IMPACT STRATEGIC SOURCING, SUPPLIER INNOVATIVENESS, AND INFORMATION SHARING ON SUPPLY CHAIN AGILITY

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Abstract

Purpose: The prime objective of the current study is to explore the nexus between supplier innovativeness, information sharing, strategic sourcing and supply chain agility. The study has tried to investigate the direct impact of supplier innovativeness, information sharing, and strategic sourcing on supply chain agility.

Methodology: In addition to that the current study is also interested in examining the mediating role of information sharing and strategic sourcing in the relationship between supplier innovativeness and supply chain agility. The previous research studies have analysed the influence of supplier innovativeness on the performance of the firm.

Results: It has been revealed through some research studies that there is a positive association among the performance of manufacturers and supplier innovativeness as well as relationship performance. Thus the current study is among the pioneering studies on this issue. Employing the survey-based methodology, the SEM-PLS technique is used to test the hypothesized relationships. So, the current study has used SEM-PLS as a statistical tool to answer the research questions raised in this study and research objectives envisaged in the current study. The findings of the study have provided support to the theoretical foundation and proposed hypothesis of the current study. Current study will be helpful for policymakers and practitioners in understanding the issues related to supply chain risk, supply chain integration and supply chain performance. In the author's knowledge this is among very few pioneering studies on this issue.

Key words: supplier innovativeness, agility, strategic sourcing, information sharing, supply chain

INTRODUCTION

For sustaining competitive advantage and achieving success in the industry, businesses need to make innovations in products and effectively manage supply chains. It is expected by the organizations that their partners in supply chain work on innovation strategies for ripe the benefits. Innovation is also tried to achieve externally by the organizations in their supply chain. This helps in improving the core skills and competencies of the firm through Research and Development (Addo-Tenkorang et al., 2017; Elad et al., 2017; Eze, 2018). In managing effective supply chain, a significant role is played by suppliers in fostering innovation in business practices and product development. The development of new products such as design, characteristics and attributes is brought through innovativeness of suppliers (Azadegan and Dooley, 2010).

Suppliers are encouraged to work on innovative policies and procedures by buyer firms. However, several challenges can be experienced by supplier innovativeness including the power of customers in supply chain, differences of geographical region, cultural barriers, costs of maintaining relationships and increased risks related to businesses (Santos-Vijande et al., 2012). Issues may arise because of the conflict among the organizations for being responsible about the innovation drive in supply chain. The risk of losing effective knowledge and control can be generated because of forcing innovation to the companies, which outsource through buyer companies (Wagner and Bode, 2014). The disadvantages of implementing innovation in supply chain are recognized by the suppliers that are higher than the benefits desired to be achieved by the buyers and suppliers.

The ability of suppliers to structure new processes and develop new products is referred to as the supplier innovativeness (Azadegan and Dooley, 2010). Several benefits can be attained through supplier innovativeness for the manufacturers. The performance of manufacturers is positively affected by the innovativeness of supplier innovativeness such as cost saving, improved product quality, time flexibility and development of new products (Atç et al., 2015; Feleke, 2018; Feleke, 2018).

Manufacturers are able to improve the technology in product development through supplier innovation (Gianiodis et al., 2010). A significant role in the development of product using improved technology is played by the ability of supplier innovation (Saebi and Foss, 2015).

The processing of information and its fit with the supply chain is improved through supplier innovativeness (Dabić et al., 2019). The environmental changes can be dealt with appropriately when suppliers are innovative in the manufacturing line.

Different benefits are offered by the supplier innovativeness to the manufacturers. This research study focuses on analyzing the influence of supplier innovativeness on the collaborative activities of supply chain through examination of the key benefits related to supplier innovativeness (Kim and Chai, 2017). The collaborative activities include procurement...
in supply chain; agility of supply chain, strategies related to sourcing, etc. The innovativeness of supplier has been extended across the entire system of supply chain. Suppliers have adopted innovativeness and so the manufacturers and buyers. However, the degree of employing innovativeness by them varies.

The diffusion of innovation theory is applied by this research study to analyze the influence of innovativeness of supplier in the supply chain. The process of innovation is spread all over and everyone is ready to take its benefits (Gianiodis et al., 2010). The researcher has categorized innovators into different forms. These involve early adopters, early majority, late majority and laggards. The categorization is based on the speed of adopting innovation. The diffusion model of information system has been applied by this research study for studying the influence of supplier innovativeness on supply chain. The factors involved are supply chain agility, sharing of information and sourcing strategically.

The previous research studies have analyzed the influence of supplier innovativeness on the performance of firm. It has been revealed through some research studies that there is positive association among the performance of manufacturers and supplier innovativeness as well as relationship performance (Trantopoulos et al., 2017). The research gap has been tried to be filled by analyzing the supplier innovativeness role in the entire supply chain. Different aspects such as agility of supply chain, relation between buyer and supplier, collaboration and cooperation in the supply chain are included in the study. The present study explores the association of supply chain practices, which are based on the model of diffusion to identify the antecedents of the better supply chain agility. The relation between the practices of supply chain based on the model of diffusion has been examined through this research study. This has been done to explore the antecedents in the form of improved supply chain agility with reference to the strategic sourcing and information sharing (Inemek and Matthyssens, 2013). The research also focuses on the way in which global sourcing creates an impact on strategic sourcing and sharing of information for making improvements in the supply chain agility.

Contribution will be made through this research in terms of industrial contribution and scholarship. The research gap is filled through this research to the literature on supply chain management and operations. For this, research model has been constructed for finding the influence of supplier innovativeness on the practices of supply chain that are based on diffusion of innovation theory (Saebi and Foss, 2015). The research framework is applied to global sourcing through examination of the mediating impact on the association among information sharing, supply chain agility, innovativeness of supplier and strategic sourcing. Managers are given the information about the influence of supplier innovativeness to be positive across the supply chain. Suppliers need to be supported by the manufacturers for implementing innovation strategies to make improvements in supply chain agility and collaboration across it.

RESEARCH MODEL AND HYPOTHESES

In the development and improvement of supply chain through innovation, the involvement of supplier is crucial. A critical role is played by suppliers because of their skills, capabilities and knowledge related to the products and the interest on the core competencies of supply chain members (Liao et al., 2010). For the purpose of innovation, there is a need for the suppliers to use their skills and capabilities. The relation with the customer needs to be considered in developing products and making innovations. The innovative skills of supplier can be improved through the cooperative relations and joint product development (Inemek and Matthyssens, 2013). In research academics and industry, the role of suppliers in supply chain innovation has gained much recognition. Research gap exists in the way that the influence of supply chain has not been explored related to supply chain management. Moreover, the innovativeness of supplier is still limited in the existing research studies. The innovativeness of supplier and its role, which is involved in the implementation of supply chain agility, has been studied based on the theory of diffusion of innovation. The concept of supplier innovativeness was added to the supply chain agility and its implementation through strategic sourcing and sharing of information. There are several benefits of supplier innovativeness, which are available in literature from different aspects (Hafeez et al., 2018).

The manufacturers directly receive the benefits of innovativeness of suppliers in the supply chain. Supplier innovativeness improves their structure of cost, product development, quality, time of delivery and flexibility. The performance of manufacturers can be enhanced through different learning styles involved in the supplier innovativeness (Sørensen and Mattsson, 2016). The operational performance of manufacturers is positively influenced through the operational innovativeness of suppliers. Opportunities are generated through supplier innovativeness, which improve the responsiveness of a firm across the supply chain. In this way, a firm is able to meet the requirements of customers and make them satisfied. The performance of newly developed products can be improved through innovation of suppliers. Moreover, the relationship performance is measured as a closeness of interactions across the supply chain (Inemek and Matthyssens, 2013).

In the available literature on supply chain and operations management, it has been confirmed that there is positive influence of supplier innovativeness on the performance of a firm. The focal firms are able to innovate in their supply chains because of the supplier innovativeness. The efforts of suppliers in making innovations get involved in the activities of firms. There is negative association between the end user satisfaction of suppliers and supplier innovativeness but there is positive impact of supplier innovativeness on the end user satisfaction through innovativeness of focal firms. Product innovation is also influenced through supplier innovativeness. The focal firms get motivated through innovativeness of supply chain partners. The innovative skills of the focal firms are improved through the development of strategic relationships with the supply chain partners resulting in innovation strategies related to the products (Kibbeling et al., 2013).
Through diffusion in the supply chain, the supplier innovativeness has a positive impact on the supply chain considering the relation between buyer and supplier. Improvements are made in the focal firm in the form of innovative products. Other parties are involved when there is openess to innovation in supplier innovativeness. For instance, the manufacturers may get involved in generating new ideas, collaborating and cooperating in different activities. Moreover, issues can be resolved in the relationship of buyer and supplier through innovation of suppliers (Aune and Gressetvold, 2011).

The antecedents to supplier innovativeness include the collaboration of buyers and suppliers in product development and cooperative ties in the supply chain networks (Inemek and MatthysSENS, 2013). Innovation is fostered through supplier innovativeness along with the opportunities for manufacturers and suppliers having relations in the supply chain. A significant role is played by supplier innovativeness in improving the relation between suppliers and buyers. The supply chain network becomes open for changes in the processes and product development by innovation through diffusion in the supply chain. Through exchange of information, communication is supported through supplier innovativeness for making changes in the firm’s products or processes through innovation in supply chain. There is positive association of innovativeness orientation of suppliers with exchange of information related to product technology, team development for solving problems, effectiveness communication and interaction among the suppliers and buyers (Hafeez et al., 2018). The exchange of information in the supply chain is facilitated through dynamism in the supply chain including development of new products, innovation in the business processes and services. It has been hypothesized that there is a positive association between the information sharing and supplier innovativeness.

H1: Supplier innovativeness has a significant impact on information sharing in supply chain.

The decision of firms to source input or related resources is based on the innovation of products and manufacturing processes. The strategies for finding input sources consider the changes in the products and methods of production. There can be better combination of products and innovation in processes because of high level of innovation in the processes and products. According to (Schiele et al., 2012), the competition is increased, and supplier innovativeness improves the relation with the customers resulting in better management of relationship among the suppliers and buyers. The link between the suppliers and buyers in the form of relationship is strengthened through innovativeness of supplier. It has a considerable role in making decisions regarding sourcing by the firms.

Suppliers having innovative approaches welcome new ideas and are ready to do experiments for the customers (Kibbeling et al., 2013). The positive influence created by the supply chain innovativeness on the innovative strategies of product is strengthened by the strategic relationships among the partners in the supply chain. The practices related to the purchasing by the supply chain members is supported through innovation in the form of buyer-supplier relationships. Through use of innovation strategies in the business activities, firms can achieve cost savings and better management of resources. For instance, vendor-managed inventory results in savings or cost cutting delivery of products in the supply chain (Liao et al., 2017). The importance of implementing strategies related to sourcing from the supply chain suppliers is recognized by the buyer firms while making technological innovation in product development. The strategy of sourcing is affected by the innovativeness of supplier, which facilitates the manufacturers to develop instructions related to sourcing and managing relationships in supply chain (Lii and Kuo, 2016).

Based on effective supply chain relationships, strategic sourcing can be implemented because of supplier innovativeness. It is believed that supplier innovativeness has a positive impact on the firm’s strategic sourcing. The following research hypothesis has been developed:

H2: There is a significant association between Supplier Innovativeness and Strategic Sourcing in the Supply Chain.

For creating supplier innovation, there is a need for learning relationship, collaboration of different systems, market knowledge and skills. Suppliers become able to develop good relations with the buyers and customers through supplier innovation (Nair et al., 2015).

According to (Schiele, 2010), the relation of suppliers with the customers is fortified through supplier innovativeness. Moreover, it supports the suppliers in making improved plans with the customers through enhanced collaboration. Opportunities are highlighted through openness of suppliers towards innovation. Manufacturers and suppliers work together for the innovation of products and processes in the supply chain. A considerable role is played by supplier innovativeness in improving the responsiveness within the supply chain through establishment of relationships.

It can be said that innovativeness of supplier can develop collaborations and effective relationships in the supply chain. According to (FayezI et al., 2017) manufacturing agility is achieved through innovation and it leads to the improvement of agility capability. According to the study conducted by (FayezI et al., 2017), for achieving the operational agility in the changing market circumstances, one of the exploratory factors is innovation. Through innovation, the focus of agility focuses is responding to the uncertainties of the market. According to the research conducted by (Manders et al., 2016), innovation is factor leading to competitive advantage, which can offer valuable agility characteristics to the firm.

Manufacturers can experience a reduction in their response time to the uncertain market conditions through supplier innovativeness. A positive association exists among the supply chain agility and innovativeness of supplier. The following research hypothesis has been developed based on the above findings.
H3: Supply Chain Agility is in significant relationship with Supplier Innovativeness

The benefits of sharing information across the supply chain have been discussed in the literature. The association among the suppliers and buyers is developed with the diffusion of supplier innovativeness across the supply chain and sharing of information. There is a positive relation between the product quality and supplier development through the sharing of information within and across the organization in the supply chain (Chen, 2018). For developing suitable communication patterns, sharing of information is considered a basic pillar among the manufacturers and suppliers. Operational performance is improved along with the collaboration of supply chain by encouraging the sharing of information. Practices of supply chain are positively influenced by information sharing. These practices include delivery practices, planning process in the supply chain and just in time production methods (Prajogo and Olhager, 2012). Integration is supported through information sharing in the area of logistics for establishing a consistent flow of resources across the supply chain (Basheet et al., 2019). Integration and collaboration across the supply chain is strengthened through information sharing. Moreover, these are the positive antecedents of improved agility of the supply chain (Droge et al., 2012). Flexibility is promoted because of the increase in supply chain integration and information sharing. Moreover, the capability responds market fluctuations increases flexibility. When sharing of information is done frequently, this helps in making decision quickly and responding to the market changes. The opportunity to make suitable decisions regarding supply chain is offered through information sharing. Impact Network and Directed Ayclic Supply Network can be used for improving agility (Braunscheidel and Suresh, 2009). The following research hypothesis has been proposed based on the above literature.

H4: Supply Chain Agility is in significant relationship with Information Sharing

In order to develop a relation with the organizational strategies, several studies have analyzed the sourcing practices in managing supply chain. The role of strategic sourcing in fostering the agility of supply chain has been identified through this research study (Dhaigude and Kapoor, 2017). Supply chain agility can be resulted by establishing right type of collaborative relationships. (Liao et al., 2010) stated that the electronic manufacturing industry could experience agility through leveraging supply chain partners. Through the implementation of strategic sourcing by the manufacturers, the strategy of purchasing can be aligned with the strategy of organization. In this way, a close relation can be developed with the suppliers. Through logistics integration, the management of strategic relationship between the suppliers and buyers is positively linked with the supplier and buyer agility (Paulraj and Chen, 2007).

The supply chain agility of a firm is directly influenced by the strategic sourcing in a positive way. The researchers have revealed that the supply chain agility is effective through the strategic flexibility in a positive manner. The research study involved five dimensions of strategic sourcing such as internal integration, information sharing, and strategic purchasing and supplier development. Manufacturers are motivated to go with the strategy of suppliers through strategic sourcing, which results in the establishment of collaboration for changes in the business environment. According to (Prajogo and Olhager, 2012) the supply chain agility of a firm is enhanced through employing evaluation practices by the suppliers, increased level of trust among the members of supply chain, strategic partners and increased flexibility of sourcing. The following research hypothesis has been formulated:

H5: The Supply Chain Agility is in significant relationship with Strategic Sourcing in Supply Chain.

In research academics, supply chain management across the globe has become an important issue. According to (Li et al., 2019) there are three important characteristics of global supply chain. Global supply chain management requires creating value with new geographical regions. It is considerable to study the economy of China where supply chain regionalization and markets are affected through economic changes. Supply chain managers have to consider the factor of location, which is important in developing strategies for supply chain. Several factors are considered when supply chain is transformed to global supply chain management. These factors include exchange rate, social, political, economic and environmental factors as well as the regional cultures. It is critical to make decision regarding the location. Location can be a risk factor if not taken into account considerably in managing global supply chain (Manders et al., 2016).

For developing and maintaining good relationships, global sourcing is a crucial factor to improve responsiveness and collaborations. Previous research studies have tried to answer these issues related to the location of suppliers. It is a strong factor for evaluating the skills and capabilities of suppliers in supply chain performance. Design problems need to be resolved by supply chain managers such as location for internal manufacturing processes. In order to evaluate the suppliers across the globe, geographical location is a crucial factor (Chan and Kumar, 2007).

Different approaches are required to be implemented in managing global supply chain because of the different in business environments, geography, cultural and social attributes. A similar approach cannot work for every region in managing global supply chain.

A clear difference exists among different regions, which can influence the supplier innovativeness. The supplier may have to respond in a different way. In managing global supply chain, information sharing, supply chain agility and strategic sourcing are influenced by supplier innovativeness. The current research study has analyzed the process of diffusing innovation to be distinct for association among information sharing, supply chain agility, supplier innovativeness and strategic sourcing based on the locations of supplier (Gianiodis et al., 2010).
Lead times are extended while managing global supply chains. Global suppliers have to source more strategically as compared with the domestic suppliers, which increases the lead-time. It has been emphasized by (Trantopoulos et al., 2017) that firms working on global sourcing need to consider the domestic and global differences in managing supplier relationships as well as lead-time. Moreover, there is a need to consider the cost of sourcing, uncertainty of demand, complexity of products and level of customer service.

**Figure 1: Conceptual Framework**

The logistics costs are determined by one of the supplier aspects, which is supplier location. It is a value-adding factor to the supply chain (Dhaigude and Kapoor, 2017). Different approaches are required in managing global supply chain for well-functioning. A single approach does not work for domestic as well as global supply chain management. Different locations require varied approaches (Dhaigude and Kapoor, 2017). A moderating impact is created on the association between the supply chain improvement systems, performance improvement and strategies of suppliers through global sourcing configurations (Purvis et al., 2014).

Supply chain members should be motivated by the issues of global sourcing to develop effective relationships and maintain them in purchasing patterns. This would result in increased supply chain collaborations, strategic sourcing and better response across the supply chain. The influence of supplier innovativeness, sharing of information and strategic sourcing has a varied impact on supply chain agility while managing global supply chain (Aune and Gressetvold, 2011). This is because of the fact that different strategies are implemented in global supply chain management as compared with the domestic supply chain by the managers. Differences can be created on the influence of association between supplier innovativeness, supply chain agility, strategic sourcing and information sharing by the global sourcing characteristics. Therefore, the following research hypotheses have been developed:

H6: Information sharing mediates the relationship between supplier innovativeness and supply chain agility

H7: Strategic sourcing mediates the relationship between supplier innovativeness and supply chain agility

**METHODOLOGY**

To answer the research questions, the survey method has been used. The research method employed in this research study is based on Primary Approach. Data collection has been done through the use of a questionnaire survey. For analyzing the structural relation among the latent variables through structural modeling, structural equation model has been used. The direct and indirect relation among the variables has been assessed through structural equation model. Sample size has been suitably determined through SEM approach. Almost 310 samples have been chosen previously considering the standard table for estimating sample size. The sample size has been increased to 500 in order to resolve the issue of biasness. The rate of response came out to be 70.05 percent and the total filled questionnaires were 355. To analyze the research objectiveness, AMOS has been used in this study. The software used for answering the research objectives was SPSS v19. The same software was used for processing and modeling of data. The coding of questionnaire was done in SPSS and statistical analysis was conducted through AMOS v21. The researcher conceptualizes the model in the first stage of SEM analysis. The relationships among the variables are hypothesized through study of research studies of different scholars. In this way, the relation among the observed and latent variables is explored. Based on the literature findings, theoretical modeling is done. The form of measured path analysis mode assumes the operationalized theories in SEM applications. The casual and structural relationship is hypothesized that is measured directly (Azadegan, 2011).

**RESULTS**

Structural equation modeling is a latest approach, which is being used in the business research studies for multivariate analysis. The approach enables the research to examine the causal indirect association among the variables. The variables
are simultaneously determined. Multiple regression equations are also used in the analysis. SEM and multiple regressions differ because of the fact that the association among the variables is determined independently in multiple regressions, while SEM measures simultaneously.

The extent to which the estimation of structural model is supported by the sample data is done through SEM data analysis. The co-variance structure among the observed variable is examined specifically though SEM. Inferences about the latent variables is defined through observed variables. More constructs are required to explain the latent variables. Maximum likelihood method is extensively used for the evaluation of data analysis. Extended analysis is done through SEM.

Using SPSS, the data reliability has been checked and results indicate that all the measures are reliable. The coefficient value to be 0.60 is considered poor, 0.70 as acceptable and 0.80 as good. Alpha values residing above 0.50 percent are considered to be sufficient and those less than 0.50 are considered to be not acceptable considering the construct reliability. The range, which is suitable for reliability is 0.50-0.6. The current research study has set the standard level of Cronbach Alpha value at 0.60. All the constructs came out to be reliable

Table 1: Reliability

<table>
<thead>
<tr>
<th></th>
<th>CR</th>
<th>AVE</th>
<th>Cronbach Alpha</th>
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<tbody>
<tr>
<td>SI</td>
<td>0.975</td>
<td>0.872</td>
<td>0.885</td>
</tr>
<tr>
<td>SCA</td>
<td>0.702</td>
<td>0.737</td>
<td>0.924</td>
</tr>
<tr>
<td>IS</td>
<td>0.960</td>
<td>0.871</td>
<td>0.893</td>
</tr>
<tr>
<td>SS</td>
<td>0.802</td>
<td>0.832</td>
<td>0.916</td>
</tr>
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</table>

The model has a good fit of the data as indicated by the values of model fit. The values came out to be CFI=0.94, RMSEA=0.05, PNFT=-.933, and TLI=0.938All the above values lie within the set level. Using SEM-AMOS, the inner model was evaluated. The factor loadings, composite reliability and discriminant validity are estimated as well.

The measures of evaluation have been assessed using Confirmatory Factor analysis.

This approach is used to check the consistency of the measurement constructs with the suggested constructs. This research indicates the presence of discriminant validity. The extent to which the constructs measures are distinct is measured through discriminant validity. This type of validity has been obtained for the comparison of item loadings and cross loadings and presented in Table 1.

Table 2: Discriminant Validity

<table>
<thead>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>SI</td>
<td>0.709</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCA</td>
<td>0.680</td>
<td>0.727</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IS</td>
<td>0.657</td>
<td>0.676</td>
<td>0.712</td>
<td></td>
</tr>
<tr>
<td>SS</td>
<td>0.632</td>
<td>0.654</td>
<td>0.682</td>
<td>0.832</td>
</tr>
</tbody>
</table>

In the next step, the structural equation model has been estimated with the use of path diagram. The direct as well as indirect association among the variables is determined through structural equation modeling. This research study has preferred structural equation modeling for testing of hypotheses.

The purpose of the research is to analyze the relation between the latent constructs identified in the study. Under the first order constructs, the structural model has been hypothesized.

For the determination of relation among the variables and testing of hypothesis, path coefficients have been used. The goodness of fit has been checked through R2 value after the assessment of structural equation model. For determining the association among the endogenous and exogenous variables, the measurement model has been converted to structural model. The table presents the results for direct hypotheses. All the direct hypotheses are accepted significantly.

Table 3: Direct Effect

<table>
<thead>
<tr>
<th></th>
<th>(β)</th>
<th>SD</th>
<th>T-value</th>
<th>P-Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>0.211</td>
<td>0.135</td>
<td>3.211</td>
<td>0.000</td>
</tr>
<tr>
<td>H2</td>
<td>0.357</td>
<td>0.152</td>
<td>3.678</td>
<td>0.000</td>
</tr>
<tr>
<td>H3</td>
<td>0.321</td>
<td>0.178</td>
<td>3.321</td>
<td>0.000</td>
</tr>
<tr>
<td>H4</td>
<td>0.342</td>
<td>0.165</td>
<td>3.234</td>
<td>0.000</td>
</tr>
<tr>
<td>H5</td>
<td>0.453</td>
<td>0.187</td>
<td>3.768</td>
<td>0.000</td>
</tr>
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</table>

The indirect effect of the current study are shown in table 4.
Table 4: Indirect Effect

<table>
<thead>
<tr>
<th></th>
<th>(β)</th>
<th>SD</th>
<th>T-value</th>
<th>P-Values</th>
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</thead>
<tbody>
<tr>
<td>H6</td>
<td>0.211</td>
<td>0.135</td>
<td>3.211</td>
<td>0.000</td>
</tr>
<tr>
<td>H7</td>
<td>0.357</td>
<td>0.152</td>
<td>3.678</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The predictor variables explain the R2 value of the endogenous variables in the study of multivariate data analysis. The magnitude of R2 value for the endogenous variables has been considered as an indicator of the predictive power of the mode. Moreover, the technique developed by (Basheer et al., 2019) was implemented to check the predictive validity of the model’s as a very reliable approach for reuse technique of the sample. According to (Droge et al., 2012; Gamba, 2017; Fengyang, 2018; Gencer, 2018) PLS has been used in this research as well as being a fit software. The variance explained by the independent variables in FP is 53.3 percent.

Table 5: Expected Variance

<table>
<thead>
<tr>
<th>SCA</th>
<th>R²</th>
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<tr>
<td></td>
<td>53.3%</td>
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</table>

CONCLUSION

The manufacturers directly receive the benefits of innovativeness of suppliers in the supply chain. Supplier innovativeness improves their structure of cost, product development, quality, time of delivery and flexibility. The performance of manufacturers can be enhanced through different learning styles involved in the supplier innovativeness. The operational performance of manufacturers is positively influenced through the operational innovativeness of suppliers. Opportunities are generated through supplier innovativeness, which improve the responsiveness of a firm across the supply chain. In this way, a firm is able to meet the requirements of customers and make them satisfy. The performance of newly developed products can be improved through innovation of suppliers. Moreover, the relationship performance is measured as a closeness of interactions across the supply chain.

The prime objective of the current study is to explore the nexus between supplier innovativeness, information sharing, strategic sourcing and supply chain agility. The study has tried to investigate the direct impact of supplier innovativeness, information sharing, and strategic sourcing on supply chain agility. In addition to that the current study is also interested in examining the mediating role of information sharing and strategic sourcing in the relationship between supplier innovativeness and supply chain agility.

The previous research studies have analysed the influence of supplier innovativeness on the performance of firm. It has been revealed through some research studies that there is positive association among the performance of manufacturers and supplier innovativeness as well as relationship performance. Thus the current study is among the pioneering studies on this issue. Employing the survey-based methodology, the SEM-PLS technique is used to test the hypothesized relationships. So, the current study has used SEM-PLS as a statistical tool to answer the research questions raised in this study and research objectives envisaged in the current study. The findings of the study have provided support to the theoretical foundation and proposed hypothesis of the current study.

Current study will be helpful for policymakers and practitioners in understanding the issues related to supply chain risk, supply chain integration and supply chain performance. In the author’s knowledge this is among very few pioneering studies on this issue. In the available literature on supply chain and operations management, it has been confirmed that there is positive influence of supplier innovativeness on the performance of a firm. The focal firms are able to innovate in their supply chains because of the supplier innovativeness.

The efforts of suppliers in making innovations get involved in the activities of firms. There is a negative association between the end user satisfaction of suppliers and supplier innovativeness but there is positive impact of supplier innovativeness on the end user satisfaction through innovativeness of focal firms Product innovation is also influenced through supplier innovativeness.

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