**RESEARCH PROPOSAL**

**Factors affecting to Supplier selection for fabric sourcing in large scale apparel companies in Sri Lanka**

**B.Sc. (Hons) in Logistics and Transport**

**CINEC Campus and University Grants Commission Sri-Lanka**

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# INTRODUCTION

Supplier section plays an important role in the competitive supplier environment. Supplier selection includes both qualitative and quantitative factors so it is a multi-criteria problem. To select the best suppliers, it is necessary to deal between these qualitative and quantitative factors. Supplier selection is very critical task because factors that affect to the suppliers will be depend on many things. As an example, its depend on industry to industry and on the other hand its depend on type of raw materials as well. So, supplier selection factors depend on above criteria’s as well. In most industries most of the cost of a product incurs due to cost of raw material and component parts, which might be 70% of product cost (S.H Ghodsypour & C. O' Brien, 1996). Thus the procurement department can play a key role in an organization’s efficiency and effectiveness because it has a direct effect on cost reduction, profitability and flexibility of a company (O'Brien & S.H Ghodsypour , 2001).

There are lots of challenges for companies as technology innovations and customer demand changes. So, they have to face and accept those challenges. These organizations realize that the effort to obtain products at the right cost, in the right quantity, with the right quality at the right time from the right source is crucial for their survival (Maher H. Al-Rafati , 2008).

There are lots of advantages company can gain if the identify the right criteria’s for identifying the right supplier. Identifying the right suppliers significantly reduces the purchasing cost and improves corporate competitiveness, which is why many experts believe that the supplier selection is the most important activity of a purchasing department (O'Brien & S.H Ghodsypour , 2001). In this research supplier evaluation method is developed to include qualitative factors for choosing best supplier.

## RESEARCH OBJECTIVES

The main objective of this research is to identify the factors that affect to the supplier selection for fabric in large scale apparel industry. When selecting a supplier there are lot of criteria and sub criteria and its depend on organization to organization.

The other objectives of this research are,

* To identify major factors that influencing the supplier selection.
* To identify the relationship between those factors.
* To enable procurement managers to identify the most important factors

## RESEARCH QUESTION

Question 1:

What are the major factors influencing the supplier selection process for fabric in apparel industry in Sri Lanka?

Question 2:

What is the relationship between those factors and how to calculate it?

In most of the industries, supplier selection is done by base on the price of raw materials and the components. This indicates that there is no consist way to evaluate suppliers considering qualitative factors. The evaluators are performing the supplier selection procedures without full consideration to professional qualifications. The research will deal with the factors that affect to the suppliers in apparel industry for fabric sourcing.

There are general restrictions imposed on the selection procedure based on the lowest price, which may not easily accomplish the selection process. Therefore, this research takes into consideration the whole criteria and sub-criteria that control the supplier selection process. This research will try to develop a model for identifying the best supplier who is capable of satisfying certain criteria.

## SIGNIFICANCE OF THE RESEARCH

After conducting this research, the main objective of the identifying of major factors will be determined by handling multiple criteria that will enable considering a number of both qualitative and quantitative factors when assessing the supplier. Then the identified factors can be used to develop a supplier selection model, which will enable the apparel industry to mitigate the selection of incompetent supplier. Apart from that this research will helpful for future researchers since there are no any research articles on this topic to refer in Sri Lanka.

## DESCRIPTION OF DATA

The main sources for the required data for this research are,

### Primary Data

* Primary data will be collected using a questionnaire. The respondents to this questionnaire are experts in the apparel industry.

### Secondary Data

* This research depends on the previous studies conducted on supplier selection, published researches, papers, documents and other related literature.

# LITERATURE REVIEW

Supplier selection is the process by which the buyer identifies, evaluates and contracts with the suppliers. Suppliers are considered the best tangible assets of any organizations that have varied strengths and weaknesses that require careful assessment before order placed (de Boer, 2001). The ability to analyze both the quantitative and qualitative criteria the organization is able to arrive at a robust decision. Supplier selection decisions are often complicated by the fact that multiple criteria, such as price, quality, flexibility, delivery, and service, must be considered in the decision-making process (Dickson, 1966; Hirakubo and Kublin, 1998; Verma and Pullman, 1998; Sarkis and Talluri, 2002; Li et al., 2006).

One of the first studies about the criteria used in supplier selection was conducted by Dickson in 1966. Dickson sent a questionnaire to 273 people who were chosen from purchasing agency and executives of National Association of Purchasing. 23 criteria were used here and the most important criteria were quality of the product, delivery on time and warranty policy (Dickson, 1966: 16-17). Many of the criteria defined by Dickson are used by manufacturing businesses in our day. The criteria to be used for supplier selection can be associated with characteristics such as the supplier’s past, structure and technical capacity of the facility, financial status, organizational structure, reputation, communication skill, employer-employee relationship and location. In general, these criteria have specific weight ratios based on the quality and amount of the purchase from the supplier (Leenders et al., 2002). According to Doğruer (2005), in the supplier selection of a business, factors such as cost (raw material, semi product, and cost), quality (final product quality), service (special services such as part replacement and repair), location (transport time, cost, urgent goods and services), supplier stock policy (supplier’s stocks), and flexibility (supplier’s willingness and adaptation to changes) should betaken into consideration.

When studies about supplier selection are examined in literature, it can be seen that three factors come to the forefront in supplier selection: price (Levary, 2008; Katsikeas et al., 2004; Doğruer, 2005; Weber et al.,1991), quality (Öz and Baykoç, 2004; Levary, 2008; Doğruer, 2005; Chan and Chan, 2004; Chan and Kumar, 2007; Dickson, 1966; Liu and Hui, 2005; Weber et al.,1991; Pi and Low, 2006; Vonderembse and Tracey, 1999; Küçük and Ecer, 2008) and delivery (Katsikeas et al., 2004; Doğruer, 2005; Chan and Chan, 2004; Chan and Kumar, 2007; Liu and Hui, 2005; Küçük and Ecer, 2008). In addition, criteria about the supplier such as supplier’s talent and capacity, supplier’s image, supplier’s financial structure (Küçük and Ecer, 2008; Cusumano and Takeashi, 1991), supplier’s management structure and management type, warranty and insurance policies provided by the supplier, flexible payment terms of the supplier are also used in the assessment of supplier assessment.

There are a great number of approaches in literature about supplier selection. According to Sönmez (2006: 33) decision making strategies such as artificial intelligence and expert systems (neural Networks, event based inference, Bayesian network), mathematical programming (techniques based on total cost, nonlinear programming, complicated integer programming, heuristic, target programming, data envelopment), MCDM (Analytical hierarchy method, ordering methods, MAUT, linear weight point, judging modeling, judging structural modeling, categorizing modeling, fuzzy clusters), multi variable statistical analysis (structural equality model, basic key analysis, factor analysis, confidence interval approach) and other decision making tools (groups decision making, multiple method) are used in supplier selection.

There are a great number of studies with different decision-making methods on different sectors for supplier selection problems. In a study by Liu and Hai (2005), AHP method criteria such as quality, flexibility, delivery and cost were used during the process of supplier selection (Liu and Hai, 2005). In their study in which they used BAHP method to measure the performances of the suppliers of businesses in automotive sub-industry, they took into consideration main criteria such as technical competency, delivery, quality, service, setting the price and innovation (Akman and Alkan, 2006: 27). As a result of the AHP method used in the supplier assessment process of a textile business to assess a great number of numerical and non-numerical criteria which conflicted each other, Öztürk et al. found criteria such as quality, cost, supply performance, technical capacity, promotion/option, financial capacity and experience/willingness (Öztürk et al., 2011: 93 112).

In a study by Jayaraman et al. (1999), which used complex integer programming method, cycle time, level of quality, production capacity and storage capacity were discussed as supplier limitations. Tracey and Tan (2001) used supplier selection criteria for the analysis of the association between another statistic technique structural equality model and suppliers’ participation in product design and continuous development programs, customer satisfaction and business performance (Özdemir, 2007: 55). Albino and Garavelli (1998) realized supplier selection with a decision support system based on neural networks (Özdemir, 2010: 60). In a study conducted by Demir (2010: 88) on a food business in manufacturing sector, one of the supplier selection ÇKKV methods, fuzzy TOPSIS method was used and the significance weights of decision criteria were found from the biggest to smallest as correct cost advantage, flexibility, terms of payment, quality, supplier reliability and delivery on time. Choi and Hartley (1996) analyzed supplier selection applications in automotive industry by using questionnaire. 23 supplier selection criteria were used in the study and as a result of factor analysis, these criteria were determined as finance, stability, association, flexibility, technological skills, service, reliability and price.

Competition necessitates selecting carefully suitable suppliers for collaboration. It is critical that supplier selection process be able to bring together all of the stakeholders into a common collaboration that generates buy-in and their judgments’, comments and evaluation be captured through the process as well. Decision is made from the suppliers who have passed the qualification requirements and are eligible for contracts award.

# METHODOLOGY

**Primary Data**

Primary data will be collected using a questionnaire. The respondents to this questionnaire are experts in the apparel industry.

**Secondary Data**

This research depends on the previous studies conducted on supplier selection, published researches, papers, documents and other related literature.

Simple random sampling will be used to identify the sample to collect data. To analyse the data SPSS will be used. Factor analysis will be conducted to identify the relationship between factors in supplier selection for apparel industry Sri Lanka.

The analysis of data collected by using questionnaire is analysed through descriptive analysis of demographic variables and other variables. Hence, by identifying the variables related to the topic, addition of question to the study is going to be completed, and then through cross tabulation, the dependent variable, **intention to selecting a supplier** and independent variables such as **the supplier’s past, structure and technical capacity of the facility, financial status, organizational structure, reputation, communication skill, employer-employee relationship and location** are analysed one by one where by considering independent variables separately through a bivariate analysis. The bivariate analysis is going to be carried out by taking two variables at a time and then check. After analysis of variables through bivariate analysis; then a hypothesis testing using categorical data analysis techniques is to be carried out to check whether these factors are significant. In addition, through hypothesis testing, it will be statistically proving that some variables are positively significant and some variables are statistically significant negatively. After that factor analysis going to be conducted. In factor analysis we group factors that have same quality, it is easy to analyse after the factor analysis because we can group and reduce the factors. The cluster analysis is a statistical method for data grouping, according to the degree of similarity or their closeness. Through cluster analysis, data is divided into homogeneous and distinct categories. The research here is the investigation of the effect of several factors Hence, this takes the nature of what happens to “Y” when “X” changes, this research takes the nature of causal design.

# TIME PLAN FOR THE RESEARCH

Table 4.01: Time plan of the research

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Activity Description | July-02 | July-10 | Jul-28 | Aug-Sept. | Nov-Dec. |
| Preparation and submission of the research proposal |  |  |  |  |  |
| proposal presentation |  |  |  |  |  |
| Questionnaire preparation |  |  |  |  |  |
| Data collection |  |  |  |  |  |
| Data entry |  |  |  |  |  |
| Data cleaning |  |  |  |  |  |
| Data Analysis |  |  |  |  |  |
| Finalizing the research |  |  |  |  |  |

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