

Mediating Role Competitive Advantage between Customer Relationship, Supply Chain Collaboration Value Innovation and Supply Chain Capability and Supply Chain Performance: Manufacturing Industry Supported Sustainable Mobility in Indonesia

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Abstract- The basic objective of this paper is to examine customer relationship, Supply chain collaboration value innovation and Supply chain capability on supply chain performance. Moreover, the mediating impact of competitive advantage is examined as well. The data is collected from respondents of manufacturing sector of Indonesia. the total 244 questionnaires for the analysis of this study. In this study we have used PLS-SEM for data examination and provision of support for the development of hypothesis. The findings of the study revealed Supply chain collaboration and Supply chain capability has significant impact on competitive advantage. Rest of the relations have proved to be significant. The findings of the study will contribute in the limited literature of the supply chain performance. Moreover, the policy makers of the manufacturing sectors of the Indonesia can get benefit from it.

Keywords: Customer Relationship, Supply chain collaboration value innovation, Supply chain capability, Competitive Advantage, Supply chain performance

1. Introduction

At the global level, the competition among the firms are increasing. If the organizations want to survive on long term basis it is critical for the organization to develop the competitive advantage. Moreover, measuring the SCP is because more than one levels of the supply chains are involved in the production and delivery of the products. Thus, evaluation of the supply chain performance is very important. Moreover, development of competitive advantage is the key as well for the organizations to increase their profitability [3].

The organization's ability to use the information and resources of the organization both externally and internally is known as the supply chain capability of the organization. the purpose of using this information and resources of the organization is to facilitate the process of research. Scholars in past studies categorize the capabilities of the supply chain as the efficacy and

efficiency capabilities [4]. Capabilities of the organization enables the firm in achieving the logistic related objectives and goals by keeping the cost very lower. Moreover, through these capabilities' organizations can maintain better relationships with the Stake holders by responding quickly to the requirements of the supply chain. The competitive advantage (CA) of the partner is also improved because of supply chain capability of the organization. it is done through the integration of important processes of the business from supplier to the consumers along with the vendors involved in whole process. Thus, overall performance of the supply chain is improved [5]. Basically, it is the integration process in which all activities of the organization are integrated from allow of raw material to the flow of products to the consumer of the product. Moreover, SCP is mainly dependent upon the capability of the organization to involve all partners of the business, minimize the cost, provide high quality of the products, minimize the inventory and uncertainty, increase the communication, seek the coordination at all levels of the supply chain and develop competitiveness and capabilities of the organization [6].

In order to achieve the goals as well as to complete the tasks of the organization, collaboration is very important. It is the process in which more than one organization and people work together. In other words, it is the intersection of goals that are common and can be seen in the form of ventures that are collaborative in order to achieve collective goals. The organizations that are able to work in the form of collaboration are able to use and utilize the resources more effectively. Collaboration among the firms is very important because of the increased competition at the global level [8]. In the supply chain management, collaboration is the word which is most frequently used. It's been mentioned by the scholars that organizations looked for opportunities outside the organizations by

which they can collaborate with the partners. The basic purpose is collaboration to develop competitiveness and to be responsive to the needs of the market. Another reason for the collaboration is to achieve the competitive advantage by gaining the knowledge from the suppliers and other stake holders like partners along the utilization of resources of the partners as well [7]. In order to increase the competitive advantage of the organizations, organizations most of the times look for the partners and collaboration. These firms also share the risk management, alignment of the supply chain, inventory management, information sharing and flow of information under the collaboration.

One of the important and essential components of the supply chain and business strategies of the organization is the customer relationship also known as customer relationship management. Capabilities of the organizations are enhanced because of the adopted CRM initiatives taken by the organizations. Moreover, it has long term impact on the market standings of the organization, its profitability and developing competitive advantage [11]. More specifically, the focus of the CRM is to develop and maintain the relationship with the customers by using different strategies including the supply chain and technologies [10]. In past, CRM was mostly viewed as the component which is only based on the IT components. Later, it was realized by the researchers that CRM is the important component for the relationship management among current as well as potential customer along with all of the stakeholder across the services, sales, marketing and supply chain [9].

The manufacturing sector of Indonesia is very important. It plays major contribution in the GDP of the Indonesia. This sector is growing rapidly, and the rate of growth expected in this sector is more than 6.4% in next 5 years. Around 15% workforce of Indonesia is implied in the manufacturing sector. More than 30% of the exports of the Indonesia are from the export sector. All these statistics highlight the importance of supply chain performance in this sector [12].

Therefore, examining the impact of supply chain collaboration, Collaborative value and supply chain capability is the aim of the current paper through the competitive advantage.

2. Literature review

2.1 Supply chain performance (SCP)

Performance of supply chain is defined as the processes that are integrated in which final product is prepared from the raw materials. Moreover, this final product is delivered to the consumer as well including to the retailers, activities of the distribution and warehousing. There is more than one level of the supply chain in which every level has its own complexity as facility as well. It is

need of the organizations to measure SCP because of this complexity so the optimum benefit of the supply chain can be developed [13].

Past literature has debated regarding the issue of supply chain on a number of occasions. Scholars have pointed out that it is very complex task. As a number of different factors are included in the supply chain which plays important role in achieving the objectives related to strategy and logistics [15].

Moreover, it is also very important to measure the performance of whole supply chain especially at the stage where a new supply chain is being developed and managed. In this scenario, measuring the SCP is very important for the success of the organization. For the management of the supply chain, measurement of the performance is very important as well. It includes controlling and coordinating the product, parts and material movement throughout the supply chain, processes related to planning as well as coordinating to the customers from the SC [14]. It is very critical to adopt the required articles in order to measure the performance of the SC so the essence of complete process of supply chain can be captured [16].

2.2 Competitive Advantage (CA)

The amount to which the organization is able to be in the defensible position over the competitors is known as competitive advantage. In order to maximize the CA among all of the members of the SC by which they can work together so the customer can be served. Researchers suggested that competitive advantage of the firm can be affected by the way the firms are linked with each other in their value chains. Especially, in the case of external assets of the firm which can be differentiated from the value chain of the organization [17].

Researchers have expressed competitive advantage in the form of delivery, quality, flexibility and cost. For this reason, all partners of the supply chain must work together so they can serve the consumer. Moreover, researchers mentioned that the choices related to strategy pursuit by the organization for sustainability can enable the organization by which they can develop sustainable competitive advantage. In order to acquire long term competitive advantage, profit and market share organizations are reducing the overall time of product development cycle [19]. Thus, the overall time to introduce a product is reduced. A number of different capabilities are identified by the researchers that can create value and impact the (CA) of the organization. Researchers developed a framework of the competitive advantage and defined it in the form of five dimensions namely production innovation, dependable delivery, value provided to the customers, premium pricing and competitive pricing. But in the present study, competitive advantage is described as the uni-variate variable [18].

2.3 Supply chain Capability (SCC)

Organizations develop and sustain competitive advantage due to which they are enabled to meet the expectations of the customers. It impacts their financial performance as well. Researchers in past studies describes capability is the need of the firm to be organized and managed in such a way that it can exploit its resources in full potential. Due to the emergence of progress in technology, scientific and operational progress, industrial environment has changed dynamically, and the life cycle of the product is reduced. Therefore, the capabilities of the organization related to supply chain are becoming very important [20].

Researchers have mentioned supply chain capability as the building block of the supply chain. Capability of the logistics on the basis of demand is the first discipline of the capability. On the other hand, second value discipline is on the basis of logistics that are supply oriented. Researchers have divided capabilities in two catalogues namely demand driven and supply driven [21].

2.4 Customer Relationship (CR)

The past literature has discussed the topic of CRM on a number of occasions. The basic purpose of its discussion in a number of discussions is because of its importance for the success factor. In the field of research, its been defined and explained in a number of different ways. Along with the practices of CRM implementation, focus of the past studies was also on the management and identification of factors that make the CRM a success factor [22].

Researchers mentioned that organizations must consider the matters related to privacy and trust within the implementation of CRM activities. A number of different strategies related to the Implementation of CRM strategies was also discussed by [23]. They mentioned that alignment of the business units and functions along the mission of the organization is key for the implementation of CRM. Moreover, practices of the CRM also play important role in the implementation of CRM activities in the organization. moreover, it's also been reported that attitude of the top management also plays important for the implementation of the attitude related to CRM Initiatives [24].

2.5 Supply chain Collaborative Value (SCCV)

Researchers have proposed that firm must have the goals that are collaborative, and they must be in relationship with the joint activities that are based on the period that are long term based. Researchers suggested that collaboration of supply chain that is at the higher-level leads to the partnership of the organization [26]. A large number of organizations are pursuing towards the collaboration, but their main focus is towards the internal collaboration and they neglect the external collaboration. Collaboration at the supply chain is beyond the integration

and exchange of information among the customers and suppliers because joint decisions related to tactics are involved in the area of product design, distribution, forecasting and planning. Researchers have also found that the organizations having high level of the collaboration among the members of the supply chain are able to perform better at the operational performance [25].

2.6 SCP and CA

This is the era in which customer demands are increasing, competition is at the global level. In this scenario organizations are being forced to improve the supply chains so they can perform better and develop competitive advantage. Generally, supply chain management is the process in which products are moved and obtained. More recently, researchers have defined supply chains as the mean to develop and sustain competitive advantage. As the result, performance of the firms is increasing [1].

In another research by [2] researchers tried to examine the relationship among the performance of the firm and supply chains. In this study, researchers revealed that competitive advantage has the significant relationship with competitive advantage. Moreover, in the garment industry, competitive advantage mediated between supply chain capability and competitive advantage [27].

H1: CA is significantly related to supply chain performance (SCP).

2.7 Customer Relationship; competitive advantage and supply chain performance

The relationship among CA and performance of the supply chain is mentioned above. Researchers have revealed empirically in their studies as well that customer relationship plays important role in developing CA

Moreover, it has positive relationship with SCP [29]; [28]. Therefore, it is proposed that

H2: Customer Relationship (CR) is significantly related to CA

H3: Customer Relationship (CR) is significantly related to supply chain performance.

Its mentioned in the literature discussed above that there exists relationship among SCP and CA. It revealed that there exists relationship among competitive advantage and the performance of the supply chain. For this reason, it's been hypothesized that

H4: Competitive advantage mediates the relationship between customer relationship and supply chain performance.

2.8 Supply chain collaboration value innovation; competitive advantage and supply chain performance

The literature discussed above highlights the relationship between competitive advantage and supply chain performance. Moreover, it's been revealed empirically

that supply chain collaboration plays significant impact on supply chain performance and competitive advantage [30]. Therefore, it is proposed that

H5: Supply chain collaboration is significantly related to competitive advantage.

H6: Supply chain collaboration is significantly related to supply chain performance.

2.9 Research Framework

Following framework is developed for current research from past literature survey:

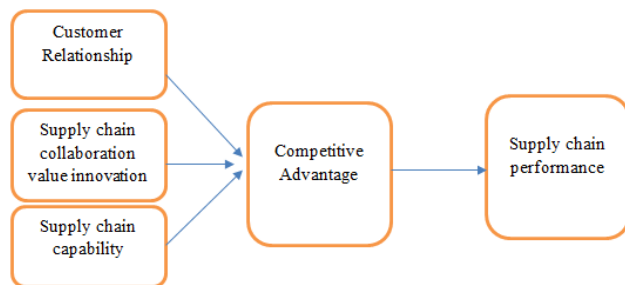


Figure 1. Framework

The literature discussed above shows that there exists the relationship among CA and SCP. Moreover, SCC also has the significant impact with the performance of the supply chain. Thus, it is hypothesized that:

H7: CA mediates the relationship between SCC and SCP.

2.10 Supply chain capability; competitive advantage and supply chain performance

The capability of the supply chain has positive relationship with performance of the supply chain. Moreover, competitive advantage has significant impact on the performance as illustrated in the literature above. Therefore, it is proposed that

H8: Supply chain capability is significantly related to CA

H9: Supply chain capability (SCC) is significantly related to SCP)

The relationship among SCP and CA is mentioned in the literature above. Moreover, supply chain capability also has the relationship with the supply chain performance and competitive advantage. Thus, it is hypothesized that:

H10: CA mediates the relationship between SCC and SCP

3. Methodology

For the current study we had distributed total 300 questionnaires to the total 250 questionnaires were obtained. For this study the total response rate was we had rejected 6 questionnaires because of some missing information, we used total 244 questionnaires for the analysis of this study. We haven't conducted any test for

checking the biasedness as data was collected by using method of self-administration. We have distributed questionnaires by hand to all the respondents and we have given them one week for completing this questionnaire. Because of the method opted for this study test for nonconformities among respondent and non-respondent was not employed because all questionnaires were received within determined time period. For analysing the data of this study, we have used PLS.

4. Results

As per the recommendation of [33], for the performance of PLS we generally use the two staged approach. In first stage we measure the validity and reliability of measurement model. Whereas in second stage the assessment of structural model is involved.

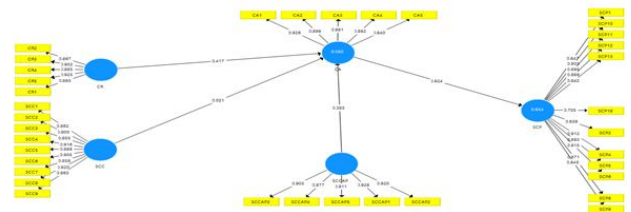


Figure 2. Measurement Model

We have used PLS-SEM because of many reasons. The first and foremost reason is that as per the study of [31] the main advantage of PLS is it required less demands about sample size with comparison of other techniques like AMOS. Moreover, for the complexed structural models have high number of constructs we can apply the PLS. And in data set it does not require the normal distribution. Lastly According to [32] we use PLS when the basic purpose of using structural modelling is explanation and forecasting of construct. In this study we have used PLS-SEM for data examination and provision of support for the development of hypothesis. As per the study of PLS is basically a modelling approach, and its aim is to explain and maximize the variance of dependent latent construct.

In the context of PLS-SEM the measurement model is denoted as outer model, and we can categorize this path modelling into formative and reflective path modelling, while the outer model selection is subjected with theoretical support [34].

Table 1. Outer Loading

	CA	CR	SCC	SCCAP	SCP
CA1	0.926				
CA2	0.899				
CA3	0.881				
CA4	0.892				
CA5	0.84				
CR2		0.897			
CR3		0.902			
CR4		0.885			
CR5		0.925			
SCC1			0.862		
SCC2			0.9		
SCC3			0.855		
SCC4			0.916		
SCC5			0.889		
SCC6			0.905		
SCC7			0.858		
SCC8			0.82		
SCC9			0.863		
SCCAP1				0.928	
SCCAP2				0.92	
SCCAP3				0.903	
SCCAP4				0.877	
SCCAP5				0.911	
SCP1					0.847
SCP10					0.803
SCP11					0.895
SCP12					0.889
SCP13					0.842
SCP18					0.705
SCP2					0.838
SCP4					0.912
SCP5					0.893
SCP6					0.915
SCP8					0.871
SCP9					0.845
CR1		0.893			

We assessed the goodness of measurement for the confirmation of reliability and validity of measured items. [35] has stated that the latent construct quality and validity have assessed with the evaluation of discriminant and convergent validity (CV) for each construct. The validity of a construct is all about that how the operational

definition of variable explains well and reflect the theoretic meaning of that notion.

Table 2. Reliability

	Cronbach's Alpha	rho_A	CR	(AVE)
CA	0.933	0.934	0.949	0.789
CR	0.942	0.943	0.955	0.811
SCC	0.961	0.963	0.967	0.765
SCCAP	0.947	0.947	0.959	0.825
SCP	0.966	0.969	0.970	0.733

According to [37] with the examination of average variance extracted (AVE, pp. composite reliability (CR) and factor loadings we can assess the convergent validity. Lastly, we had calculated AVE to determine the CV. The level at which the latent construct describes the change in its items is known as AVE. [38] has stated that the criteria for convergent validity is AVE. As per the study of [37] if the value of AVE is higher than 0.50 its shows that above half of change in indicator is because of its latent variable. For the determination of construct validity, the other observed indicator is discriminant validity.

Table 3. Validity

	CA	CR	SCC	SCCAP	SCP
CA	0.888				
CR	0.692	0.901			
SCC	0.679	0.815	0.875		
SCCAP	0.676	0.668	0.722	0.808	
SCP	0.824	0.701	0.741	0.757	0.856

As we have discussed earlier that we have conducted the analysis of discriminant and convergent validity by using the Confirmatory Factor Analysis (CFA). According to [36] the contract between the similar construct measures is known as convergent validity. CV shows indicators set which represents the similar original construct and that can be established over their uni-dimensionality [35].

The degree at which the construct cannot correlate with the different measures is known as discriminant. Or we can define the discriminant validity it's a situation when two different concepts having different characteristics are not correlated with each other [39]. So, the DV is basically concerned with the uniqueness of dissimilar construct [36]. Studies have suggested that for the determination of DV of construct there are two different methods such as Fornell-Lareker criterion and the cross loadings.

We have used the path analysis for testing and verifying all the hypothesis of this study. At this stage the inner model analysis has conducted. The PLS technique is known as a variance based and prediction-oriented approach. Which is related with the forecasting of theory building and hypothesized relation.

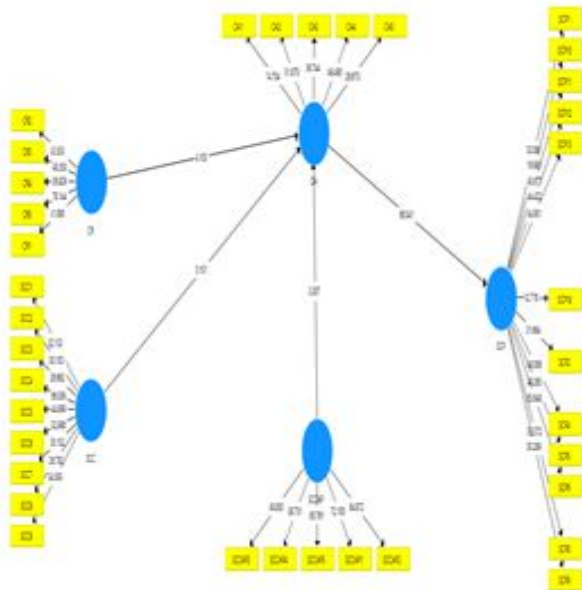


Figure 3. Structural Model

We have performed the assessment of structural model for hypothesis testing and checking the relation among all the variables. We can do this test only after the analysis of measurement model.

Table 4. Direct Relationship

	(O)	(M)	(STDEV)	T Statistics ((O/STDEV))	P Values
CA -> SCP	0.924	0.924	0.014	66.041	0.000
CR -> CA	0.417	0.416	0.102	4.103	0.000
CR -> SCP	0.385	0.384	0.093	4.158	0.000
SCC -> CA	0.021	0.028	0.137	0.151	0.440
SCC -> SCP	0.019	0.026	0.126	0.151	0.440
SCCAP -> CA	0.383	0.378	0.116	3.307	0.000
SCCAP -> SCP	0.354	0.350	0.108	3.280	0.001

The mediating role of CA is explained in the table 5 below We have also performed the assessment of structural model by using PLS-SEM bootstrapping and algorithm.

The bootstrapping procedure is basically a non-parametric procedure of re sampling which PLS uses for the evaluation of estimated parameters significance [35]. We have performed the procedure of bootstrapping for generating the t-values to test the model. For this purpose of bootstrapping we have used total 500 resampling procedure.

Table 5. Mediation

	(O)	(M)	(STDEV)	T Statistics ((O/STDEV))	P Values
CR -> CA -> SCP	0.385	0.384	0.093	4.158	0.000
SCC -> CA -> SCP	0.019	0.026	0.126	0.151	0.440
SCCAP -> CA -> SCP	0.354	0.350	0.108	3.280	0.001

The value of R square ranges from 0 to 1 and the high-level shows that there is high level of forecasted accuracy.

Table 6. R-square

	R Square
CA	0.562
SCP	0.854

If the value of R square is 0.75 it is substantial, if it is 0.50 then it is moderate and if it is 0.25 then it is known as weak.

5. Conclusion

Manufacturing sector of Indonesia is the important sector that plays major role in job creation and contribute in the GDP of the country. It is important for the organizations of this sector to focus on their supply chain because customers are more concerned about in time and good quality product. For this reason, the main objective of this paper was examining the impact of supply chain collaboration, collaborative value and supply chain capability on the supply chain performance through the competitive advantage. The data is collected from respondents of manufacturing sector of Indonesia. the total 244 questionnaires for the analysis of this study. In this study we have used PLS-SEM for data examination and provision of support for the development of

hypothesis. The findings of the study revealed SCC and SCCA have significant impact on CA.

Organization of the manufacturing sector should keep themselves engaged with the customers so they can understand the needs of the customers and fulfil them through their SC. Same is the importance of SCC and supply chain collaboration for the improvement of SCP. All of the direct as well as indirect relationships of the study have proved to be significant by the findings of the study. The findings of the study will contribute in the limited literature of the supply chain performance.

Moreover, the policy makers of the manufacturing sectors of the Indonesia can get benefit from it.

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