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*Full Length Research Paper*

# **Determinants of supplier selection and evaluation, their impact on business key performance indicator of buying companies: in the context of telecom companies in Pakistan**

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**Our paper will discuss determinants of supplier selection and evaluation, their impact on business key performance indicators with a focus on telecom companies. Our research is causal by nature. Interviews were conducted from the heads, managers and specialists of the supply chain department. Data was gathered through questionnaire distributed among the practitioners. Different statistical tools were used to check the reliability of the questionnaire and find out the important determinants of suppliers selection and evaluation. Our findings confirm that there are some potential factors of strategic buyer supplier alliance which has a positive impact on overall business performance of the buyer firm in telecom sector. Due to constraints of time only telecom sector is selected for our research study. Moreover only five variables were taken in to consideration. Further studies must be conducted in various cities and sectors of the business. This paper unfolded the vital factors of the supplier selection, and highlighted the importance of buyer supplier strategic alliance. Ultimately both buyer and supplier take lead in their area of business, and establish reputation. The results shows that buyer supplier alliance has an impact on overall business performance and understanding each other will yield good results for both buyer and supplier.**

**Keywords :** Supply chain management, Telecom sector, and Business Performance.

## **INTRODUCTION**

Supply chain management is going to be an essential line of track to enhance the business key performance of the companies as well as the competitive advantage in the international and domestic market (Li *et al.*, 2006). So, in today's competitive business environment companies have to enhance quality of services, delivery performance of their products and mean while remain

cost effective. To meet this challenge most of the companies are exploring way to improve buyer supplier alliance. More or less all telecom companies are relying on vendors and on their performance. Some prior studies discussed that the business key performance of vendors always having an influential impact on the key performance indicators of the buying companies. This research study will examine the selection and assessment criteria of the vendors, suppliers, for telecom companies in Pakistan. As few models and evaluation techniques are in use to assess and evaluate

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the selection of trustworthy suppliers. Infact the KPI's of telecom companies more or less depend on the suppliers' performance on monthly, quarterly, semi-annually and annual basis. So, this study will also examine that what will be the impact of these suppliers' selection, assessment criteria's (Standard operative procedures and practices for selection and evaluation) on the key business performance of the telecom companies. The purchasing of products and services to run the company's operations has become most essential subject for the supply chain management managers (Coase *et al*, 1937). This makes it impossible to one or few companies to fulfill all of the requirements. Therefore telecom companies at the same time have to rely and depend upon many suppliers to run smooth business operations. In many cases top management and supply chain managers think what should be the model and framework to select the trustworthy supplier. Telecom companies are following the best possible models and techniques for the selection, assessment and evaluation of the suppliers, yet most of the times suppliers get black list tag which is due to lack of commitment both at buyer and supplier end. Similarly, during the evaluation, assessment and selection procedure telecom companies don't keep supplier on board as a strategic partner. Supplier are kept at an arm length, as a result of this the supplier feels unsecure regarding the future business. Globally most of the telecom companies are working and investing for the development of their suppliers and contractors. One of the most important fact that in-spite of knowing that flow and sharing of both way information has an effect on buying firms business key performance, telecom companies do not value the factor to view the readiness and capability of supplier to share the most of relevant information's during the evaluation and assessment procedure. May be due to lack of buyer supplier strategic alliance factor during selection and assessment, in telecom companies, their relationship does not last longer and ultimately there is impact on the business key performance of buyer , as well as supplier. Similarly, the conventional method of supplier's selection on the basis of low price is exercised and less importance is given to the suppliers who also renders after sale services, give assurance of on time delivery and long term business relations. The question arises what are the criteria of selecting and evaluating the suppliers? What are the key determinants of telecom companies to select and evaluate the suppliers? We will try to answer these questions in our paper. Our research objectives are to suggest/improve the existing criteria of the supplier's selection in the telecom industry. What are the impacts of these potential factors involve in selection criteria on the business performance of the buyer business.

## LITERATURE REVIEW

Focus of the supply chain is to improve the value produced by the organization, meeting customer demands, and at the same time keeping cost in controlled and maximizing profitability. (Ranadive, 1999) explained that profit is the result of adding value. Ranadive stressed that customer value can give a company a competitive advantage. In effective supply chain management companies plan and efficiently manage resources. Selection of reliable vendor and pricing mechanism is of paramount importance. We also have to focus on receiving timely shipment, furnishing them to our manufacturing and services facilities and managing inventory. The glitches in supply chain management are primarily caused by lack of buyer supplier strategic alliance, unpredictable demand, wrong and delayed deliveries from vendors, and internal production hitches. As vendors are our strategic partners, therefore it is important that we share our future product and goal with them.

A case study of Nike, Hershey and Dell, to outline the causes of supply chain execution issues on these firms' performance (Uma *et al.* 2005). The problem encountered by Nike as a result of implementing a new information technology based supply chain management solution resulted in an unfavorable impact on the performance of the Nike. On the other hand Dell had totally opposite results from Nike because Dell's reliable vendors had access to the predicted sales, defect rate and warranty services entertained, so they are aware of current status of inventory and future plan. All the stakeholders of the supply chain have to work in coordination to reduce on hand stocks, maintain quality and improve customer satisfaction. While Dell successfully applied the supply chain Nike had faced problems implementing supply chain (Uma *et al.* 2005). If the difficulties in the applying supply chain management solutions are not dealt shrewdly, these difficulties can result in a distraction of a firm's supply chain, and as a result firm's reputation and performance might be at stake. One can conclude that more care should be taken while implementing new supply chain management solutions. In this case study limitation was sample of only three companies therefore; their result could not be generalized.

Presutti (2003), Roberts *et al.* (1998), Kindler (2003), and Davila *et al.* (2003) have indicated that the importance of information technology in supply chain management transactions in the "real-time" flow of information that results in enhanced customers service, lower costs, and improved supplier relationship. In Collaboration, effective supplier selection is of great importance for maintaining a level of quality and

performance within any organization (Kannan *et al.*, 2002). In today's advantage of information technology we cannot ignore the importance of information technology and internet in the supply chain management.

David L. Levy, (1995), developed an abstract and experiential model in which they deliberated disorders in the supply chain i.e. act together from distance, which resulted in additional costs. For this research they studied a computer manufacturing company as a sample. The study concluded that disruptions are usually caused by unpredictable demand, faulty and delayed deliveries from vendors, and firms own production problems. The results showed the amount of the costs which the management did not expect. However the results of the study could not be generalized, but it gave a direction for future exploration in other sectors. The study has looked at the affect of unpredicted demand, production, and vendor related delays in one company. It is stated that vendor assessment and development is of key importance for the modern age companies.

More firms are purchasing and procuring products and services from international vendors and this practice will increase in future as well. But it is pivotal that firms should collect relevant and important information about foreign suppliers before firms establishing business relation with these vendors (Sunil *et al.*, 1998). Usually the foreign vendors don't have established strategies for international business, stock management, logistics and transportation. There is a dire need to help firms in making hands-on strategies, standard and organized purchasing procedures, excellent evaluation system, international ethical values for running these areas of international operations. Foreign sourcing came as a reactive strategy to production cost decrease in an effort to mitigate the threat of international competition.

At one end competitive international environment has forced the firms to improve quality, on time delivery and prompt responsiveness and on the other hand remaining cost effective also. As a result, firms are finding ways to optimize their supply chains, and in particular, focusing on supplier selection and assessing the role of vendors in their activities (Prahalad *et al.*, 1990).

Firms have to keep low inventory level and select reliable supplier and maintain a strategic alliance with your suppliers. As a result firm's product quality will improve, so they will compete and their market share will rise. Ultimately firm's reputation and financial health will also improve. Supplier selection research can either be descriptive or prescriptive (Ellram 1990), elucidating what are actual practices and representation how the vendors should be selected and evaluated. Previous researches have mentioned the identifying criteria used by buyer for supplier selection (e.g, Dickson 1966; Lehmann *et al.* 1982). Further researches have been conducted to recognize supplier selection for a particular circumstances i.e. Buyer supplier alliance (Ellram 1990),

single versus multiple sourcing (Swift 1995), and routine versus non-routine purchase (i.e. White 1978; Dempsey 1978; Johsun 1981; Lehmann *et al.* 1982). Industry such as the Japans electronic components industry has been look at, regarding supplier selection (Hirakubo *et al.*, 1998).

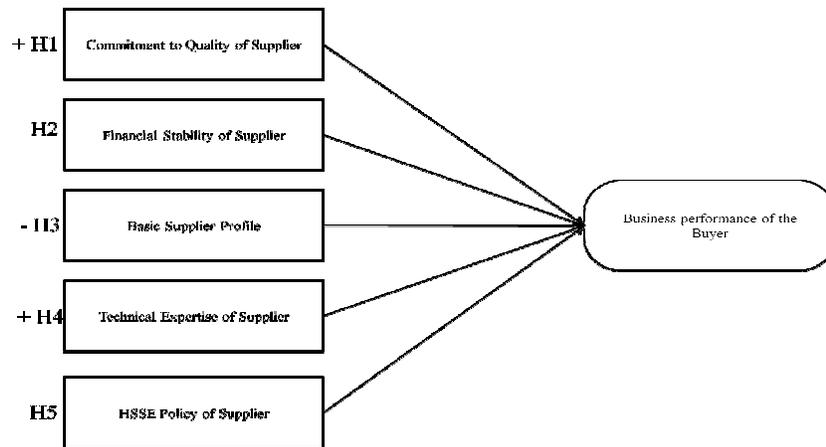
The criteria commonly used for supplier's selection are cost, quality, delivery and services and little importance is given to supplier assessment and long term strategic relation with the suppliers. To the best of our knowledge supply chain management the advent field in Pakistan, little efforts has being made to determine the supplier selection criteria and their strategic alliance with the buyer. Reputable international firms give more to vendor's selections and are in touch with the potential supplier even at tactical level. They are at strategic alliance and as a result both buying and selling firms get benefit and prosper. We will focus on supplier selection assessment and their impact on telecom industries operating in Pakistan especially having their head offices in Islamabad.

## Theoretical Framework

Theoretical framework is the foundation of research study it not only identifies the dimension to research, it is a road map for the readers. The theoretical framework of our research describes how the determinants involved in the selection, assessment and evaluation process leaves impact on the key performance indicators of the buyer business. As in this research study we are identifying what are the standards and criteria to select the supplier in telecom sector and whether their strategic buyer supplier alliance exist or otherwise. After prequalification of suppliers the buying companies expecting a lot from their supplier because they are confident that they have filtered their suppliers on very efficient basis but still buyers are uncertain about the quality of the items to be delivered, on time delivery, commitment to quality, financial stability, technical expertise and after sales services, etc. Commitment to quality, financial stability, technical expertise, health safety security and environment, basic supplier profile for the selection and evaluation set by buying telecom companies are the independent variables and business performance of the telecom companies is dependent variable. The performance of the supplier will leave impact on the buying companies, as their performance will also depends on the supplier's performance. The relationship between them would have some impact.

## Hypothesis:

Followings are the hypothesis that are proposed under



**Figure1.** Theoretical frame work

the research study.

H<sub>1</sub>: Commitment to quality of supplier affects the key performance of the buyer business.

H<sub>2</sub>: Technical expertise of the supplier affects the key performance of the buyer business

H<sub>3</sub>: Basic Supplier profile affects the key performance of the buyer business.

H<sub>4</sub>: Financial stability of the supplier affects the key performance of the buyer business.

H<sub>5</sub>: HSSE policy of the supplier affects the key performance of the buyer business.

### Research Design

The type of study is causal, as we are checking the impact of some potential factors on the business performance of the buyer. The telecom industry is almost working on the model of outsourcing as the operators awarded the turnkey projects to their potential strategic aligned vendors; furthermore these vendors assigned same projects to their suppliers. The Telecom operator’s performance is depending upon its strategic aligned vendor. The study is examining those factors in the selection criteria of supplier that can leave influence on the performance of each vendor’s business as well as the operator. We selected the main operators of the telecom industry working in Pakistan, as well as their sub-suppliers to collect the data.

There are number of potential factors gives the answer about the successful selection of supplier, and these potential factors ultimately impact the key performance indicators of the business. But some of them are important in this regard, so we adapted a questionnaire (Vijay, *et al*, 2006), and send it to supply chain management practitioners of telecom industry.

We distributed 70 questionnaires and got 55 replies from them as well as the interviews with the practitioners were very helpful regarding our data gathering. The questionnaire was distributed among the directors,

managers, assistant managers, team leads, executives and associates of telecom operators and their strategic aligned suppliers.

Total numbers of valid responses were 55, so the rate of responses was 84%. There are factors involved in the supplier selection and evaluation criteria, but the results of our study identified the four potential factors, basic supplier profile, commitment to quality, financial stability, technical expertise and health safety security and environment policy of the supplier. These factors plays very major role in the selection and evaluation criteria of the supplier and ultimately positively affects the business performance. Similarly telecom operators and strategic aligned vendors check these factors on semiannually or annually basis to maintain the efficient business performance of the company.

### DATA ANALYSIS AND RESULTS

To analyze our data first we used Cronbach’s Alpha to check the reliability of our questionnaires. Generally the minimum acceptable value of Cronbach’s alpha is 0.65, whereas our value of  $\alpha$  was 0.67 which shows that it is exceeding the minimum acceptable level. Thus the instrument/scales used for the questionnaire considered as reliable measures.

### Validity and Reliability of Data

In order to check the face validity of the data, obligatory items were verified by the content specialist. To check about the reliability of the data we used Cronbach’s Alpha. Table 1 shows the reliability of each variable.

Secondly, we used the test of Pearson correlation of coefficient between the variables, to check the relations between variables, the results are shown in table 2. The table-2 shows the negative significant relationship of

**Table 1.** Reliability of data by using Cronbach's Alpha

| S.No | Variable               | Cronbach's Alpha | N of Items |
|------|------------------------|------------------|------------|
| 1    | Basic Supplier Profile | 0.68             | 6          |
| 2    | Commitment to Quality  | 0.89             | 4          |
| 3    | Financial Stability    | 0.61             | 4          |
| 4    | Technical Expertise    | 0.73             | 7          |
| 5    | Health Safety          | 0.86             | 6          |
| 6    | Business performance   | 0.79             | 3          |

Note. \*\* $p < 0.05$ **Table 2.** Pearson Correlation Matrix among the Business Performance and Independent Variables

|                                  |                        | Basic<br>Supplier<br>Profile | Commitment<br>Quality | Financial<br>Stability | Technical<br>Expertise | Health Safety | Business performance |
|----------------------------------|------------------------|------------------------------|-----------------------|------------------------|------------------------|---------------|----------------------|
| <b>BasicSupplier<br/>Profile</b> | Pearson<br>Correlation | 1                            | -.535**               | -.298*                 | -.473**                | -0.126        | -.634**              |
|                                  | Sig. (2-tailed)        |                              | 0                     | 0.029                  | 0                      | 0.366         | 0                    |
| <b>Commitment<br/>Quality</b>    | Pearson<br>Correlation | -.535**                      | 1                     | 0.031                  | .914**                 | 0.008         | .918**               |
|                                  | Sig. (2-tailed)        | 0                            |                       | 0.825                  | 0                      | 0.951         | 0                    |
| <b>Financial<br/>Stability</b>   | Pearson<br>Correlation | -.298*                       | 0.031                 | 1                      | -.333*                 | .333*         | -0.18                |
|                                  | Sig. (2-tailed)        | 0.029                        | 0.825                 |                        | 0.014                  | 0.014         | 0.193                |
| <b>Technical<br/>Expertise</b>   | Pearson<br>Correlation | -.473**                      | .914**                | -.333*                 | 1                      | -0.186        | .971**               |
|                                  | Sig. (2-tailed)        | 0                            | 0                     | 0.014                  |                        | 0.178         | 0                    |
| <b>Health Safety</b>             | Pearson<br>Correlation | -0.126                       | 0.008                 | .333*                  | -0.186                 | 1             | -0.202               |
|                                  | Sig. (2-tailed)        | 0.366                        | 0.951                 | 0.014                  | 0.178                  |               | 0.142                |
| <b>Business<br/>performance</b>  | Pearson<br>Correlation | -.634**                      | .918**                | -0.18                  | .971**                 | -0.202        | 1                    |
|                                  | Sig. (2-tailed)        | 0                            | 0                     | 0.193                  | 0                      | 0.142         |                      |

**Table 3.** Model Summary of Regression Analysis (Model Summary<sup>b</sup>)

| Model | R                 | R<br>Square | Adjusted<br>R Square | Std. Error<br>of the<br>Estimate | Change Statistics     |             |     |     |                  |
|-------|-------------------|-------------|----------------------|----------------------------------|-----------------------|-------------|-----|-----|------------------|
|       |                   |             |                      |                                  | R<br>Square<br>Change | F<br>Change | df1 | df2 | Sig. F<br>Change |
| 1     | .996 <sup>a</sup> | 0.992       | 0.991                | 0.14826                          | 0.992                 | 11.42       | 5   | 48  | 0                |

Note.  $R^2 = 0.992$ ;  $F$  Change= 11.42,  $p < 0.05$ **Table 4.** ANOVA predicting the fit of model

| Model      | Sum of<br>Squares | Df | Mean<br>Square | F     | Sig.              |
|------------|-------------------|----|----------------|-------|-------------------|
| Regression | 130.945           | 5  | 26.189         | 11.42 | .000 <sup>a</sup> |
| 1 Residual | 1.055             | 48 | 0.022          |       |                   |
| Total      | 132               | 53 |                |       |                   |

Note.  $p < 0.05$

Table 5. Coefficient table

| Model |                      | Unstandardized Coefficients |            | Standardized Coefficients |        |      |
|-------|----------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                      | B                           | Std. Error | Beta                      | t      | Sig. |
| 1     | (Constant)           | -.215                       | 1.915      |                           | -.112  | .911 |
|       | BasicSupplierProfile | -.974                       | .119       | -.178                     | -8.164 | .000 |
|       | CommitmentQuality    | -.490                       | .289       | -.155                     | -1.696 | .096 |
|       | FinancialStability   | .602                        | .166       | .152                      | 3.629  | .001 |
|       | TechnicalExperties   | 4.328                       | .430       | 1.065                     | 10.054 | .000 |
|       | HealthSafety         | -.232                       | .050       | -.076                     | -4.624 | .000 |

basic supplier profile with the commitment to quality of supplier, similarly the basic supplier profile has negative correlation with financial stability, technical expertise, and business performance, whereas, the correlation doesn't exist between basic supplier profile and health safety related variables. The negative sign shows that the increase in issues in the basic supplier profile may decrease the reliability of the other factors. As sometimes most of the suppliers don't present the genuine information about the organization in front of buyer, which results in the losses and buyer reputation is dented badly. The commitment to quality of the supplier shows very strong relationship with the business performance of the buyer as well as with the technical expertise of the supplier. In this case the sig value is less than 0.05, which shows the significant relationship among them. Our results showed that the financial stability of the supplier will leave the impact on the business performance of the buyer, same is depicted by the sig value which is insignificant ( $\alpha < 0.05$ ).

Technical expertise of the supplier having very strong relationship with the business performance of the supplier, as shown in table 3, the sig value is less than 0.05, (Pearson correlation value = 0.971). Health and safety is the very important factor evaluating any supplier by telecom operators and their strategic aligned vendors, the results are showing the insignificant relationship between HSSE policies and business performance of the buyer at the time of selection.

Correlations of the supplier selection factors shows that if the suppliers have strong profile, technical expertise and should be committed with the quality then it can meet the buyer's needs efficiently. This will leave the strong positive impact on the business performance of the buyer which shows the supplier capability.

Model summary table 3 output shows the results of run model, it also shows that the basic supplier profile, commitment to quality of supplier, financial stability, technical expertise as well as the HSSE policy of the supplier explaining the variation in the business performance (dependent variable) of the buyer significantly.

The value of adjusted  $R^2$  shows that the 99.1% of the variance predicted from the independent variables. Tables of model summary also show that the multiple

correlation of coefficient using all the predictors is 0.99. This means that the IV's and DV's are highly correlated with each other, as we can see in the table of correlation of the coefficient that the basic supplier profile, commitment to quality and technical expertise are significantly correlated with business performance of the buyer and IV's are showing the affect on DV's as well.

The value of ANOVA (table 4) is less than 0.05 i.e. 0.000 which shows that regression model is significant. This indicates that the predictors significantly predicting the business performance of the buyer.

### Practical Implication

There are observations and outcomes related to the supplier selection and evaluation as well as their impact on the business performance of buyer with the relationship among them. In the context of telecom industry the commitment to quality and technical expertise of the supplier are only correlates positively as well as showing the maximum variation in dependent variable as compare to other variables. While supplier's health safety security and environment policy, basic supplier profile and financial stability are playing secondary role in the selection and evaluation criteria for supplier. Whereas basic supplier profile of supplier is negatively correlated with business performance of buyer, because in the mostly cases basic supplier profile gives the incomplete information which may affect the business performance of the buyer. The increase in number of incomplete and fake information will decrease the business performance of the supplier. Most probably supplier mentioned its highly technical resources just for taking business but at the time of project supplier can never accomplish the assigned projects successfully, that will leave high impact on the business performance of the buyer. It also affects the key business performance indicators of telecom operators. Practically in most of the cases new suppliers shows highly attractive profiles regarding their expertise, but with the passage of time due to lack of availability of good technical resources, miss commitments, less industrial knowledge and miss commitment with the quality they get fail to proof their productivity in front of buyer. Due to

this, not only the buyer suffers in its business operations but the supplier is also affected.

## DISCUSSIONS

The overview and finding of the study indicates how some factors in the supplier selection and evaluation criteria affect the business performance of the buyer. The main factor in this regard is the commitment to the quality and technical expertise.

Similarly, these are the key factors for the practitioners if they are in process to select the suppliers for some key projects, they go first for these two main factors then for rest of factors. The quality of the products and services is only the one main option that may build long term relations with the supplier. Here the paper is not discussing the long term relationship between buyer and supplier but discussing the business performance of the buyer, as the success of buyer ultimately becomes the success of the supplier. This success leads the long term relationship of the buyer and supplier. Due to limitations of time, access to further data, small sample size and only the response of telecom sector the result and cannot be generalized. Further studies are required to determine more factors and other industries can be explored. However in telecom industry commitments to quality and technical expertise are important determinants while selecting and evaluating supplier. As these two factors showed high correlations with the business performance of the buyer. The business performance of the buyer makes the strategic alliance with the supplier.

Here we discussed the factors involved in the selection criteria of the supplier and their affect on the business performance, future behavioral research studies can also be conducted by using these factors to determine the strong relationship between them.

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