Mediating Role of Competitive Advantage on the Relationship of Supply Chain Management and Organizational Performance on the Food Industry of Thailand

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Abstract- **This study evaluated the effectiveness of supply chain management (SCM) practices with respect to competitive advantage and firm performance. It also investigated the mediating role of competitive advantage between SCM practices and organizational performance relationships. It used the PLS-SEM to examine the association between the variables under study. Data were collected form the supply chain mangers of the food industry in Thailand. The results indicated that effective practices of SCM could increase the competitive advantage and organizational performance. This study also revealed that the competitive advantage of the firm mediates the SCM practices and organizational performance relationship.**

Keywords: *Supply Chain Management Practices, Competitive Advantage, Organizational Performance*

1. Introduction

The need for effective SCM practices is increasing with time due to market globalization, and intensified competition situation exists in the market. These challenges force the organizations that they escalate their processes in a way that products are available at the right place within the right time and bearing very low cost that leads the organization towards the high profitability. This motive cannot be achieved without effective SCM practices. Thus, the practicing and understanding of SCM now become a vital prerequisite that helps the organization in staying alive in the global competition and enhance organizational performance by generating high profitability [1]. The effective practices of SCM not only enhance the performance of the individual entity but also enhance the performance of all organization associated with the supply chain. Thus, the SCM refers to the coordination that has strategic nature between the trading partners that achieve the dual goal of SCM: to enhance the individual performance of the entity and to enhance the performance of all the associated companies with supply chain. The SCM now becomes an effective competitive tool that eliminate information flows from supply chain and make them able to compete the rivals. Therefore, the attention of business managers, consultants and academicians have increased towards the concept of SCM. In addition, almost all of the organizations have now realized that SCM is an effective tool in building a sustainable competitive advantage for the products in the global market.

The growing importance of SCM with respect to increasing competition and globalization creates an opportunity that this area should be investigated further. Although, several previous studies have been undertaken on the concept of SCM in different perspectives including; management information system, logistics and transportation, organization theory and operations management. Moreover, several theories were also used to explore the SCM concept in different perspectives, namely; competitive strategies, resource-based theory, industrial organization and cost analysis theory [1]. However, the growing reputation of supply chain in the performance of the entities are still gaining the attention of the new researchers on the concept of SCM practices. Moreover, the concept of SCM is based upon two separate paths, namely; transportation and logistics management and supply management. As for as supply management is a concern, it involves the purchasing of goods and supplies them in a very low handling cost by applying the Just in time (JIT) technique. While transportation and logistics

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management means the supply of the goods at the right place with in the right time that increase the effectiveness of the overall supply chain, these two factors are necessary for the improvement of individual firm performance and performance of the whole supply chain. Based on all the above evidence, this study is also evaluating the firm performance with the help of SCM practices that provide a competitive advantage to the organization.

The complexity and evolutionary nature of SCM are also the reasons for the attraction of researchers toward the practices of SCM. The focus of most of the previous studies had only on the upstream and the downstream side of SCM practices regarding the selection of supplier. The previous studies on the selection of the suppliers are supplier involvement, manufacturing performance, supplier selection, influence of alliances of suppliers, supplier performance and supplier orientation management [2]. The role of the supplier on buyer and supplier relationship, supplier responsiveness and supplier attitude investigated only on the supplier side. Moreover, some of the studies deals with downward linkage among retailer and manufacturers and few studies consider both downward and upward sides of that relationship with the help supply chain simultaneously. However, several studies are available on the practices of the supply chain, both upwards and downwards streams. Moreover, the linking activities were detracted, and less attention had been paid with reference to SCM practices, and this study examined the role of SCM practices on competitive advantage and organizational performance on the food industry of Thailand.

SCM is one of the major tools that improve the firm performance. The food industry of Thailand is also a growing industry in the country. The involvement of SCM practices in this industry can also increase its performance and give them a competitive edge among other industries in the country [4, 5]. This industry provides the semi-raw material that is used in other industries as a raw martial such as skins of many animals used by the other industries to produce different things. Moreover, this industry also provides the final products to its end users in the shape of sea food, nuts, vegetables etc. The following Table 1 shows the improvement in the performance of the food industry due to the effective supply chain from 2009 to 2015. The figure shows that the growth of the companies increased from 0% to 8% and average growth rate is 2% due to the supply chain. Moreover, the operating margin of the companies also increased from 0.01 to 0.17 and the average increase in operating margin was 0.1. In addition, inventory turnover also increased from 5 to 7 units due to the supply chain and the average increase in the turnover was seven units. Furthermore, Return on capital and book value were also increased due to the effective supply chain implemented in the companies. Table 1 shows all the figure of improvement in the performance due to the supply chain given below:

Table 1. Improvement in Performance of Food Industry due to Supply Chain (2009-2015)

Company	Growth	Operating Margin	Inventory Turns	Return on Invested Capital	Book Value	Supply Chain Rank
The Arcger Daniels Midland Company	-1%	0.03	7	7%	1.40	1
Campbell Soup Company	0%	0.15	6	17%	-6.81	3
Con Agra Foods Inc.	5%	0.07	5	6%	18.43	11
Danone SA	2%	0.12	9	3%	6.49	7
General Mills Inc.	4%	0.16	7	11%	4.36	10
The Hershey Company	1%	0.17	6	21%	43.51	5
Kellog Company	5%	0.13	7	12%	5.72	5
Maple Leaf Food Inc.	1%	0.01	13	9%	4.68	8
Mondelez International Inc.	8%	0.13	6	8%	3.08	2
Nestle SA	-4%	0.14	5	17%	5.59	9
The J.M. Smucker Company	0%	0.15	4	7%	-11.94	3
Average	2%	0.11	7	11%	3.39	N/A

The SCM tools can increase the performance of the organization by getting a commutative advantage in the market. The following Figure 1 shows the performance of the company by giving the revenue of the companies that is improved due to the effective supply chain that are implemented. According to Figure 1, the revenue of automotive was increased by 9.2% while the revenue of chemical and material was increased by 12.3%. In addition, the revenue of the computer increased by 10.7% whereas the revenue of consumer goods increased by 10.0%. Moreover, the revenue of

pharmaceutical was increased by 9.1% while the revenue of the telecommunication equipment was increased by 7.4%.

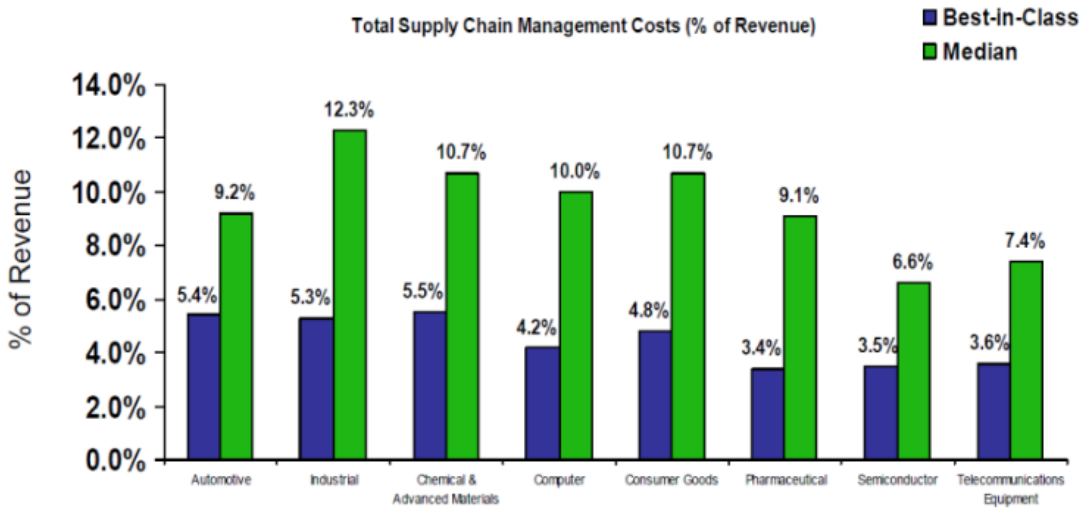

Figure 1. Performance of Supply Chain Management

2. Literature Review

This section provides a review of the literature regarding the previous studies on the topic of SCM, competitive advantages and firm performance. This section is divided into subparts; the first part describes the SCM practices, the second part describes competitive advantage, the third part of the section provides the knowledge about organization performance and the rest of the sections show the literature of past studies on the relationships between the variables under study.

2.1. SCM Practices

SCM practices are the activities that are undertaken by the firms to increase the effectiveness of their supply chain. Moreover, Donlon [3] mentioned that the SCM practices include supplier partnership, continues the flow of the process, cycle time compression, and sharing technology information. Furthermore, Alvarado and Kotzab [4] described in their study that the SCM practices include the core competencies, effective internal-organizational system, and understanding the supply chain practices. In addition, SCM practices also include the supply chain integration, JIT capabilities, information sharing and characteristics of the supply chain. [5]. Additionally, agreed goals, risk and reward sharing, sharing information, cooperation and long term relation with partners are the major practices of the supply chain [6].

2.2. Competitive Advantage

Competitive advantage is the ability of the organization to compete in the market with its competitors. Moreover, the competitive advantage also refer to the extent of the defensible position under the competition over the competitors. In addition, it also refers that the capability of the company that allows to differentiate it from the competitors in the market [7]. Furthermore, Koufteros, et al. [8] found in their study that the capabilities that provide the competitive advantage to the company include; premium price, dependable delivery, customer quality, production innovation and competitive pricing. The firm that has above-mentioned capabilities is considered that the firm has a competitive advantage over its rivals in the market.

2.3. Organizational Performance

Organizational performance is defined as the ability of the organization that achieves the market-oriented and financial goals of the organization [9]. The short-term goals of the implementation of SCM practices are to enhance the productivity, cycle time and inventory of the firm [10]. In addition, the long term goals of the implementation of practices of SCM are to enhance the profits, market share and investment of the company and all the other entities of supply chain. “Financial metrics” are considered as a vital tool of comparing and measuring organizational behavior over time [11]. The effective supply chain leads to increase the organizational performance by providing a competitive advantage to the firm. Most of the previous studies used the financial as well as market criteria to measure the organizational performance variable of the study.

2.4. SCM practices and Organizational Performance

Several studies examine the capabilities of SCM practices with reference to organizational performance, and this section of the study provides a review of previous literature on the relationship between SCM practices and organizational performance. A study by Lin, et al. [12] conducted on the supply chain of several industries in Hong Kong and Taiwan. They found that the organizational performance in term of customer satisfaction, strategies of supplier participation and reduction in the cost of products are influenced by the effective supply chain practices. They also revealed that effective SCM practices are a necessary element for the improvement of organizational performance of Hong Kong and Taiwan. Moreover, Green Jr, et al. [13] conducted the study on Chinese firms by collected data from 142 operational managers and indicated in their study that SCM practices are the vital tool for the logistics performance. In addition, effective SCM practices are not only influenced the market performance of the firm but also have influenced the financial performance of the firm positivity. Furthermore, Germain, et al. [14] conducted the study on the variability of SCM process to check the level of inconsistency regarding the impact of SCM practices and revealed that variability in the process of SCM could improve the financial performance of the firm. Based on all studies mentioned above, this study develops the following hypothesis:

H1: SCM practices have a positive impact on the performance of the firm.

2.5. SCM practices and Competitive Advantage

The SCM practices enable that create a competitive advantage for the firm in the market [15]. In addition, Markley and Davis [16] conducted the study on sustainable practices of the supply chain by using secondary data and indicated that sustainable practices of SCM could create a competitive advantage for the firm. Moreover, Ling and Ogunmokun [17] mentioned that the topic of competitive advantage with practices of SCM was ignored by previous studies. They also indicated that competitive advantage could be achieved through the effective practices of the supply chain. Similarly, a study by Scannell, et al. [18] conducted on the automotive industry and indicated that positive practices SCM could be able to bring the competitive advantage for the SCM implemented firmly. Based on all studies mentioned above, this study develops the following hypothesis:

H2: SCM practices have a positive impact on the competitive advantage of the firm.

2.6. Competitive Advantage and Organizational Performance

Several studies examine the capabilities of competitive advantage with reference to the organizational performance, and provides the review of previous literature on the relationship of "competitive advantage" and organizational performance. Moreover, Collins and Clark [19] conducted the study on 73 firms and revealed that the competitive advantage creates the extra demand for the products that enhance the performance of the organization. Similarly, a study by Yamin, et al. [20] conducted a study on the manufacturing companies of Australia. They indicted in their study that growing competition in the market is required to take the competitive advantage on the rivals exist in the market. This competitive advantage can lead the organization to improved financial performance. In addition, Agha, et al. [21] conducted the study on the paint industry in the UAE by collecting data from 77 managers. They analyzed in their study that any type of competitive advantage can improve the process of the business that can lead the business towards high performance. Based on all studies mentioned above, this study develops the following hypothesis:

H3: Competitive advantage has a positive impact on the performance of the firm.

2.7. Mediating Role of Competitive Advantage on the Relationship of SCM Practices and Organizational Performance

The effective practices of SCM can create a competitive advantage for the firm, and this advantage improved the performance of the firm. A study by Cao and Zhang [22] found that the supply chain improves the collaboration between the firm and its suppliers, that create collaboration advantage for the firm that helps the organization to improve its performance. Similarly, Huo [23] conducted the study on 617 Chinese companies and indicated in his study that SCM practices increase the internal and external integration, and this competitive advantage can increase the firm performance. Moreover, the practices of supply chain enhance the relationship with suppliers, vendors and customer. This competitive advantage also increases the performance of the firm [24]. Based on all the studies mentioned above, this study develops the following hypothesis:

H4: Competitive advantage has mediated the relationship between SCM practices and organizational performance of the firm.

3. Research Methods

Primary data were collected through a questionnaire for analysis. The list of the respondent was collected from the "Department of Industrial Work Thailand", respondents were the managers of the supply chain working in the food industry of Thailand. However, the companies who have not the separate department of SCM, they data were collected form the top-level executives or production mangers who know the practices of SCM. At the first stage, 1,500 respondents were selected and send them the questionnaire for data requirement. Only 586 questionnaires were returned from the respondents out of them 26 responses were not meet the satisfactory criteria and excluded from the analysis. Thus, only 560 valid response were remained for analysis that was approximately 37.33% response rate. Furthermore, many of the questions in the survey were changed according to the environment and nature of the study and its scope. Five points Likert scale was used to answer the questions (from 1 for strongly disagree to 5 for strongly agree) [25].

3.1. Measures

SCM practices have five dimensions, the first dimension is strategic supplier partnership (SSP) that have six items, customer relationship (CR) is the second dimension that has five items, information sharing (IS) is the third dimension that has six items, information quality (IQ) is the fourth dimension that has five items and Postponement (POS) is the last dimension that has three items. In addition, competitive advantage also has five dimensions, the first dimension is price/cost (P/C) that have two items, quality (Q) is the second dimension that has four items, delivery dependability (DD) is the third dimension that has three items, product innovation (PI) is the fourth dimension that has three items and time to market (TM) is the last dimension that has four items. Finally, organizational performance is the one-dimensional variable that has seven items

3.2. Data Collection Procedure

An email sent to the supply chain managers and other top-level managers where the separate SCM department did not exist, to obtain the consent regarding data collection. Total 1,500 questionnaires was sent to the managers after getting consent from them, but only 586 responses were returned. Moreover, 26 responses out of 586 were not up to the standard and eliminated from the analysis. Finally, 560 valid responses were selected for analysis purpose.

3.3. Research Framework

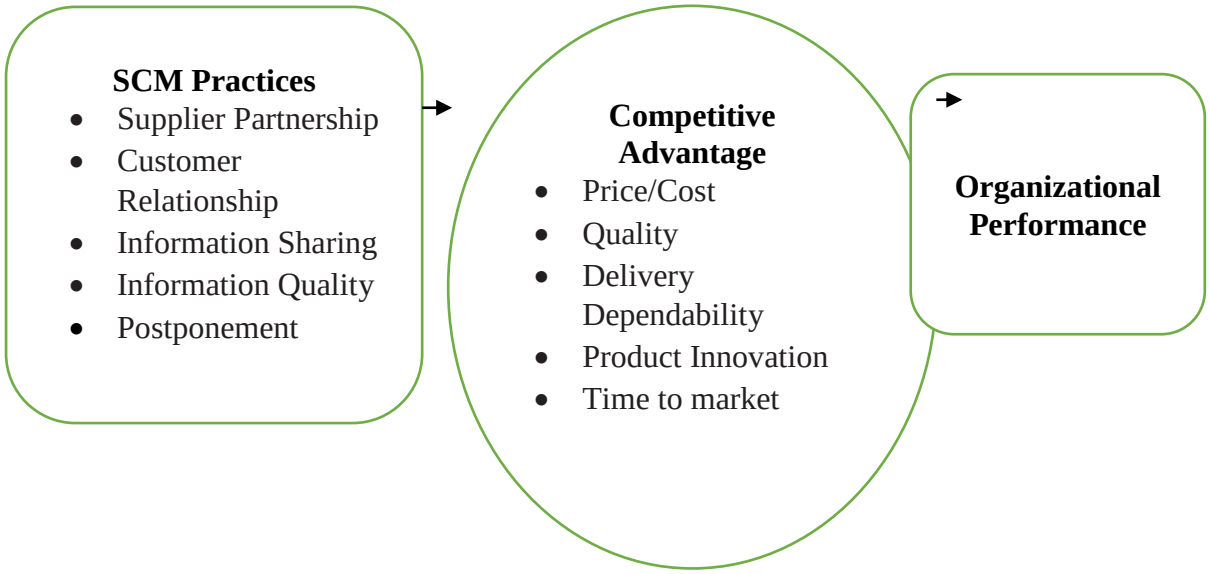

Figure 2. Theoretical Framework

4. Results

This study used the PLS-SEM to investigate the relationships among under study variables. The validity of the items and constructs must be check before to test the relationships between variables. There are four criteria to check the convergent validity of the items; the first criteria is outer loadings that should be greater than 0.50. According to the results of this study, the outer loadings of almost all items are greater than 0.05 that means no problem with convergent validity. The second criteria are Cronbach's Alpha that should be greater than 0.07, and the results show that the value of Cronbach's Alpha is more than the limit that means no issue with convergent validity. The third criteria are composite reliability (CR) that should be greater than 0.07, and the results show that the value of CR is more than the limit, that means no issue with convergent validity. The last criteria are Average Variance Extracted (AVE) that should be greater than 0.05, and the results show that the value of AVE is more than the limit that means no issue with convergent validity.

Table 2. Convergent Validity

1st Order Constructs	2nd Order Constructs	Items	Loadings	Alpha	CR	AVE
Organizational Performance		OP1	0.814	0.907	0.931	0.729
		OP2	0.888			
		OP3	0.853			
		OP4	0.895			
		OP5	0.816			
Customer Relationship		CR1	0.826	0.905	0.934	0.78
		CR2	0.909			
		CR3	0.92			
		CR5	0.875			
Supplier Partnership		SP1	0.783	0.869	0.902	0.607
		SP2	0.849			
		SP3	0.756			
		SP4	0.734			
		SP5	0.723			
		SP6	0.821			
Information Quality		IQ1	0.856	0.908	0.935	0.784
		IQ2	0.916			
		IQ4	0.885			
		IQ5	0.883			
Information Sharing		IS1	0.82	0.869	0.911	0.718
		IS2	0.864			
		IS4	0.82			
		IS5	0.884			
Postponement		POS1	0.882	0.844	0.906	0.763
		POS2	0.862			
		POS3	0.875			
	Supply Chain Management Practices	CR	0.778	0.939	0.854	0.897
		SP	0.807			
		IQ	0.815			
		IS	0.814			
		POS	0.816			
Time to Market		TM1	0.945	0.942	0.958	0.851

Table 2 (Continue)						
1st Order Constructs	**2nd Order Constructs**	**Items**	**Loadings**	**Alpha**	**CR**	**AVE**
		TM2	0.92			
		TM3	0.915			
		TM4	0.91			
Price / Cost		PC1	0.958	0.915	0.959	0.922
		PC2	0.962			
Product Innovation		PI2	0.823	0.57	0.823	0.699
		PI3	0.849			
Quality		Q1	0.872	0.908	0.936	0.785
		Q2	0.93			
		Q3	0.915			
		Q4	0.824			
Delivery Dependability		DD1	0.962	0.743	0.859	0.687
		DD2	0.954			
		DD3	0.477			
	Competitive Advantage	IM	0.247	0.892	0.852	0.675
		PC	0.733			
		PI	0.842			
		Q	0.851			
		DD	0.747			

This study is used the Heterotrait and Monotrait (HTMT) ratio to check the discernment validity of the constructs. The value of HTMT should be less than 0.05, and Table 3 shows the values of all constructs are less than 0.05, that means no problem with discriminant validity.

Table 3. Discernment Validity (HTMT) First Order

	CR	**DD**	**IM**	**IQ**	**IS**	**OP**	**PC**	**PI**	**POS**	**Q**	**SP**
CR											
DD	0.245										
IM	0.071	0.168									
IQ	0.562	0.345	0.119								
IS	0.796	0.311	0.056	0.589							
OP	0.511	0.573	0.164	0.533	0.499						
PC	0.275	0.524	0.032	0.41	0.416	0.557					
PI	0.476	0.799	0.104	0.715	0.578	1.026	1.079				
POS	0.693	0.369	0.087	0.698	0.704	0.579	0.49	0.748			
Q	0.511	0.537	0.177	0.46	0.495	0.836	0.482	0.846	0.607		
SP	0.334	0.484	0.076	0.579	0.469	0.615	0.751	0.971	0.483	0.513	

Table 4. Discernment Validity (HTMT) Second Order

	CA	**OP**	**SCMP**
CA			
OP	0.82		
SCMP	0.682	0.693	

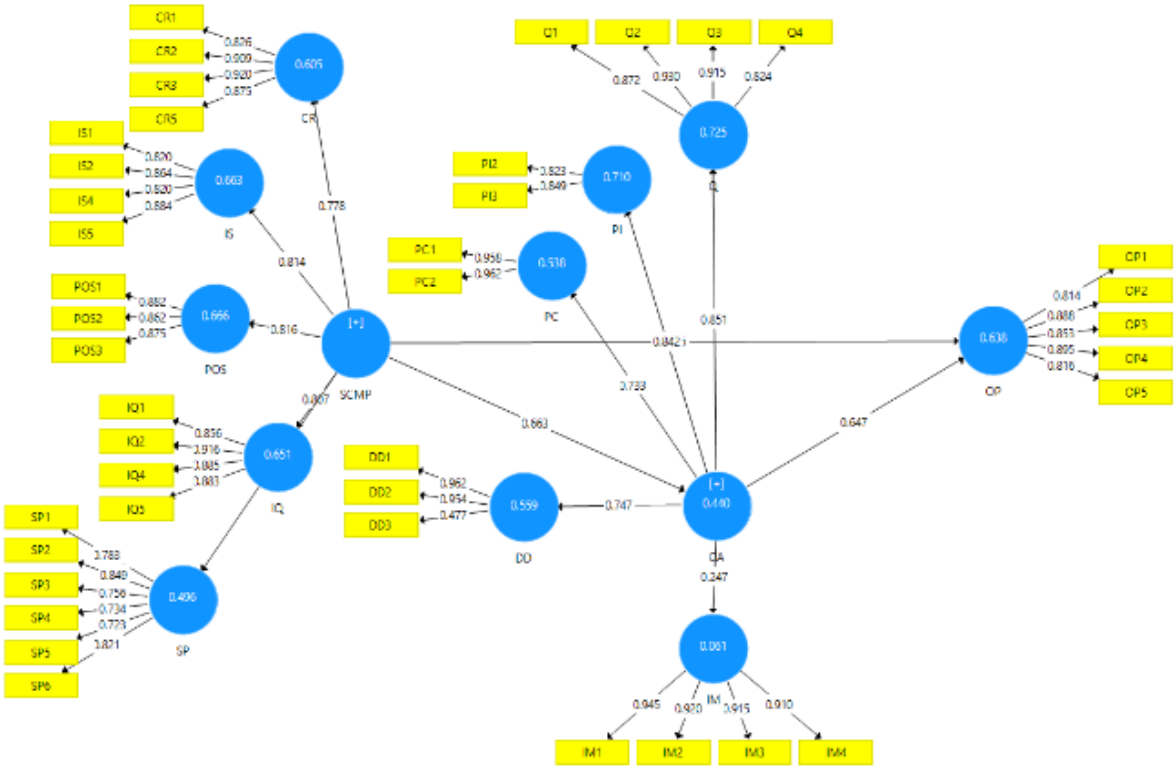

Figure 2. Measurement Model Assessment

The direct and mediating relationship between the variable is mentioned in Table 5 given below. The results show that practices of SCM has increase the organizational performance (β = 0.206; t = 4.378), and supported the H1. While, practices of SCM has also increase the competitive advantage (β = 0.663; t = 19.94), and supported the H2. Whereas, the competitive advantage also has a positive impact on organizational performance (β = 0.647; t = 15.273), and supported the H3. In addition, the results show that competitive advantage has a mediating impact on the relationship of SCM practices and organizational performance (β = 0.429; t = 12.874), and supported the H4.

Table 5. Path Analysis

	Original Sample (O)	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
CA -> OP	0.647	0.042	15.273	0.000
SCMP -> CA	0.663	0.033	19.94	0.000
SCMP -> OP	0.206	0.047	4.378	0.000
SCMP -> CA -> OP	0.429	0.033	12.874	0.000

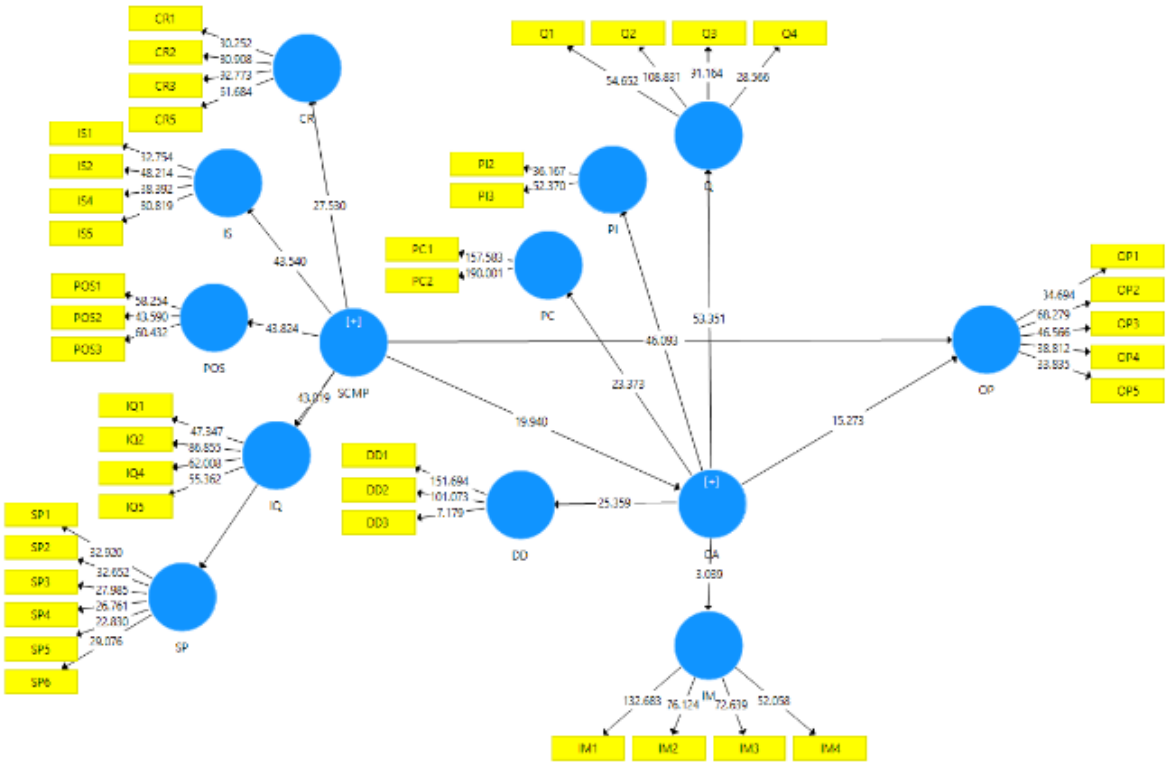

Figure 3. Structural Model Assesment

5. Discussion

This last section of the study provides a discussion regarding the results that are mentioned above in the study. Moreover, it also provides the comparison of current study results with the results of past studies, and finally, it presents the conclusion, the suggestion to future researchers and limitations of the study.

Increase the performance of an organization is the prime goal of every personal in the wold. The focus of the organization is only on the enhance the performance by applying different strategies and tools in the business processes. Supply chain practises the major tool that boosts up the process of the business in a way that itenhances the capacity of the firm to perform better and generate more profit for the business. This study also investigated the SCM practices impact on the performance of the business with the mediating role of competitive advantage. The results revealed that the effective practices of SCM could increase the performance of the company. The results are similar to Zhu and Sarkis [26] and Kim, et al. [27] who also found that SCM practices play a major role in the performance of the firm. Moreover, the results are also indicated that SCM practices can also bring a competitive advantage. The results are also aligned with the results of Jones and Riley [28] and Mason and Towill [29], who also proved that the supply chain could gain a competitive advantage.

The results also found that the competitive advantage can also become the reason to increase the performance of the firm. The results are also similar to the results of Newbert [30] and Flynn, et al. [31] who also indicated the positive association between competitive advantage and firm performance. In addition, the results proved that the practices of SCM could increase the performance by gaining the competitive advantage. SCM practices bring the competitive advantages for the firm and this advantage improve the performance of the firm. The results are aligned with results of Harrison and New [32] and Chan, et al. [33] who found that supply chain gains the competitive advantage that achieves the high performance goal of the firm.

Finally, this study concluded that effective practices of SCM could increase organization performance and also brings a competitive advantage for the firm. In addition, competitive advantage has a positive association with organizational performance. Moreover, it also concluded that SCM practices bring the competitive advantage that leads the companies towards high financial and market performance. Thus, the competitive advantage mediates the relationship between the practices of SCM and organizational performance.

This study has several limitations that are the gaps for future researchers. This study use only one factor to measure the performance of the firm. There are several factors are also exist that influenced the performnace of the firm. The scope of the study is very limited, only one industry is used for the anlysis and ignored the other important industry. Moreover, this study foucs only one country and ignored the corss country analysis. Thus, this study is highly recomanded to the future research that the incorporate the above mentioned gaps and explore this area in a different perspective.

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