The Individual, Network, and Collaborative Competencies, and Investment in Strategic Partnership as Antecedents of the Overall Performance of a Supply Chain Network

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ABSTRACT- **The prime objective of the current study is to examine the individual, network, and collaborative competencies, and investment in strategic partnership as antecedents of the overall performance of a supply chain network. Additionally, the study has examined the mediating role of collaborative awareness. In this research, the influence of competencies at individual and organizational level has been identified on the practices and performance of supply chain management. The current study has expanded the competencies by studying it at firm level in the management of supply chain. It has been revealed through research findings that collaborative awareness is positively influenced by organizational awareness, which is the individual level competency. The study is among the pioneering studies on the issues. So, current study has used SEM-PLS as statistical tool to answer the research questions raised in this study and research objectives envisaged in the current study. The findings of the current study have provided support to with the hypothesized results. This study will be helpful for policymakers and researchers in examining the link the individual, network, and collaborative competencies, and investment in strategic partnership as antecedents of the overall performance of a supply chain network.**

Keywords: *Collaborative competencies, strategic partnership, overall performance of a supply chain network*

1. Introduction

In order to achieve organizational advantage, it has become crucial for the organizations to develop competencies, which enable the employees to contribute their expertise and knowledge. [5] Increased value for the firm can be achieved by combining different skills, knowledge and abilities, which are important for formulating the goals of organization related to supply chain management. The use of these skills and abilities can add value to a firm, when used in a strategic way [1].

There is limited research available on the capabilities, which are necessary for successful system of supply chain. The literature lacks in relation human resources (HR) with operations management [2]. According to Carr, et al. [3] very few studies have worked on employee practices or organizational implications. The importance of these concepts is increasing. The history of human resource and supply change management has different roots but they are linked together in the organizational environment [4].

This research paper contributes in the way that the relation between HR management and supply chain is improved by over viewing the capabilities possessed in successful systems of supply chain. This influences the development of strategic suppliers' partnership. The importance of competency of supply chain management for professionals is limited to case studies only at the individual level. A basic understanding of the subject can be offered by an empirical study, which is developed for validation of competency in human resource. Moreover, this offers implications for practitioners of human resource and supply chain management. Information should be shared among the managers of supply chain along with development of cooperation in the relationship through collaborative skills. Both internal and external customers should be communicated with the information. The internal differences or issues among different business functions should be resolved in the organization. This research study is based on the literature of knowledge management on competency for formulating the competency of organizational awareness at individual level in an organization.

Competences have been investigated by very few empirical researches at different levels considering it valuable strategic instrument in management of supply chain. Three important areas have been identified in this research, which are important at the level of supply chain manager and individual level. These are important across the supply chain network and in the requirements of collaboration with the suppliers. There has been some research carried out on supplier collaboration. However, there is need for attention by the researchers on the required competencies for managers in supply chain [5]. In this way, this research will contribute

to literature by analysis the required competencies for managers in supply chain.
Problems related to strategic and operational issues are resolved through collective working and coordination by the managers in supply chain. This supports the existence of partnership in the organization in an effective manner. The competencies, which are required for development of strategic partnership, have been examined by this research. In this way, the current study will contribute to the literature. Using inter-organizational competencies, the literature on competency will expand.

2. Background and Formulation of Hypotheses

2.1. Competencies

Arnold [6] introduced the concept of competencies. Recently, the concept has been expanded from the human resource management to a number of business aspects. Most of the studies have been made at individual or group level. However, currently it has been studied at the level of firm but there are rare studies conducted at the level of inter-organizational. Skills, abilities, and knowledge are involved in competences from the perspective of human resource management. These competencies are related with the growth in performance at individual job level [7]. The capacity of a person to interact with rest of the team members and one's individual competency influences the competency at the group or team level. It has been recognized by recently conducted studies that team competencies involve technical competency as well as social competency specifically communication and teamwork.
In order to create learning environment with collaboration, four team competencies for self-management were studied by Barnes and Liao [8], which include skills, knowledge, and ability for cooperating and communication. Collective influence is created on skills; knowledge, behaviors, and individual perception are influenced through social interaction. A crucial role is played by social competency in the implementation of technical competencies. The concept has expanded to the level of firm by incorporating the competencies such as process, product, and intellectual competencies. These competencies offer a competitive advantage for the business [9]. Moreover, contributions are made to the success of performance through collective learning. It has been suggested by Heijde and Van Der Heijden [10] that with the change in business processes, technology and increased globalization, there is need for the inclusion of process capabilities in competencies to increase the performance of organization. The focus of competency is more on the association of partners in supply chain as compared with individual level in the supply chain management. This directs towards the importance of team level. It is an integral business activity, which is adopted by an organization for continuous innovation in product development etc. cross-functional abilities are improved as well [11].

2.1.1. Collaborative Awareness (CA)

Every supply chain partner has unique set of abilities and capabilities, which offer firm a source of competitive advantage. In order to develop a successful relationship in supply chain, there is need for partners to be aware of the mutual goals. Moreover, the issues or problems because of the difference in their abilities should be management for the achievement of set goals. Awareness of Collaboration has been identified by different studies on IS management, which says that it is a social interaction among members of a group. Yu, et al. [12] have defined it as a system, which can be adopted by a number of users. It is also regarded as a knowledge, which has been developed technologically [13].
The management of information and processes is required beyond the boundaries of organization as per the concept of collaboration in the supply chain context. It requires the sustaining of social interaction among the partners. At the level of an organization, this research study defines collaborative awareness as the level with which trust is developed by a firm and commitment is maintained with the partners of supply chain. A strategic advantage is created through inter-organizational competencies by the clear knowledge of firms in supply network [14].
The combination of commitment and trust in relations is involved in collaborative awareness that is crucial element for achieving success. It has been argued by the researchers that trust is the main factor involved in collaborations across supply chain, which aim at continuous organizational improvements [15]. The effectiveness of supply chain is improved through trust [16]. A positive influence is exerted through this on the relations and cooperation is improved among the parents in alliance [8]. When cooperation is made among the parties and they work with mutual interest, this leads to the development of trust [17]. It is evident that commitment for taking on the relation by the firms is a basic capability in the relation of firms within supply chain. When a firm is managing its supply chain effectively, it has developed suppliers' relations with commitment and act in the relation with mutual interest.

2.1.2. Organizational Awareness (OA)

For achieving and sustaining competitive advantage, human resource acts as an important

source [18]. The competencies are developed by the skills, experience, knowledge, and capabilities of an individual. These are the elements, which influence the ability of an organization to realize the business objectives and develop strategies [19]. It was found by Xie, et al. [20] while conducting a study on the competencies at manager level that firms having high performance are linked with organizational awareness. The level of understanding of organization goals and strategy along with clear communication of roles and responsibilities across the organization is referred as organizational awareness [21]. It is expected that strategic thinking improve with organizational awareness. This type of awareness or knowledge is required for the managers who work in line with the supply chain project [22].

According to Wagner, et al. [23], for high performance of managers in supply chain, the big picture knowledge is required. In a research on logistics, Vasylieva [24] found that the one of the top skills, which is required for managers in supply chain, is to see the big picture.

The possession of knowledge by a professional of supply chain related to the issues of cross-functional, opportunities and solution of the political restrictions, this developed a knowledge base assisting in shaping the perception and behavior within a firm. Trust among the individuals and an organization is influenced by the boundary spanners [25]. When the professionals of supply chain in a firm are having sufficient knowledge related to cross-functional activities, commitment, and coordination, the firm is expected to value the importance of external partners.

The following relation can be expected, which has been hypothesized:

H1: The organizational awareness is in significant relationship with the collaborative awareness

2.1.3. Supply Network Competency (SNC)

Several researchers have claimed that the increased competition in the business world has moved the traditional models to the business model in which supply chains are competing with the supply chains. The business is not among the organizations rather it is among their supply chains in terms of competency [26]. The resources used by organizations are extended by the networks, which helps in achieving competitive advantage through building capabilities. Complementary resources are exploited by the supply networks along with establishing competencies with reference to supply chain [27, 28]. It is difficult to copy the resources, which have been gained from network. Flexibility is attained by the organizations investing in network capability for access to the resources resulting in sustainable competitive advantage. Research studies on supply network have analyzed various attributes of suppliers such as cooperativeness and technical competence, responsiveness and operations [29]. The flexibility, operational and spanning abilities of suppliers has been used in this research as the determinants of competency of supply network (Kościelniak, 2018).

Higher performance is attained by the organization with better competencies in the supply network, as compared with the companies having low or no competency in their network [30]. Strong beliefs are developed by companies with high level of competencies in supply network making them consistent in operations. More time, resources and investment is contributed by the companies because of their confidence in their abilities and coordination with the supply parents. The feeling of ownership is enhanced through supply network competency, which adds to the level of commitment and trust. The following research hypothesis has been developed in line with the above literature findings:

H2: The supply network competency is in significant relationship with the collaborative awareness

2.2. Investment in Strategic Partnership (ISP)

A network with a number of independent relations is involved in a supply chain [31]. The dependent of a firm on other partners in supply chain is the basic element in this network. Activities such as sharing of information planning through joint efforts are involved in the firms, who are increasingly dependent on other firms. This is related to the long-term associations of firms with the partners [32]. Specific information is attained and shared, which supports the process of decision making and controlling business activities effectively (Watters et al., 2016). The information should be viewed as an important asset by the supply chains, which can provide them competitive advantage.

The relations are not just confined to sharing of information. However, several other factors are involved in strategic partnerships such as collaboration on making strategic plans [32]. Moreover, goals are set with mutual consent of the partners reflecting a sense of coordination among them. The success of one partner is linked with the success of other partners in strategic relations A base for developing trust among the partners is developed through the process of setting goals, which enable them to achieve improvements in business and success [32].

The involvement of suppliers in setting goals and planning processes helps in sharing knowledge with them. The supply chain members are able to work in collaboration with effective information

sharing resulting in improved service to the end customers. A supportive environment is created with the development of inter-firm competencies resulting in improved cooperation. This develops a sense of trust among the suppliers and makes them sustained in the relation. The following research hypothesis has been developed in line with the above results:

H3: The collaborative awareness is in significant relationship with the strategic partnership.

2.3. Overall Performance

The level with which the company fulfils the requirements of its customers and carries business operations in an efficient way determine its overall performance. It is implied by the concept of overall performance that efficiency for achieving the set goal is the main aspect. Effectiveness in supply chain is referred as to be related with the demands of customers, which need to be satisfied. This makes it an outward looking aspect. On the other side, efficiency is regarded as an inward-looking component, which involves the proper utilization of resources in a company [33]. This research study has adopted three aspects of supply chain performance, which include reliability, cost performance, and responsiveness of customers. The focus of cost performance is on the efficiency of operations in supply chain. In this way, it is an inward looking perspective. Customer responsiveness and reliability are the outward looking aspects, which are based on the outcome. These are the indicators of supply chain performance in relation to the needs and requirements of the customers.

The process in which organizations interacts with the suppliers and develop long term association is referred as investment in strategic relations or partnership. The relation of business performance and strategic partnership has gained a lot of attention. With the development of strategic partnerships, time cycle of delivery is reduced, operational cost is reduced, and productive improves. The important of partnership in supply chain has been found by Schaltegger and Wagner [34], which creates a positive influence on the operational performance in the manufacturing sector. The following research hypothesis has been developed:

H4: The investment in strategic partnership is in significant relationship with overall performance of supply chain network

2.4. The effect of Collaborative Awareness as a Mediator

Social capital is required to build for making supply chain relations for long-term basis. This characterizes social competency and path dependence. According to Bassellier and Benbasat [35], business relations or partnerships are influenced through organizational knowledge as compared with the knowledge of management. A knowledge base is created by the managers along with social capital, who are aware of their responsibilities in supply chain through organizational awareness. A firm is motivated and supported through the development of social capital and experience of knowledge for sharing information and resources with the partners. The level of commitment and trust influences the impact on strategic partnership development by organizational awareness. Alternatively, the level of commitment and trust in the conception of buyer is stronger when professionals in the supply chain are involved in improvement programs for strengthening the relations. Further, a level of commitment and trust is required among the partners for creating influence on strategic partnerships. The following relation has been hypothesized in this research:

H5a: Collaborative Awareness act as a mediator in the relation of Investment in Strategic Awareness and Organizational Awareness

One of the key resources is supply chain competence, which improves the performance and capabilities of a firm. According to Hafeez et al. (2018), capabilities of suppliers such as quality, innovation, creativity can improve the strategic relation in various industries. The inter-firm relations become complicated from social perspective because of resources, capabilities and knowledge acquisition from supply base. Not every supplier can develop partnership, nor it is suitable.

H5b: Collaborative Awareness of a firm act as a mediator in the relation of Investment in Strategic Partnership and Supply Network Competency

3. Methodology

The study is based on examining correlation among variables and is descriptive in nature. The descriptive nature of the study is attributed to the ratings of subject matter and profile of exporters. However, the correctional nature is because of the relation between international marketing program and performance of exports. Hypothetico-deductive method is the research designed selected for the research. Seven steps are involved in hypothetico-deductive method, which involves identification of a broad problem, defining the problem, development of hypotheses, determination of estimates, collection of information, analysis of information and its interpretation to make conclusion. The important aspect of the study is deductive approach. A general theoretical framework is implemented in the research. Use of previous researches is made in identifying the

relations among the variables and theoretical aspects. A quantitative research survey method has been used in the study. In this method, the objectives of the research are set. The research is designed through use of reliable research instrument. The survey is conducted, and data is collected. The collected data is analyzed in the light of theoretical framework and findings are reported.
The research is made at a specific time, as time is a constraint in the academic researchers. Therefore, the study was cross-sectional. For gathering information or data, the use of questionnaire survey was made and conducted through emails. The formulated hypotheses were tested against the employed questionnaire survey. To cover a large geographical region, the method of survey was adopted as it involves low cost and is time efficient. The method of information collection was based on natural environmental setting. A natural environment is considered to be the one in which the events happen in a natural way rather than accidental. The responses or reactions of the respondents are not controlled in any way. The purpose behind survey is to make the results of study generalized. In this way, the questions of the research study are addressed. The use of cluster sampling was made in the study for collection of samples. In cluster sampling, the sample units are selected randomly from small cluster of popular. The approach given by Gay and Diehl [36] was adopted in the research. The Five-technique research is used to estimate the size of sample in this research. The first step in the study is to estimate the size of total population from which the sample will be drawn. The table presented by Krejcie and Morgan [37] is used for the estimation of population, which were 310 in number (Nobanee, 2018). SEM approach is considered the most common method of research adopted in researches of social sciences. This approach has a significance of estimating multiple equations at a time [38]. Several researchers have pressurized on AMOS that is a co-variance technique, but PLS-SEM is considered a suitable alternative to CB-SEM method due to several distinct abilities in estimation. The measurement of the variables namely supplier network competency, organizational awareness , investment in strategic partnership and organizational performance are taken from the prior studies of [39] and Barnes and Liao [8].

4. Results

Choice of PLS-SEM has been made based on the several reasons. Different reasons for its choice have been given by the researchers, which are assessed [40]. The PLS method is effective in use, when the explanation about the constructs' prediction is to be made through structural modeling [38]. This research study has adopted PLS-SEM method for its flexibility for sample size and estimating multiple structural modeling. Two constructs, formative and reflective are involved in a model. The purpose of the study is to show prediction among the constructs.

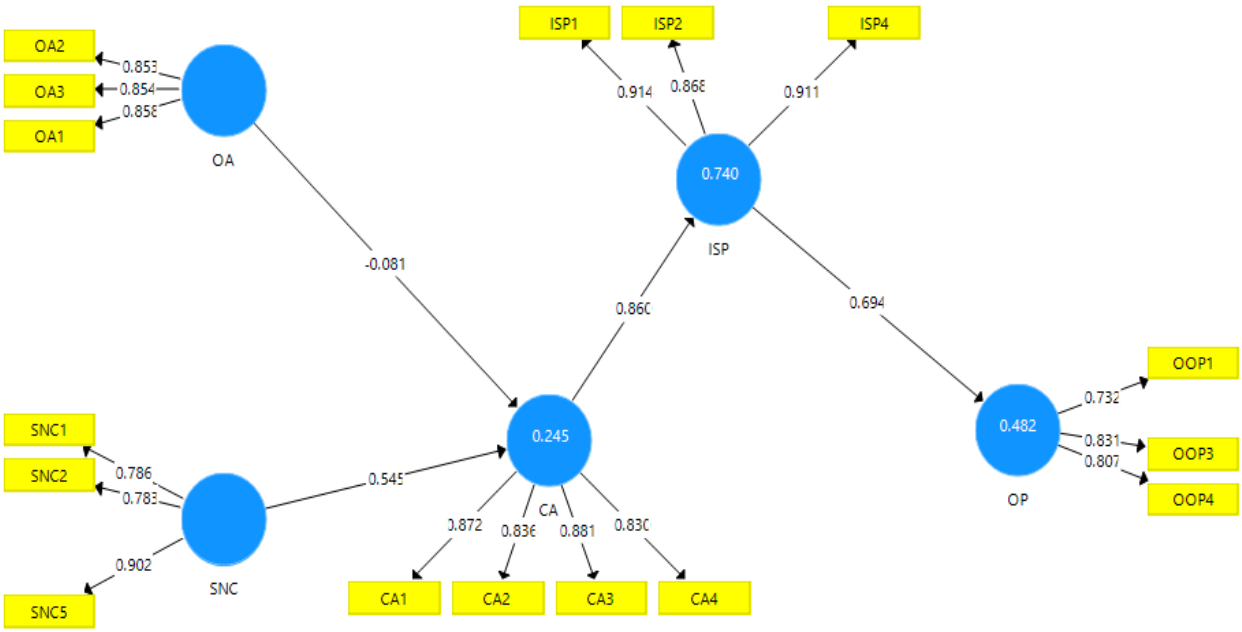

Figure 1. Measurement Model

The reason for choosing PLS method has been given by Hair Jr, et al. [38]. Two models, the measurement, and structural model are involved in SEM-PLS approach. Initially, the outer model,

which is the measurement model, is estimated in PLS-SEM method. The measurement component is involved in the outer model. It is determined by the outer model that item-loading indicators determine are associated with the related constructs.

Table 1. Outer loadings

	CA	ISP	OA	OP	SNC
CA1	0.872				
CA2	0.836				
CA3	0.881				
CA4	0.830				
ISP1		0.914			
ISP2		0.868			
ISP4		0.911			
OA2			0.853		
OA3			0.854		
OOP1				0.732	
OOP3				0.831	
OOP4				0.807	
SNC1					0.786
SNC2					0.783
SNC5					0.902
OA1			0.858		

The constructs measure with the survey items as the design was made to measure is ensured through the outer model analysis. The validity and reliability is ensured. In PLS-SEM approach, there are two criteria for outer model evaluation i.e. reliability and validity [41, 42]. The results regarding the association between the constructs is based on the measures of reliability and validity. The individual item reliabilities are assessed for the outer model through composite reliability (CR). The relation between the individual constructs is measured through AVE (average variance extracted). Fornell-Lacker criterion and outer loadings indicators are used in discriminant validity. The relation between the observed and unobserved variables is reflected through the measurement model. All the items in the model are exposed to changes during the estimation of the measurement model.

Table 2. Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CA	0.877	0.882	0.916	0.731
ISP	0.880	0.883	0.926	0.806
OA	0.816	0.816	0.891	0.731
OP	0.700	0.698	0.833	0.626
SNC	0.787	0.959	0.865	0.681

When a strong association exists between the variables, they are combined for developing a construct. The way in which the constructs are represented by the observed variables is confirmed through the validity of outer model. CFA (Confirmatory Factor Analysis) is used for estimating first and second order constructs. Each element is estimated separately through structural, formative, and reflective modeling. The criterion set by Fornell and Larcker [43] of discriminant validity is used in research studies by research studies. The variables in the model are activated through discriminant validity. This has been used as a standard for the estimation of discriminant validity. The reliability value is expected to be equal to 0.70 or higher than this value. The similar

values are attained for outer and cross-loadings. The existence of association between the constructs is determined through cross-loadings. The discriminant validity has been analyzed for the constructs and variables in this research, which is depicted in table 3

Table 3. Discriminant Validity

	CA	ISP	OA	OP	SNC
CA	0.855				
ISP	0.860	0.898			
OA	0.285	0.339	0.855		
OP	0.677	0.694	0.388	0.791	
SNC	0.491	0.529	0.671	0.403	0.825

The relation among the variables is estimated after assessing the reliability and validity. Simultaneous equations can be estimated for all the developed variables through SEM-PLS, which cannot be done by other techniques. The direct as well as indirect impact of the variables is analyzed through the approach for structural model.

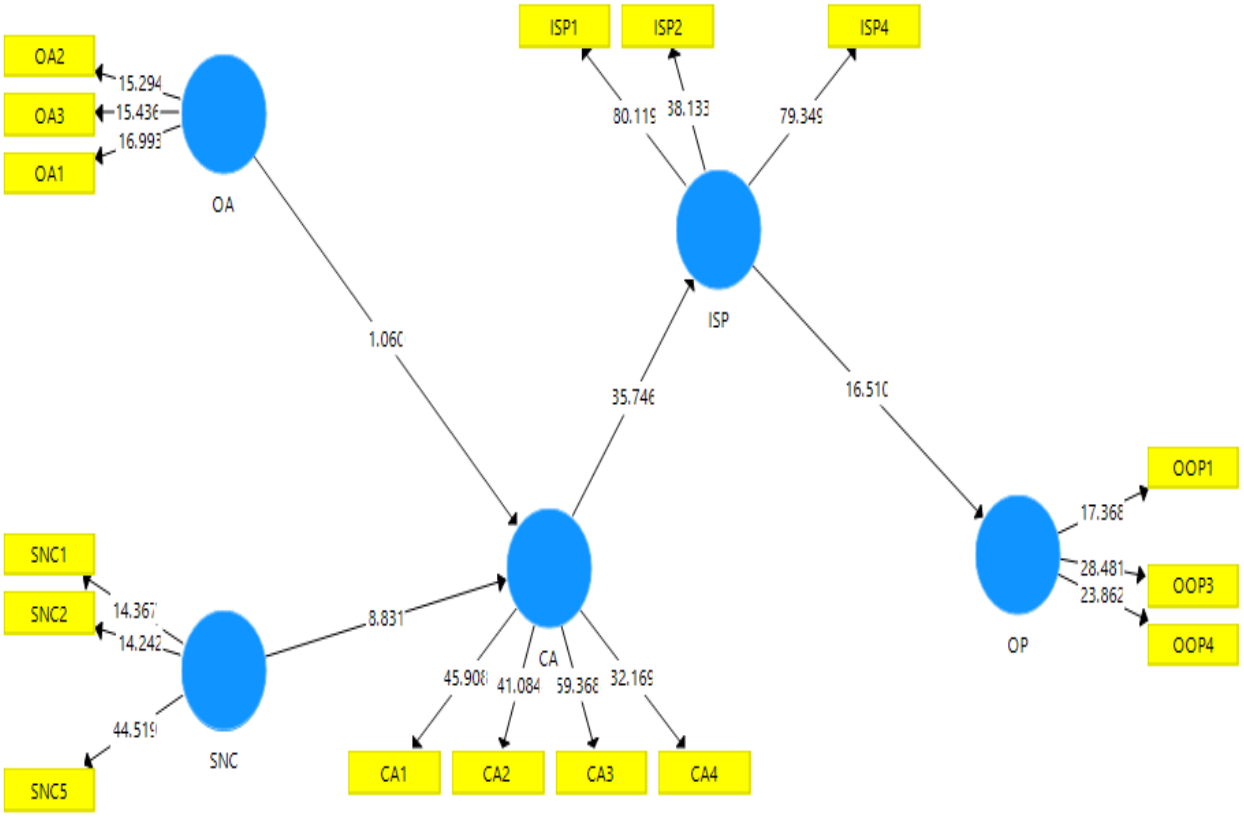

Figure 2. Structural Model

For estimating the indirect impact, the role of moderator is incorporated in the estimation. The method of bootstrap is involved in the research based on 1000 observation. The significance level of p-value is less than 0.05. The p-value is significant for all the hypotheses except H_2, as p is less than 005. Except the one hypothesis which was predicting the relationship between OA and CA all hypothesis are accepted significantly.

Table 4. Direct relationship

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
CA -> ISP	0.860	0.860	0.024	35.746	**0.000**
ISP -> OP	0.694	0.694	0.042	16.510	**0.000**
OA -> CA	0.081	-0.076	0.077	1.060	**0.289**
SNC -> CA	0.545	0.545	0.062	8.831	**0.000**

This leads to the hypotheses accepted. The impact of moderation created by customer response of the relation of external performance of SC and agile SC has been shown in Table 4. The results of moderation show that the p-value and t-value is significant for the second hypotheses, as p-value is less than 0.05 and t-value is greater than 1.96.

Table 5. Indirect results (Mediation)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
OA -> CA -> ISP	-0.070	-0.065	0.066	1.065	**0.287**
SNC -> CA -> ISP	0.469	0.469	0.057	8.229	**0.000**

The power of prediction of the independent variables is revealed through R2, which is the coefficient of determination. When the value of R2 is closer to 1, it is regarded as strong. When the value is average, the predictive power is also average or moderate. The value closer to 0 reflects weak predictive power of endogenous variables. Therefore, it lies in the range of 0-1. In this study, the value of coefficient of determination are 0.245, 0.740, and 0.482, which means that the endogenous variable explains 24.5 , 74 percent and 48.2 percent of variation in dependent variable

Table 6. R-Square.

	R Square
CA	0.245
ISP	0.740
OP	0.482

5. Conclusion and Discussion

In this research, the influence of competencies at individual and organizational level has been identified on the practices and performance of supply chain management. Very few studies were conducted on this aspect in literature. In previous studies, the importance of competencies for achieving competitive advantage was studied at the organization and individual level. Moreover, collaborative awareness is positively influenced by competency of supply network at organizational level. There is a positive and significant association between investment and collaborative awareness, which supports that inter-organizational competencies are crucial. Another source of competitive advantage highlighted in this research is human capital [44].

Organizations work at improving the skills and competencies of their employees for achieving competitive advantage (Setamanit, 2018). There is need for more investigation on identifying the role of human resource in supporting the development of relations in supply chain. The model developed in this research is in line with the previous study, which found that competitive advantage could be attained by individual competency in supply chain relations. The efforts of an organization for collaboration are based on the knowledge, skills; competency of its human resource or employees in sustaining competitive advantage. Organization awareness was taken as individual competency measurement, which is based on the understanding of managers in supply chain about the functions of business, resolving issues through collective approach and collaboration. A crucial role is played by human resource in creating value through improving individual competencies and sharing of knowledge in the organization with reference to supply chain and operations management. There is need for shifting inter-organizational association from individual to collective level as claimed by researchers of supply chain [45]. The concept of competency has been expanded by incorporating the concept of competencies within organization, which is one of the important contributions of this

research. In promoting inter-organizational competencies, sharing of information, collaboration, problem solving is considered important in supply chain relations. Further, the relation is built on trust, when partners are involved in decision-making and formulation of strategic goals. This results in the enhanced efficiency, which leads to fulfillment of customer requirements in product development. It has been shown by this study in line with the existing literature related to strategic partnership, that value of a firm could be created by developing strategic partnerships. The cross-functional ability and interaction within the organization can be improved by working on strategic partnerships. This results in the growth of performance by improving the performance of suppliers through coordination. Firms are able to improve its processes for acting as per the changes in the market by coordinating with other independent firms including retailers, manufacturers, suppliers of raw material, etc. The operation performance can be affected because of lack or poor coordination among the members of supply chain. There are negative aspects of lack or poor coordination, which include delay in delivery of products, high cost of transportation, inventory cost, risk of damage and loss and decline in customer satisfaction.

Important insights are contributed by this research by taking the collaborative awareness as a mediator in the relation of competency, organizational awareness, and strategic relations among partners. It is indicated that the competencies at individual and organizational level are based on the competencies of inter-organization, which influence the strategic partnership. Collaborative awareness totally defines organizational awareness while supply in network competencies is partially based on it. There is social and teamwork interaction, communication in strategic partnerships, which make it highly complex. This results in clear knowledge development among the partners. Therefore, the strategic partnerships are developed at individual and organizational level when there is commitment and level of trust among the partners.

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