organizational performance. Researchers argued that backdrop to develop proper way by which appropriate supplier us selected and evaluated as well. Strategic sourcing shows the relationship of the organization have impact on the ability of the supplier to achieve the agility [25]. Thus, following hypotheses are developed:

H4: Supplier Partnership show significant relationship with SCA.

H5: SCF mediates the relationship between Supplier Partnership and Competitive advantage.

H6: SCA mediates the relationship between Supplier Partnership and Competitive advantage.

2.9. Customer Relationship Management; SCF and SCA

The long-term relationship of the customer is impacted by the agility and SCF. Integration of a number of activities of whole supply chain is the antecedent of effective supply chain. Organizations can get competitive advantage by high level of integration among customer and suppliers. For this reason, management of supply chain is considered regarding management and integration of important business process throughout the supply chain from designing the product to the delivery of the product and from the strategic partners to the service providers [27]. Reconfiguration of supply chain is challenged due to close relationships and dimensions regarding flexibility is also provided by it. Past studies show some aspects of flexibility plays important role to build close and strong relationships like give response to the complaints of customers and feedback of the customers, monitoring and tracking the services regarding customers [26].

H7: Customer Relationship Management show significant relationship with SCF.

The aim of SCA for responsiveness to customer service. In recent years co-creation has become more popular and

SCA is exemplified by it. In order to fulfill the needs if the customers, the involvement of users are useful. In this scenario, knowledge regarding new product development also plays important role for the success of the product. In order to manage several varieties of the product, customer's involvement cocreation is perceived to be a very effective way. Researchers pointed out that there is need for the demand side to the supply side regarding management of SC [28]. More access towards the demand information all over the supply chain allows efficient and rapid delivery, better communication of logistics and coordinated planning, results in agility of supply chain. Researchers also supported the relationship among suppliers and buyers which can improve the responsiveness of supply chain [29].

Therefore, as an external integration activity, closer and coordinated relationships with customers can lead to greater SC agility in response to market needs:

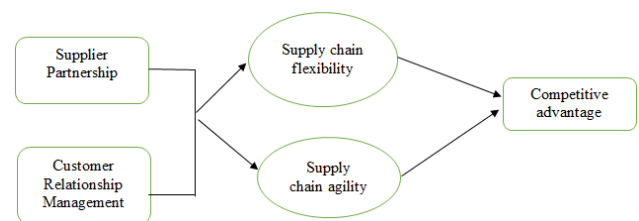
H8: Customer Relationship Management show significant relationship with SCA.

H9: SCF mediates the relationship between Customer Relationship Management and Competitive advantage.

H10: SCA mediates the relationship between Customer Relationship Management and Competitive advantage.

2.10. Research framework

Following research framework is developed based on above surveyed literature:



3. Methodology

After collecting data for this research, the descriptive and inferential analyses were performed as part of data analysis process. The developed hypotheses were examined by employing different techniques. For the purpose of data analysis, the Smart PLS 3.0 and Statistical Package for Social Sciences (SPSS) version 23 were used. The data analysis techniques have been selected given the proposed research questions and the characteristics of the variables involved in this research. After careful consideration, we chose Structural Equation Modeling (SEM) approach to perform the data analysis for this research [30].

Quantitative scholars consider SEM approach as an effective instrument for establishing multiple relationships between the constructs. Therefore, unlike regression models, the SEM models are deemed as superior and more

powerful to determine mediation and moderation effects [31].

In particular, the PLS software is generally employed to perform data analysis and to demonstrate the obtained results and findings, as it provides flexible estimation and validation of the complex models. The Partial Least Square Structural Equation Modeling (PLS-SEM) is a relatively new technique and a second-generation SEM which works well for models which consist of multiple latent variables and series of cause-and-effect associations [33]. The data for current research was collected from the customers of textile firms of Indonesia. The response rate of the current study is 43.8 %.

4. Results

Just like covariance based SEM, which uses Goodness of fit (GOF) and Goodness of measure (GOM) as the two significant model examining criteria, the PLS-SEM also involves two steps, firstly the measurement model and secondly the structural model, also termed as outer and inner model, respectively [34]. The measurement model describes the nature of structural relationships among latent endogenous constructs and their respective indicators [35].

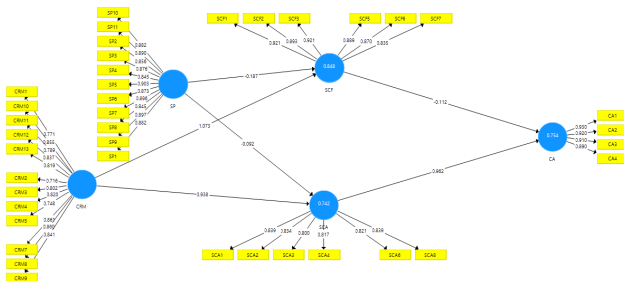


Figure 2. Measurement Model

In the initial calculation of PLS algorithm, the items were found to be poorly loaded, were deleted subject to the aforementioned outer loading criterion, and resulted in the increase in CR and AVE values for the organizational citizenship behavior construct. Moreover, item with loading less than 0.70 was omitted from the model for the purpose of increasing the CR and AVE values of its respective construct.

Table No. 1. Outer Loadings

	CA	CRM	SCA	SCF	SP
CA1	0.930				
CA2	0.920				
CA3	0.910				
CA4	0.890				
CRM1		0.771			
CRM10		0.855			
CRM11		0.789			

CRM12		0.837			
CRM13		0.819			
CRM2		0.716			
CRM3		0.802			
CRM4		0.820			
CRM5		0.748			
CRM7		0.861			
CRM8		0.860			
CRM9		0.841			
SCA1			0.839		
SCA2			0.834		
SCA3			0.800		
SCA4			0.817		
SCA6			0.821		
SCA8			0.839		
SCF1				0.921	
SCF2				0.893	
SCF3				0.921	
SCF5				0.889	
SCF6				0.870	
SCF7				0.835	
SP10					0.882
SP11					0.890
SP2					0.856
SP3					0.876
SP4					0.845
SP5					0.903
SP6					0.873
SP7					0.896
SP8					0.845
SP9					0.897
SP1					0.882

According to [36], the threshold level for individual item loading is 0.70, however, [37] proposed 0.40 as the cut point for indicator loadings, thereby suggesting that items with less than 0.40 item loadings must be excluded from the measurement model. Furthermore, if the indicators' outer loadings fall within 0.40-0.70 range, then indicators can be considered for deletion from the model, only if their deletion may lead to the improvement in CR and AVE threshold values [34]. [36] posited that during measurement model estimation, the discriminant validity and the convergent validity must be ascertained by computing the composite reliability (CR) and the average variance extracted (AVE). Besides, the outer loadings and cross-loadings for this research were also calculated to check the reliability of the indicators.

Table No. 2. Reliability Analysis

	Cronbach's Alpha	rho_A	CR	(AVE)
CA	0.933	0.935	0.952	0.833
CRM	0.953	0.955	0.958	0.658
SCA	0.906	0.907	0.927	0.680
SCF	0.947	0.949	0.957	0.790
SP	0.970	0.971	0.973	0.769

Composite reliability is suggested as a robust analytical technique to determine the measures' internal consistency reliability. Therefore, [38] composite reliability criterion has been used, according to which the threshold level for composite reliability is $CR > 0.70$, while in case of exploratory research, 0.60-0.70 range is somehow acceptable. However, if $CR < 0.60$, then it represents scarce internal consistency [34].

Table No. 3. Discriminant Validity

	CA	CRM	SCA	SCF	SP
CA	0.903				
CRM	0.753	0.891			
SCA	0.867	0.860	0.895		
SCF	0.713	0.815	0.857	0.889	
SP	0.714	0.844	0.699	0.719	0.877

[34] defined discriminant validity as the extent that indicators are truly representing their respective construct and is unique from the rest of the constructs. Therefore, in order to examine discriminant validity, [39] criterion was adopted, requiring the AVE square roots of a particular construct to be greater from that construct's correlation with other constructs involved in the model.

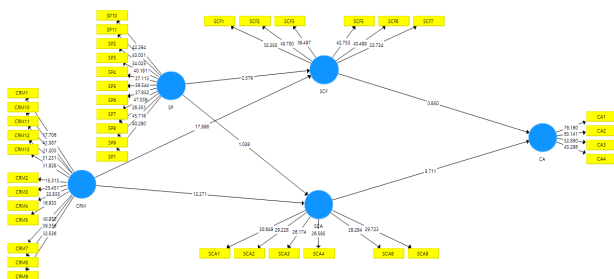


Figure 3. Structural Model

Subsequent to the measurement model, determining the inner or structural model is the next requirement for carrying out sequential analyses in PLS3. Therefore, in this section of this study, the criteria, methods and procedures for analyzing structural model are presented. Meanwhile, the t-statistics, standard errors and path-coefficients were observed to determine the relevance and significance of the inner model.

Table No. 4. Direct and Moderating effect

	(O)	(M)	(STDEV)	(O/STDEV)	P Values
CRM -> CA	0.783	0.774	0.102	7.679	0.000
CRM -> SCA	0.938	0.930	0.076	12.271	0.000
CRM -> SCF	1.073	1.060	0.060	17.996	0.000
SCA -> CA	0.962	0.961	0.110	8.711	0.000
SCF -> CA	0.112	0.109	0.131	0.850	0.198
SP -> CA	0.368	0.355	0.091	4.745	0.000
SP -> SCA	0.092	0.083	0.089	1.038	0.150
SP -> SCF	0.187	0.172	0.072	2.579	0.005

The [33] proposed yardsticks were used for testing and evaluating the hypotheses, by conducting bootstrapping procedure using Smart PLS 3, for determining the main effect as well as mediating and moderating effects for both models [34].

Table No. 5. Mediation effect

	(O)	(M)	(STDEV)	(O/STDEV)	P Values
CRM -> SCA -> CA	0.902	0.891	0.107	8.427	0.000
SP -> SCA -> CA	0.489	0.477	0.083	4.070	0.000
CRM -> SCF -> CA	0.120	0.117	0.141	4.851	0.000
SP -> SCF -> CA	0.521	0.021	0.027	0.774	0.219

Coefficient of determination (R-square) was also calculated following the recommendation of scholars, since it is considered to be one of the important yardsticks which presents the proportion of predictive relevance in

endogenous variable that can be predictable by one or more predictor variables [34], [36].

The results of current study show that SCF is not proven a significant mediator between suppliers' performance and competitive advantage. Also, SCF and competitive advantage relationship is also proven insignificant. As well, supplier partnership and SCA association are also proven insignificant. All the other proposed hypotheses are proved to show significant relationships.

Table No. 6. R-square

	R Square
CA	0.754
SCA	0.742
SCF	0.848

5. Conclusion

With the need of usage of good fabric across the world, the competition in textile firms has been increased tremendously. In order to cope up with this competitive situation, organizations need to focus on their competitive strategies. To gain competitive advantage, firms should focus on the factors like customer relationship and partnership with suppliers. Today, organizations should think more than delivering the product, as they should focus on maintaining long-term relationship with their stakeholders, especially with suppliers and customers.

Furthermore, current research has highlighted two distinct concepts of supply chain to enhance the competitive advantage of the forms i.e. SCA and flexibility. The results show that firms should focus on the strategies of SCA to gain competitive edge. The study provides insights for managers and practitioners on how to use SCA, suppliers' partnerships and customer relationship management across whole supply chain procedure. Present study provides extensive and recent literature on under study constructs. Also, various research gaps in supply chain are identified and discussed in detail.

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