

# The Mediating Role of Information Flow and Factors for Supplier Selection

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**Abstract** – It is very difficult to select the right supplier from supply base for the global supply chain due to many challenges and problems especially for the developing countries such as Pakistan. In the present study primary data is collected via adopted questionnaire from cases of the total 170 cases from Kotri manufacturing companies of Sindh, Pakistan. For the analysis of gathered data many tests were applied such as reliability test, factor analysis and structural equation modelling in SPSS and AMOS software. Findings, revealed the partial mediation for both quality and delivery variables in the presence of mediating variable information flow. However, the quality confirmed the more important variable for the supplier selection in manufacturing companies of Kotri, Sindh, Pakistan due to higher beta value than delivery variable. In the past research scholars explored the direct relationship between quality and delivery for the supplier selection but, in the present mediating variable information flow is introduced in order to verify the strength of studied variables. Lastly, based our limited knowledge this would be the first study conducted on Kotri manufacturing companies of Sindh, Pakistan.

**Keywords** – Quality, Delivery, Supplier Selection, Information Flows

## 1. Introduction

In today's era and prompt worldwide environment, operative supply chain management carries excessive significance to get gain in a competition of business no matter what the scale. The aspects, which can obtain an operative supply chain management, are; providing the required substantial on time and providing the right quantity with the anticipated value on an achievable cost. Since, the supplier whose businesses indicate play an imperative role and are operational in the forthcoming of the business, it is necessary for the business to give precedence to a selection of supplier and go along an upright supplier selection policy [1]. To know the quantity of the required raw materials, semi-products, and other various materials and from whom they are acquired, supplier selection is taken place [2]. Those suppliers who carry potential far above the ground and can use a feasible amount of money to congregate the requirements of business repeatedly are found out by the use of supplier selection [3].

In general, this decision is about to what extent the supplier will meet the requirements that affect the performance of the supply chain, such as quality, quantity of product, cost, terms of delivery, and the standard of service that the company demands [4]. To determine whether the suppliers can easily work with the business, the supplier selection criteria are used. To manufacture the right product according to what the customers hope for and to convey these products to the customers within time, for long-lasting ceaseless production and to put off any barrier, supplier selection is extremely important (SMSE) [1]. In this research paper, the contribution among different variables like quality and delivery for the supplier selection of SMEs catering to the Manufacturing Industry which run in the city of Kotri are discussed.

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## 2. Literature Review

A study was conducted to check the impact of quality strategies of suppliers on the decisions taken regarding outsourcing. This was a quantitative study carried out through online surveys and interviews from the textile manufacturers and retail businesses in the US to test to what extent the global supply chain is affected by quality management practices. A total of 140 surveys were selected through the Qualtrics survey software out of 500 members who emailed. Also, 25 in-person and telephone interviews were put into practice; the interviews carried out shortly were to verify the outcomes of the survey analysis. The study proved that a quality management program particularly 'Lean and Six Sigma' can considerably boost the stages of the quality of the global suppliers towards the height of national suppliers. This continuation of Programs regarding Quality can hold back actions that are taken to restore by the US purchasers. Also, quality management can lend a hand to global suppliers to preserve their position in the global marketplace and recover supplier growth. To make a single product effectively, a great range of machines (technology) and manufacturing procedures are needed. It is recommended that a special type of quality management programs such as TQM, ISO, Lean, and Six Sigma within the framework of global supplier expansion should be taken into account for each manufacturing firm. Also, buyers should be involved who support the execution of organized quality proposals specifically on Lean and Six Sigma [5].

A research was conducted on a supplier selection life cycle approach integrating traditional and environmental criteria where the best worst method was used in which for evaluating the supplier selection a three-phase methodology was used. An explicit criterion was obtained to achieve the primary phase of the screening process from a case company by interviewing company specialists and those who are given the authority of making decisions. Accordingly, five dissimilar screening criteria were preferred on which the recognized suppliers were screened. 23 suppliers were selected out of 34 suppliers. Further, in the second phase, the Best Worst Method was used for the formation of the selection process. Here, the criteria were strong-minded based on what knowledge the experts of the case study have provided which was obtained from 6 interviews; 6 corporate personages contributed to telling about the most essential criterion for the company when running in a new market. A total of 50 criteria were obtained, based upon the involvedness together with the relevancy of the criterion considering fresh market conditions, 8 criteria were preferred. 7 suppliers were chosen who

provided the material with discretion. Then, for checking the importance of the material provided, the third phase of aggregation was used. The study suggested that Quality is the most important criterion, delivery as less significant and cost as the least significant. Also, the geographical position carried some significance [6].

Another study was conducted on how the performance of supply chain management is determined with the help of supplier selection and value internalization from a point of view of self-determination theory. 18 thoroughly semi-structured interviews were carried out. To ensure the validity of the data, primary data was mapped with secondary data, and analysis of the interviews was assessed by the research panel. Axial coding was done to link the grouping of green supplier selection and supplier motivation and the notions of the study. It is suggested that importance should be given to inspire supply chain co-workers for learning about green supply chain management practices. Also, these associates should be familiar with the key external factors such as conformity and regulation, broad industry, and the hopes from the other supply chain co-workers so that they get to know the consequence of green supply chain management. Further, integration of quality management systems should also be brought into concern as this offers substantial ecological benefits, therefore leading to the green supply chain management performance [7].

Examining the factors which affect supplier selection and monitoring in the automotive industry in Thailand is also implemented. This study is an integration of quantitative and qualitative approaches. The criteria were then recognized by the help of the Delphi method using the three-domain experts. Both open-ended and preliminary Questionnaires were used to assemble information and classify the criteria for supplier selection and monitoring. The domain experts were then told to modify the main criteria based on the information collected which were then put forward to the 14 experts from 8 different automobile manufacturers in Thailand until it reached to a point of agreement. The study proved that Quality has the uppermost priority amid the criterion, and out of its dimensions, 'Quality level' is said to have a significant impact on supplier selection and monitoring, and it has to be tested for different elements before going for any suitable automobile manufacturer. It is suggested that both the purchasing and production department should work together and develop a supportive program between them to attain the components with higher quality when selecting and monitoring a supplier. Also, managers should be aware of the variety of criteria when going through the process of selecting and monitoring suppliers in a business [8].

Supplier Selection and building up strong relationships with the right suppliers are of great importance in decisions of procurement and it poses an immense effect on the overall firm’s performance. A descriptive study was carried out to satisfy the research objectives. The sample size was 187 respondents from purchasing departments including managers, officers, and staff. The source of data collection was primary data, collected on hand using a questionnaire consisting of four sections. Assessment and KPIs in material acquiring process and questionnaire consisted of 5 Likert scales ranging from Low extent to High. The results of the study show that 86 percent of the companies focused on timely service delivery by the supplier [9]. The conceptual framework for this study has been given in Figure 1.

For this research the following alternative hypothesis are proposed:

H1: The information flow mediates the relationship between quality and supplier selection.

H2: The information flow mediates the relationship between delivery and supplier selection.

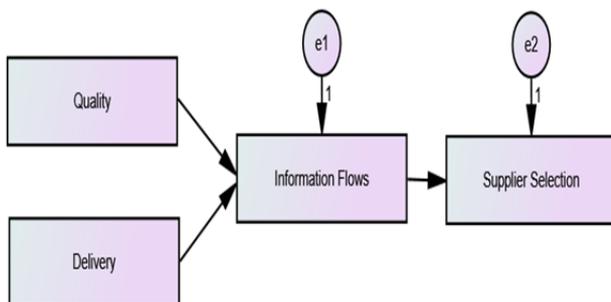


Figure 1. Conceptual Framework (This Study)

### 3. Methodology

Primary data was collected via questionnaire as a research instrument. Total 170 questionnaires were distributed among manufacturing companies of Kotri, Sindh, Pakistan, however, only 160 questionnaires were found reliable after data cleaning, screening and coding into SPSS. The random sampling strategy was carried out in order to test proposed hypotheses of the present study. Five Likert scale from negative to positive (Strongly disagree 1 to strongly agree 5), scaling was used. Data was analyzed in both software SPSS and AMOS. Sample size calculated is based on thumb of rule for the survey method that at least 1 item should have 10 respondents. Present study has 12 items for the 4 variables such as quality, delivery, and information flow and supplier selection. Furthermore, suggested sample size would be  $16 \times 10 =$  one hundred sixty cases, but for more reliable results data collected from 170 cases.

### 4. Findings

#### Questionnaire Reliability and Convergent Validity

The reliability and convergent validity of adopted questionnaire is given below in Table 1. It is very important to check the reliability and validity of data before checking the hypothesis testing. There are three important values which cannot be ignored such as Factor loading; Cronbach’s value and average variance extracted that are given for making decision in regard of reliability and validity of data. The value of factor loading and Cronbach’s value are suggested more than 0.70 and for the convergent validity average variance extracted has to have value greater than 0.50 [10]. It can be seen (based on recommended value) that present study data confirmed the reliability and convergent validity for the adopted questionnaire.

Table 1. Construct Reliability and Convergent Validity

Variable	Items	Loading (Factor)	CV	AVE
Supplier Selection	SS1	0.82	0.85	0.69
	SS2	0.78		
	SS3	0.86		
	SS4	0.87		
Quality	Q1	0.75	0.80	0.64
	Q2	0.78		
	Q3	0.82		
	Q4	0.85		
Delivery	D1	0.80	0.82	0.63
	D2	0.79		
	D3	0.75		
	D4	0.84		
Information Flow	IF1	0.80	0.83	0.64
	IF2	0.78		
	IF3	0.82		
	IF4	0.80		

### 5. Hypothesis Testing

#### Quality

The mediation effect for the variable quality has been checked in the presence of mediating variable information flow. There are three different effects such as total effect, direct effect and indirect effect which are studied in the present study in order to conclude the proposed hypothesis 1, shown in below Table 2. Total effect is revealed positive and significant between independent variable quality and supplier selection (Beta=0.58) and (p-value= 0.000). Furthermore, the direct effect for the variable quality and supplier selection confirmed the positive relationship and significant relationship (Beta=0.42) and (p-value= 0.000). Lastly, the indirect effect in the presence of mediating variable information flow

suggested positive (Beta=0.16) and (p-value= 0.003). Finally, it can be concluded in regard of mediation effect as a partial mediation because value of beta reduced from 0.42 to 0.28. Therefore, the partial mediation is recommended and proposed hypothesis 1 is accepted.

Table 2. Quality Mediation Effect

Three Effects	SEM-Paths Direction	Path Beta Value	Sig-value
Total Effect	*Q->SS	0.60	0.000
Direct Effect	**Q>SS	0.42	0.002
Indirect Effect	***Q->IF->SS	0.28	0.004

### Delivery

The mediation effect for the variable delivery has been checked in the presence of mediating variable information flow. There are three different effects such as total effect, direct effect and indirect effect which are studied in the present study in order to conclude the proposed hypothesis 2, shown in below Table 3. Total effect is revealed positive and significant between independent variable delivery and supplier selection (Beta=0.62) and (p-value= 0.000). Furthermore, the direct effect for the variable delivery and supplier selection confirmed the positive relationship and significant relationship (Beta=0.44) and (p-value= 0.001). Lastly, the indirect effect in the presence of mediating variable information flow suggested positive (Beta=0.18) and (p-value= 0.002). Finally, it can be concluded in regard of mediation effect as a partial mediation because value of beta reduced from 0.44 to 0.18. Therefore, the partial mediation is recommended and proposed hypothesis 2 is accepted.

Table 3. Delivery Mediation Effect

Three Effects	SEM-Paths Direction	Path Beta Value	Sig-value
Total Effect	*D->SS	0.62	0.000
Direct Effect	**D>SS	0.44	0.001
Indirect Effect	***D->IF->SS	0.18	0.002

### 6. Discussion

The findings of this study suggested that Quality and Delivery have an impact on Supplier selection of Small and Medium-size manufacture in Kotri, Sindh Pakistan. Both affect the direct effect of quality and the indirect effect of quality in the presence of information flow since a mediator is found to have a positive and significant impact on supplier selection. These findings are similar to studies conducted in

various parts of the world such as, in Turkey [11]; this study suggested that both Quality and delivery are important factors for the selection of suppliers. In Kenya [12], research’s final results revealed that quality is the most important factor for supplier selection and supplier profile in terms of timely delivery also cannot be ignored. Lastly, a study was carried in Nairobi [13], the supplier capacity in terms of delivery is found to have a positive and significant impact on supplier selection and this will have an impact on the overall performance of a firm and strategic relationship will be developed in the future.

### 7. Conclusion and Implications

In this paper, the authors confirmed the mediating role of information flow for quality and delivery in order to supplier selection in Kotri, Pakistan. Many factors affect the selection of supplier selection but the right quality and right delivery seem to be very important factors for supplier selection via literature and practical observation. Recent changes in the global supply chain, the supplier used distant in various parts of the world. In this situation selection of suppliers is the key challenge, and this study’s insight would suggest better policy in the future. This study will help small and medium-size manufacture in Kotri, Pakistan, and findings will be implemented in future polices while selecting the supplier. For, academia, the researchers can develop new objectives and hypotheses regarding supplier selection in the service sector as well and this study framework can be verified and compare to the other industries too in the future.

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