

**KEY FACTORS REQUIRED BY PURCHASING AND SUPPLY DEPARTMENTS  
IN THE AUTOMOTIVE MANUFACTURING INDUSTRY**

By

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## DECLARATION

I, Jean Karen Howell, hereby declare that the research in this dissertation is my original work, except where otherwise stated. All sources used and quoted in the study have been acknowledged and referenced.

This research has never been previously submitted in full or partial fulfillment by the candidate or any other individual for a degree at this university or any other educational institution.

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**JEAN KAREN HOWELL**

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**DATE**

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## ABSTRACT

The main research problem addressed in this study was to determine the key factors required by purchasing and supply departments in the automotive manufacturing industry to be efficient and effective. To achieve this objective, it was necessary to identify five sub-objectives which were, firstly, to determine the extent to which the purchasing and supply departments in the automotive industry believe that certain key factors in pricing, quality and supplier management are required to achieve excellence. Secondly, to identify if the purchasing and supply departments in the automotive industry actually implement the key factors on pricing, quality and supplier management in practice. Thirdly, to determine if there are any additional factors other than these key factors that business firms regard as key factors to be classified as world-class purchasing and supply departments. Fourthly, to analyse why purchasing and supply departments in the automotive manufacturing industry do not always implement these key factors. Lastly, to identify any other factors that could have a significant negative impact on the performance of purchasing and supply departments.

The study commenced with an analysis and review of relevant literature from various text books, journals, publications and internet sources. The literature study covered issues such as price determination, cost management, basic negotiation strategies, managing supplier quality and the supplier base, as well as a general overview of the latest developments in purchasing and supply management in business. The purpose of the literature analysis was to establish a theoretical basis for the design of the questionnaire which was used as a research instrument in this study.

A survey was conducted among selected automotive assemblers and their first and second tier manufacturing suppliers in the automotive industry. The main areas of focus in the questionnaire were pricing, quality, and supplier management. As the questions in the questionnaire related to the purchasing and supply department of a business firm, a qualified and experienced buyer in the

purchasing and supply department was identified in each firm to complete the questionnaire.

The empirical results from the study conducted indicated that the respondents were in strong agreement with the proposed importance of the factors of pricing, quality, and supplier management required to achieve excellence. However, the respondents also indicated that there were various obstacles which prevented the firms from implementing these key factors. Some of the obstacles mentioned were long lead times, late deliveries from suppliers, too few competitors in the market place, supplier capacity constraints and the sustainability of suppliers. Additional obstacles that the study identified were the high workload of buyers in general, incompetent staff and insufficient manpower that affected the performance of a purchasing and supply department. The buyers were not only performing buying activities, but were also involved in logistics related activities, which increased their workload and negatively affected their performance. Lack of specialised purchasing and supply chain knowledge was identified as another obstacle to achieving excellence.

The empirical study highlighted some recommendations to assist purchasing and supply departments in the automotive industry to achieve excellence and become world-class departments. Examples of these recommendations are that suppliers need to be educated on how to understand their costing models and to check their own sustainability; local purchasing and supply departments require training in the purchasing skills such as incoterms, delivery times, minimum and maximum order quantity; as well as the payment terms. Buyers should be trained to become experts in their products and packaging, as well as the manufacturing process of the product they are purchasing. The business firm should only employ qualified buyers who have financial and administrative skills, as well as the ability to adapt to change and work in teams. Buyers also need to master the in-house systems and work procedures involved in purchasing a product.

The empirical study also identified that the majority of buyers in the automotive manufacturing industry are senior buyers, male in gender and between the ages of 40-49.

The implementation of the recommendations based on the study's empirical findings will assist in improved pricing, quality and supply management in the automotive manufacturing industry.

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## CHAPTER ONE

### INTRODUCTION, RESEARCH OBJECTIVES AND STUDY SIGNIFICANCE

#### 1.1 INTRODUCTION

One of the main challenges in business is the growth of globalisation and the way that it is changing how firms trade with one another. Firms are continuing looking for global opportunities and view the world as a single market within which they can freely trade (Monczka, Handfield, Guinipero, Patterson & Waters, 2010: 187). With South Africa being a global player, Saxton (2006: 5) refers to the effects of international trading as the “Tsunami of globalisation currently hitting South African business”.

In their fight for survival in a global market, there has been an increasing awareness among firms of the strategic importance of an effective and efficient purchasing and supply department within their organisations. The purchasing and supply department of a firm can contribute significantly to ensuring that the business remains profitable and competitive. Van Weele (2010: 3) argues that as the business environment is becoming more and more competitive, purchasing and supply management is increasingly being recognised as a key function by top management. As a result, there is constant pressure on purchasing and supply departments to achieve high levels of performance and to be effective and efficient to meet the firm’s strategic objectives. The purchasing and supply department of a firm therefore needs to keep abreast of the latest changes occurring in the field of procurement, both nationally and internationally. Business firms that take advantage of new opportunities or increase their procurement effectiveness should have a competitive advantage over their competitors.

## 1.2 PROBLEM STATEMENT AND RESEARCH OBJECTIVES

### 1.2.1 Problem statement

The establishment of purchasing and supply departments of excellence is critical to the success and survival of automotive manufacturing firms in South Africa. As these firms compete on a global basis, excellent purchasing and supply performance becomes a pre-requisite to gain a competitive advantage over their rivals. From this statement arose the main research objective for this study, which reads as follows:

To identify the key factors required by purchasing and supply departments of firms in the automotive manufacturing industry to achieve excellence.

### 1.2.2 Research objectives

In support of the main objective and in an effort to solve the main problem of the study, the following sub-objectives have been identified:

- To determine the extent to which the purchasing and supply departments in the automotive industry believe that certain key factors in pricing, quality and supplier management are required to achieve excellence.
- To identify whether the purchasing and supply departments in the automotive industry implement the key factors in pricing, quality and supplier management required to achieve excellence.
- To determine whether there are any additional factors other than the factors mentioned on pricing, quality and supplier management that business firms regard as key factors for world-class purchasing and supply departments.



- To analyse why purchasing and supply departments in the automotive industry do not implement the key factors in pricing, quality and supplier management required to achieve excellence.
- To identify any other factors that could have a significant negative impact on the performance of the purchasing and supply department.

### 1.3 REVIEW OF RELATED LITERATURE

The purchasing and supply department is one of the few areas within a firm that is involved in spending the firm's cash resources and therefore has a unique advantage to reduce the firm's costs and increase its profits (Assiamah, 2008). According to Monckza et al (2010: 13), a typical manufacturing firm will spend fifty percent of their cost of goods sold on material and therefore a small percentage saving in the purchasing costs can result in a large percentage increase in profit.

Supporting the above statement, Burt, Petcavage and Pinkerton (2010: 7) state that purchasing and supply are responsible for spending over 50% of every dollar the firm receives as income from sales in automotive manufacturing industries, which leaves the purchasing and supply departments with a huge potential to reduce costs for a firm. Lysons and Farrington (2012:19) explain that for the majority of automotive business firms in the United States of America, the areas of greatest expenditure is purchasing, followed by the salary and wage bill. Due to advanced technologies in automotive manufacturing firms, there has been a reduction in labour and operating costs, which increased the percentage of purchased cost in every sales dollar. This increase in purchasing costs resulted in a greater awareness by management of the important role that purchasing and supply plays in the success of a firm, especially with the economic pressures, both locally and internationally, that have forced firms to reduce costs to remain competitive.

In recent years, global business concepts such as supply chain management, just-in-time (JIT), total quality management (TQM), cycle time reduction, service

excellence and strategic cost management have become more prominent and have allowed the purchasing and supply function an opportunity to play a larger strategic role (Lysons & Farrington, 2012: 17). According to Burt et al (2010:9), purchasing and supply management should be regarded as a core function based on its impact on a business firm's profitability and survival in a radically changing business environment. Carter and Kirby (2006: 2) state that one of the key goals of any excellent purchasing and supply department would be to support and contribute to the successful achievement of the firm's corporate goals of being competitive and profitable. They argue that there are various opportunities in the procurement field to cut costs and improve customer satisfaction. Therefore, the opportunity areas such as supplier selection, value analysis, just-in-time deliveries, quality assurance and benchmarking, for example, are some of the areas that were researched in this study.

#### 1.4 RESEARCH DESIGN AND METHODOLOGY

In an attempt to address the objectives of this study, the following broad procedures, with the emphasis being placed more on the qualitative research method, were followed:

##### 1.4.1 Literature review

An analysis of relevant literature from textbooks, dissertations, journals, publications and internet sources were performed. The purpose of the literature analysis was to establish a theoretical basis for the design of the questionnaire to be used in this study.

##### 1.4.2 Empirical study

A mail survey was conducted among selected automotive assemblers and their first and second tier manufacturing suppliers in the automotive industry by means of a detailed questionnaire developed by the researcher. The questionnaire was based on the information identified in the literature survey. The main areas of focus in the questionnaire were pricing, quality, and supplier management.

The purpose of the empirical study was to:

- Determine to what extent the purchasing and supply management departments of these firms are achieving standards of excellence.
- To establish the shortcomings where the purchasing performance is below standards of excellence.

Respondents included in the survey were in the employment of General Motors in Port Elizabeth, Volkswagen in Uitenhage, Mercedes Benz in East London, as well as their first and second tier suppliers.

The results of the literature study and the empirical survey were integrated to develop recommendations to the participants of the study and other automotive business firms on the factors required to establish excellent purchasing and supply departments. A detailed discussion of the research design and methodology applied in this study, is done in Chapter Six.

## 1.5 DELIMITATION OF THE STUDY

The research area was delimited as follows to make the study manageable from a research point of view:

- Geographical location

The research was specifically focused on the automotive manufacturing firms in the Eastern Cape Province of South Africa. Close proximity of these firms made it easier for the researcher to distribute and collect the questionnaires.

- Type of firms that were interviewed

The study included the three motor assemblers situated in the Eastern Cape Province, namely General Motors in Port Elizabeth, Volkswagen in Uitenhage and Mercedes Benz in East London, as well as their first and second tier suppliers. As the supplier base of the automotive assemblers covers a broad

spectrum of industries, it was decided that plastic, rubber, metal, glass, electrical, trim and chemical suppliers would be approached to complete the questionnaire.

- Operational level

As the study mainly concentrated on the operational aspects of the purchasing and supply departments of firms in the automotive manufacturing industry, questionnaires were sent to the purchasing and supply buyers of the identified firms.

## 1.6 DEFINITION OF KEY CONCEPTS

The meaning of certain key concepts and terms that were used in this study are explained in this section to facilitate reading. These key concepts include:

- Benchmarking: Benchmarking is defined as "a process that allows a company to evaluate its work methods, processes, service levels or products against meaningful standards" (Hugo, Badenhorst-Weiss & Biljon, 2006: 63).
- Outsourcing: According to Van Weele (2010: 162), outsourcing is the purchasing of activities that were previously conducted in-house, from a third party.
- Total Quality Management (TQM): Stevenson (2012: 391) defines the concept Total Quality Management (TQM) as "a philosophy that includes the involvement of everyone in a business firm in a continual effort to improve quality to meet or exceed customer expectations".
- Partnership sourcing: Hugo, Badenhorst-Weiss and Van Biljon (2006: 114) state that partnership sourcing is a long-term agreement based on high levels of trust between two parties.

- Just-in-time (JIT): Pienaar and Vogt, (2012: 242) define the Just-in-time (JIT) system as “the activities in a supply chain which are geared towards providing the business enterprise with raw materials and other components just before they are required in the production process”.
- Lean manufacturing: According to Stevenson (2012: 619), lean manufacturing is a highly co-ordinated system that produces a high volume of high quality output with minimal resources and with more variety than traditional systems.
- Value analysis: Value analysis is defined as “a systematic procedure aimed at ensuring that necessary functions are achieved at minimum costs without detriment to quality, reliability, performance and delivery” (Carter & Kirby, 2006: 20).
- Supplier quality assurance: Hugo, Badenhorst-Weiss and Van Biljon (2006: 141) state that supplier quality assurance entails all those planned and systematic activities implemented within the supply chain quality system that provide adequate confidence that the required quality is ensured and that defects and problems are continuously identified and prevented.
- Supply chain management: Supply chain management is defined as “a sequence of organisations - their facilities, functions and activities - that are involved in producing and delivering a product or service. The sequence begins with the basic suppliers of raw materials and extends all the way to the final customer” (Stevenson, 2012: 663).

## 1.7 SIGNIFICANCE OF THE STUDY

As mentioned in the problem statement, the aim of this study was to investigate the factors that are required to create an excellent purchasing and supply management department for automotive manufacturing firms in South Africa. The

results from the study will allow the participants and other business firms to benchmark themselves against the identified standards of excellence in the areas of pricing, quality and service delivery. As most firms are striving to achieve standards of excellence, the study will assist them to identify the strengths, weaknesses, potential opportunities and threats of their purchasing and supply departments in the above-mentioned areas. Once they have performed this analysis, they can then determine in what areas they need to implement improvement programmes. The benefits of improvement in the purchasing and supply strategies should contribute towards ensuring that a firm remains profitable and competitive. The spin-offs could also be that firms expand their business and this will ultimately boost the local economy.

Furthermore, the study will provide improved communication and co-operation between the Nelson Mandela Metropolitan University (NMMU) and the automotive industry in South Africa. The research outcomes could also provide guidance to the Logistics Department at the NMMU in their programme development and service delivery to the community.

## 1.8 CHAPTER OUTLINE

The dissertation is divided into the following seven chapters:

Chapter 1 is this introductory chapter and outlines the research problem and objectives, the research design and methodology, as well as the significance of the study.

Chapter 2 gives an overview of the latest developments regarding purchasing and supply management in business. The chapter refers to the reasons for the increasing importance of effective and efficient purchasing; the activities included under the purchasing and supply function; the relationship between this function and other departments in a firm; as well as the role of cross-functional teams and the latest trends in purchasing and supply in a global business.

The main area of focus in Chapter 3 is the discussion of the techniques needed to limit price and cost increases. The chapter explains concepts such as the total cost of ownership, open-book costing, cost transparency, standardisation, learning curve and value analysis, centralisation versus decentralisation, break-even analysis and discounts, as well as negotiation skills and techniques.

Chapter 4 explains the management of quality in the purchasing and supply process. Issues such as the buyer's role in the management of supplier quality, methods/techniques to ensure supplier quality and the factors that the buyer must consider when managing supplier quality, are discussed.

The management of the supplier base is explained in Chapter 5. The growing importance of supplier selection, sourcing policies and strategies, as well as the four stages of managing a viable supplier base are discussed.

Chapter 6 focuses on the research methodology, the design of the questionnaire and the population sample that was used in this study.

The findings of the empirical study were integrated with the literature study and the responses to the questionnaires are discussed in context of the study objectives in Chapter 7.

Chapter 8 covers the conclusion, recommendations to improve purchasing and supply departments in a firm, as well as future research topics that relate to this study's topic that could be of interest to researchers in the future.

## 1.9 CONCLUDING REMARKS

The researcher outlined the research problem, study objectives, the research design and methodology, the chapter outline, as well as the significance of the study in this chapter. Chapter 2 will discuss the latest developments regarding purchasing and supply management in business.

## CHAPTER TWO

### GENERAL OVERVIEW OF THE LATEST DEVELOPMENTS REGARDING PURCHASING AND SUPPLY MANAGEMENT IN BUSINESS

#### 2.1 INTRODUCTION

In the previous introductory chapter, a structured outline of the research problem, the study objectives, as well as the research design and methodology for this study was offered. Following this, using the outlines provided, Chapter Two will seek to provide the reader with a general overview of the latest developments regarding purchasing and supply management in modern business. In order to have a better understanding of the factors required for world-class purchasing and supply departments in the automotive industry, a general overview of the purchasing and supply function, as well as the latest local and international business trends is required. As such, to provide an overview of this nature will be the aim of this chapter.

To start with, this chapter will provide an explanation of the activities included under the purchasing and supply function, as well as the reasons for the increasing importance of this function. Next, its possible impact on the profitability of a firm, and the relationship between this function and other departments in a firm, will be discussed. The discussion will also refer to the goals and objectives of the purchasing and supply function, the role of cross-functional teams and, finally, the latest trends in purchasing and supply in global business.

#### 2.2 ACTIVITIES OF PURCHASING AND SUPPLY MANAGEMENT

Purchasing and supply management can be described as a series of activities that must be managed effectively for the organisation to deliver best value to the final customer (Johnson, Leenders & Flynn, 2011: 04). The purchasing and supply department of a firm must determine the quantity of the product to be purchased; select the supplier/s; determine how much to pay; and ensure the availability of materials by maintaining good relationships with suppliers. More



specifically, Van Weele (2010:08) suggests that today's purchasing and supply departments cover various activities, which include:

- Determining the required quality and quantity of the materials to be purchased as per the specifications
- Choosing the most appropriate supplier and continually developing procedures and policies to select the best supplier
- Preparing and conducting negotiations, for example, on the price of the material, lead times, payment terms and transportation costs with the supplier
- Writing up the contract as per the agreement reached
- Placing orders with the selected supplier and following up when orders are not received on the due date
- Developing efficient purchase order and handling systems
- Expediting critical items
- Handling faulty consignments
- Fostering a win-win relationship with suppliers
- Involvement in supplier ratings
- Involvement in cross-functional teams
- Involvement in value analysis studies

The purchasing and supply departments of the smaller first and second tier suppliers would also perform all the activities mentioned above. However, automotive assemblers and larger first and second tier suppliers would separate the above-mentioned activities into two main areas of responsibility. The first area is a team of people known as 'material controllers'. Their main responsibilities are to place orders against concluded purchase agreements; to follow up on the orders placed; and expedite to ensure that orders are received on time, thereby preventing production line stoppages. They also try to keep inventory levels as low as possible.

The second area is a team of people often referred to as 'buyers or supply managers'. Their responsibility is to participate in cross-functional teams; select appropriate suppliers; reduce costs; assist in developing suppliers; nurture supplier relationships and strategic alliances; and to enter and manage long term

contracts with suppliers. The need for this separation was stimulated by the fact that the majority of manufacturers purchase their materials on a global basis. Another factor that contributed to the need for the separation is that purchasing accounts for over half of organisations' total monetary expenditure (Gale, 2006).

Traditionally, the purchasing and supply managers' performance was based mainly on their ability to ensure a reasonable purchase price and to keep the production line running by avoiding shut-downs and stock-outs (Gale, 2006). Today, world-class firms expect this function to add value by reducing the time that is required to bring a product to the market, purchase materials that are defect-free, as well as by reducing the risk of supply disruptions and the total cost of ownership of a product. These added responsibilities have contributed to increasing the importance of the purchasing and supply function in a firm.

### 2.3 REASONS FOR THE INCREASING IMPORTANCE OF PURCHASING AND SUPPLY MANAGEMENT

According to Hugo and Badenhorst-Weiss (2011: 6), the purchasing and supply function is currently regarded in the business world as a key contributor to the firm's competitive position and to achieving customer satisfaction. Stated below are a number of the reasons for the increasing importance of this function.

- Globalisation

To take advantage of opportunities in the global market place, firms are operating their organisations on a global scale. This presents firms with the opportunity to provide customers with an improved product at a lower cost. Purchasing and supply managers, therefore, are forced to develop world-class supply relationships in terms of cost, quality, on-time delivery and performance. Senior management have realised that in order to survive, they need to develop their purchasing and supply function to be of a world-class standard as global supply is a competitive necessity (Johnson et al, 2011: 384).

- Business strategies and organisational structures have become more internationally orientated.

Owing to globalisation, supply chains run across international borders, and therefore, management strategies and organisational structures have to be adjusted to accommodate the international markets. Supply management philosophies such as global sourcing, knowledge of incoterms, employing professional procurement staff with specialised skills and flexible supply structures, are all important elements of global business strategies.

- Rapid development in information technology

Information on suppliers, the quality of materials, prices, and the different types of materials are more readily available. This poses new opportunities or threats to firms that do not keep abreast with the latest technology. Developments in e-commerce, e-procurement and electronic data interchange have reduced the order time for materials. These developments in information technology have made top management aware that the purchasing and supply function can contribute significantly to the success of a firm.

- Supplier risks

Supplier risks have increased with the growth in economic activity in Asian countries, for example, Japan and China, as well as with energy shortages and risks associated with civil wars in certain countries. It has become important for the purchasing and supply function to manage or reduce these risks.

- Technological revolution that has shortened the life span of products

Firms have to pay special attention to prevent materials from becoming obsolete. This is why the purchasing and supply function has to introduce new technologies such as sourcing new improved materials and production processes on a continuous basis.

- Increasingly strict quality specifications

Careful attention needs to be given to the inherent materials of a product to ensure that they meet the quality specifications stipulated. All over the world there is an increase in environmental awareness and this has led to very strict specifications for the material and manufacturing processes of the finished product. Purchasing and supply management play an important part in ensuring that the materials that are purchased are environmentally friendly.

- Increases in inventory costs

Constant increases in transport costs had forced firms to consider what inventory they should hold without having the danger of too little stock and the cost of having too much stock. Unnecessary inventories tie up the working capital of the firm and increases costs.

- Inflation

Suppliers' material prices are being increased in response to the rising costs of fuel, electricity and labour. Purchasing and supply management have to manage the prices of materials during inflationary periods (Benton, 2010: 9).

- Complex, high value products

Today's products utilise more complex materials and components in more configurations, with higher degrees of customisation, than in the past (Benton, 2010: 9). Specialised purchasing and supply skills are required to purchase these complex materials efficiently and effectively.

For all the above-mentioned reasons, senior management's awareness of the importance of the purchasing and supply function has increased, and they have recognised the value that it can contribute towards a firm's profitability and success.

## 2.4 IMPACT ON THE PROFIT OF AN ORGANISATION

As was indicated in the previous sub-section, effective and efficient purchasing can have a significant impact on a firm's profitability. All purchasing and supply management activities have the potential to reduce costs and thereby increase profits. There are three main areas that one can discuss to indicate the important influence that efficient purchasing can have on a firm. These are the 'profit-leverage effect', the 'return on investment effect', and the 'reduction in inventory investment effect'.

To start with, the 'profit leverage effect', states that a small percentage saving in the purchase price of material inputs can result in a large increase in profit (Hugo & Badenhorst W-Weiss, 2011: 8). A simple illustration of this affect is as follows:

Purchasing costs (materials)	=	R40
Overheads (electricity/wages)	=	R20
Profit	=	<u>R6</u>
Selling price	=	R66

Suppose the production buyer is able to reduce the costs of materials by 10%, then the profit would increase as follows, on the assumption that the selling price stays the same:

Purchasing costs (materials)	=	R36
Overheads (electricity/wages)	=	R20
Profit	=	<u>R10</u>
Selling price	=	R66

As illustrated above, any savings made in the cost of the material is added directly to the profit. To have the same effect as a 10% decrease in purchasing costs, the firm would have to implement the following:

- Double the sales volume
- Selling prices would have to be increased by 6%

- Overheads would have to be reduced by 8%

The second area influencing efficient purchasing is the 'return on assets effect'. This occurs when efficient purchasing reduces the cost of the assets purchased, which in turn will increase the profit of a firm (Hugo & Badenhorst-Weiss, 2011: 10).

The third area is the 'reduction in inventory' investment by reducing purchasing prices and getting the suppliers to take over the inventory responsibility and ownership, thereby reducing inventory carrying costs and preventing the risk of obsolete stock.

Although the purchasing and supply function can assist to make immediate savings on purchasing prices, there are other areas in which this function can contribute to the firm's competitive position in a more indirect manner. These areas include:

- Lowering of quality costs

Many firms inspect the supplier's materials when they are delivered. The cost of incoming inspection can be reduced by buyers implementing a quality assurance programme and sourcing only from those suppliers that have sound quality policies and procedures in place.

- Product standardisation

Product standardisation refers to the reduction of the variety of materials that are purchased (Stevenson, 2012: 149). Purchasing can contribute to a cost reduction programme by striving to achieve standardisation by liaising with suppliers as to which products can be standardised. This will result in bulk purchases and therefore the effect of discounts based on the economies of scale principle. Another area to achieve standardisation is by reducing the supplier base so that the volumes that are purchased are increased and the standardisation of parts is made possible.

- New product designs and innovations

Innovations and new product designs come mostly from suppliers. Active interaction between the buyer and supplier can contribute to the firm's continuous innovation and improvement of products.

- Inventory reduction

Safety stock is usually regarded as an insurance against suppliers who do not meet their delivery dates. This buffer stock is then used to prevent any production stoppages. Purchasing can contribute to the reduction in inventory by selecting suppliers that are reliable, provide outstanding quality products and adopts just-in-time policies. A reduction in inventory reduces the costs of the firm and hence increases profit.

- Agility

Owing to globalisation, firms have to be geared towards being flexible in order to meet the ever changing customer requirements. Integration between the supplier and buyer is of utmost importance to ensure that lead times are as short as possible and inventory in the entire supply chain is kept to a minimum. This will prevent obsolete stocks while modifications to products can be introduced with minimal costs. Purchasing should carefully select suppliers who are flexible and can meet the firm's demands of just-in-time scheduling and total quality management.

It can be determined from the list of examples given above, that sound purchasing and supply management strategies can benefit firms significantly and that there are many opportunities for improvement. For purchasing to take advantage of these opportunities, they require good co-ordination, collaboration and harmonisation among the different functional areas within a firm, as with the respective suppliers (Van Weele, 2005: 19).

## 2.5 RELATIONSHIP WITH OTHER DEPARTMENTS

As stated above, good co-ordination, collaboration and harmonisation among the different functions within a firm, is required to take advantage of opportunities to improve the purchasing and supply function. According to Hugo and Badenhorst-Weiss (2011:11), the following departments all impact on purchasing's ability to perform successfully:

- Production

Close purchasing and production co-operation is essential for production excellence. The production department relies heavily on purchasing for the timeous and correct supply of materials of the required quality and quantity to prevent production stoppages and poor final product quality. Purchasing and supply will also procure the machinery, equipment and maintenance materials for the production department. In addition to the above, purchasing plays a strategic role in cycle time reduction by ensuring that the suppliers' lead times are reliable and kept to a minimum.

- Engineering

Close co-operation is required between engineering and purchasing to ensure that the specifications of the parts are procurable. One should try to avoid a design that looks good on paper, but which requires materials that cannot be sourced, or manufactured by the supplier. Therefore, these two departments need to work effectively together as a team. The failure to include supply considerations in the design stage could lead to reworks, scrap, poor quality products being delivered and end user dissatisfaction (Johnson et al, 2011: 49).

- Marketing

The marketing function depends on purchasing for the timely delivery of materials for marketing purposes. It is also responsible for providing certain operating requirements such as vehicles, stationery and various other commodities. The



purchasing department's contact with suppliers can provide information on current and future market conditions. Finally, purchasing forms an important link in communicating the needs of the customer to the first tier supplier who in turn will pass this information on to their suppliers.

- Finance

Purchasing can negotiate with suppliers on payment terms, such as a 2.5% discount if their invoice is paid within thirty days. This information should be communicated to the finance department. The finance department should keep to the terms signed in the contract with the supplier and ensure that invoices are paid in a timely manner (Johnson et al, 2011: 49). Failure to pay invoices in a timely manner could result in production stoppages.

- Stores

Purchasing needs to keep stores informed about agreements with new suppliers and stock due to be received. When negotiating agreements, purchasing should bear in mind that inventory should be kept to a minimum. Stores should keep purchasing up to date on parts that have been rejected and short shipments (Carter, Price & Emmett, 2005: 37).

Carter et al (2005: 41) maintain that a culture of co-operation and working together for a common goal should have positive consequences for the end user. An effective approach to promoting this culture in a firm is the use of cross-functional teams. Burt, Petcavage and Pinkerton (2010: 37) state that this is a common approach to addressing many purchasing and supply management related activities such as new product development, value analysis, standardisation, supplier selection, outsourcing, the acquisition of capital equipment, as well as supplier development. As these teams require investment in human resources, their use is limited to high value activities.

All functions working together in a cross-functional team benefit from the variety of inputs from the different functional areas. For example, during the new product

development process, marketing has information on the end user's requirements. Engineering has knowledge of the design process and what can and cannot be done. The production department has knowledge on the firm's manufacturing capabilities and capacities. Purchasing has information on the supplier's capabilities, costs and availability of materials. When these different departments come together under the leadership of a team leader, the result is a more profitable product and the time taken to introduce the product into the market is far less than the traditional approach of product development only by the engineering department (Burt et al, 2010: 39).

## 2.6 CROSS-FUNCTIONAL TEAMS

As far as cross-functional teams are concerned, the following question should be asked: "What are the pre-requisites to successful cross-functional teams?" According to Burt et al (2010: 42), there are four critical pre-requisites. These include:

- The support of top management

Top management should have the ability to secure the co-operation and support from senior management in the different functional areas to allow the assignment of the appropriate human resources to the project. Executive management should track the cross-functional team's progress and obtain the additional resources as required by the team.

- Effective team leaders

Effective teams require highly skilled leaders who build a team with vision, accountability, information, skills, enthusiasm and commitment to achieve their goals. One of the main roles of the team leader is to help the team focus on the task that they wish to accomplish and remove any obstacles that stand in the way of the team's performance. Without skilled leadership, teams may lose sight of their goals, become involved in inter-personal fights, lose morale, and not contribute to their full potential.

- Qualified team members

One of the key factors to be a successful team member is a person's willingness and desire to contribute. Some examples of the skills needed are that team members must have the ability to listen, give clear information, give unbiased information and be able to foster open communication.

- Training and development

Having a competent leader and qualified team members is important, but the training and development of these teams are required. Team development and training calls for high investment, but the results can be very cost effective.

As the four pre-requisites for successful cross-functional teams have been determined, the role that the purchasing and supply management professionals play in these teams still needs to be outlined. Burt et al (2010:46) state that these purchasing and supply management professionals have four major roles to play. The first is to represent the purchasing and supply management department's point of view in terms of trade-offs and decisions that affect their department's policies and procedures. Secondly, to provide product knowledge on suppliers' products. Thirdly, to provide expertise in purchasing and supply management areas such as material costs, suppliers' capabilities and capacities and the availability of materials. Fourthly, to be a liaison between the firm and suppliers to ensure that project needs are met.

Cross-functional teams are one of the most recent trends in business firms and these teams are required to improve the efficiency and effectiveness of the supply chain within which the firm operates. There are also other major trends in business firms which will be discussed in the next section.

## 2.7 ADDITIONAL RECENT TRENDS

It is important that business firms take note of recent trends. These new developments should be taken into account in the strategic planning of the

business, as well as in the purchasing and supply department. Examples of these new developments include (Stevenson, 2012:24):

- Internet, e-commerce and e-business

The internet has changed the way firms compete in the market place. It provides great opportunities for firms, but firms need to increase their knowledge of how these opportunities can be exploited. Electronic business (e-business) is the use of the internet to conduct business, while electronic commerce is the consumer-business transactions such as buying on-line, communicating with suppliers, sending technical drawings or requesting information on-line. Buyers can now concentrate on value adding activities such as early involvement in product design, negotiations of high value items, reducing costs, strategic sourcing and supply base selection. Therefore, these trends are receiving increased attention from firms' owners and management in developing their strategies.

- Flexibility

Flexibility refers to the ability of a firm to respond to changes in the design and demand of its product. A firm should be able to maintain a flexible system that can quickly respond to changes to remain competitive and cope with the pressure of increasingly shorter product life cycles in the marketplace.

- Ethics

Nowadays, ethical behaviour is receiving increased attention from management. Buyers releasing misleading information, accepting bribes, and breaches in privacy and security of computer files are just some of the many ethical issues that have led to various investigations. Business firms can obtain a poor public image when consumers discover their suppliers are exploiting children in low cost countries, not adhering to the basic health and safety regulations, exploiting their workers and not being environmentally friendly. As a consequence of the above, consumers may not purchase the firm's products.

- Technology

There are mainly three types of technology that affect a firm's costs, productivity and competitiveness. Firstly, there is product and service technology which refers to the discovery and development of new products and services. This is mainly done by researchers and engineers, but purchasing may contribute by obtaining clues from their suppliers on the latest developments with products and services. Secondly, there is process technology, which refers to new methods and procedures to reduce costs and increase productivity. Thirdly, there is information technology, which refers to the use of computers and other electronic equipment to store, process and send information as referred to earlier.

- Supply chains

Management is paying considerable attention to the management of their supply chains. A supply chain is a sequence of facilities, functions and activities that are involved in producing a product, starting at the raw material supplier and extending all the way to the end user. The main goal of supply chain management is to add value to the product as it moves through the supply chain.

- Outsourcing

According to Johnson et al (2011: 121), outsourcing is when an activity, product or service that was previously done in-house is now being purchased from an outside party. The main reason for outsourcing is that firms, by buying from outside suppliers, can then concentrate on their true core capabilities. Benton (2007: 75) states that the benefits of outsourcing are that it reduces the pressure of the firm to be competent in all areas of production that go into manufacturing a product. Another benefit is that by concentrating on their core business they can direct all their energies into value-adding activities. Inventory can be eliminated or kept to a minimum and concepts such as just-in-time can be introduced.

In addition to the above, Van Weele (2010: 17) explains that there are further trends that purchasing and supply management must consider. These trends include:

- Globalisation

To remain competitive, firms are increasingly sourcing their materials from foreign, low cost firms. Buyers have been forced to adopt an international scope towards their supplier markets. Being able to deal with different cultures effectively, negotiate in different languages, have skills and knowledge on monetary systems, import duties and taxes, have all become important pre-requisites for the professional buyer.

- Supplier integration

Advances in information technology have enabled firms to improve their materials planning and supply systems within the firm and with suppliers. To achieve system integration, close co-operation is required between the functional areas such as stores, quality inspection, production, purchasing and the suppliers. The capability of a supplier to 'see into' the buyer's manufacturing planning and inventory systems becomes a pre-requisite of being able to apply concepts such as total quality management, just-in-time, and quick response logistics.

- Reciprocity agreements

"I buy from you and you buy from me" is a strategy that is being implemented by many firms that are operating in the international market. According to Burt et al (2010: 259), most purchasing and supply managers disapprove of these counter-purchase obligations, even when it is legal, because it restricts competition among suppliers. Conversely, some buying firms argue that when important factors such as price, quality and service are all equal, they prefer to purchase from the firm's suppliers than other customers. The buying firm believes that if the firm purchases products from the supplier, they will both profit in the long term, and the service from the supplier will be of a higher standard.

- Environmental issues

According to Hugo and Badenhorst-Weiss (2011: 71), all firms should have a policy on environmental responsibility. Buyers should procure materials considering the following three aspects:

- Suppliers being sourced should have policies and measures in place to protect the environment during the manufacturing of products.
- Products should be environmentally friendly. In other words, the recyclability of the products and packaging should be considered.
- Correct materials and quantities should be purchased so as to prevent waste and obsolescence.

- Centralisation/Standardisation

When firms have several production plants, even if these plants are across international borders, important purchasing advantages can be realised by combining their purchasing requirements. One of the advantages is purchasing in bulk and obtaining discounts. Firms are actively implementing policies that enable them to benefit from purchasing and supply strategies such as centralisation and standardisation.

If automotive assemblers and their suppliers keep abreast of, and implement, the above trends in their purchasing and supply management functions, they will be progressing towards world-class status. These firms should, however, not lose sight of the overall goals of the purchasing and supply function.

## 2.8 OBJECTIVES OF THE PURCHASING AND SUPPLY FUNCTION

A purchasing and supply department's main goal is to purchase the materials in such a manner that the business firm can maximise its profits and satisfy its customers. To accomplish this main goal there are certain sub-objectives that need to be achieved. According to Johnson et al (2011: 47), these goals include:

- To supply an uninterrupted flow of materials and services to the organisation.

Late deliveries, short shipments and poor quality products can stop the production line and are extremely costly to the organisation in terms of higher input costs, lower profits and customer dissatisfaction.

- To keep investment in inventory to a minimum

The firm needs to maintain an optimum quantity of inventory by considering the trade-off of having the costs associated with large inventory levels versus lean inventory levels, and the associated stock-out costs. Firms always need to keep in mind that inventory ties up working capital that can be put to other productive uses.

- To implement a quality assurance and continuous improvement programme

To develop the quality of their products and service delivery, firms should implement a quality assurance programme, internally and externally, with suppliers (Hugo & Badenhorst-Weiss, 2011: 6). To compete on a global basis, continuous improvement in supplier quality is crucial.

- To achieve good communication and co-operation between internal departments

Purchasing and supply managers cannot achieve their goals without effective communication between functional areas. Poor communication leads to errors and mistakes, and increases the firm's costs.



- To select and develop world-class suppliers

The success of the organisation depends largely on the purchasing and supply function's ability to source world-class suppliers, develop their supplier base and work with the supplier to continually improve and foster a win-win long-term relationship.

- To standardise products and processes

The standardisation of materials leads to bulk purchases and, consequently, lower prices, lower inventory levels, and lowers the risk of unavailability and rejected parts. The standardisation of capital equipment results in fewer spare parts being kept in inventory and reduced costs on training and maintenance. Process standardisation can result in higher productivity, higher profits, shortened cycle times and more opportunities to share knowledge across cross-functional and cross-organisational teams.

- To develop strategies for key components

According to Hugo and Badenhorst-Weiss (2011: 6), strategies need to be developed for key components that are critical to the continuation of the production line and for the survival of the firm. This is to prevent the huge costs that can be incurred owing to the non-availability of items.

- To purchase materials at the lowest total cost of ownership

The purchasing and supply department needs to purchase products at the lowest possible total cost of ownership, which is the purchase price of a product together with other factors such as inspection costs, production stoppages, inventory requirements and warranty costs. The total cost of ownership is all the costs involved in bringing the product to the end user.

If the above objectives are achieved, then the purchasing and supply department will improve the profitability of the business firm and ensure its survival in the market place, as well as ensuring that the firm's suppliers maximise their profit and remain in business.

## 2.9 CONCLUDING REMARKS

This chapter gave a general overview of the purchasing and supply department, as well as the latest developments related to this function. The general overview included activities of the purchasing and supply function, reasons for the increasing importance of this function, the impact on the profitability of a firm, as well as the relationship between this function and other departments in a firm.

The next chapter will give an explanation of the suppliers' pricing methods and cost structures, as well as basic negotiation concepts.

## CHAPTER THREE

### PRICE DETERMINATION, COST MANAGEMENT AND BASIC NEGOTIATION STRATEGIES

#### 3.1 INTRODUCTION

In the previous chapter, a general overview of the purchasing and supply department, as well as the latest developments regarding purchasing and supply management in modern business was discussed. Following this, using the guidelines from Chapter Two, this chapter will focus on price determination, cost management and negotiation strategies. A good understanding of suppliers' pricing methods and costing systems, as well as basic negotiation strategies, forms part of the key factors required by world-class purchasing and supply departments in the automotive industry.

To start with, this chapter will offer an explanation of suppliers' pricing methods and cost structures; the total cost of ownership; open book costing and cost transparency; as well as price reduction techniques such as value analysis, learning curve, target pricing, standardisation, centralisation, break-even analysis and discounts. Next, the discussion will refer to basic negotiation strategies such as planning for negotiations, the actual negotiation process, negotiation tactics, circumstances under which negotiation should take place, characteristics of a successful negotiator, cultural differences in negotiation, as well as the determinants of effective negotiations.

#### 3.2 SUPPLIERS' PRICING METHODS

According to Benton (2010: 284), price determination is becoming the most important competitive weapon to ensure the survival of a business firm. As many business firms are shifting from manufacturing products in-house to outsourcing, a significant percentage of component parts and services is being purchased from outside suppliers. Outsourcing is also increasing in the automotive industry as business firms try to find ways to lower their costs.

In the past, the production manager was responsible for making sure that a large percentage of the input costs that was part of the finished product, was kept under control. This responsibility has now moved to the purchasing and supply department. Van Weele (2010: 345) states that the importance of the purchasing and supply function increases if the rise in material prices cannot be directly passed onto the customer. To prevent price increases being directly passed onto the customer, the buyer should consider methods to reduce the supplier's costs. However, to be able to reduce the supplier's costs, the buyer needs to have a thorough understanding of the supplier's pricing methods and cost structures. Van Weele (2010: 350) states that the supplier will consider the following factors when determining his/her selling price to the buyer:

- Competitors in the market

When the supplier is a monopoly, the supplier has a high degree of freedom in determining the selling price. There are only a few monopolies that exist today, and, as a result, the majority of suppliers operate in a competitive environment and have to consider their competitors when setting their selling price.

- Importance of the customer

Suppliers, especially new suppliers, are eager to do business with large firms who have a very good reputation. Suppliers will often charge special prices to the buying firm, but after a certain time period, will try to re-establish the prices at a higher level.

- Order volume

Suppliers are often willing to charge lower prices in exchange for the buyer purchasing a certain minimum quantity over a time period or that the buyer will give the supplier more business in the future. Suppliers may also employ a sliding scale indicating to the buyer which discounts apply to which quantities.

- Expected demand

If the demand for a particular product is high in the market place, the supplier will generally charge a price that is a little higher than when demand is low. The supplier will, therefore, also not be willing to reduce prices as he knows that the product is in high demand.

- Expected development of the cost price of the product

If the supplier expects the production volumes to increase in the future, the supplier will anticipate that his/her costs will be reduced in the future based on the learning curve scenario, and may set a lower selling price.

- Value of the product to the customer

In some circumstances, for example when there is a shortage of products in the marketplace, the value of the product bears no relationship to the manufacturing cost of the product. If these materials are needed urgently for the continuity of the production process, the supplier may charge a higher selling price compared to the original cost price of the product.

In addition to the above, Hugo and Badenhorst-Weiss (2011: 137) state that the method of price determination is strongly influenced by the type of product that is being purchased. The different types of products fall into various categories which are mentioned below:

- Raw materials

In the automotive industry examples of these products are copper, steel and crude petroleum. These products are usually purchased on world commodity markets and the prices are fixed. As the prices are fixed, the buyer will rather have to negotiate on other key variables such as service, lead times and quality.

- Custom-made items

These products are manufactured according to the buying firm's specifications. Examples of these products in the automotive industry are headliners, decals, carpets and dash boards. The supplier will generally set a higher selling price as the product is being manufactured according to the buyer's specifications.

- Standard production items

Examples of standard production items in the automotive industry are tyres, paint and fasteners (bolts and washers). The prices of these products are determined by a quotation based on a published price list. These prices are fairly stable and the buyer should negotiate a discount.

- Items of low value

Examples of low value products in the automotive industry are nuts, bolts, washers and staples. Owing to the low value of these products buyers do not spend much time and effort checking the price prior to the purchase. Buyers, however, should review these prices on a regular basis, especially in inflationary times, when suppliers tend to increase their prices without proper justification.

Once the supplier has taken into account all the factors mentioned above, the selling price will be determined based on the following two methods (Johnson et al, 2011: 257):

- Cost approach

The cost approach to pricing is when the supplier adds a fixed percentage mark-up to the cost price of the product. This approach offers the buyer a number of opportunities, such as suggesting lower-cost manufacturing alternatives and negotiating the profit percentage of the supplier. Negotiation and other price reduction techniques are useful tools to lower costs, which will be discussed later on in this chapter.

- Market Approach

The market approach to pricing is when the prices are set in the market place and may not take into account the costs of the product. The buyer must either accept the prevailing market prices or must find methods to reduce the supplier's price. Examples of some of these strategies are to find substitute materials that can be used; enter into a long term agreement; or to manufacture the product in-house. If nothing can be done to reduce the price, the buyer may select suppliers that can offer non-price incentives such as holding inventory, superior quality, excellent service delivery, or technical expertise.

According to Benton (2010: 295), knowing how suppliers set prices, being able to manage supplier risks and establish strategies for price adjustments are important skills for buyers. Buyers who do not have these skills and depend on competitive bidding to determine prices will miss opportunities to reduce total costs. A factor closely related to price determination is cost analysis. Burt et al (2010: 345) explain that professional buyers need to have an understanding of cost analysis and costing systems if their business firms are to have world-class purchasing and supply functions. Buyers that have a thorough knowledge of their suppliers' costing methods should be able to help their suppliers reduce their costs, which ultimately benefits the buying firm.

### 3.3 COST ANALYSIS

Cost analysis is the evaluation of actual or anticipated costs. This analysis involves the application of knowledge, experience, and judgement to determine a reasonable price that is fair both to the buyer and seller (Burt et al, 2010: 332). Cost analysis is also extremely useful when purchasing non-standard items especially if, for example, the buying firm may have manufactured the product before and can highlight areas where costs can be reduced. Carter and Kirby (2006: 74) maintain that a complete cost breakdown should be obtained by the buyer and a full analysis carried out to examine the following:

- Profit mark-up

Some buyers believe that the supplier's profitability is of no concern to the buyer. However, if the supplier goes into liquidation in the short term, the buyer will have no supplies and in the long term, the buyer will have to go through the entire sourcing process again which involves a great deal of time and cost. It is, therefore, in the interest of the buyer that the supplier makes a profit and remains in business. The buyer, when examining the supplier's cost breakdown, should analysis the profit mark-up of the supplier. Hugo and Badenhorst-Weiss (2011: 134) mention that different approaches can be used to estimate the profit mark-up of a product. Some examples are a percentage of production costs, a percentage of sales or a percentage decided by management. Certain factors such as the risks run by the supplier, the quantity purchased, technological skills and competitive prices must be considered by the buyer when evaluating the supplier's profit mark-up.

- Material costs

Material costs can be estimated by comparing the material costs of a similar product or by the supplier providing the buyer with a material list. This material list will give a breakdown of the material and their quantities that can be identified in the finished product. If the supplier does not have a material list, the buyer's own production department can be useful in determining the quantities of the different materials that go into the final product (Hugo & Badenhorst-Weiss, 2011: 134). If it is found that the supplier is paying too much for the materials from their own suppliers, then the selling price to the buyer will be high. Conversely, paying too little for a product can have adverse effects such as bad quality products.

- Direct labour costs

All labour that is used in manufacturing the final product can be regarded as direct labour. An estimate of the direct labour is done by considering the labour hours and wage rate. The buyer's production department may be able to assist in estimating the labour hours and the nature of labour required to manufacture the product. Information on the wage rate can be obtained from the human resources department (Hugo &



Badenhorst-Weiss, 2011: 134). If the supplier is paying wages higher than the going rate to the workers then the input costs will be too high and, hence, the selling price to the buyer. Conversely, paying less than the going rate may result in strikes and supply disruptions.

- Factory overheads

Factory overheads consist of costs that are directly related to the manufacture of a product, and other costs that have no connection to any production run. Some examples of these costs are rent, electricity, lubricants, advertising, cleaning materials and indirect labour such as cleaning staff and management. It is important that the buyer ascertains on what basis the supplier makes this cost estimate and whether the cost allocation of the overheads is correct (Hugo & Badenhorst-Weiss, 2011: 134). The buyer's cost accounting department can assist with the allocation of the overheads to the final product. Over contribution of the overheads to the product means that the selling price is too high, whereas under contribution means that the supplier is in danger of going bankrupt.

The cost astute buyer will estimate the cost of the product based on a full analysis of the above factors. Once the buyer has determined the cost breakdown of the purchase price, the next step is to take into account the total cost of ownership of the product to be purchased.

### 3.4 TOTAL COST OF OWNERSHIP

Carter and Kirby (2006: 3) explain that many buyers still tend to focus on paying the lowest possible price for the material they purchase. They incorrectly believe that the lowest price means the best value. Both authors indicate that buyers should seek to obtain the lowest total cost of ownership as a low price may not necessarily mean a low total cost of ownership. According to Burt et al (2010: 304), the three components of the total cost of ownership include:

- Acquisition costs

These costs are the initial costs associated with the purchase of material and include:

- Purchase price

The purchase price of a product is calculated by taking the supplier's price and adding the freight costs and insurance costs. Most of the suppliers include freight and insurance costs into the price that they quote to the buyer. Buyers can reduce the supplier's purchase price by negotiating effectively, standardising specifications, conducting value analysis, qualifying for quantity discounts and the sharing of transport between suppliers.

- Planning costs

Some of the planning costs are developing specifications, conducting price and cost analysis, supplier selection and sourcing, drawing up the contract, as well as the initial order processing and following up. Buyers can reduce these costs, for example, by spending time with the engineering department during the development phase of a new product and suggesting that custom parts are replaced with standardised parts. This will reduce the initial purchase price, inventory carrying costs, inspection costs and production costs owing to standardised processing, as well as future repair and replacement costs.

- Quality costs

It is important to build quality into the product rather than to inspect the product continually. If the product has to be continually inspected it increases costs as resources are required to inspect the product. To build quality into a product may require a high initial cost of designing good quality into the product during the design phase. However, a well-designed product should lower the future ownership and post-ownership costs. It is also imperative that the right supplier is selected to ensure the optimal level of quality. The supplier implementing quality assurance policies and procedures is vital to preventing future costs.

Long-term strategic alliances between the buyer and the supplier may facilitate supplier assurance systems and as a result cost reductions, especially in a cross-organisational environment.

➤ International costs

Owing to globalisation, firms that are sourcing internationally must address the impact of taxes and custom duties on the cost of the purchased material. Buyers should consider the differences in taxes between local and international countries to determine which option will be most competitive to source materials from. An example is that buyers could source materials in free trade areas where duties on all or part of the product are reduced or eliminated. The impact of taxes can have a significant effect in reducing the purchase price. A depreciation of the local currency also makes the price of imported material more expensive.

• Ownership costs

Ownership costs are the costs associated with the on-going use of the purchased product. These costs have an important bearing on the cash flow, profitability, employee morale and productivity. The following ownership costs should be considered.

➤ Lost production time costs

Costs associated with downtime are reduced production volumes, lost sales, idle labour and machinery, overtime wages and unsatisfied customers. To avoid these costs, buyers should pay careful attention to the reliability and dependability of the supplier.

➤ Risk costs

An example of a risk cost is purchasing materials from a new supplier. Careful investigation and the development of appropriate suppliers will reduce the risk of the unknown. Another example is the risk of delivering materials on a just-in-time basis. If the materials are not received in the correct quantity, quality and on time,

the production line stops, resulting in a significant increase in costs. The buyer can avoid this by selecting the correct supplier.

➤ Cycle time costs

World-class firms will apply the principle of ensuring that the time to introduce a new /modified product is kept to a minimum. This involves keeping all relevant purchasing and production activities to a minimum time period. Some of the practices that buyers can employ that will have a significant impact on reducing the cycle time are just-in-time materials management, long-term relationships with key suppliers and cross-functional teams within the firm. This will help to achieve a smoother-running and efficient firm, which will result in reducing the cycle time.

➤ Transformation costs

If the incorrect material is purchased, whether in quality or design, the cost of transforming inputs into outputs will increase. Materials not suited for particular production processes can decrease productivity, increase labour and overhead costs. The buyer can influence these costs by being part of a cross-functional team whereby the production department can inform the buyer regarding the type of materials required for the production processes.

➤ Waste costs

Buyers with knowledge of management, production, finance, information technology and logistics are qualified to make suggestions to their suppliers that will help to reduce non-value added costs. The supplier's production plant can be visited and their manufacturing process can be observed. This observation may reveal a number of non-value adding costs that can be reduced or eliminated, thus helping the supplier to lower his/her price to the buyer.

- Post-ownership costs

These costs occur after the purchased material is in the possession of the final customer. Burt et al (2010: 309) state the following examples of these costs:

- Warranty/product liability costs

There may be unforeseen warranty costs when a poorly designed and manufactured product is produced. A professional buyer who participates in a cross-functional team will be able to point out potential warranty or recall costs in the beginning of the design phase, which will contribute to the firm manufacturing a defect-free and reliable product.

- Customer dissatisfaction costs

When customers are unhappy with the product that they have purchased, they will disclose this information to their friends and acquaintances. This will result in lost sales or loss of potential sales, which negatively affect the profitability of the business firm.

Once the total cost of ownership has been determined, the buyer may begin to look at methods to reduce the supplier's price. The buyer may ask the supplier to disclose the cost information on the product that is being quoted on.

### 3.5 OPEN-BOOK COSTING AND COST TRANSPARENCY

Open-book costing is when suppliers are requested to share sensitive cost information which is usually kept secret by their business firms (Hoffjan et al, 2011). The buying firm places pressure on the supplier to disclose cost information relating to the product that is being quoted on. The supplier may only feel comfortable to reveal the costs of the contract in question, and not on the entire business. The supplier may not want to reveal the entire business costs to the buyer to prevent the buyer knowing what the supplier is charging the buyer's competitors for materials. A confidentiality agreement is often

drawn up between the buyer and the supplier to prevent the buyer from revealing the supplier's prices to other parties (Partnering, 2008).

The sharing of information between the buyer and the supplier indicates that the two parties are working together to reduce costs (Hoffjan, Luhrs & Kolburg, 2011). When working on a supplier development programme it is of benefit to both parties to have a thorough appreciation of the product costs so that these costs can be reduced. Open-book costing can be very resource-intensive and may require some assistance from the finance department in an organisation. It is very important that when adopting open-book costing, the buyers do not abuse the situation by reducing the supplier's profit margin to such an extent that the supplier goes into liquidation (Partnering, 2008).

If, after viewing the supplier's cost information, the buyer cannot find an area where the supplier can reduce his/her costs, various other methods to reduce prices will have to be considered. Some of these methods are value analysis, the learning curve method, standardisation, centralisation, target pricing and discounts. This is the topic of the next section.

### 3.6 PRICE REDUCTION METHODS

As mentioned in the previous section, there are various techniques and methods that the buyer can consider to reduce the supplier's price. These techniques and methods include:

#### 3.6.1 Value analysis

According to Lysons and Farrington (2012: 296), value analysis is a step-by-step procedure aimed at ensuring that the same performance of the products is achieved at a lower cost. The products must be manufactured at a minimum cost without detriment to quality, reliability, performance and delivery. The main goal of value analysis is, therefore, to eliminate all unnecessary costs in a product. This can be achieved by changing the design, re-engineering the manufacturing process, or purchasing alternative materials to reduce the supplier's price (Hugo, Badenhorst-Weiss & Van Biljon, 2006: 137). Lysons and Farrington (2012: 296) state that the implementation of

value analysis depends on choosing the right people and right project to carry out the procedure. It can be carried out by a team comprising of representatives from departments such as purchasing and supply, manufacturing, engineering, quality control, marketing, as well as the supplier of the product and the value analysis engineer. The value analysis engineer will have the responsibility of co-ordinating a value analysis team. Value analysis will be conducted on high value items or items that are procured in large quantities as any cost saving achieved with these items will have a significant affect on the profit of the business firm.

When negotiating a purchase agreement, the supplier will receive the buyer's specifications and will quote a price accordingly. If the price is too high, the buyer may visit the supplier's production plant and review their manufacturing processes. Value analysis will help the buyer to identify areas where costs can be eliminated or reduced in order to reduce the supplier's cost and the quoted bid price (Grant, Lambert, Stock & Ellram, 2006: 109). The professional buyer needs to know the value analysis procedure so that s/he can use this technique to reduce the supplier's price. According to Lysons and Farrington (2012: 297), the value analysis procedure includes:

- Identifying stage

The buyer should identify a product of high value or high usage. As mentioned earlier, any cost saving achieved with these products will have a significantly positive effect on the profit of a business firm.

- Information stage

The buyer should obtain all the information relating to the product such as the cost of materials and components, manufacturing and assembly times, inspection procedures and the functions of the product. This information is required to be able to identify areas where any cost savings can be achieved.

- Speculation stage

The buyer or the cross-functional team will have a brainstorming session and as many ideas as possible for reducing costs and improving the product will be noted. Examples of questions that may encourage suggestions include:

- Can the product be changed in form, shape, material and colour?
- Can the material be substituted with other materials?
- Can certain features of the product be eliminated?
- Can any of the manufacturing processes be changed?
- Can the product be re-designed?

- Evaluation stage

The buyer or cross-functional team will select the best ideas from the brainstorming session and determine their feasibility. The positive and negative effects of all the ideas must be stated clearly to find the best alternative.

- Proposal stage

During this stage, recommendations on the cost saving ideas will be presented to management for approval. The recommended proposal will have information relating to the change/s suggested, the cost saving that will be achieved, and the period over which the saving will occur.

- Implementation and follow-up stage

This is the stage where the agreed recommendations, once approved by management, should be implemented. The buyer should carefully monitor the results of the new recommendations to determine whether the cost saving is being achieved.



Hugo et al (2006: 138) explain that the following checklist, which is called the 'ten tests for value', forms the basis of value analysis and involves a critical examination of every material component and its operations:

- Does the product contribute value?
- Are the product's costs proportionate to its usefulness?
- Does the product need all its features?
- Is there anything better in the marketplace for its intended use?
- Can a substitute part be made at a lower cost method?
- Can a standard part be found which can be used?
- Is it made with proper tooling – considering the quantities used?
- Do the materials, direct labour, overheads, and profit justify its cost?
- Will another reliable supplier provide it for less?
- Are your competitors or suppliers buying it for less?

Value analysis is a useful tool in supporting purchasing decisions, especially when costs have to be minimised. The role of the purchasing and supply function is to obtain maximum value when purchasing material by eliminating anything that does not add value. By means of value analysis, the purchasing and supply function will have information that will enable the department to find opportunities to reduce costs (Hugo et al, 2006: 140). According to Lysons and Farrington (2012: 302), some of these opportunity areas include:

- The use of a supplier's standard item instead of a custom-made item
- Purchasing alternative materials at a lower cost
- Outsourcing instead of manufacturing in-house
- Purchasing of assemblies instead of components
- Buying quantities in bulk
- Reducing costs of packaging, transportation and handling
- Encouraging supplier participation as specialist suppliers will often provide advice for free

### 3.6.2 Learning curve method

The learning curve method is an important instrument in the reduction of purchase prices. Burt et al (2010: 337) state that the learning curve is defined as “an empirical relationship between the number of units produced and the number of labour hours required producing them”. The learning curve indicates that there is a specific and constant percentage reduction in the average direct labour hours for each unit produced, every time the number of units produced is doubled. This means that as labour becomes more efficient and skilled with the repeated handling of equipment and materials in the manufacturing process, more units of the same product are manufactured in the same time period (Hugo & Badenhorst-Weiss, 2011: 146). According to Johnson et al (2011: 300), the learning curve is brought about by a combination of factors that include:

- Turnover rate of labour
- Learning rate of labour
- Alternative materials, tools and equipment used
- More effective use of materials, tools and equipment
- Pressure from competition to do tasks faster and better
- Production scheduling improvement
- Labour force motivation

Van Weele (2010: 354) states that knowledge of the learning curve is of vital importance to the buyer. Knowledge of the supplier’s learning curve will help the buyer when negotiating a reduction in prices. The buyer can apply the learning curve to reduce prices in the following circumstances:

- When direct labour contributes to a significant part of the cost of the product
- Where single sourcing is involved
- When the contract to be awarded is of a high value
- When the products are custom made according to the buyer’s specifications

In addition to the above, Hugo and Badenhorst-Weiss (2011: 146) indicate the following learning curve circumstances:

- When the supplier introduces a new production process
- When the supplier manufactures a technically complex item for the first time
- Where a unique product is manufactured, with the assembly of the components being the most important activity in the manufacturing process

### 3.6.3 Target pricing

Johnson et al (2011: 299) explain that target pricing occurs when the buying firm establishes the price at which it is planning to sell its finished product in the market place. Once this price is determined, the profit is subtracted, leaving the target cost that the firm is trying to achieve. This cost is then divided into manufacturing, overheads, and materials. The buyer then becomes responsible for working with suppliers to achieve the cost target set for the materials of the product. Target pricing works best when there is a long term strategic alliance with the supplier. Dominick (2008) identifies target pricing as working well in the following circumstances:

- Buying firms are experts on the costs of the product
- Materials are not subject to volatile price fluctuations
- Material costs and labour hours can be clearly identified
- The supplier is manufacturing the product according to the buyer's specifications
- Labour represents a large portion of the total cost of the product

Dominick (2008) elaborates on these target pricing factors by saying that if a buyer is a technical expert s/he will know the costs prior to getting quotes from the suppliers. The buyer will then set a price for the supplier rather than the supplier informing him/her what the price should be. Lysons and Farrington (2012: 573) explain that target pricing is used by the buyer in the following ways:

- By giving the supplier a price that the buyer is prepared to pay for the product
- Through the buyer discussing with suppliers and agreeing on the means by which the target price can be achieved, including a fair profit
- By informing the suppliers of the expected life cycle of the product so that suppliers can estimate the total demand that suppliers may be expected to receive over a given period of time
- By including improvements into the product or price at agreed stages or when the contract is renewed

For target pricing to be successful, buyers must be involved in cross-functional teams, early supplier involvement, concurrent engineering and value engineering. Target pricing can be a tool used to increase the competitiveness of the business firm by reducing the price of the supplier's product and thereby ultimately reducing the price of the finished product to the consumer.

#### 3.6.4 Standardisation

Stevenson (2012: 149) defines standardisation as the "extent to which there is an absence of variety in a product, service or process". For Hugo and Badenhorst-Weiss (2011: 120) standardisation reduces the number of items being purchased and can have significant benefits and cost savings for the buying firm. Some of these benefits include:

- Large quantities can be purchased which allows the opportunity for bulk discounts
- A reduction in the total cost of ownership to the final customer since standardised materials and processes will reduce costs and increase the value delivered to the end customer
- A reduction in inventory carrying costs at both the buyer and supplier firm
- A decrease in or even elimination of inspection and quality control when standardised materials, processes and standardised quality assurance procedures are part of the supplier base management philosophy
- The facilitation of communication with internal and external customers as standard descriptions are used

- A reduction in or elimination of mistakes and doubts as the standard description is used
- An improvement in the firm's market share as less expensive standard items may reduce the cost of the final product
- Reduced training costs and time may ensure better labour relations, increase productivity and, hence, lower costs
- A decrease in global logistics costs as packaging sizes are reduced
- The standardisation of material handling equipment and storage systems
- A reduction in lead times as standard items are more readily available

In addition to the above, standardisation offers the following advantages to the buyer (Lysons & Farrington, 2012: 278):

- Clear specifications can be given to the supplier, which eliminates errors
- Suppliers are more reliable as they are manufacturing in large quantities and will carry stock
- Cycle time of the product can be reduced by saving on production time
- Suppliers will all be quoting on the same product as there are clear specifications
- Supplier goodwill can be increased owing to less errors and conflict
- There should be greater scope for negotiation owing to less dependence on specialist suppliers

Hugo and Badenhorst Weiss (2011:120) suggest that standardisation plays a vital role in purchasing decisions and can be used in a variety of circumstances, such as cutting costs so that the business can remain competitive or when trying to obtain a competitive advantage by lowering prices of the finished product, as well as maintaining current prices by avoiding price increases. Standardisation may also be used when a firm is experiencing cash flow problems as less stock is kept with standardisation.

When a business firm's production and purchasing department are not highly skilled, standardisation is a useful tool as standard parts require less skill. Another area in which standardisation can provide cost savings is when the demand for a product is uncertain and the firm does not wish to invest substantially in the manufacture and

purchase of non-standard items. Standardisation may increase sales as the customer will be able to acquire the product and install it in the after-sales market.

### 3.6.5 Centralisation

A centralised purchasing and supply function is where the authority and responsibility of the buying and supply-related function is assigned to a central organisation (Johnson et al, 2011: 51). According to Burt et al (2010: 34), an efficient and effective centralised purchasing and supply management operation can achieve a significant saving compared with a decentralised organisational structure. Benton (2010: 13) argues that centralised purchasing results in lower prices because of the consolidation of orders and, subsequently, purchase quantity discounts. The prices will be lower as the supplier will be able to spread the overheads over many more units. On the other hand, a firm with a decentralised purchasing and supply function will have several departments buying the same products. These departments could be competing against one another and when there are shortages of materials, this can result in higher prices.

Centralised purchasing promotes the effective use of buyers as they obtain knowledge on their products and have more authority and accountability. Lysons and Farrington (2012: 165) explain that a strong central purchasing and supply function can ensure the following:

- Uniform policies such as single sourcing can be adopted and uniform purchasing procedures can be followed
- Suppliers deal with one purchasing department which also improves the buyer-supplier relationship
- Standardisation is facilitated by the use of one set of specifications for all plants
- Inventories and the risks associated with carrying inventory can be reduced
- Approaches such as just-in-time, total quality management and material requirements planning can be implemented
- Order quantities, delivery dates and stock control can be co-ordinated
- Supplier development, supplier performance and purchasing research are facilitated

- Budgetary control of the department is facilitated

Benton (2010: 14) identifies disadvantages to a centralised purchasing and supply function. It may not always be cost-effective when a just-in-time policy is implemented as there may be a need for small deliveries on a frequent basis. The supplying firm, therefore, needs to be in close proximity. If the engineering department is not centralised, early involvement by purchasing in new-product development may be difficult to implement.

The modern trend is to have a centralised purchasing and supply function as firms are becoming leaner in their operations and long-term contracts are being entered into to stabilise prices. Honda of America is an example of a firm that uses a centralised purchasing and supply function as a competitive weapon (Benton, 2010: 14).

### 3.6.6 Break-even analysis

According to Hugo and Badenhorst-Weiss (2011: 147), the break-even point is where “the total cost curve intersects with the total revenue curve”. At this point, the cost of manufacturing equals the sales revenue and no profit or loss is being made. The buyer can apply the break-even analysis when determining the price of a product. A supplier who operates above the break-even point and is making a profit, and who is expecting a drop in sales, will accept lower prices so as to increase demand and render a higher profit from the increased sales. The buyer can use this information to convince the supplier to accept bulk discounts when negotiating with the supplier.

### 3.6.7 Discounts

Discounts represent an effective means of reducing prices (Johnson et al, 2011: 268). Van Weele (2010: 351) identifies the following different discount practises:

- Volume discount

As was indicated earlier, a lower price per unit is given to the buyer for purchasing materials in bulk. The quantity discount concept comes from the unit cost reduction

achieved in large-volume manufacturing operations. A large production run of a single product spreads the fixed costs over the number of items produced and, therefore, the larger the quantity produced, the lower the unit cost of each unit. However, the buyer must consider the trade-off between the cost saving achieved and the extra costs incurred as a result of the longer storage of the materials and the risk of obsolescence.

- Cash discount

Burt et al (2010: 350) explain that suppliers often offer price reductions for the prompt payment of invoices. The discount given is a percentage of the net invoice price. The most commonly used, for example, is that a 2.5% discount is given if the invoice is paid within 30 days of it being submitted.

- Seasonal discounts

This discount is given to the buyer if s/he orders out of season in the automotive industry. An example in the automotive industry of low season is in January when the majority of consumers have minimal income remaining after the Christmas holidays. The supplier will give this discount to the buyer to improve production capacity in periods when sales decline.

- Location discount

This location discount is given to buyers who are located in close proximity to the supplier's factory or distribution centre. The supplier can afford to give a cost reduction as the transportation costs will be much lower.

In addition to the above, Burt et al (2010: 349) maintain that suppliers will give trade discounts to various categories of buyers and manufacturers to compensate them for performing marketing and advertising on behalf of the supplier.

The above are all methods that can be implemented to reduce prices, but one of the most powerful tools to reduce prices is negotiations. This is discussed in the following section.



### 3.7 BASIC NEGOTIATION STRATEGIES

Negotiation has been described as “perhaps the finest opportunity for the buyer to improve the company profits and obtain recognition” (Lysons & Farrington, 2012: 526). However, Johnson et al (2011: 302) state that negotiation is also one of the most expensive means of price determination. Because of the expense and time involved, negotiations will only be used for large value orders. According to Van Weele (2005: 285), a significant amount of the buyer’s time is taken up preparing and conducting negotiations. An effective buyer must have knowledge on the negotiating process and negotiating skills. Burt et al (2010: 372) state that there are several objectives that are common to all purchasing negotiations. These objectives are to obtain the quality specified by engineering, to obtain a fair price and to negotiate that the deadlines are met with regard to sample delivery, pilot runs and delivery of materials.

Once the objectives have been determined, planning for the negotiations can commence. Van Weele (2005: 288) proposes the following ten step approach to the negotiation preparation process:

- Establish the goals of the negotiation.

As stated in the above paragraph, examples of these objectives can be to obtain a fair price, to receive the quality according to the buyer’s specifications, and to negotiate delivery times/lead times.

- Gather facts that will have an effect on the negotiations

There are objective and subjective facts. An objective fact, for example, is when a supplier has requested a price increase and the buyer will find out the supplier’s competitors’ prices and their planned price increases. Conversely, a subjective fact is the perceived relationship between the buyer and supplier. For example, if there is a partnership between the buyer and the supplier, then the buyer can obtain the supplier’s costing before the actual negotiations take place.

- Determine the power position of the buyer and supplier

It is important to determine the foundation of the supplier's power position. Sometimes suppliers prevent making decisions by referring to their firms' price lists or policies. Another example is when the supplier indicates that s/he must obtain the authority from his/her manager to make a decision.

- Determine the areas of common interest

A great deal of time can be saved by establishing, in advance, the points of agreement such as the quality of the product, the supplier's lead times and method of delivery. Focusing attention on the points of agreement creates a positive atmosphere and a more open discussion.

- Draw up a list of questions

The buyer should resist the temptation to respond immediately to new information presented by the supplier. A systematic procedure in negotiations is important and drawing up a list of questions will help the buyer not to deviate.

- Plan expected results in advance

It is important for the buyer to establish in advance what would be the best, most likely, and worst possible result.

- Decide on the responsibilities of the negotiating team, if a team is required

For strategic negotiations, it may be helpful to establish a cross-functional team. As each member of the cross-functional team should be an expert in his/her specific field, the buyer can seek their input on certain issues. The responsibilities of each member of this team should be clearly defined before negotiations take place.

- Plan opening bid and concessions

The buyer should decide on the timing of the opening bid. Because a buyer should never make a concession without asking for something in return, and vice versa, s/he should decide which concessions are possible and which are not-negotiable. The buyer should decide on what concessions s/he anticipates the supplier will make and which are unrealistic to expect of him/her.

- Decide on the negotiating tactics that will be followed

There are various negotiation tactics that the buyer can use during the actual negotiation session. These tactics will be discussed in detail in the next section.

- Determine how the negotiations will be concluded

Indicate the working agreements that can be reached with the supplier. An example of a working agreement is when the supplier gives the buyer a reduction in the purchase price which will be effective from the beginning of the next month, as well as a reduction in his/her lead time by three days which is effective the next week. It is important to summarise the expected results and agreements to prevent any misunderstandings that could occur between the two parties.

As mentioned above, the buyer must decide on the negotiating tactic that will be followed. Hugo and Badenhorst-Weiss (2011: 215) state that the following are a few negotiation tactics that can be followed in the negotiation process:

- The negotiation should take place at the buyer's firm according to the buyer's agenda and rules. There is a psychological advantage in having the supplier come to the buyer's premises. The buyer should sit at the head of the table. This will indicate that the buyer is in control.

- The buyer must be a good listener. The buyer should allow the supplier to do most of the talking as s/he may supply information that was never known or concede to certain points that were never planned.
- The buyer should be self-confident. A lack of self-confidence gives the supplier a psychological advantage.
- The buyer should not get emotional when presenting facts. Personal remarks and emotional reactions to the supplier's arguments should be avoided.
- The buyer should not place the supplier in an embarrassing position when s/he is making a concession. An example is that when a supplier makes a mistake in his/her presentation, no accusations should be made and the buyer should rather request that the supplier reviews this point.
- The buyer should insist that a final decision be made at the negotiations.
- The buyer should only make concessions near the end of the negotiation session and only a little at a time. If the supplier advises that s/he no longer wishes to concede, the buyer can use the approach of a 50:50 split. This will help build strategic partnerships and a long-term relationship.
- When the supplier is putting the buyer under pressure to make concessions, s/he can deny that s/he has authority to make this type of concession and has to consult his/her manager. However, delayed negotiations can have a negative effect as issues that have not been resolved.
- Setting deadlines are important as both parties will concentrate on matters and try to find a compromise.
- A recess can benefit both parties when a stalemate is reached or the buyer is placed into a difficult position. This recess allows both parties to revise the matter and consider new strategies.

In addition to the above tactics, the buyer in inflationary times may need different tactics to achieve cost containment. Dominick (2008) states that inflation provides an easy excuse for a supplier to try and increase prices. Suppliers often regard this time as a golden opportunity to increase their profit mark-up to make up for the last few tough years when they were forced to give price reductions.

There are, however, several negotiation tactics that can be used to maintain current prices. For example, one tactic is that the buying firm needs to commit to a long-term agreement. This will allow the buyer and supplier to improve processes targeted at reducing waste. Another tactic is to improve communications between the two parties. Providing suppliers with information such as sales and production output figures can reduce perceived risks and lower costs. This will also increase the trust between the buyer and the supplier and eliminate the need by the supplier to increase prices.

Above are some of the negotiation tactics that should be used to maintain prices during inflationary times. Dominick (2008) continues to explain that there are, however, additional negotiation tactics that can be effective in inflationary times, but can fail if not applied in the appropriate situations. Firstly, there is the 'crying poor tactic'. This tactic is often used by small firms or firms with a poor financial performance. The buyer will stress to the supplier that his/her firm does not have much money and, therefore, the supplier needs to reduce his/her pricing. This tactic can be effective, but can also raise suspicion with the supplier that the firm will not pay his invoices or fulfil their contractual obligations. As a result of this, the supplier may decide not to reduce his/her prices as s/he does not want the contract.

Secondly, there is the 'get it from someone else tactic'. The supplier may reduce his prices based on the fear that he may lose a deal to a competitor. This tactic can be effective, but not all markets are that competitive that one can obtain the exact same material with the equivalent quality, delivery and service. Suppliers in the less competitive markets are usually aware of this. If this tactic is used, the supplier will realise that the buyer has less knowledge than them on their competition. The result is that the supplier will feel that s/he has more leverage in the negotiation and will be less likely to concede on prices.

Thirdly, there is the 'saving the toughest issue for last tactic'. This tactic can be effective as the buyer and the supplier will agree on the easier issues which create an atmosphere of compromise and mutual understanding for a win-win situation. If there is a deadline for the negotiations, this tactic will not be effective as time will be an issue and the buyer will feel pressured to concede to a less-than-optimal deal.

However, negotiations are time-consuming and there is a large cost involved in the preparation and conducting of these negotiations. The circumstances under which negotiations should take place include (Hugo & Badenhorst-Weiss, 2011: 209):

- Cost-effectiveness

Negotiations should not be considered for all orders. The cost of the negotiations should be considered against the saving that can be achieved by conducting the negotiations. Negotiations, therefore, are only considered for high value or high volume products.

- No competition

When there is a monopoly or very little competition in the supply market, negotiation can be the only alternative to try to reduce supplier prices.

- Technology

When the buying firm is purchasing hi-tech materials and the specifications are difficult to define, negotiations are necessary. An example could be the wiring harness of an automobile.

- Modifications to the product

If, during the term of the contract, the buyer decides to modify the product being supplied, this has major implications for the supplier. The supplier may have to change his/her manufacturing processes, purchase new equipment, learn new manufacturing skills and purchase new raw materials. All these changes affect the quality, price and

delivery in the supply chain and, therefore, negotiations are necessary for the buyer and the supplier to reach a compromise.

- Bulk purchases

The buying of materials in large quantities often results in a discount being negotiated between the two parties.

- Risk

The distribution of risk is often the subject of negotiations, especially when new products are being manufactured according to the buyer's specifications.

- Outsourcing

In the supply chain management approach, manufacturers focus on their core activities and all other activities are outsourced to suppliers. The buyer should negotiate with the supplier the outsourcing processes.

- Non-value adding activities

With the supply chain management approach, negotiations between the buyer and supplier will take place on a continual basis with the goal of eliminating all non-value adding activities and unnecessary costs in the supply chain.

- Resolving matters between the buyer and supplier

Negotiations are the best way to solve matters such as poor quality or late payment between two parties. This allows the buyer and the supplier to find solutions to the problems jointly.

- Post-tender negotiations

When the buyer has received a number of quotations or tenders and none of them is acceptable to the buyer, negotiations may be conducted with the various suppliers to reduce their prices before the quotation is accepted, or the tender awarded. All suppliers that have been short listed should be given the opportunity to revise their quote or tender.

The buyer, therefore, needs to identify the circumstances under which negotiations should take place to prevent wasting time and money negotiating on all matters. For the negotiations to be effective, the negotiator also needs to have certain characteristics.

Burt et al (2010:394) describe successful buyer negotiators as buyers having a broad knowledge of related departments within firms. They are also experts on the techniques of negotiation and the products they purchase, as well as being able to lead meetings and excel in good judgement. Combining these skills, knowledge and good judgement make a buyer a successful negotiator. Finally, a successful negotiator is also honest, ethical, and interested in what is best for his/her firm but, at the same time, adopts a win-win approach.

When negotiating across different countries, the buyer should be knowledgeable of the supplier's culture and country. Different countries have different customs and values which could have a negative affect on negotiations if not understood by the buyer. It is, therefore, crucial that the buyer is well-prepared and aware of the various customs, values, strengths and weaknesses of other countries. The differences between the cultures should also be respected. For example, in some cultures, it is custom to socialise and then negotiate, while in other cultures, it is custom to offer gifts to each other (Hugo & Badenhorst-Weiss, 2011:216).

A successful negotiator should also be able to determine whether the negotiations were effective or not. Lysons and Farrington (2012: 550) conclude that effective negotiations may be said to have taken place when:



- The buyer and the supplier come to an agreement that is satisfactory to both sides
- There is no conflict between the buyer and supplier and the negotiation process fosters good inter-personal relationships
- All issues are satisfactorily resolved
- Negotiation processes are not more time consuming or costly than planned

### 3.8 CONCLUDING REMARKS

This chapter gave an explanation of suppliers' pricing methods and cost structures, the total cost of ownership, open-book costing, as well as price reduction techniques such as the learning curve method, value analysis, standardisation, centralisation, break-even analysis and discounts. A description of basic negotiation strategies, such as planning for negotiations, the actual negotiation process, negotiation tactics and the characteristics that a buyer should possess to be a successful negotiator, was also offered. Finally, the cultural differences in negotiations and the determinants of effective negotiations were discussed.

In what follows, Chapter Four will explain the management of quality by the purchasing and supply function.

## CHAPTER FOUR

### MANAGING SUPPLIER QUALITY

#### 4.1 INTRODUCTION

In the previous chapter, an explanation of the suppliers' pricing methods and cost structures, as well as basic negotiation concepts, were offered. Following this, Chapter Four will discuss the second key factor in purchasing and supply departments, which is supplier quality. For a firm to be competitive in the automotive industry, locally and internationally, the firm requires zero defect materials to be delivered by his/her suppliers. How the buyer manages the suppliers' quality will influence the profitability of the firm. It is, therefore, imperative that the buyer has a clear understanding of the management of supplier quality. The management of supplier quality is thus the main focus of this chapter.

This chapter starts with an explanation of the term 'supplier quality', the buyer's role in the management of supplier quality, and the methods/techniques to ensure supplier quality. The discussion will also refer to the factors that the buyer must consider when managing supplier quality. Finally, a brief explanation will be given of the internal service quality of the purchasing and supply department.

#### 4.2 EXPLANATION OF THE TERM 'SUPPLIER QUALITY'

According to Stevenson (2012:371), quality can be defined as "the ability of a product or service to consistently meet or exceed customer expectations". Lysons and Farrington (2012: 261) state that there are various dimensions of product quality which include:

- Performance: a product's operating characteristics
- Conformance to specifications: the degree to which the product meets the specifications specified

- Reliability: how well the product copes over a period of time under stated conditions of use
- Serviceability: the ease of repairing a product
- Durability: how well the product lasts before it starts to deteriorate
- Features: the secondary characteristics of a product
- Aesthetics: personal judgement from the customer as to how a product looks, feels, and so forth
- Perceived quality: personal judgement from the customer on the quality of the product
- Price: the price paid for the product will play a role in determining the quality

The final customer in the automotive industry will consider all of the above dimensions when determining the quality of the finished product. The buyer, when purchasing raw materials or component products from a supplier, will determine the quality of the product by its conformance to the specifications. There are usually two types of specifications which include:

- Buyer specifications for custom made parts

Specifications are developed by the buyer's engineering department and communicated to the supplier via an engineering drawing. These drawings describe in detail the exact configuration of the product and the assembly of it. It will also provide information on the material to be used and the finishes and tolerances. Providing clear, meaningful and mutually acceptable specifications that specify the requirements of a product is an important part of supplier quality management. The buyer, by providing these specifications to the supplier, is actually indicating the level of quality required. Johnson et al (2011: 152) explain that it is an expensive method of description due to the cost and time it takes to prepare the blue-print. It is, however, the most accurate of all forms of description and is important when purchasing products that require a high degree of manufacturing perfection and close tolerances, such as automotive component parts.

- Standard specifications for off-the-shelf products

Standard specifications usually apply to products that can be purchased off the shelf. The advantage of using standard specifications is that they are widely known and accepted and are readily available from most suppliers. They are usually lower in price and satisfy the requirements of many purchasers. As was indicated in the previous chapter, an example of a standard product in the automotive industry is a fastener or a washer.

The buyer should not only consider the technical requirements or specifications of the product such as performance, reliability and durability, but should also balance these requirements against price and availability. The buyer should consider the optimum quality for the application rather than the highest quality (Lysons & Farrington, 2012: 262).

#### 4.3 THE BUYER'S ROLE IN MANAGING SUPPLIER QUALITY

Monczka, Handfield, Giunipero, Patterson and Waters (2010: 281) state that buyers play an important role in determining the optimum quality of the product by managing supplier quality. One of the questions to be asked is “what can buyers do to ensure total supplier quality?”

Firstly, as mentioned in the previous section, the buyer must clearly communicate the specifications of the product to the supplier. The ability of the supplier to meet the buyer's requirements is based on the ability of a buyer to clearly inform the supplier about what s/he expects. Secondly, suppliers enjoy working with buyers who are good customers. A buyer is a good customer if s/he understands the supplier's needs and expectations. Some of the expectations that suppliers have of buyers include:

- Once production commences there should be minimal product design changes
- To be treated fairly, equally and with respect

- Payment when requested or within a reasonable time period
- Sufficient production lead time
- No or minor changes to purchase volumes once the supplier has received the purchase order
- Early communication of new product developments
- Early communication of future purchase volume requirements to assist their planning
- Clear communication of the physical product specifications and delivery requirements

Thirdly, providing supplier performance feedback is a key element in ensuring supplier quality. Effective supplier feedback must be specific, clear and timely. This responsibility of supplier performance rests with the supplier.

#### 4.4 METHODS/TECHNIQUES TO ENSURE SUPPLIER QUALITY

In addition to what has been mentioned in the previous section, there are several methods or techniques that the buying firm in the automotive industry should use to ensure that the supplier becomes a world-class supplier of quality products. These techniques include:

##### 4.4.1 Supplier development

Supplier development is the process of working with specifically chosen suppliers on a one-on-one basis to improve their performance and capabilities to meet the buying firm's supply needs (CIPS: Supplier Development-CIPS Positions on Practice, 2009). There are generally two reasons why the buying firm is forced to develop their suppliers. Firstly, there may be no suitable supplier in the market, locally and internationally, to manufacture a new product required by the buying firm. Secondly, buyers may find that the current supplier's capabilities are not sufficient to meet the firm's current and future expectations. The buyer, however, does not want to change suppliers owing to the costs associated with new supplier selection. A solution to this problem is to help develop the supplier to be

able to meet the firm's current and future expectations. As the buyer and supplier work together to develop the supplier, the supplier should improve at a faster rate than if the supplier worked independently on his/her own. The supplier's improvement and success will lead to long-term benefits for the buyer and the supplier.

Leenders et al (2006: 508) state that Honda of America Manufacturing is a good example of a successful supplier development programme. Because the finished automobile consists of a significant amount of purchased materials, world-class suppliers are critical for the success of Honda. Honda develops their suppliers into world-class suppliers by:

- Improving quality by the buyer and supplier working together on quality problems, with the goal of zero-defects.
- Working closely with the suppliers when a new car is being developed. This helps Honda to develop leading-edge technology.
- Lowering costs through target pricing and helping the supplier to meet these targets.
- Honda's main goal is to develop the supplier to the point where the firm no longer needs Honda to develop them. The supplier becomes a world-class supplier and uses his/her expertise to help his/her own suppliers become world-class suppliers.

Some suppliers may be resistant to being developed and purchasing and supply professionals would need to encourage the suppliers to commit to a supplier development programme by offering them incentives, such as sharing the benefits or giving the supplier a 'preferred supplier' status. The development of the supplier will not only benefit the buying firm, but also the supplier's other customers. Relationships with all their customers could improve, and business

opportunities may increase, which could be the main incentive for the supplier to participate in a supplier development project.

Once the supplier has agreed to participate in the supplier development project, it would be advisable to identify, in advance, what has been agreed upon in terms of the required outputs. The effort, risks and rewards also need to be determined in order for both parties to be committed to this project (Supplier development, 2014). All this information should be documented to ensure that there are no misunderstandings in the future of what is required from each party.

#### 4.4.2 Early supplier involvement of new product designs

Supplier involvement in the product design reduces costs, improves quality, reduces lead times, improves the buying firm's relationship with the supplier, and increases customer satisfaction. Van Weele (2010: 225) states that early supplier involvement in the product design improves the firm's competitiveness and reduces the cycle time of the product to the customer. When a new product is introduced, or a modification to a product is required, suppliers are included on the cross-functional team of the buying firm. According to Burt et al (2010: 102), before a supplier is asked to participate in the development of a new product and is included on a cross-functional team, the following questions need to be answered by the buyer:

- Are the supplier's short- and long-term goals the same as the buying firm's?
- Is it possible to enter into a long-term agreement and build a trusting relationship with this supplier?
- Is the supplier financially stable?
- Does the supplier have the necessary manufacturing processes and quality capabilities required?
- Does the supplier have the reputation of being able to overcome problems as they arise?
- Does the supplier have the required engineering expertise?

- Will the supplier be able to meet the buying firm's development and manufacturing needs?
- Will the supplier be able to meet the buying firm's cost, quality and product performance requirements?

Once the above questions have been answered and the supplier is approved to be a member of the cross-functional team, one needs to determine the 'new product development process'. The development process of a product consists of several stages which include (Van Weele, 2010: 233):

- Outline of the new product

At this stage, the ideas supplied by marketing are translated into functional designs. These designs describe the functions that the final product to be developed should fulfil to meet the customers' needs and wants. Once these functional designs have been viewed, the most promising design is selected.

- Product design

At this stage the functional design chosen as indicated above, is worked out in detail into their component parts. The specifications for all the component parts of the final product are determined. The specifications of the individual component parts are then given to the various suppliers that have been selected by the buyer. Often, a sample of the product is made by the supplier to obtain the buying firm's reactions and impressions of the product. This sample is tested by the buying firm against its specifications and approved or rejected.

- Pilot run

The ability of the buying firm's production department to manufacture the product would have been considered during the product design stage. After the sample of the component part has been approved, preparation for production can commence. Pre-production planning often ends with a pilot run being conducted



to ensure that the materials can be used in the manufacture or assembly of the final product.

- Start of production

Products from the pilot run are subject to a thorough inspection. Based on the results of this pilot run, the settings on the machinery may have to be changed to keep quality problems to a minimum. If a change to the specification of the product is required, the engineering department, purchasing department, and the supplier need to get involved.

It is important to remember that as the product development process advances, the specifications become more rigid and it becomes difficult and costly to make the modifications. As mentioned earlier, to prevent these additional costs and improve the quality of the product, suppliers are invited to participate in the firm's new product development programmes at an early stage. The supplier's in-depth knowledge of components and technologies may help the firm to match its product/component designs better with their production capabilities. The buyer should also remember that confidentiality issues on the firm's product design have to be considered and it must be made clear to the supplier that his involvement guarantees him the business (Johnson et al, 2011: 367).

#### 4.4.3 Reduce the supplier base

Monczka et al (2010: 68) maintain that a pre-requisite of achieving world-class supplier quality involves determining the right mix and number of suppliers for the buying firm. Good supplier quality requires the reduction of the number of suppliers as value-added activities, just-in-time and total quality management are easier to implement with a smaller number of suppliers. The downsizing of the supplier base can enhance the development of long-term partnerships and supplier associations (Lysons & Farrington, 2012: 379). Both the buying firm and the supplier benefit as the supplier becomes stronger because of larger and long-term contracts while the buying firm will receive reduced prices and improved

quality. There are many more benefits on supplier base optimisation which will be discussed in detail in Chapter Five.

#### 4.4.4 Quality assurance

Hugo et al (2006: 141) define quality assurance as “the right quality is built into the product, not inspected into it”. Quality assurance is a comprehensive ‘from-the-cradle-to-the-grave’ approach. To ensure that poor quality products do not reach the buying firm, purchasers must be confident that the suppliers will deliver the right quality. This occurs when the buyer places the responsibility with the supplier to provide good quality products according to the specifications /requirements stipulated by the buying firm. For quality assurance to be effective, the following is required:

- Acceptable quality levels and tolerances must be agreed, in advance, between the buyer and the supplier.
- The buying firm should inspect the supplier’s manufacturing facilities to ensure that they meet the stipulated requirements.
- Management and the staff of the supplier should be trained in the principles and techniques of process control. The buying firm may also assist the supplier in this area.
- Suppliers must measure and assure quality during their manufacturing process and not afterwards. In this regard, suppliers can implement the statistical control process.
- There should be shared responsibility and cost sharing of measuring quality. The duplication of measuring quality adds to costs and does not increase the value of the product to the customer.

#### 4.4.5 Six sigma approach

According to Benton (2010:32), the six sigma approach is one technique that can be used to measure supplier quality. Suppliers that follow the philosophy of the six sigma approach will make excellent strategic partners. Stevenson (2012: 26)

states that the six sigma programme is “a business process for improving quality, reducing costs and increasing customer satisfaction”. It is a programme designed to reduce the number of defects that can be employed in design, production, inventory management and service delivery. The six sigma approach has many objectives such as reducing defects, reducing costs, reducing product/process variability, reducing cycle time and increasing productivity, as well as increasing customer satisfaction (Stevenson, 2012: 394). There are two components to the six sigma programme, namely the management and technical components. The management component involves selecting projects that will yield results, select and train the correct employees, provide strong leadership and define performance standards. The technical component involves improving process performance, implementing standardisation, utilising statistical methods and designing an improvement strategy. Key factors the supplier should consider when designing an improvement strategy are to define, measure, analyse, improve and control. Kruger, De Wit and Ramdass (2005: 267) explain in detail the five phases/factors of the improvement programme or six sigma problem-solving approach that the supplier should implement:

- Define
  - Identify the buying firm’s wants and needs
  - Identify a project based on the supplier’s goals and the buyer’s requirements
  - Identify critical quality characteristics that, according to the buyer, affects quality
  
- Measure
  - Decide how to measure the performance of the process
  - Determine the key internal processes that influence the critical quality characteristics and measure the defects that relate to those processes

- Analyse
  - Decide on the most likely causes of these defects
  - Understand why defects occur by identifying the key variables that are most likely to cause process variation
- Improve
  - Determine ways to remove the causes of the defects
  - Confirm the key variables that are causing the process deviation and measure their effects on the quality of the product
  - Determine the maximum acceptable tolerances of the key variables
  - Identify a system to measure the deviations of the key variables
  - Change the process to stay within the acceptable tolerance range
- Control
  - Decide on how to maintain these improvements
  - Put systems in place to ensure that the key variables remain within the acceptable tolerance levels under the modified process

To become a world-class supplier of quality, the above objectives need to be attained.

#### 4.4.6 Total quality management (TQM)

Benton (2010: 268) explains that the purchasing and supply function is one of the key elements of Total Quality Management (TQM). A firm will not be competitive or be able to compete on a global basis without highly qualified suppliers that deliver acceptable raw materials and component parts. TQM is a philosophy that will enable suppliers to provide acceptable materials. Stevenson (2012: 391) defines TQM as “a philosophy that involves everyone in the organisation in a continual effort to improve quality and achieve customer satisfaction”. The TQM approach can be described as identifying what customers want; designing a product that will meet or exceed customer expectations; designing processes that

will facilitate doing the job properly the first time; keeping track of results; and using them to guide improvements; implementing a culture of continuous improvement; and extending all these concepts to the supplier. The main goals of TQM are to improve quality in all areas within the business firm with all activities being done right the first time, and all errors and waste eliminated from all operations (The concept of TQM, 2014).

The buyer, when managing supplier quality, should encourage the supplier to implement the elements of TQM within his/her firm. Stevenson (2012: 392) states that TQM has important elements that include:

- Each worker is responsible for his/her own quality. Workers are expected to do the job correct the first time and if there are mistakes, they must correct them. The worker becomes a quality inspector of his/her own work.

One of the advantages of the worker checking his/her own quality is that it removes the conflict situations that may arise between the production workers and the quality inspectors. Another benefit is that it motivates workers and gives them more pride in their output.

- All employees and managers must be trained in the use of quality tools, especially since each worker will inspect his/her own work.
- Long-term contracts with suppliers' own suppliers are encouraged as suppliers are seen as business partners in the TQM process. Suppliers must be included in quality assurance and quality improvement programmes to ensure that they have the manufacturing ability to deliver good quality products in a timely manner.
- It is important to have a person who will promote the principles and values of TQM. This person is called the TQM champion.

- Management should always make decisions based on facts and not on personal opinion.
- World-class benchmarking seeks other firms that are the best at something and studies these practices to learn how to improve a firm's operations.
- TQM makes use of teams to solve problems and suggest improvements.
- Employees working in teams encourage a spirit of co-operation and shared values among employees.
- Workers are given authority to make changes pertaining to their work processes. This motivates the employees by putting decision-making in their hands, as they have considerable knowledge into the problems and the solutions which affect their work stations.
- Continuous improvement is the philosophy that seeks to find continual improvements to the process of converting inputs into outputs.

Some of the criticisms of TQM are that the supplier may pursue quality improvement programmes blindly and lose sight of other priorities such as a competitor threat. These quality improvement programmes may also not be linked to the overall strategies of the supplier. Another criticism is that the supplier's quality-related decisions are not related to the buying firm. An example is when a supplier emphasises the buying firm's wants and needs and does not take into account the costs needed to achieve this standard and, as a result, the product's price becomes uncompetitive.

#### 4.4.7 Standardisation and simplification

According to Johnson et al (2011: 154), standardisation and simplification refer to two different ideas. Standardisation is an engineering or technical concept whereby agreement is reached on the sizes, design, or quality of the product. Simplification refers to "the reduction in the number of designs, sizes and so forth". It is important to stress the standardisation and simplification of component

parts rather than just the finished product. The benefits of standardisation and simplification are lower unit prices, lower inventories, long-term agreements with suppliers and improved quality products. The automotive industry has used this approach to reduce costs and improve quality in recent years.

Johnson et al (2011: 155) explain that standardisation is important for a firm to have the ability to design and build a product for the end customer, which is consistent regardless of where the product is being manufactured. This is crucial when purchasing products on a global basis. Firms will use the same top-quality suppliers who will provide support anywhere in the world. Traditionally, firms would purchase from common suppliers, but the prices and specifications would differ greatly.

#### 4.4.8 Establish supplier improvement targets

It is important for firms to give suppliers aggressive performance targets, otherwise the supplier becomes comfortable at the rate at which s/he is improving and the result is often mediocrity. By providing the supplier with aggressive improvement targets it forces the supplier to improve at a rate faster than his/her competitors' suppliers. Buying firms often want their suppliers to pursue the same goals that they have. These goals could be that firms want their suppliers to strive for perfect product quality; to become leaders in product and process technology; implementing just-in-time manufacturing and delivery; and offering cost-competitive service. The supplier, however, must first satisfy current performance expectations before more demanding goals or aggressive performance targets can be given to the supplier.

#### 4.4.9 Supplier certification

Fawcett, Ellram and Ogden (2007: 328) explain that in the past, firms used to perform inspection on all deliveries to verify supplier quality. The buying firm could not take the risk of the supplier delivering defective products. As incoming inspection contributes towards costs, firms have eliminated the inspection process by implementing supplier certification programmes. Stevenson (2012:

679) defines supplier certification as “a detailed examination of the policies and capabilities of a supplier”. The certification process verifies whether the supplier meets or exceeds the expectations of the buyer. The supplier has to go through a quality audit programme to verify that the supplier is capable of producing the required quality levels (Fawcett et al, 2007: 328). Buying firms can use their own certification programme, but most companies rely on standard international industry certifications such as ISO 9000.

Once the supplier has been certified, the supplier will receive a ‘dock-to-stock’ status. ‘Dock-to-stock’ status means that the products are no longer inspected and the products will go straight to the store or to the production floor. If a quality defect is discovered, it is resolved jointly between the buyer and the supplier. The basic goal of supplier certification is that the responsibility of quality is given to the supplier. Certified suppliers are given preference when buyers request quotes. Many of the suppliers use their certified status as a marketing tool (Fawcett et al, 2007: 328).

As mentioned earlier, a supplier can be certified by using various supplier evaluation systems. The most common standards system used for supplier quality evaluation is ISO (International Standards Organisation) 9000. The ISO 9000 is a set of world-wide standards that determines the requirements of firms for their quality management systems. ISO 9000 consists of separate standards which include (Hugo and Badenhorst-Weiss, 2011: 121):

- ISO 9000:2000 indicates the fundamentals and vocabulary of a quality management system
- ISO 9001:2000 indicates the requirements for a quality management system
- ISO 9004:2000 indicates the guidelines for performance improvements in a quality management system

These quality standards help promote international trade between countries (Burt et al. 2010: 162). The ISO 9000 quality standards have been adopted by more than a hundred countries, including South Africa (Kruger et al, 2005: 183).



According to Kruger et al (2005: 184), the reasons why firms seek ISO 9000 certification include:

- Obtaining contracts from the buying firm. Suppliers who do not obtain ISO 9000 registration will lose customers.
- Adhering to trade regulations. Certain products require product certification to assure their safety to the customer.
- Selling products in Europe. This registration has become a requirement for doing business with firms in this region.
- Obtaining a competitive edge. Most buying firms use this ISO registration as a criterion when selecting suppliers. Firms that do not have this registration are at a disadvantage.

Certification is done by a third party auditor. Re-certification is required every three years and each production plant/site must achieve registration, as well as the entire firm. All costs are for the applicant's account and this process can become expensive, especially for the smaller suppliers (Kruger et al, 2005: 186).

#### 4.5 FACTORS TO CONSIDER WHEN MANAGING SUPPLIER QUALITY

The various techniques and methods to manage supplier quality have been discussed in the previous section. Monczka et al (2010: 281) state that there are a number of factors and constraints that influence how much attention a buying firm commits to managing supplier quality. These factors and constraints are as follows:

- The buyer must manage the supplier quality of critical/high value items differently to those items that are of less importance
- The availability of resources such as personnel, budget, time and information technology will influence the scope of the supplier's quality management effort.

- A buying firm should have the ability to practise world-class quality practises before it attempts to work with suppliers on the proper use of quality tools, techniques and concepts.
- The supplier must be willing to work with a buying firm to improve quality.
- The buying firm must be able to track how well the supplier is meeting key quality performance measures.
- The buying firm should have the ability to communicate clearly the specifications and expectations to the supplier.
- A supplier's current quality level will determine how much time and effort is spent by the buying firm on helping the supplier to improve his/her quality level. A world-class supplier will require minimal attention while developing suppliers will require greater attention.

Buying firms who do not allocate time to manage supplier quality, could have suppliers that provide the buying firm with poor quality products and this could affect the firm in many areas, such as a loss of business, liability costs, additional costs, and lower productivity rates. Liability costs owing to a faulty design or poor quality materials being used can be substantial, especially if a large number of items are involved. Poor quality materials can negatively affect productivity during the manufacturing process if items have to be reworked or scrapped. The additional costs to take corrective action in quality management are not accounted for and therefore impact directly on the profit of the firm. It has been estimated that to fix a problem at the customer end is about five times the cost to correct the problem at the engineering or manufacturing stage (Stevenson, 2012: 379). Poor quality products and poor designs can damage a firm's reputation, lead to increased criticism and a decrease in market share. The end result will be a loss of business to the firm.

Conversely, firms who offer excellent quality products will have several advantages over other competitors, such as the ability to charge higher prices, customer loyalty, increased market share, good reputation and higher productivity, which result in increased output, lower costs and higher profits (Stevenson, 2012: 378). Purchasing the right quality is extremely important as

the quality of the finished product to the customer is largely determined by the quality of the purchased materials. Quality management of the purchasing and supply department is also involved in ensuring a high quality of service from the purchasers to their internal customers (Hugo & Badenhorst-Weiss, 2011: 114).

#### 4.6 INTERNAL SERVICE QUALITY

Hugo and Badenhorst-Weiss (2011: 114) explain that the main focus of implementing quality management programmes was on the external suppliers. Firms have, however, realised that the quality of the service that the purchasing and supply departments provide to their internal customers is just as important. The quality level that the final customer receives depends on the quality at each link in the supply chain.

Internal service quality is important to the purchasing and supply department as, firstly, the purchasing and supply department's internal customers such as engineering, stores and production determine to a large extent the quality of the product and service delivered to the customer. Secondly, the level of internal service provided impacts on a firm's ability to meet the final customers' needs. Thirdly, the purchasing and supply department is an internal supplier and customer as well as an external customer to suppliers. As a result of this the purchasing and supply department plays an important part in ensuring that good quality service is delivered internally and externally. The internal quality in the work environment is also an important factor in determining employee satisfaction. Therefore, each employee in the purchasing and supply department has a role to play in the quality delivered to the internal and external customers.

To improve the quality of internal service delivery, the purchasing and supply management department should emphasise the importance of improving customer relations and understanding the needs of the internal customers.

#### 4.7 CONCLUDING REMARKS

This chapter gave an explanation of the definition of supplier quality, the buyer's role in the management of supplier quality, the methods/techniques to ensure supplier quality, as well as the factors that the buyer must consider when managing supplier quality.

Chapter Five will describe the selection of suppliers and how it impacts upon the buying firm.

## CHAPTER FIVE

### MANAGING THE SUPPLIER BASE

#### 5.1 INTRODUCTION

In the previous chapter an explanation of the buyer's role in the management of supplier quality and the methods/techniques to ensure supplier quality, as well as the internal service quality of the purchasing and supply department, was offered. Following this, Chapter Five will seek to explain the third key factor in purchasing and supply departments, namely the management of the supplier base. It is extremely important that the buyer has an understanding of the management of the supplier base. The professional buyer needs to ensure that the correct suppliers are selected and that they are managed throughout their contract period. How the buyer manages the supplier base will determine whether the firm is competitive on a global basis and will thus influence the profitability of the firm.

This chapter begins with an explanation of the growing importance of supplier selection and sourcing policies and strategies. The discussion will also refer to the four stages of managing a viable supplier base. These four stages are the identification, evaluation, selection and management of suppliers.

#### 5.2 THE GROWING IMPORTANCE OF SUPPLIER SELECTION

One of the most important activities of the purchasing and supply department is the selection of the correct suppliers. Selecting the correct supplier is essential to the success of not only the purchasing and supply department, but also to the business firm as a whole. Selecting the right suppliers can help the buying firm outperform their competitors by providing low cost, defect-free products which are delivered on time (Benton, 2007: 143). Selecting the wrong suppliers can have serious consequences such as out-of-stock situations, poor quality material and late deliveries, which will result in the loss of sales, weaken the firm's competitive position and image, and ultimately threaten the very survival of the firm.

Hugo et al (2006: 82) state that some of the other reasons for the growing importance of selecting the right suppliers are that a typical manufacturer will spend about 60% of the annual sales turnover on raw materials, component parts and services, and there is increasing pressure to reduce costs to remain competitive. Other reasons are that firms are concentrating on their core business and are outsourcing non-core activities, while the rapid growth of e-commerce and the internet have made it easier for buyers to identify new suppliers. Lastly, the adoption of techniques such as just-in-time, total quality management and supply chain management requires that the buying firm has close relationships and partnerships with their suppliers.

Before identifying potential suppliers, the buyer must bear in mind the purchasing and supply department's policies on selecting suppliers and the buyer should also have a supply strategy in mind. It is important to have an understanding of these policies and a supply strategy in mind to prevent identifying suppliers that are not suitable.

### 5.3 SOURCING POLICIES AND STRATEGIES

Policy guidelines enable the buyer to make decisions more easily and to justify the buyer's actions when selecting suppliers. Indicated below are some of the general sourcing policies and strategies of purchasing and supply departments:

#### 5.3.1 Single versus multiple sourcing

Burt et al (2010: 254) explain that the decision to have a single supplier or multiple suppliers may affect the success, and even the survival, of the firm. Johnson et al (2011: 323) explain that the buyer should place an order with one supplier when:

- The value of the order is so small that it does not make it worthwhile to split the order
- The supplier offers outstanding quality or service
- The supplier is the only owner of exclusive patents or processes

- There has been a successful long-term relationship with an existing supplier
- Large purchases make bulk discounts and lower freight rates possible
- The supplier is usually more interested and co-operative if s/he are the only supplier being awarded the contract
- Stockless buying and just-in-time deliveries are required
- A partnership is required
- When the item to be purchased involves a tool/mould or large set-up costs, then duplicating the expense of these costs may be substantial

On the other hand, the buyer should place an order with more than one supplier when:

- The buying firm does not wish to be dependent on one supplier
- One supplier may not have sufficient capacity
- The assurance of supply is needed, especially when there have been strikes and production stoppages in the past
- Suppliers tend to keep their prices low and offer good service when they know that their competitors will be receiving some of the business
- A greater need for flexibility is required
- There is volatility in the marketplace
- A new supplier is being tested with trial orders

The current trend in manufacturing firms is single sourcing. Most of the points mentioned above as to why a buyer should place an order with one supplier, are the pre-requisites for a firm to remain competitive.

### 5.3.2 Local, national or international suppliers

The buyer should decide if the geographical location of the supplier should be considered. According to Johnson et al (2011: 325), most buyers prefer to buy locally if they have a choice. Many of the buyers are willing to pay slightly higher prices to gain the advantage of materials being delivered on time and better

service which in the end could result in lower costs for the buying firm. Burt et al (2010:256) found that there are many advantages to placing an order with a local supplier. These advantages are that suppliers can deliver on a just-in-time basis; lower transport and insurance costs; shorter lead times which result in lower inventories; delivery dates are more assured; and urgent orders are easier to expedite. Additional advantages to buying from a local supplier are improved communication and a high level of service; any disputes are more easily resolved; and the firm's social responsibility to the local community is partially fulfilled.

Conversely, there are also certain advantages to purchasing materials from a large national supplier. These advantages are reduced prices as the supplier will manufacture in bulk; superior technical assistance owing to research and development; supply of materials is assured as larger national suppliers are usually in a strong financial position to hold inventory; and local branches can provide a high level of service (Hugo & Badenhorst-Weiss, 201: 68).

If the buying firm is under pressure to reduce costs, it may adopt a policy of buying wherever the lowest price can be obtained. This could mean sourcing on an international basis. Nowadays, there is a minimal number of firms that can limit their sourcing strategies to within their national boundaries to remain competitive. In what follows, the advantages, disadvantages and risks relating to global sourcing will be examined (Stevenson, 2012: 336):

- Advantages
  - Less restrictive environmental and other regulations. For example, more favourable and less rigid laws may be introduced.
  - Suppliers with new ideas and new perspectives on production become available. International suppliers may have implemented the latest production processes.
  - Opportunities to expand their market. Local buying firms can expand their market to include customers on a global basis.



- Cost savings owing to lower labour costs, raw material costs and taxes.
  - Incentives may be offered by certain governments to attract businesses that will create jobs and boost the local economy.
  - Advanced technical ability and outstanding quality. An international supplier may have the funds to invest in research and development and, therefore, offer outstanding quality products at a low cost compared to national and local suppliers.
- Disadvantages
    - Low labour costs usually mean low skilled labour. This type of labour could negatively impact the productivity and ultimately the quality of the product.
    - Slow shipment to other countries because of security checks at international borders.
    - High transportation costs owing to the distances which could offset the savings in labour and materials costs.
    - Long lead times due to the distances involved.
    - Exchange rates that fluctuate which make planning difficult.
- Risks
    - Political instability and terrorism could affect the supply of products
    - Economic instability due to inflation or deflation could affect the price of the product being purchased
    - Laws and regulations may change, which could mean eliminating the saving achieved
    - Language and cultural differences increase the risk of mis-communication.

Because of the differences between local, national and international sourcing, the buyer needs certain skills, knowledge and tools to be able to successfully source globally. Five of the most important global sourcing tools for a buyer are firstly, to

have a landed cost model which includes global sourcing costs such as freight costs, duties and custom fees. Secondly, the buyer must have knowledge of the thirteen incoterms which define the responsibility of the buyer and seller with regards to handling, insurance and paying for shipping and customs. Thirdly, a transport time chart defining the transportation time of the suppliers needs to be known in advance. The lead time of the supplier will determine how much inventory the buying firm needs to hold. Fourthly, the buyer must learn the supplier's culture so that there is no mis-communication. Finally, a business case/plan indicating the cost saving potential if the buyer sources globally, must be drawn up. This is normally presented to top management to convince them that there is a need to source globally (Dominick, 2008).

### 5.3.3 Long-term relationships or partnerships

Monczka et al (2010: 69) found that if it is the buying firm's policy to award long-term contracts and enter into a partnership with their suppliers, then it is important that suppliers with exceptional performance are identified. It is usually the policy that firms award long-term contracts to suppliers for critical or high value items. Lysons and Farrington (2012: 394) define a partnership as a "commitment to both customers and suppliers, regardless of size, to a long-term relationship based on clear, mutually agreed objectives to strive for world-class capability".

There are certain products that are suitable for a partnership. These products are high value, critical, technically advanced and new products, as well as products which are supplied by a supplier in a market where there are a few reliable or competent suppliers. The reasons why partnerships are entered into for these products are that high value products are supplied by a small number of suppliers which usually account for a high portion of the monetary value of purchases. Critical items are vital no matter what their value is and the buying firm needs to secure the supply of these products. With technically advanced products the cost of changing suppliers would be too high and a long-term contract is, therefore, necessary to save costs. A partnership is required with a new supplier when the

buying firm requires the supplier to be involved in the design and production of the new product (Lysons & Farrington, 2012: 398).

Burt et al (2010: 70) state that the main benefits of a partnership include:

- Reduced cost. This can be achieved through co-operative cost reduction programmes.
- Reduced cycle time. The cycle time of getting the products to the customer can be reduced. This can be achieved by reducing the time to design, develop and distribute the products.
- Reliability of supply. Suppliers in a partnership are less likely to cause supply disruptions.
- Improved quality. The testing of the design of a product during the initial design stage and supplier certification ensures that quality is built into the product rather than inspecting products for errors.
- Improved designs. The openness and mutual trust between the buyer and supplier leads to many new successful products.

There are certain standards that the potential supplier should meet before a buying firm will enter into a partnership with the supplier. These standards are that the supplier must have the ability to supply locally and on a global basis; be flexible; have consistent quality and reliable delivery; must be committed to continuous research and development; as well as be ISO 9000 certified. The supplier must also be committed to implementing techniques such as just-in-time, lean manufacturing and total quality management and have the ability to design new products (Lysons & Gillingham, 2012: 398).

Dominick (2008) explains that it is important that the buyer understands that a policy of supplier partnering involves the buying firm helping the buyer to achieve its goals. Examples of some of these supplier goals and how the buying firm helps them achieve their goals include:

- To increase their sales turnover. The buying firm can help their suppliers by allowing the supplier to use the firm's marketing material or to use the firm as a reference.
- Payment on time. The buyer can help by ensuring that the suppliers get paid on time. One of the largest problems firms have is cash-flow.
- Achieve cost reductions. The buyer can help the suppliers by advising the suppliers of any unnecessary services that they perform that can be eliminated.
- Improve the reliability of sales forecasts. The buyer can help the suppliers by committing to a long-term contract. This will increase the supplier's confidence in future sales targets.

By being aware of the firm's suppliers' goals and helping the suppliers to achieve these goals, should ensure that the firm will obtain the suppliers' commitment in helping the buying firm to achieve its goals.

#### 5.3.4 Outsourcing

Chopra and Meindl (2013: 441) define outsourcing as "hiring an outside firm to perform an operation rather than executing the operation within the firm". If it is the firm's policy to outsource the majority of its component parts or sub-assemblies, the buyer will have to identify suppliers who have the capability to manufacture these parts and who are willing to enter into a partnership with the buying firm. According to Johnson et al (2011: 128), many of buyers believe that they can add value to outsourcing decisions by identifying opportunities for outsourcing; being able to identify and select sources of supply and negotiating the contract; as well as managing the relationship with the supplier on a continual basis.

The strategic importance of whether to outsource or not is so critical that a great deal of care needs to be exercised to ensure that the correct decision is made. The buyer's input is critical to make sure that whatever option is chosen, it is the correct decision.

Kruger et al (2005: 313) state that the reasons why firms make the decision to outsource are as follows:

- Quality

The larger suppliers who have a high sales turnover will be willing to invest in the latest technology. Suppliers will often listen to the needs of their customers and invest in new technology if they believe they could obtain the contract. The result is that the suppliers will specialise in certain technologies and offer higher quality products than the firm itself.

- Concentration on the firm's core tasks

The buying firm can concentrate on its main tasks. All finances and resources should be available to enhance the firm's core tasks. As a result, the firm can become more competitive.

- Superior design

A supplier may be able to offer a superior design than the firm itself. This may create a competitive advantage for the firm, especially if the price of the product remains the same.

- Reduced cost control

The buying firm is mainly concerned about the unit price that the supplier charges. All cost calculations and control of the components, sub-assemblies and assemblies are the responsibility of the supplier, which frees up the buyer to concentrate on more important tasks such as negotiating on high value contracts or critical products.

- Available resources

Resources such as personnel and capital that have been tied up in the manufacturing of components are now available and can be used in other areas. For example, this capital could be spent on research and development.

- Available capacity

To remain competitive, firms have to meet the demands of their customers. If there are increases in the demand for the finished product, then the management of such a demand is much easier if they can access the capacity of their suppliers.

- World-class capabilities

Buying firms will source from world-class suppliers to manufacture their products. This ensures the buying firm has access to the latest technology and expertise.

- Costs will be reduced

The fixed and operating costs of the buying firm will be reduced. Although these costs are reduced, the buyer should ensure that by outsourcing a cost saving is achieved.

Correlatively, there are some disadvantages to outsourcing, with the main one being loss over its operations. Control over key activities such as quality, speed of delivery and reliability of delivery are becoming the responsibility of the supplier. In addition to the above, the risk with outsourcing is high as there is often the need to disclose proprietary information. Another disadvantage is that once the decision has been made to outsource, it is difficult and costly to reverse this decision (Kruger et al, 2005: 314).

### 5.3.5 Supplier development

Hugo and Badenhorst-Weiss (2011: 70) found that the degree to which the buying firm gets involved in supplier development is a top management decision and this decision should be made according to policy guidelines. Lyson and Farrington (2012: 249) explain that the reason why it is a strategic decision is because it involves the manufacturer's resources and competences. Before the buyer identifies a supplier/s, it is important that s/he understands to what extent the purchasing and supply department gets involved in supplier development.

### 5.3.6 Reciprocity

Hugo and Badenhorst-Weiss (2011: 70) define reciprocity as "I buy from you because you buy from me". Suppliers who are also customers of the buying firm are given preferential treatment. If the purchasing and supply department wants to engage in reciprocity, top management will have to approve such a policy and it must be legal. It is important that top management thinks carefully about a policy on reciprocity as there are many disadvantages and long-term consequences for the firm. Some of these pitfalls include:

- Reduced competition between suppliers
- The supplier may terminate the contract which could lead to production stoppages
- A passive marketing effort by the firm
- Sourcing decisions that are not based on the correct business principles and the best "value" package
- Problem of convincing other customers to buy the firm's product
- Problem of convincing other suppliers to quote on products
- Poor reputation and image in the business world

## 5.4 IDENTIFICATION OF POTENTIAL SUPPLIERS

Traditionally, the ability to identify potential suppliers was very limited. Today, however, potential suppliers across the globe can be sourced by simply going onto a worldwide website, such as Google.com. Although buyers use this technique all the time, they must not forget the other sources of information available in soft and hard media to identify potential suppliers. Examples of these sources of information include (Johnson et al, 2011: 317):

- Trade magazines

Trade magazines deal with a particular industry and their suppliers and buyers. A buyer will read the magazine pertaining to his/her industry and obtain information from the articles that may suggest new products, substitute products, as well as information about the suppliers. This will allow the buyer to keep abreast with the latest offerings in the industry.

- Electronic catalogues

The purchasing and supply department should have electronic catalogues of all the commonly known sources of supply. Although some firms use hard-copy catalogues, the current trend is electronic catalogues as they provide easy access to the buyer. Buyers will use electronic catalogues to determine potential sources of supply and estimate prices.

- Trade directories

Trade directories list the leading manufacturers, their contact details, addresses, branches and even their financial position. These directories are indexed by product, manufacturer or trade name.



- On-line sources

The world-wide web and the internet have become primary ways to obtain information on suppliers. There are many web addresses that relate to purchasing and supply managements such as [www.purchasinga2z.com](http://www.purchasinga2z.com), [www.ifpmm.org](http://www.ifpmm.org), [www.supplymanagement.com](http://www.supplymanagement.com) and [www.ipsa.com](http://www.ipsa.com).

- Firm's employees

Employees in the same department or in other departments often provide the buyer with information about potential sources. The employee, having completed a purchase requisition, may indicate the supplier which could be beneficial to the buyer.

In addition to the above, Burt et al (2010: 242) list the following as valuable sources of information to identify suppliers:

- Supplier's information file

Most purchasing and supply management departments will keep a record of past and present suppliers. Information such as the supplier's details, delivery history, quality record, service level and general information on the supplier will be recorded. Most buyers will have their personal file on the suppliers for their own use. It is important to record this information as it will be poor management to have buyers obtaining information repeatedly on suppliers which was once available to them.

- Sales representatives

Sales representatives are excellent sources of information on suppliers and products. They are usually well-informed about their own products as well as their competitors' products. Sales representatives may be able to suggest new applications for a product which will eliminate the need to source new suppliers.

Owing to their contact with many firms, sales representatives learn about new products and services, and the proactive buyer should be able to obtain this information.

- Professional organisations

Local purchasing and supply management associations such as the Institute of Purchasing and Supply South Africa (IPSA) list all their members. One of the main goals of this association is that members help each other in areas such as sourcing new suppliers.

Once a buyer has identified a potential supplier/s, the buyer's next step is to evaluate the supplier/s.

## 5.5 EVALUATION OF POTENTIAL SUPPLIERS

The type of evaluation required to select a supplier depends on the nature of the product, complexity, criticality and rand-value of the purchase to be made. For uncomplicated low-rand value purchases, an investigation of basic information such as price, quality and delivery may be sufficient (Burt et al, 2010: 244). For critical, high-rand value purchases which need an in-depth analysis of the supplier's capabilities, a more detailed supplier evaluation study may be required. This supplier evaluation study will usually cover the following supplier performance areas (Monczka et al, 2010: 170):

- Management capability

It is important that the buyer understands the management's strengths and weaknesses. The buyer must determine if the supplier's management is committed to the Original Equipment Manufacturers' (OEMs') international purchasing guidelines and to the OEMs' supplier manufacturing systems, such as lean manufacturing. In addition to the above, there are a number of questions that the buyer should ask the supplier to determine the supplier's management capability:

- Does top management practice long-term planning?
- Is management making investments to enable the firm to grow in the future?
- Has management prepared the firm to face future opportunities and threats?
- Is there a future vision on the direction of the firm?
- Is there a high degree of turnover of managers and employees?
- What is the history of the relationship between management and staff?
- Does management have future plans to train and develop their staff?
- What is the professional experience of the managers?
- What is the professional experience of the purchasing and supply managers?
- Does management understand the importance of sourcing the correct suppliers?

A well-managed firm seldom experiences major problems and will always strive to improve and reduce cost. It is, therefore, important that when evaluating a supplier, a buyer conducts a thorough analysis of the supplier.

- Financial capability

It is important to select financially sound suppliers that are expected to remain in business for the long-term. Many buyers may conduct a detailed financial assessment as a screening process that a supplier must pass before a detailed evaluation process commences. According to Spillane (2004), there are certain areas that must be investigated to determine whether the supplier has financial problems. These areas include:

- Looking at the supplier's financial trends over the last few years. Factors to consider are the supplier's earnings, cash flow projections, liabilities, assets and related transactions. Drastic changes over time should be carefully assessed.

- Determine what the supplier's current assets and liabilities are to assess whether the supplier has adequate working capital. Cash flow or working capital shortages are often a sign of trouble ahead.
- Ask the supplier for a report on his/her outstanding payables and the number of days that the firm owes them payment for. If there are any outstanding payables and these are owed for a long period of time, this could predict future working capital problems.
- Check whether the supplier has an overdraft or any loans with the bank.
- Check the footnotes on the financial statements. These footnotes often provide critical information about the firm that may not have been discovered by looking at the financial statements.

Monczka et al (2010: 171) state that selecting a supplier with a poor financial position has a number of risks. Some examples of these risks are that the supplier may become insolvent; the supplier may not be able to invest in the production plant or in its employees: or conduct research which is necessary for long-term technological and performance improvements. Another example is that the supplier may become too reliant on the buying firm which makes it difficult for the buyer to change suppliers. Dominick (2008) explains that one of the main causes of supplier failure is insufficient capital.

- Quality capability

Buyers must not only evaluate the obvious quality factors such as the firm's ability with quality assurance techniques, the number of defects, statistical process control and top management's commitment to quality, but also broader areas such as safety and training, facilities and quality measurement.

- Personnel capability

Personnel capability is the assessment of non-management employees. The buyer's evaluation should include:

- Labour turnover
- Labour morale
- Employees' commitment to quality and continuous improvement
- Relationship between employees and management
- Flexibility of the workforce
- Skills and ability of the workforce
- Willingness of the employees to improve the supplier's operations
- History of labour strikes and labour disputes

There is a huge advantage for a firm in having a highly trained, stable and motivated labour force as this can create a competitive advantage by being able to supply quality products on a continuous basis.

- Process capability

A buyer should be accompanied by a member from the engineering or technical department when evaluating a supplier's production plant process and technological capability. When the supplier's production process is evaluated, the buyer and the engineer will look at factors such as technology, design, methods and equipment used to manufacture a product. In addition to the above, the buyer must consider the firm's commitment to research and development, as well as its future process and technical ability. It is also important to evaluate the supplier's design capability. The trend is to use qualified suppliers who can design the buying firm's products.

- Cost structure

The buyer requires an in-depth understanding of the supplier's cost structure to be able to determine how efficiently the supplier will be able to manufacture the product. Examples of these costs are direct and indirect labour, material and overheads. A supplier may not want to reveal his cost structures to the buyer out of fear that the cost information will affect his pricing strategy or that his competitors may gain access to these costs. If a supplier is not willing to release his costing information, the buyer can estimate with the help from his/her

production department the supplier's cost structure during the initial supplier evaluation process.

- Production scheduling and delivery capability

The goal behind evaluating the production scheduling system is to determine the degree of control that the supplier has over its scheduling and production system.

Some of the factors that the buyer should consider include:

- Does the supplier use a Material Requirements Planning (MRP) system?
- Can the supplier support a just-in-time system?
- How much lead time does the supplier require?
- What is the supplier's on-time delivery performance history?
- Does the supplier monitor the production cycle time?
- Does the supplier implement programmes to reduce cycle times?

Hugo et al (2006: 84) conclude that the latest trend is for suppliers to make smaller deliveries on a more frequent basis. The late delivery of a product can stop the production plant, especially when the firm is operating on a just-in-time basis. In 2004, Nissan's plant in Japan had to close for several days owing to the non-delivery of steel components because of a shortage in the country. It is, therefore, imperative that the supplier has the ability to be flexible to change his production schedule to manufacture another vehicle, and that suppliers can deliver the required materials on time.

- E-commerce capability

One of the pre-requisites today in selecting suppliers is that these suppliers are able to communicate electronically with the buying firm. The buyer should determine whether the suppliers implement the following:

- Computer-aided design and computer-aided manufacturing capability

- Bar coding on their products
- Advanced shipping notices that can be sent electronically
- Payment by electronic transfer
- Departments are networked throughout the firm
- Communication via e-mail
- Enterprise Resource Planning (ERP) is implemented

If the supplier has the above systems, the buyer can determine that the supplier is staying abreast with the latest e-commerce technologies.

- Supplier sourcing capability

It is important that the buyer evaluates the performance of the first and second tier suppliers. However, due to time and resource constraints it is not always possible to investigate the first and second tier suppliers of all the products in the supply chain. This investigation is usually carried out on high-rand value products that are of a strategic nature. The buyer will have discussions with the first tier suppliers and gain insight about the second tier suppliers. A buyer who understands the supplier's first and second tier suppliers will have a competitive advantage over his/her competitors. There are many benefits of integrating information systems across multiple tiers of suppliers such as reduced cycle times, inventory and costs. Mercedes Benz has developed a process whereby the firm informs suppliers, all the way to the raw material suppliers, how their products are used in the Mercedes Benz vehicles.

- Long-term relationship capability

The trend is for the buying firm to have a long-term relationship with their suppliers. It is important for the buyer to assess the supplier's willingness to develop a long-term relationship which could result in a partnership with the buying firm. Spekman, as quoted by Monczka et al (2010: 174), states that there are a number of questions that the buyer should ask the supplier, to determine whether there is potential for a long-term relationship. Some examples of these questions include:

- Is the supplier willing to commit resources based on the buying firm's request?
  - Has the supplier informed the buying firm that s/he is willing to enter into a long-term relationship?
  - Will the supplier be committed to understanding the buying firm's problems?
  - Is the supplier open to share costing information?
  - Is the supplier willing to share information such as quality systems across the two firms?
  - Is there a high level of trust between the two parties?
  - Is the supplier able to participate early in the product design stage?
  - Is the supplier able to be innovative?
  - Is the supplier willing to commit capacity to meet the buying firm's needs?
  - Is the buying firm special to the supplier or just another customer?
- Environmental regulation compliance capability

There has been an increased awareness of the impact that industry has on the environment. The buying firm does not want to be associated with firms that do not adhere to environmental regulations, from a public relations point of view, as well as a potential liability standpoint.

In addition to the above points, Hugo and Badenhorst Weiss (2011: 79) state that the supplier evaluation study should also include flexibility and service capability. Owing to the changing market conditions, it is important to select a supplier who is flexible. The supplier must be able to adapt to changes in the volume, variety, and mix of the product, as well as have the ability to develop new products. Service capability is just as important as a supplier should excel in all aspects of customer service, such as providing early warning of any late deliveries or disruptions that could affect the production line. A quick response to all customer complaints and a rapid response to the buying firm's request or queries are vital to consider when evaluating a supplier. A supplier with outstanding service levels



could become the buying firm's preferred supplier, especially when prices from different suppliers are all the same.

Dominick (2008) states that there are three questions that the buyer should ask about the supplier to try and predict his/her future performance. The first question is "Is this product the supplier's core competency?" Some suppliers supply multiple products while others specialise in one or two products. If one purchases a product from suppliers who do not specialise in this product, the risk of poor performance is greater. The second question is "Does the supplier have experience in supplying products with similar requirements?" If it is a new product, the more similar the product's specifications and requirements are to previously manufactured products, the more likely the vendor will perform well. The third question is "How will the awarding of the contract to the supplier affect the supplier's capacity?" The supplier must have the capacity to manufacture the product or s/he must explain to the buyer how they are going to make the capacity available. Suppliers, who are trying to squeeze requirements into their current capacity, are less likely to perform well.

Once one or several suppliers have passed the evaluation process mentioned above, the selection process should commence.

## 5.6 THE SELECTION OF SUPPLIERS

The buyer will at this stage ask the suppliers that have passed the evaluation process, to quote on products. According to Monczka (2010: 39), there are two methods used to select suppliers, namely competitive bidding which is used to obtain quotes, as well as negotiations which are used to reduce the prices stipulated in the quotes.

Competitive bidding involves the buyer sending a request for quotations to the suppliers. Burt et al (2010: 247) explains that requests for quotations are usually sent to between three and eight suppliers, depending on the type of product being purchased. The proper use of competitive bidding is based on five criteria, which are:

- The rand value of the specific purchase must be high enough to justify the expense of the bidding process.
- The specifications of the product to be purchased must be clear to the supplier. As such, the request for quotation is usually accompanied by an engineering drawing to eliminate any confusion on the specifications.
- There must be a sufficient number of suppliers in the market place who want to quote on the product.
- The suppliers that are given the request for quotations must be technically qualified.
- Enough time must be given to the suppliers so that the best prices can be quoted. The norm is usually 30 days, but because of the increasing use of on-line bidding, this time has been reduced.

Once the buyer has received the request for quotations, s/he may reduce the list of suppliers and then enter into contract negotiations. Negotiations may be used when the product is new or technically complex, and the specifications are not clear or when special tooling is required. It may also be used when there are performance factors that are crucial to the awarding of the contract, such as just-in-time delivery, quality, lead times and service or the risk of the contract needs to be negotiated.

Once the buyer has negotiated with the supplier, s/he may then select the supplier/s. In this instance, the buyer has the authority to select the supplier/s, but there are also two other approaches that can be used in the selection of a supplier/s. The first approach is that of a cross-functional team comprising of the buyer and representatives of various departments related to the supply management, such as purchasing, production, engineering and quality. The second approach is a commodity team which consists of the same representatives as the cross-functional team. The difference between a commodity team and a cross-functional team is that the commodity team manages a group of similar products and is fairly permanent. Cross-functional teams tend to be more temporary in nature (Burt et al, 2010: 252).

Once the supplier has been selected based on the best value package and all variables such as cost, quality and delivery are agreed upon, the buyer will award the contract. There are different types of contracts, but the main types of contracts are (Monczka et al, 2010: 334):

- Fixed price contract with escalation or de-escalation clauses

If the parties have entered into a long-term contract and there is a high probability that the costs of the supplier will increase, then the supplier and the buyer will choose to have an escalation clause in the contract. If the supplier has entered into a long-term contract for a new product, then the learning curve is applicable and the buyer will choose to have a de-escalation clause in the contract. The supplier will benefit as s/he will have some price protection, while the buying firm can take advantage of any price reductions.

- Fixed price contract

The price on this contract does not change irrespective of the changes in the market place. Examples of such changes are material price increases, competition, levels of supply or any other general economic condition. The risks involved are that if the price of the product rises above the contract price, the supplier has to absorb the additional cost. If the price falls below the stated contract price, the buyer will lose this cost saving. It is important that the buyer understands the current market conditions prior to signing a fixed price contract. The reason for this is that a supplier may need to add to his basic price to cover for any unanticipated rising costs. This will mean that if the buyer has not kept abreast with the latest market conditions, s/he could pay an inflated price for the product.

- Fixed price contract with re-determination

This type of contract is used when suppliers cannot estimate with certainty the labour or material costs of a product prior to signing the contract. This is often the case with new highly technical products. The parties will then estimate the price.

After a certain agreed volume of products have been manufactured, the parties will review the production process and determine a revised fixed price.

- Fixed price contract with incentives

This type of contract is used when it is difficult to arrive at a price prior to the production of the materials. The initial price is determined by estimating the finished price of the product. After a certain agreed volume of production, any cost savings achieved by the supplier are shared at a pre-determined rate and over a certain time period. This type of contract is usually issued for high value items with long lead times.

- Time and materials contract

This type of contract is usually used for plant and equipment maintenance when it is difficult to estimate the cost before the repair has taken place. The contract will indicate the agreed labour rate per hour plus an overhead and profit percentage. It is important with this type of contract that the labour hours spent on the job are carefully monitored.

- Cost-sharing contract

In this case, the buyer and the supplier agree on certain allowable costs and these costs are shared between the two parties at pre-determined percentages.

- Cost plus incentive fee contract

In terms of this contract, the base price is determined by agreeing upon allowable costs. In the fixed-price contract with incentives the base price is a fixed price. Any savings achieved by the supplier will be shared between the two parties at a pre-determined rate for a certain period.

- Cost plus fixed-fee contract

In this case, the supplier will receive a fixed price based on the targeted cost of the product plus additional allowable costs up to a pre-determined amount. The disadvantage of this contract is that the supplier has no motivation to try and reduce his/her costs over the life of the contract.

Cost-based contracts are less favourable with the buying firm as the threat of financial risk based on the supplier's costs is transferred from the supplier to the buyer. The supplier also becomes less interested in reducing costs by improving his operations. Once the contract has been issued, the next step will be to manage the supplier.

## 5.7 SUPPLIER MANAGEMENT

According to Spillane (2004), one of the ways that the proactive buyer will manage his current suppliers is by being aware of any early warning signs that may indicate that the supplier is having problems. It is important that the buyer identifies these problems early before it affects the production line and the entire supply chain. Some of these early warnings of possible trouble include:

- Late deliveries or short-shipments
- Early payment requests
- Request for price increases more than once a year
- Changes in the product quality
- Request for technical support on products and production processes
- Failure to keep abreast with technology
- Failure to reduce costs and achieve cost savings
- Non-payment of taxes
- Increased debt
- Increased number of accounts receivable and payable
- Bad publicity
- Management not spending their available cash wisely

- Lack of focus by top management
- Delayed response to requests
- A decline in market share compared with their competitors

There are, however, some techniques that can be used to manage or avoid problematic suppliers. These techniques include implementing internal training among the departments that deal with suppliers, in an effort to identify potentially troubled suppliers. There should be a process whereby reports of potential trouble with suppliers are immediately sent to the buyer. Another technique to avoid troubled suppliers is to audit the suppliers on a periodic basis and to document all deviations from the contract agreed upon. These deviations can be monitored and early detection of problems identified. A buying firm can create problem suppliers by, for example, reducing the supplier base and not ensuring that the remaining suppliers can handle the additional capacity. This could result in the supplier not delivering on time or meeting the quantities ordered.

To avoid having a disruption in the continuity of supply, the buyer should keep a bank of alternative suppliers for a product. This is also extremely important when a new supplier has to be sourced because of problems with the current supplier. When re-sourcing to a new supplier, the buyer must determine how long the problem supplier will continue to supply and how long it will take to re-source. If there is no possibility of re-sourcing, the buyer must work with representatives from the legal and financial department to assess the viability of the supplier's firm. A plan of action should be determined on how to resolve the current problems the supplier is experiencing. However, before providing the supplier with financial assistance, the supplier should clearly outline his future plans. The buyer also needs to determine the supplier's willingness to provide information about the problem areas in his business (Spillane, 2004).

The buyer can help prevent problems with suppliers by working as a team with second and third tier suppliers to introduce concepts such as lean manufacturing, performance standards and continuous improvements. If OEMs request cost reductions, the buyer should work not only with the first tier suppliers but also the second and third suppliers to try and reduce costs. This could prevent the

suppliers reducing his/her costs and providing, for example, poor quality products, short-shipments and so forth.

Previously, the early warning signs of problem suppliers and the suggestions/techniques on how to avoid having these suppliers, were discussed. Although the buying firm may be satisfied with the current supplier's performance, there are a number of techniques that can be used to improve the existing performance of the supplier. These techniques include (Hugo et al, 2006: 112):

- Focus on eliminating or reducing wasteful activities of the supplier
- Visit suppliers' facilities to offer advice on areas where they can improve
- Invest capital into the supplier's operations
- Focus on trying to reduce long cycle times
- Provide improvement-focused training programmes and allocate time to implement them to the suppliers
- Involve suppliers in new product development at the buying firm
- Provide assistance to the supplier in all areas
- Create a supply development team and train the supplier in developing him/herself without any assistance
- Invite suppliers to the buying firm's premises to educate them on how the production plant operates and the end product is used
- Share any cost savings achieved from the development programmes
- Promise the supplier additional business if s/he performs well
- Assist suppliers in their staff and management development programmes
- Encourage information sharing
- Implement a supplier performance review procedure to encourage suppliers to analyse and measure their productivity
- Encourage the supplier to help the buying firm to improve its own processes

Conversely, there are some supplier management practices that should be avoided. For example, the supplier should avoid having one-sided contracts

where all the benefits are for the buying firm, or when the buyer takes advantage of the buyer-supplier relationship. Some buyers do not accept supplier feedback and criticism and argue every time feedback is given. The supplier should avoid doing business with this type of firm. If the buyer does not regard the supplier as a partner in their business, it would be better for the supplier to seek contracts elsewhere.

For a firm to remain competitive in a volatile market, the buying firm should devote a large amount of time in the development and management of the supplier relationship, especially with the supplier with whom they have a long-term contract. These long-term contracts are, therefore, usually awarded to the buying firm's current suppliers who have proven their performance ability (Johnson et al, 2011: 367).

## 5.8 CONCLUDING REMARKS

This chapter gave an explanation of the growing importance of supplier selection, sourcing policies and strategies, as well as the factors that the buyer must consider when managing the supplier base.

Chapter Six will describe the research methodology and the design of the questionnaire that was used in this study to obtain the necessary empirical data.



## CHAPTER SIX

### RESEARCH DESIGN AND METHODOLOGY

#### 6.1 INTRODUCTION

In the previous chapter, an explanation of the growing importance of effective supplier selection and the management of the supplier base, as well as the different sourcing policies and strategies used by purchasing and supply departments in the automotive industry, was given. A literature study was undertaken (chapters 2 to 5) to determine the theoretical guidelines for purchasing and supply departments in a business, with the main focus being on the key factors that are required to be classified a world-class purchasing and supply department. The main objective of this empirical study was to determine the extent to which these key factors are required for world-class purchasing departments and whether these are practically applied and currently executed in businesses in the automotive industry. The empirical study also needed to identify the possible problems or obstacles which prevent purchasing and supply departments from implementing the key factors required in pricing, quality and supplier management, to achieve excellence.

The research methodology and design used to collect the empirical data is the topic of Chapter Six. This chapter will explain details of the research methodology used, the target population and the sample size, as well as the rationale for the data collection method used in this study.

#### 6.2 RESEARCH DESIGN

Research is a process of systematic inquiry with the purpose of gaining more knowledge (Bertram & Christiansen, 2014, 6). Welman and Kruger (2001:2) define research as a process that results in the creation of knowledge by means of various methods and actions. These methods and actions are referred to as the research design and methodology of a study and serve as a detailed plan used to guide a research study towards its objectives. Therefore, research does not only rely on emotions and opinions, but is achieved through the specific

application of certain scientific methods. These methods include identifying the target population, determining a sample size, collecting data and analysing the collected data.

Although the concept 'research' has various definitions and is interpreted differently by different people, there is agreement on the following characteristics of research (Collis & Hussey, 2003:1):

- A process of enquiry and investigation
- Being systematic and methodical
- It increases knowledge

These characteristics indicate that research should be conducted in a systematic and methodical manner and the correct data collection method and method of analysis should result in research outputs that are reliable and valid. This study is also characterised by these characteristics.

### 6.3 QUANTITATIVE VERSUS QUALITATIVE RESEARCH METHODS

Research is concerned with seeking solutions to problems or answers to questions. There are two main research methods, namely the quantitative and qualitative research methods. Quantitative research refers to the use of structured, standard questions and pre-determined response options given in the form of a questionnaire to a large target group (Burns & Bush, 2006:202). Quantitative research methods are directly related to descriptive research, which uses a set of scientific methods for collecting raw data and creating data frameworks (McDaniel & Gates, 2006:79). Quantitative research is based on positivistic methodologies for developing knowledge. These methodologies include: cause-and-effect relationships; the reduction of specific variables in the analysis; and the use of statistical measurement and observation (De Vos, Strydom, Fouche & Delpont, 2005: 79). Qualitative research, on the other hand, is any research in which qualitative data is used such as textual or visual data. Some examples are audio recorded interviews, photographs, video footage and drawings, as well as field notes recording observations, ideas or thoughts (Bertram & Christiansen, 2014, 116).

The main difference between the two research methods is that the quantitative research method provides numerical data or information that can be statistically analysed, while the qualitative research method gathers non-numerical data. A more detailed point-by-point comparison between the two types of research is outlined below (Quantitative and Qualitative Research, 2009):

- The main goal of the qualitative research method is to provide a detailed description of the research topic, and tends to be more subjective in nature. Conversely, the quantitative research method focuses on constructing statistical models and figures, and is mostly objective in nature.
- The data gathering instruments used in the qualitative research method are in-depth interviews, focus groups, structured or non-structured interviews, participant observation and the reviewing of documents. The quantitative research method, on the other hand, makes use of tools such as surveys, structured interviews and review documents or records to collect numerical or measurable data.
- The presentation of the data in the qualitative research method is in the form of words, pictures, drawings, photographs, or any information that is not expressed in numbers. However, if one is conducting a study using the quantitative research method, the presentation of data will appear in the form of tables with numbers and statistics.
- The qualitative research method seeks to understand human behaviour and the reasons that govern such behaviour, while the quantitative research method seeks precise measurements and the analysis of target concepts/members to answer a particular inquiry.

The main advantage of using the qualitative research method is that it studies phenomena in their natural habit and obtains a holistic picture of the subject under research. Because of its non-intrusive nature, this research method may be used when it is impossible or unethical to study a particular subject by using

the quantitative research method. However, the main disadvantages of this method are that the researcher is heavily involved in the study which allows the researcher to interpret the research according to his/her own view which could be biased. Another main disadvantage is that this research method is time consuming and can carry on for months or even years (Scruggs, 2014).

Correlatively, the main advantages of the quantitative research method are that it is objective in nature and that the data in the survey will provide meaningful information about the subject under consideration. The statistics derived from the data allows one to make evaluations about the subject being studied. The main disadvantages of the quantitative research method are that quantitative data ignores human elements and relies on the respondents to answer the questionnaires correctly and to provide valid and reliable data (Scruggs, 2014).

An important decision to make is to decide which research method to use. The qualitative and quantitative research methods each have their own strengths and weaknesses, as discussed above, and these can vary depending on the topic that one would like to research. However, if a research topic aims to achieve numerical evidence, then one should rather make use of a quantitative research method. If on the other hand, a study aims to explain why a particular event or phenomenon happened, then one should make use of the qualitative research method (Quantitative and Qualitative Research, 2009). As this study's aim was to determine answers to an inquiry through numerical evidence, the quantitative research method was chosen.

As alluded to above, the main characteristics of the quantitative research method are that the data is gathered using a structured research instrument such as a questionnaire to do a survey. The results are based on the responses obtained from a sample size that is representative of the target population to be researched. The study can be repeated if necessary. A quantitative study is based on a clearly defined research question to which objective answers are required. All aspects of the research are carefully designed and piloted before the data is collected. Data is collected and analysed in the form of numbers and statistics and can be used to generalise answers to a specific defined research question (Organising Your Social Sciences Research Paper, 2014).

This current study contains all the characteristics of the quantitative research method that are mentioned above and thus it can be concluded that the decision to use the quantitative research method was most suitable. Based on this decision, the survey for the study was designed in such a way that it would contribute to attaining the research objectives as stated in the introduction. The study takes the form of an in-depth investigation, involving data being collected from purchasing and supply departments within the automotive industry, to determine the key factors required to be classified a world-class purchasing and supply department.

#### 6.4 THE SAMPLE AND SAMPLING METHOD

The target population for a survey is the entire set of units for which the findings of the survey are meant to generalise (Cox, 2008). This target population can be very large and can be a dispersed population that could be time consuming and expensive to collect data from. It is often more cost effective to reduce the scope of the target population to one that is easier to contact. This is often called the survey population or sample size.

The sample size is the total members of a defined class of people, objects, places or events selected because they are relevant to one's research question (Health Management, Ethics and Research HEAT Module, 2014). Horn (2012: 104) explains that the need for sampling occurs because of the following reasons:

- The size of the target population is too large and it becomes expensive to study all the cases in a population
- Restriction on the amount of time available to conduct the research as a dissertation has a limited time period within which it must be completed
- Inaccessibility of some of the target population as certain people may not be happy to participate in the survey
- Possible destruction involved in a study such as researching the quality of components of a computer, in which case it would not be appropriate to damage too many components, but rather take a sample of the components off the production line

There are two sampling methods, namely probability and non-probability sampling. According to Horn (2012: 104), probability sampling uses a random selection of a population element or members from a sample framework whereas with non-probability sampling the chances of being selected are unknown. For the purpose of this study, the probability sampling method was used.

There are also different probability sampling methods which include simple random sampling, stratified sampling, cluster random sampling and multi-stage sampling. Simple random sampling is when, for example, there is a list of 500 staff members at NMMU and all the names of these staff members are placed into a hat. One randomly selects 40 of these staff members to interview owing to the time and cost involved in the interviewing process. Stratified random sampling ensures a more accurate representation of the population and sub-groups or sections within a population selected. An example of the stratified sampling method is when 500 staff members at NMMU are divided into the academic and administration staff members. The academic staff members are then further divided into their departments such as Logistics Management, Human Resource Management, Business Management and so forth. Using this sampling method, 5 lecturers from each of these departments are randomly selected to participate in the survey. However, one may find that only 3 of the 5 lecturers chosen would participate in completing the survey.

Cluster random sampling is used when the population is spread over a large geographical area. The population is grouped to reduce costs and time involved in completing the study. An example of cluster sampling is when the nine provinces of South Africa are divided equally for the sample size and 11.1% of the population of each province is selected for the sample.

The last probability method is the multi-stage sampling method which combines simple, stratified and cluster sampling to develop a representative sample of the population. This type of sampling method is very seldom used in dissertation research due to the cost and time involved.

For the purpose of this study, the stratified sampling method was used as the sample population was divided into the different automotive sub-sectors that represent the automotive industry. Sample members of each of these sub-

sectors were chosen and these sub-sectors include electrical, rubber, plastic, chemical, trim (upholstery), metal, glass, sub-assembly, as well as the motor vehicle assemblers in the Eastern Cape, which are General Motors South Africa, Volkswagen South Africa and Mercedes Benz. There is also a sub-sector called 'other' for those members who form a combination of the sub-sectors mentioned above or who perceive themselves as a different sub-sector. A total of 60 questionnaires were distributed to these mentioned suppliers and OEMs in the automotive industry.

## 6.5 DATA COLLECTION METHODS

As mentioned previously, the quantitative research method involves data collection methods that rely on structured data collection instruments. The main goal of a quantitative data collection method is to obtain empirical data that will produce results that are easy to summarise, compare, and allow one to make generalisations. Typical quantitative data collection strategies are experiments/clinical trials, observing, and recording well-defined events such as counting the number of people going into a supermarket in a day, and administering surveys.

For the purpose of the current study, the survey data collection method will be discussed. There are two types of surveys, namely interviews and questionnaires. The different types of interviews and questionnaires are summarised below (Data Collection Methods, no date) and include:

- Face-to-face interviews

Also known as personal interviews, this type of interview has the advantage that the researcher has personal contact with the respondents and therefore can gain their full co-operation. Its high response rate can be attributed to the researcher's ability to clarify ambiguous answers and answer any question that the respondent may have with regard to the questionnaire in real time. It is, however, impractical when large samples are involved due to the time consuming nature of the data collection method, as well as the relative expense of the interview.

- Telephone interviews

Telephone interviews are less time consuming and expensive and the researcher has access to anyone globally who has a telephone. The response rate is not as high as face-to-face interviews, but it is higher than mailed interviews. However, with this data collection method, the sample may be biased to the extent that people without phones are automatically excluded.

- Computer assisted personal interviewing

With this type of interviewing the interviewer brings a laptop and enters the respondent's responses directly into the database. The respondent does not complete a questionnaire. This method saves time in processing the data from each questionnaire completed and the researcher does not have to carry all the questionnaires to the interviews. The main disadvantage of this method is that the interviewers require computer skills and may enter the information incorrectly into the database.

- Paper-to-pen questionnaires

Paper-to-pen questionnaires can be sent to a large sample of respondents. It can save time and money compared to the interview methods of collecting data. The data received is often more truthful especially where the respondent wishes to remain anonymous. However, the main problem with this method is that respondents who receive questionnaires often do not return them. It then becomes a time consuming and tedious task to get these questionnaires completed.

- Web-based questionnaires

This method makes use of internet-based research. The respondent would receive an e-mail and the respondent would click on an address that would take the respondent to a secure site to complete a questionnaire. Another example of this method is when the researcher can send the respondent an e-mail with an attachment of the questionnaire. This option is quicker as the questionnaire is



completed and returned immediately by the 'click of a button'. The main disadvantages are that people who do not have access to a computer are excluded and often the respondents are in a hurry to complete the questions, and this results in inaccurate responses.

This current research project made use of paper-to-pen questionnaires and web-based questionnaires. The reason why these data collection tools have been chosen is due to the size of the sample which is composed of 60 buyers of various suppliers and OEMS throughout the Eastern Cape Province.

## 6.6 DESIGN OF THE QUESTIONNAIRE

Correct questionnaire construction is one of the most important steps in achieving a successful research study. One advantage of a well-designed questionnaire is that respondents will be more willing to complete the questionnaire and the accuracy of data collected will be better (Getting the Right Answers, 2010). Another advantage is that a large number of respondents can be reached in a short period of time and in an easy and economical manner. Each respondent receives the same set of questions and therefore the results received can easily be compared. The results can be easily and quickly quantified by a researcher or through the use of a computer software package. Furthermore, the data of a standardised questionnaire can be analysed more scientifically and objectively than interviewing the respondents. A disadvantage of using questionnaires is that there is no way of telling how truthful the respondents are in answering the questions. The respondents may also interpret each question in their own way.

Inappropriate questions or the incorrect wording of questions in the questionnaire can cause the survey to be a failure, as the information obtained may be incorrect or not express the views and opinions of the respondents. It is therefore imperative that the questions in the questionnaire are formulated correctly. There are four types of questions that can be used in a questionnaire, which include (Byrant, 2014):

- Contingency questions: Contingency questions are questions that are only answered by the respondent if s/he answered the previous question. This

prevents respondents having to answer questions that are not applicable to them.

- **Matrix questions:** These are questions in which identical response categories are assigned to a list of questions. There is a main question and response questions are listed one under the other, forming a matrix with response categories on the top. An example is given below:

**Please rate the service of the following suppliers:**

	Bad				
Good	1	2	3	4	5
Feltex	X				
Shatterprufe			X		
Continental Tyres				X	
City Paint and Tool					X

- **Closed-ended questions:** Closed-ended questions are questions whereby the respondent's answers are limited to a fixed set of responses. These include yes/no, multiple-choice and scaled questions.
- **Open-ended questions:** These are questions that give the respondents the opportunity to supply their own answers to the question.

The questions included in the questionnaire used for this study (see ANNEXURE A) were formulated based on the knowledge obtained from the literature study of the subject. The questionnaire is divided into three sections. The first section is a 'General Information' section which determines specific information on the respondent (buyer) and the area/sub-sector in the automotive industry in which the respondent's business firm operates. The questions in this section are closed-ended questions and consist of multiple-choice questions.

Section two contains questions on pricing, quality and supplier management in accordance with the literature study. The questions in this section are matrix questions, as identical response categories were assigned to a list of questions. Section three contains open-ended questions regarding the respondent's opinion on problems or obstacles preventing the buyer from implementing the world-class factors in pricing, quality, and supplier management in the business firm.

Researchers often make use of rating scales in their questionnaire, with the best known one being the Likert scale. The Likert scale is a five or seven point scale which is used to allow the respondents of the survey to indicate the degree to which they agree or disagree with a particular statement or question. The advantage of using a Likert-scale survey is that the respondents do not simply answer yes or no, but are allowed to express degrees of opinion or no opinion at all. From these answers, quantitative data is obtained and this data can be analysed using statistics (Mcleod, 2008). This study used the Likert-scale method in Section A of the questionnaire with the range between 1 and 5. (See ANNEXURE A).

A poorly designed questionnaire will collect data that is biased, uninterpretable, insufficient or misleading. If the questionnaire is designed poorly the research project can be a costly and time consuming exercise as the data will be inaccurate and invalid. As such, there are certain guidelines that a researcher needs to keep in mind to ensure that the questionnaire will be the most effective data collection tool possible, and to ensure the success of the research project. The following guidelines are proposed for the layout of the questionnaire (Getting the Right Answers, 2010):

- The questions should be clear to the reader and enable the researcher to obtain the data that will be required to obtain the goals of the research project. Other than the demographic questions, the questions in the questionnaire used in this study are all related to the discipline of purchasing and supply management. As the respondents were buyers of automotive manufacturing firms the questions would have been clear to the reader.

- Questions in the questionnaire should be grouped in sections and the questions should be in a logical order. This principle was also applied in this study. Section A of the study's questionnaire has questions grouped into three sections, namely pricing, quality, and supplier management.
- The questionnaire should not begin with an open-ended question as the respondent may not become motivated to answer the questionnaire. The first questions in the questionnaire should be easy to understand and answer, as well as engaging to the respondent. It was therefore decided that the questionnaire for this study will commence with a 'General Section' which includes questions such as the job position, age and gender of the respondent, which are simple and easy questions to answer and understand.
- The number of open-ended questions in a questionnaire should be kept to a minimum. Open-ended questions lengthen the time to answer the questionnaire and are more difficult to answer than closed-ended questions. The questionnaire in this study has three open-ended questions at the end of the questionnaire.
- Questions should be numbered to prevent the respondent becoming 'lost' while answering the questions. The questions in the survey in the 'General Section' are clearly numbered 1 to 4 and in 'Section A' from 1 to 25.
- The questionnaire should be professional, attractive and easy to answer. The fonts should be large enough to avoid eye strain and clear instructions for completing the questionnaire should be given to the respondent. For the purpose of this study, the questionnaire consists of five pages, the font is arial 12 and each respondent is given a brief introduction describing the purpose of the survey and how the results will be used. Anonymity is also stated clearly in the questionnaire.

Although all the above guidelines will contribute to the creation of a quality survey instrument, it is important that the length of the questionnaire is reasonable. Questionnaire length refers to the period of time it takes for the respondent to complete the questionnaire. Longer questionnaires result in higher survey costs, lower response rates and poor data collection. It has been recognised that the length of the questionnaire has the above disadvantages when it takes more than 20 minutes to complete (Hugick & Best, 2013). The time taken to complete the questionnaire in this study has been tested and it was calculated that should not take a respondent longer than 10-12 minutes to complete it.

## 6.7 PILOT STUDY

Another important factor to consider before distributing the questionnaire is to test the questionnaire by conducting a pilot run. A pilot study can be referred to as a research project that is conducted on a limited scale, as well as the pre-testing of a particular research instrument such as a questionnaire (Crossman, 2014). Pilot studies are a very important element of a good study design.

Once the questionnaire was designed and developed for this study, a pilot survey was conducted to test the user-friendliness of the standard questionnaire and to ensure that the questions and instructions were clear, as well as to identify any shortcomings, in order to minimise any possible errors. The questionnaire was pre-tested by 10 buyers of various automotive manufacturing firms. Although the general feedback from the respondents was positive, the pre-testing assisted the researcher in adding some additional questions into the questionnaire, as well as changing the layout of Section B. After these minor adjustments were completed, the researcher was confident that the questionnaire would produce the outcomes that were required and that the information obtained from the questionnaire would be valid and reliable.

## 6.8 VALIDITY AND RELIABILITY

To ensure that the measuring instrument (questionnaire) used in the study measures the data accurately, the reliability and validity of the study needs to be tested. Validity can be explained as the extent to which the research study actually measured what it was supposed to measure and not something else.

There are two types of validity that are applicable to this study, and these are face validity and content validity. Face validity refers to the extent to which the questionnaire measured what it was supposed to measure. That is, whether the wording and phrasing of the questions were correct, and whether the responses from the participants in the survey seem appropriate. Content validity refers to the extent to which the questionnaire measured the actual concepts related to the main research question.

Reliability refers to the extent to which the measuring instrument produces stable and consistent results (Exploring Reliability in Academic Assessment, 2005). The reliability of the study means that one would get similar results from the same questionnaire if the study was repeated soon afterwards with the same buyers of the purchasing and supply departments. The 'repeatability' of this study would be high as the respondents understood the questions and answered as was required. Another important aspect of reliability is the consistency among the questions.

In this study, questionnaires were completed only by qualified and experienced buyers in the automotive industry, in order to ensure the credibility and accuracy of the responses. The buyers received and completed the questionnaires, the questionnaires were collected and scrutinised to ensure that each questionnaire was completed correctly and that the answers were understood. The name and contact details of the buyer completing the questionnaire were obtained in order for the buyer to be contacted if any information needed to be clarified. There were instances where the respondent wanted to remain anonymous.

The answers received from the respondents were fairly consistent with one another. The reliability and validity of the study could also be attributed to the questions that were specifically related to the respondent's current job position as a buyer (questions related to purchasing and supply management).

## 6.9 CONCLUDING REMARKS

In this chapter, the research design and methodology, in particular the data collection method and design of the questionnaire, were explained.

Chapter Seven will discuss the empirical results of the study which were analysed and interpreted in accordance with the study objectives as outlined in Section 1.2.2 in Chapter One.

## CHAPTER SEVEN

### ANALYSIS AND INTERPRETATION OF THE EMPIRICAL DATA

#### 7.1 INTRODUCTION

In the previous chapter, an explanation of the research design and methodology, the data collection method and the design of the questionnaire used in this study, was given. The topic of Chapter Seven is the analysis and interpretation of the empirical data.

A literature study (chapters 2 to 5) was undertaken to determine the theoretical factors on pricing, quality and supplier management needed for purchasing and supply departments in the automotive industry to become world-class and achieve excellence. The empirical study conducted (see Annexure A) was based on this literature study to determine, firstly, the extent to which purchasing and supply departments believe that these key factors are required to be a world-class purchasing and supply department. Secondly, to determine if these key factors were actually applied and practically executed within the departments and, thirdly, to identify problems or obstacles which prevent the departments from implementing the key factors.

In this chapter, the results from the empirical study will be discussed with the aid of tables and figures based on the responses from the respondents to the questionnaire. The findings obtained from the empirical study will be discussed in terms of the literature study and the discussion will be presented in terms of the sub-objectives mentioned in Section 1.2.2 of Chapter One.

#### 7.2 RESPONSE RATE AND INTERPRETATION

A total of 38 completed questionnaires from the sample size of 60 were collected from suppliers and original equipment manufacturers (OEMs). This gives a response rate of 63.3% which is regarded as sufficient to make valid and meaningful conclusions. The reasons why some of the suppliers did not complete



the survey could be attributed to time constraints in that they were too busy to answer the questionnaire; lack of interest to respond; simply refusal to respond; as well as fear that the data may not be confidential even though it was stated in the questionnaire that the information would only be used for research purposes and the respondents would be treated anonymously.

It was possible to draw general conclusions from the questionnaires that were completed as the researcher made sure that the respondents understood the questions and completed the questionnaire as was required. The accuracy level of the research can therefore be declared as being relatively high and acceptable.

### 7.3 ATTAINMENT OF THE STUDY OBJECTIVES

As was indicated earlier the main goal of this study was to identify the key factors required by world-class purchasing and supply departments of business firms in the automotive manufacturing industry to achieve excellence. To develop a research strategy to solve the main problem of the study, a number of sub-objectives were identified. The questionnaire was designed in such a manner that the answers to the sub-objectives could be obtained. In this section each sub-objective is listed and the responses to the specific sub-objective outlined. The findings of the empirical study are also discussed in terms of the literature study.

#### 7.3.1 ***Sub-objective one: To determine the extent to which the purchasing and supply departments in the automotive industry believe that certain key factors in pricing, quality and supplier management are required to achieve excellence.***

The goal of this sub-objective was to determine if the respondents believe that certain key factors on pricing, quality and supplier management, as referred to in the literature study, were in practice required for purchasing and supply departments to be regarded as being world-class. To achieve this goal, the respondents were asked to indicate their level of agreement on a number of key factors that were identified and listed in the questionnaire. The respondents were

asked to indicate their level of agreement based on a Likert-scale rating of 1 to 5 with 1 being “to a very little extent” and 5 “to a very large extent”. The results are shown in Tables 7.1 to 7.3. The percentages in columns D and E were added together to obtain the percentage of buyers that were in support of the statements given in the questionnaire.

In statistical notation, the hypothesis used in this study is as follows:

$$H_0: p \leq 0.65$$

$$H_1: p > 0.65$$

This hypothesis was tested for each item in the questionnaire.

If the percentage in the combined columns (D plus E) is significantly greater than 65%, it is an indication for the researcher that a significant number of the target population is in agreement or actually implemented what the items measure and the scale used.

Furthermore, each hypothesis test involved the calculation of a z-value. If this z-value was greater than the critical value of 1.645, it means that the alternative hypothesis ( $H_1$ ) was supported, while the null hypothesis ( $H_0$ ) was rejected at the 5% level of significance.

Therefore, where the z-value was in excess of 1.645, it indicates sufficient evidence that the proportion of the population supporting/agreeing to the items, is greater than 65%.

However, it needs to be noted that there are some cases where, although the combined score (D plus E) of the sample population is in excess of 65%, the z-value is less than 1.645. This means that there was not sufficient evidence that the proportion of the population support/agree to the items, and could have occurred only by chance.

- Pricing

Table 7.1: Synopsis of responses (expressed in %) for the questions on 'pricing' in Section A of the questionnaire

	A	B	C	D	E	D+E		
PRICING	To a very little extent	To a little extent	To a moderate extent	To a large extent	To a very large extent	Sum of column D and E	z-value	Reject (H <sub>0</sub> )
Negotiates with the suppliers to avoid or reduce price increases			2.6	28.9	68.4	97.3	4.183	*
Implements co-operative cost reduction programmes with suppliers	2.6	2.6	15.8	26.3	52.6	78.9	1.803	*
Applies outsourcing to reduce costs		13.2	44.7	28.9	13.2	41.2	n/a	
Demonstrates expertise in supplier costing methods			10.5	52.6	36.8	89.4	3.163	*
Encourages supplier open book costing and cost transparency			21.1	23.7	55.3	79	1.803	*
Demonstrates knowledge of the learning curve to reduce the supplier's prices		5.3	21.1	42.1	31.6	73.7	1.122	
Encourages standardisation with the supplier to reduce prices			18.4	36.8	44.7	81.5	2.143	*
Implements centralisation of the purchasing and supply department to enable purchases to be made in bulk and volume discounts to be negotiated		5.3	7.9	39.5	47.4	86.9	2.823	*
Implements long-term contracts with suppliers	2.6	10.5	23.7	36.8	26.3	63.1	n/a	

The responses to the questions asked on pricing almost all gave a combined score (columns D plus E) of more than 65%, for example 97.3%, 89.4% and 86.9%, with the exception of only two questions that obtained a combined score of less than 65%. A high percentage of respondents (97.3%) indicated that negotiating with suppliers to avoid or reduce price increases was a key requirement for a world-class purchasing and supply department. This is line with

the findings of Benton (2010: 284) that price determination is becoming the most important competitive weapon to ensure the survival of a business firm. It is, therefore, crucial that business firms obtain the best price that they can from the suppliers and avoid any future price increases or negotiate any unavoidable price increases to a minimum.

The factors on pricing that also received strong support from the respondents were expertise in supplier costing methods (89.4%) and the implementation of centralisation by the purchasing and supply departments to enable purchases to be made in bulk and volume discounts negotiated (86.9%).

The two questions that obtained a score less than 65% include: some 41.2% of the respondents indicated that they believe that the principle of outsourcing to reduce costs was a key factor of pricing, while 63.1% indicated that they believe that the implementation of long-term contracts with suppliers is a key factor.

The respondents indicated in the open-ended question section of the questionnaire that outsourcing is generally not done on core competencies and can be more problematic than the cost savings achieved. There are various problems with outsourcing such as the fact that the business firm loses control over its operations and key activities such as quality, speed and reliability of delivery which become the responsibility of the supplier. The risk with outsourcing is high as there is often the need to disclose proprietary information. Another disadvantage is that once the decision has been taken to outsource it is very difficult and costly to reverse this decision as was found by Kruger et al (2005:314).

As mentioned above, 63.1% of respondents indicated that the implementation of long-term contracts with suppliers was a factor required of a world-class purchasing and supply department. The slightly low percentage compared with the 65% and higher percentages could be attributed to the risks involved in having a long-term contract with suppliers, such as complacency and performance deterioration by the supplier. Monczka et al (2010: 338) also concluded that buyers need to consider the risks when entering into a long-term agreement with a supplier. The risks are that the supplier becomes too complacent and loses the drive to improve performance. Performance

deterioration could appear in various ways such as late deliveries, poor quality supplies and services, high price increases, increased lead times and not keeping up with the latest technologies.

- Quality

Table 7.2: Synopsis of responses (expressed in %) for the questions on 'quality' in Section A of the questionnaire

QUALITY	A	B	C	D	E	D+E	z-value	Reject (H <sub>0</sub> )
	To a very little extent	To a little extent	To a moderate extent	To a large extent	To a very large extent	Sum of column D		
Sources suppliers who implement quality assurance and continuous improvement programmes			2.6	15.8	81.6	97.4	4.183	*
Includes suppliers in the early stages of the design of a product		5.3	15.8	15.8	63.2	79	1.803	*
Develops suppliers to become world-class suppliers			26.3	31.6	42.1	73.7	1.122	
Works in and leads cross-functional and cross-organisational business teams		2.6	15.8	36.8	44.7	81.5	2.143	*
Provides the suppliers feedback on their Performance			15.8	28.9	55.3	84.2	2.483	*
Implements the goal of zero defect with the supplier			7.9	23.7	68.4	92.1	3.503	*
Establishes supplier improvement targets			10.5	28.9	60.5	89.4	3.163	*

As shown in Table 7.2, all the questions on quality obtained a combined response score (columns D plus E) of above 65%. Therefore, all the respondents are in agreement that the key factors on quality, as mentioned in the questionnaire, are required to be a world-class purchasing and supply department. There were two percentages that were above 90% which indicate that the respondents were in strong agreement that these two factors of quality

are required by a world-class purchasing and supply department. The majority of respondents (97.4%) indicated that they believe that buyers should source from suppliers who implement quality assurance and continuous improvement programmes, while 92.1% of respondents believe that the goal of zero defects needs to be implemented with suppliers. These two factors go hand-in-hand because if suppliers implement quality assurance and continuous improvement programmes they should deliver zero defect goods. Hugo et al (2006: 141) define quality assurance as the fact that 'the right quality is built into the product, not inspected into it'. Therefore, if the 'right quality is built into the product, not inspected into it' then the products should be manufactured with zero defects.

A relatively low percentage (73.7%) of respondents believe that developing suppliers to become world-class suppliers was a requirement of a world-class purchasing and supply department. Supplier development is the process of working with specifically chosen suppliers on a one-on-one basis to improve their performance and capabilities to meet the buying firm's supply needs (CIPS: Supplier Development-CIPS Positions on Practice, 2009).

A reason for the relatively low percentage of 73.7% indicated for buyers developing suppliers to become world-class suppliers could be that the respondents indicated in the open-ended question section of the questionnaire that they were battling to do their daily tasks due to their high workload. Supplier development requires time and effort to improve the supplier's performance.

- Supplier management

Table 7.3: Synopsis of responses (expressed in %) for the questions on 'supplier management' in Section A of the questionnaire

<b>SUPPLIER MANAGEMENT</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>D+E</b>		
	<i>To a very little extent</i>	<i>To a little extent</i>	<i>To a moderate extent</i>	<i>To a large extent</i>	<i>To a very large extent</i>	<i>Sum of column D and E</i>	<i>z-value</i>	<i>Reject (H<sub>0</sub>)</i>
Conducts an in-depth analysis of the supplier's capabilities		2.6	5.3	31.6	60.5	92.1	3.503	*
Co-ordinates and collaborates with the supplier			2.6	31.6	65.8	97.4	4.183	*
Assists the supplier with implementing cost reductions			26.3	34.2	39.5	73.7	1.122	
Works with suppliers to introduce concepts such as lean manufacturing, continuous improvement and JIT		2.6	15.8	28.9	52.6	81.5	2.143	*
Demonstrates knowledge of global supply markets and suppliers		2.6	2.6	36.8	57.9	94.7	3.843	*
Visits the supplies' premise on a regular basis			28.9	31.6	39.5	71.1	0.782	
Rates the supplier on a periodic basis		2.6	13.2	23.7	60.5	84.2	2.483	*
Acknowledges that the supplier is an extension of the buying firm's business	2.6	2.6	13.2	44.7	36.8	81.5	2.143	*
Encourages the suppliers to reduce their lead times		2.6	5.3	28.9	63.2	92.1	3.503	*

As shown in Table 7.3, a high combined percentage (97.4%) of respondents believe that co-ordinating and collaborating with the supplier is a key factor of supplier management. The supplier and the buying firm need to have a very close relationship and become partners in order to succeed in today's competitive environment. Lysons and Gillingham (2012: 394) define a partnership as a "commitment to both customers and suppliers, regardless of size, to a long-term relationship based on clear, mutually agreed objectives to strive for world-

class capability". High support was also obtained for factors such as buyers demonstrating knowledge of the global supply markets and suppliers (94.7%), encouraging suppliers to reduce their lead times (92.1%) and the conducting of an in-depth analysis of the supplier's capabilities (92.1%).

Some 71.1% of the respondents indicated that they believe visiting the supplier's premise on a regular basis was a key factor of supplier management. This low percentage compared to the other factors of supplier management mentioned in Table 7.3 could be due to buyers purchasing from international suppliers and, therefore, suppliers' visits may be limited.

Furthermore, assisting the supplier with implementing cost reductions requires time and effort and the buyers may not always have the additional time to assist the supplier. This could be why only 73.3% of respondents believe that assisting the supplier to implement cost reductions is a key factor required in supplier management.

Due to the high percentage of respondents (65% and above) being in agreement that the factors mentioned in tables 7.1 to 7.3 on pricing, quality and supplier management are required for a world-class purchasing and supply department, it can be concluded that these factors, with the exception of outsourcing (41.2%) and long-term contracts (63.1%), are required to be a world-class purchasing and supply department.

**7.3.2 Sub-objective two: To identify if the purchasing and supply departments in the automotive industry implement the key factors in pricing, quality and supplier management required to achieve excellence.**

The goal of this sub-objective was to determine if the purchasing and supply departments in the automotive industry practically applied and currently executed the key factors in pricing, quality and supplier management required to achieve excellence. To achieve this goal, the respondents were asked to indicate their purchasing and supply department's level of implementation of these factors. The respondents were asked to indicate their level of implementation based on a



Likert-scale rating of 1 to 5 with 1 being “not at all” and 5 “all the time”. The percentages in columns D and E were again added together to indicate the percentage of respondents that implemented the factors on a regular basis.

- Pricing

Table 7.4: Synopsis of responses (expressed in %) for the questions on ‘pricing’ in Section B of the questionnaire

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>D+E</i>		
<b>PRICING</b>	<i>Not at all</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Frequently</i>	<i>All the time</i>	<i>Sum of column D and E</i>	<i>z-value</i>	<i>Reject (H<sub>0</sub>)</i>
Negotiates with the suppliers to avoid or reduce price increases		2.6	7.9	39.5	50	89.5	3.163	*
Implements co-operative cost reduction programmes with suppliers	2.6	5.3	26.3	31.6	34.2	65.8	0.102	
Applies outsourcing to reduce costs	7.9	18.4	57.9	5.3	10.5	15.8	n/a	
Demonstrates expertise in supplier costing methods	2.6	7.9	28.9	36.8	23.7	60.5	n/a	
Encourages supplier open book costing and cost transparency	2.6	5.3	28.9	26.3	36.8	63.1	n/a	
Demonstrates knowledge of the learning curve to reduce the supplier’s prices	2.6	15.8	28.9	26.3	26.3	52.5	n/a	
Encourages standardisation with the supplier to reduce prices	2.6	13.2	39.5	15.8	28.9	44.7	n/a	
Implements centralisation of the purchasing and supply department to enable purchases to be made in bulk and volume discounts to be negotiated		13.2	23.7	34.2	28.9	63.1	n/a	
Implements long-term contracts with suppliers	5.3	15.8	21.1	31.6	26.3	57.8	n/a	

The respondents indicated that they implemented the key factors on pricing in varying degrees. The results are shown in Table 7.4. A high percentage (89.5%) of respondents indicated that they negotiate with their suppliers on a regular basis to avoid price increases. Dominick (2008) states that inflation provides an easy excuse for a supplier to try and increase prices. Suppliers often regard this time as a golden opportunity to increase their profit mark-up to make up for the previous few tough years when they were forced to give price reductions. A low percentage (15.8%) of the respondents applied outsourcing to reduce costs. This correlates with the low response rate received on whether the buyers believe that outsourcing is a key factor required to achieve excellence. Possible reasons for the low response rate were discussed in the previous section.

The combined response rate to buyers demonstrating knowledge of the learning curve and encouraging standardisation with suppliers to reduce prices were 52.5% and 44.7%, respectively. These two percentages are below 65% which is an indication to the researcher that the majority of respondents do not actually apply these key factors on pricing. For the open-ended question section in the questionnaire the respondents indicated that a lack of training and high staff turnover due to the pressure involved in meeting short deadlines, as well as a high workload, prevented them from implementing the key factors in pricing, quality and supplier management required for a world-class purchasing and supply department.

Understanding and implementing the learning curve scenario with suppliers, as indicated in Chapter Three, to reduce prices require time and effort which the buyers may not have due to the high staff turnover and workload. Van Weele (2010: 354) states that knowledge of the learning curve is of vital importance to the buyer. Knowledge of the supplier's learning curve will help the buyer when negotiating a reduction in prices.

As mentioned in Chapter Three, encouraging standardisation with suppliers requires the buyers to have knowledge on the design and the manufacturing process of the product. Therefore, the lack of training and high staff turnover could also attribute to the buyer not becoming an expert on the product that s/he purchases. It is essential for a buyer to encourage standardisation with suppliers

as standardisation reduces the number of items being purchased and can have significant benefits and cost savings for the buying firm (Hugo & Badenhorst-Weiss, 2011: 120).

The respondents' response rate to the implementation of long-term contracts with suppliers gave a combined score of 57.8%. This could be attributed to the risks involved in entering into a long-term agreement with the supplier which was discussed in the previous section.

As only two of the key factors on pricing mentioned in Table 7.4 had a combined score of 65% and above and all the rest were below 65%, it can be concluded that the respondents (purchasing and supply departments in the automotive industry) do not implement the key factors on pricing required to achieve excellence. This could result in the buyers purchasing materials at higher prices and as a consequence selling their finished products to customers at a higher price which ultimately could affect the firm's competitiveness and sustainability in the market place.

- Quality

Table 7.5: Synopsis of responses (expressed in %) for the questions on 'quality' in Section B of the questionnaire

	A	B	C	D	E	D+E		
QUALITY	Not at all	Rarely	Sometimes	Frequently	All the time	Sum of column D and E	z-value	Reject (H <sub>0</sub> )
Sources suppliers who implement quality assurance and continuous improvement programmes		2.6	10.5	21.1	65.8	86.9	2.823	*
Includes suppliers in the early stages of the design of a product	2.6	10.5	18.4	28.9	39.5	68.4	0.442	
Develops suppliers to become world-class suppliers		15.8	28.9	31.6	23.7	55.3	n/a	
Works in and leads cross-functional and cross-organisational business teams		10.5	26.3	39.5	23.7	63.2	n/a	
Provides the suppliers feedback on their performance			26.3	34.2	39.5	73.7	1.122	
Implements the goal of zero defect with the supplier		2.6	21.1	18.4	57.9	76.3	1.462	
Establishes supplier improvement targets		7.9	21.1	36.8	34.2	71	0.782	

As is shown in Table 7.5, almost all the questions on quality obtained a combined score (columns D plus E) of 65% and above, with the exception of two questions. A high percentage of respondents (86.9%) indicated that they source from suppliers who implement quality assurance and continuous improvement programmes, implement the goal of zero-defect with the suppliers (76.3%) and provide the suppliers feedback on their performance (73.7%).

As far as responses with a combined score of less than 65% are concerned, only 55.3% of the respondents assisted in developing suppliers to become world-class suppliers. The respondents mentioned in the open-ended question section of the questionnaire that the short lead times of deadlines prevented them from

achieving their desired outcomes. Developing a supplier is a time consuming and lengthy procedure and the results of the questionnaire indicated that the respondents are under pressure just to complete their day-to-day activities.

Another factor that could be an obstacle to a buyer developing a supplier in South Africa is the sustainability of the suppliers. As mentioned by the respondents in the survey, there are only a few competitors in the domestic supply market of the automotive industry and therefore imports are less expensive. This results in buyers purchasing products from international suppliers and then local suppliers battle to survive. Dominick (2008) explains that one of the main causes of supplier failure is insufficient capital. Purchasing and supply departments may not want to invest the time and money in developing a supplier who remains in business for a short period of time. Another obstacle is that if the buying firm develops the supplier, the supplier may become too reliant on the buying firm which makes it difficult for the buyer to change suppliers. The effort, risks and rewards need to be determined in order for both parties to be committed to this project of supplier development (Supplier development, no date).

The second question which obtained a combined response score of less than 65% was that only 63.2% of respondents indicated that they are involved in cross-functional and cross-organisational business teams. In the open-ended question section of the questionnaire the respondents mentioned that there was a lack of transparency and visibility of the parties in the supply chain and suppliers do not have sufficient knowledge of the customer's purchasing systems, as well as the late involvement by the buyer in product design. These problematic areas could be solved by the implementation of cross-functional and cross-organisational business teams. Carter et al (2005: 41) maintain that a culture of co-operation and working together for a common goal should have positive consequences for the end user. An effective approach to promoting this culture in a firm is the use of cross-functional teams. Burt, Petcavage and Pinkerton (2010: 37) state that this is a common approach for addressing many purchasing and supply management related activities such as new product development, value analysis, standardisation, supplier selection, outsourcing, the acquisition of capital equipment, as well as supplier development.

When studying Table 7.5, it can be concluded that the factors on quality required to achieve excellence with the exception of the two factors which were discussed above, are implemented in practice by the majority of respondents (65% and higher) in the purchasing and supply departments.

- Supplier Management

Table 7.6: Synopsis of responses (expressed in %) for the questions on 'supplier management' in Section B of the questionnaire

SUPPLIER MANAGEMENT	A	B	C	D	E	D+E	z-value	Reject (H <sub>0</sub> )
	<i>Not at all</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Frequently</i>	<i>All the time</i>	<i>Sum of column D and E</i>		
Conducts an in-depth analysis of the supplier's capabilities	5.3	10.5	26.3	23.7	34.2	57.9	n/a	
Co-ordinates and collaborates with the supplier		2.6	21.1	39.5	36.8	76.3	1.462	
Assists the supplier with implementing cost reductions	2.6	5.3	39.5	28.9	23.7	52.6	n/a	
Works with suppliers to introduce concepts such as lean manufacturing, continuous improvement and JIT	2.6	23.7	18.4	28.9	26.3	55.2	n/a	
Demonstrates knowledge of global supply markets and suppliers			21.1	52.6	26.3	79	1.803	*
Visits the supplier premise on a regular basis	2.6	13.2	36.8	28.9	18.4	47.3	n/a	
Rates the supplier on a periodic basis		5.3	31.6	31.6	31.6	63.2	n/a	
Acknowledges that the supplier is an extension of the buying firm's business			44.7	42.1	13.2	55.3	n/a	
Encourages the suppliers to reduce their lead times		5.3	10.5	34.2	50	84.2	2.483	*

Of the three categories in the survey (pricing, quality and supplier management), the category of supplier management obtained the lowest combined percentages (columns D plus E) with regards to the implementation of the key factors in supplier management required for a world-class purchasing and supply

department. The factors which had a combined response rate in excess of 65%, are encouraging the suppliers to reduce their lead times (84.2%), demonstrating knowledge of the global supply markets and suppliers (84.2%), and co-ordinating and collaborating with the supplier (76.3%). The factors which had a response rate of low than 65% will be discussed below and include:

- Only 47.3% of the respondents visited the suppliers' premises on a regular basis. This relatively low percentage could be that purchasing and supply departments are importing a large percentage of their products from international suppliers.
- Some 57.9% of the respondents conducted an in-depth analysis of the supplier capabilities. As the respondents indicated that a large portion of the purchases are made on a global basis, buyers could experience difficulties in conducting an in-depth analysis on these suppliers as well as monitoring international supplier processes due to limited visits to their premises.
- A total of 52.6% of the respondents assisted the suppliers with implementing cost reductions. It was also indicated in the survey that suppliers are not familiar with their own costing methods. It could become difficult for the buyer to assist the supplier in implementing cost reductions when the suppliers themselves do not have knowledge on how the price was determined. Limited visits to the suppliers' premises could hinder this process as the buyer would not have the opportunity to identify areas of improvement which could reduce costs.
- Some 55.2% of the respondents worked with the suppliers to introduce concepts such as lean manufacturing, continuous improvement and just-in-time methods. Just-in-time methods can only be adopted by local suppliers to a particular manufacturing plant. Burt et al (2010:256) found that there are many advantages to placing an order with a local supplier. These advantages are that suppliers can deliver on a just-in-time basis, communication is improved and a higher level of service is offered.

In order to have a partnership with a supplier, the supplier must be committed to implementing techniques such as just-in-time, lean manufacturing and total quality management, as well as having the ability to design new products (Lysons & Gillingham, 2012: 398). The percentage (55.2%) is relatively low as most suppliers nowadays need to implement lean manufacturing and continuous improvement programmes to be competitive and cannot afford to rely on their customers to introduce their business to these concepts.

- A relatively low 55.3% of the respondents acknowledged that the supplier is an extension of the buying firm. This relatively low percentage could be attributed to the reducing number of South African suppliers compared to international suppliers. It was indicated in the survey that the size of the automotive industry in South Africa makes economies of scale purchasing difficult for the buyer as in some instances the quantities are small and the buyer pays a premium price. If the buying firm is under pressure to reduce costs, it may adopt a policy of buying wherever the lowest price can be obtained. This could mean sourcing on an international basis. Nowadays, there are a minimal number of firms that can limit their sourcing strategies to within their national boundaries to remain competitive (Stevenson, 2012: 336).
- A total of 63.2% of the respondents indicated that they were involved in cross-functional and cross-organisational teams. As mentioned previously, the respondents indicated in an open-ended question in the questionnaire that they were battling to complete their daily tasks due to the high workload. Being involved in a cross-functional or cross-organisational team requires additional time which the buyers may not always have due to their high workload.

When studying Table 7.6, it can be concluded that although the respondents implement the key factors in supplier management, this area can be improved. Of the nine questions asked only three questions obtained a combined response rate of above 65%. Therefore, it can be concluded that the factors of supplier management that are required to achieve excellence are not implemented as



would be expected by the majority of the respondents (purchasing and supply departments in the automotive industry).

**7.3.3 *Sub-objective three: To analyse why purchasing and supply departments in the automotive industry do not implement the key factors in pricing, quality and supplier management required to achieve excellence.***

The goal of this sub-objective was to determine the reasons or obstacles that contribute to the purchasing and supply departments in the automotive industry not implementing the key factors in pricing, quality and supplier management required to achieve excellence. To achieve this goal, the respondents were requested to complete one open-ended question in the questionnaire.

The respondents highlighted a number of reasons or obstacles preventing purchasing and supply departments implementing these key factors. Some of the reasons or obstacles were mentioned by more than one respondent. The following is a list of the main reasons or obstacles as given by the respondents:

- Suppliers not having sufficient stock which has a negative impact on production
- Impact of strikes by the labour force of the supplier
- Fluctuation of interest rates, exchange rates and inflation that influences the prices of the suppliers
- Short lead times of deadlines which could lead to the buyer not achieving cost savings or desired outcomes
- Late deliveries, capacity constraints and long lead times by suppliers
- Constant changes to drawings/design of components which negatively affect negotiations
- Too few competitors in the domestic supply market in the automotive industry and therefore imports are less expensive
- Supplier systems not compatible with the manufacturer/customer's system
- Non-sustainability of the supplier

- The introduction of E-tolling which has hindered business firms in conducting future business in Gauteng, as it has a negative bearing on purchasing's ability to achieve transport savings
- Lack of transparency and visibility of the parties in the supply chain
- Difficulty in monitoring international supplier processes due to no or limited visits to their premises
- Suppliers disclosing incorrect information and failing to meet deadlines
- Suppliers not being familiar with their own costing methods
- Late design involvement by the buyer
- Focus on short-term pricing strategies and operational issues
- The limited and shrinking supplier base in South Africa thus forcing importation

The respondents indicated that the limited supplier base in South Africa has created less competition and forced business firms to import. Some of the obstacles mentioned above such as long lead times, late deliveries, the few competitors in the market place, supplier capacity constraints and the sustainability of suppliers could be due to business firms importing products and not supporting national and local suppliers. Although purchasing on a global basis has opportunities, it also has risks involved which need to be taken into consideration as one of these resulting risks is the reduction of the supplier base in South Africa.

**7.3.4 *Sub-objective four: To determine if there are any additional factors other than the factors mentioned on pricing, quality and supplier management that business firms regard as key factors for world-class purchasing and supply departments.***

The goal of this sub-objective was to determine if there were any additional factors that were required by purchasing and supply departments to achieve excellence that the researcher may not have mentioned. The main additional factors mentioned by the respondents include:

- Knowledge of the design, the manufacture and the use of the product that is being purchased, as well as the packaging of the product
- Understanding the supply chain by having, for example, knowledge of the logistics routes of the supply chain and the costs thereof, as well as all the available suppliers and customers in the supply chain
- Ensuring that the suppliers sign a quality assurance agreement with customers in order to ensure the uniformity of quality processes and procedures
- Using the opportunity to 'pool resources' such as warehouse space and freight consolidation on a regional basis to reduce costs
- Ensuring that suppliers are aware of the customers' requirements regarding quality, environmental and social standards which are the minimum entrance requirements to supply materials to the automotive industry

The respondents highlighted that it is extremely important for the buyer to be trained on the products that they purchase and the manufacturing process of this product, as well as the packaging in order to become specialists in their field. It was also mentioned that one of the relatively easiest ways to reduce costs is for the buyer to understand the logistics 'legs' of the supply chain and the costs thereof.

**7.3.5 *Sub-objective five: To identify any other factors that could have a significant negative impact on the performance of the purchasing and supply department.***

The goal of this sub-objective was to determine if there were any problems or obstacles that have a significant impact on the purchasing and supply department's performance that are not directly related to pricing, quality and supplier management. This question was posed to the respondents as the researcher wanted to determine if there were any additional problems or obstacles that hamper the purchasing and supply department from becoming a

world-class department. The following obstacles or problems were identified from the responses given:

- High pressure placed on the purchasing department without proper recognition which results in low morale
- High staff turnover in the purchasing and supply departments due to the pressure in obtaining targets and performing the day-to-day requirements
- The buyer and supplier business firm not having clear procedures and policies
- Capacity constraints of purchasing personnel which result in one buyer often performing all the purchasing and logistics activities
- Systems that do not allow efficiency improvements in purchasing-related documentation such as request for quotations (RFQs) and contracts
- Top management not recognising the need to embark on significant measures to improve the buyers' performance by sending them on training courses
- Low competence level of the purchasing personnel

The main obstacles that the majority of the respondents gave were their high workload, incompetent staff and insufficient manpower that affected the performance of the purchasing and supply department. The respondents indicated that they were not only performing buying activities, but were also involved in logistics related activities which increased their workload and negatively affected their performance. Lack of specialised purchasing and supply chain knowledge was regarded as another obstacle by the respondents that impacted negatively on their performance.

#### 7.4 ADDITIONAL FINDINGS OF THE EMPIRICAL STUDY

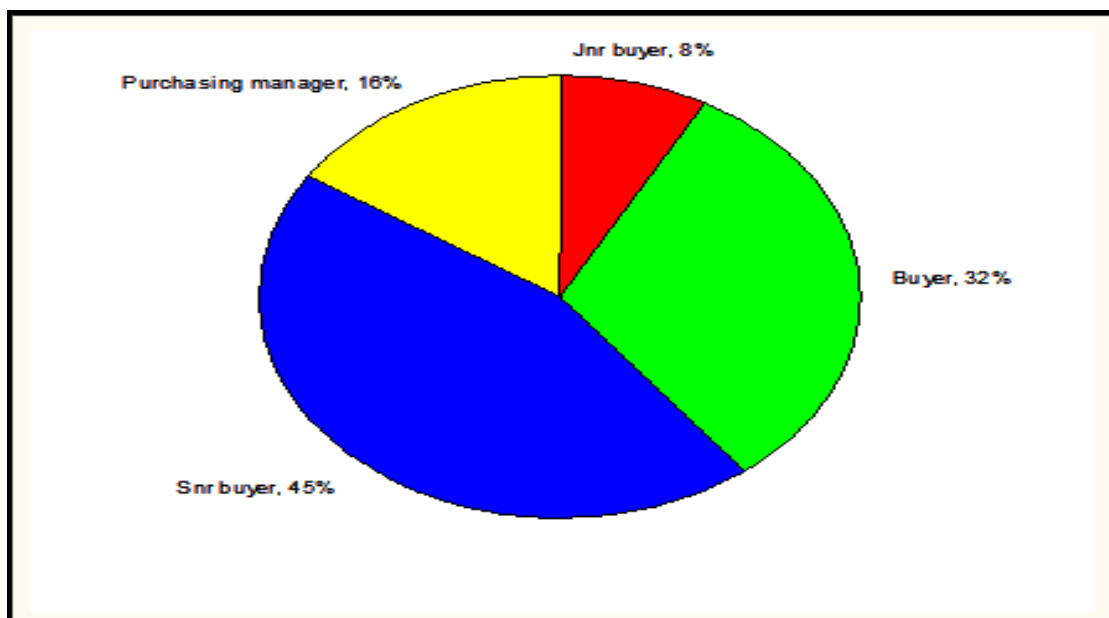
The questionnaire also included a "General Information" section which asked questions relating specifically to the respondent, for example, his/her job position, age and gender, as well as to the specific sector that his/her business firm operates within the automotive industry. Although these questions were not required to achieve the study's objectives, the researcher included the questions

to obtain additional information that could be of interest to the reader and useful for future studies. The results are as follows:

- Job position of the buyer in the business firm

The results in Figure 7.1 indicated that 7.9% of the respondents were junior buyers, 31.6 % were buyers, 44.7% were senior buyers and 15.8% were purchasing managers. The higher percentage of the buyers (31.6%) and senior buyers (44.7%) could be attributed to the products that are being purchased in the automotive industry which require a certain degree of expertise and skill. The majority of products are manufactured according to the buyer's specifications and therefore are more complex than standard products. An example is a headliner or carpet for a particular model of vehicle. Due to the complexity of the product being purchased, a buyer needs to be an expert of the product that s/he is purchasing. The sourcing of new products and modifications to existing products require the buyer to work in cross-functional and cross-organisational teams which include departments such as engineering and production, as well as with the supplier. The buyer is required to be a specialist in purchasing and to have knowledge and understanding of the engineering and production department. An example is that the buyer is expected to read blue print drawings and purchase tooling for the production department for a specific part from suppliers.

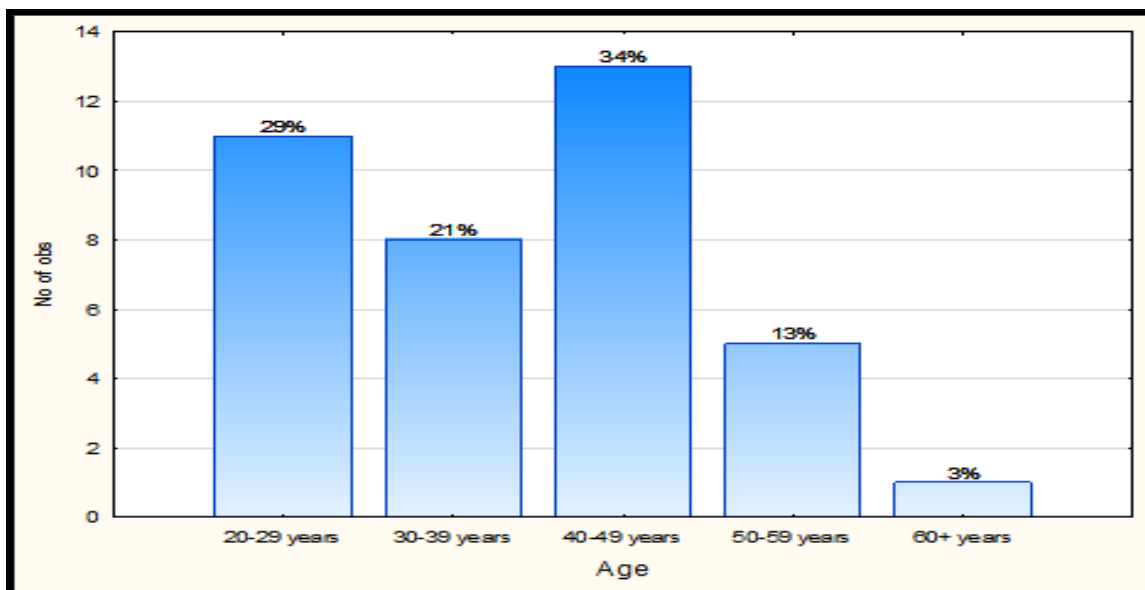
Figure 7.1: Pie chart indicating the response rate of the respondents' job position



- Age bracket of the buyer

The respondents were asked to indicate in which age bracket they fall into. The results from the questionnaires are shown in the column chart in Figure 7.1 and this indicates that 28.9% of the buyers were between the age bracket of 20-29 years; 21.1% were between 30-39 years; 34.2% were between 40-49 years; 13.2% were between 50-59 years; and 2.6% were 60 years and older. The highest percentage of 34.2% for buyers between the ages of 40-49 could be attributed to, as mentioned above, the degree of experience and skill required by automotive buyers which is gained through years of experience in the industry. It was interesting that the percentage (28.9%) for the age bracket 20-29 was higher than the age bracket 30-39 (21.1%). The low percentage (21.1%) for the buyers between the age of 30-39 could be due to buyers in this age bracket usually having gained some experience in buying and looking for 'greener pastures' which could be buying in other industries. One would find that, generally, between the age bracket of 20-29, the job position held would be that of a buyer. For example, the researcher obtained a B.Com: Purchasing Management degree and at the age of 22 years was employed as a non-production buyer at Delta Motor Corporation (Now again called General Motors South Africa). Two years later at the age of 24, the researcher was promoted to a production buyer. The researcher was promoted to a senior buyer in her early thirties.

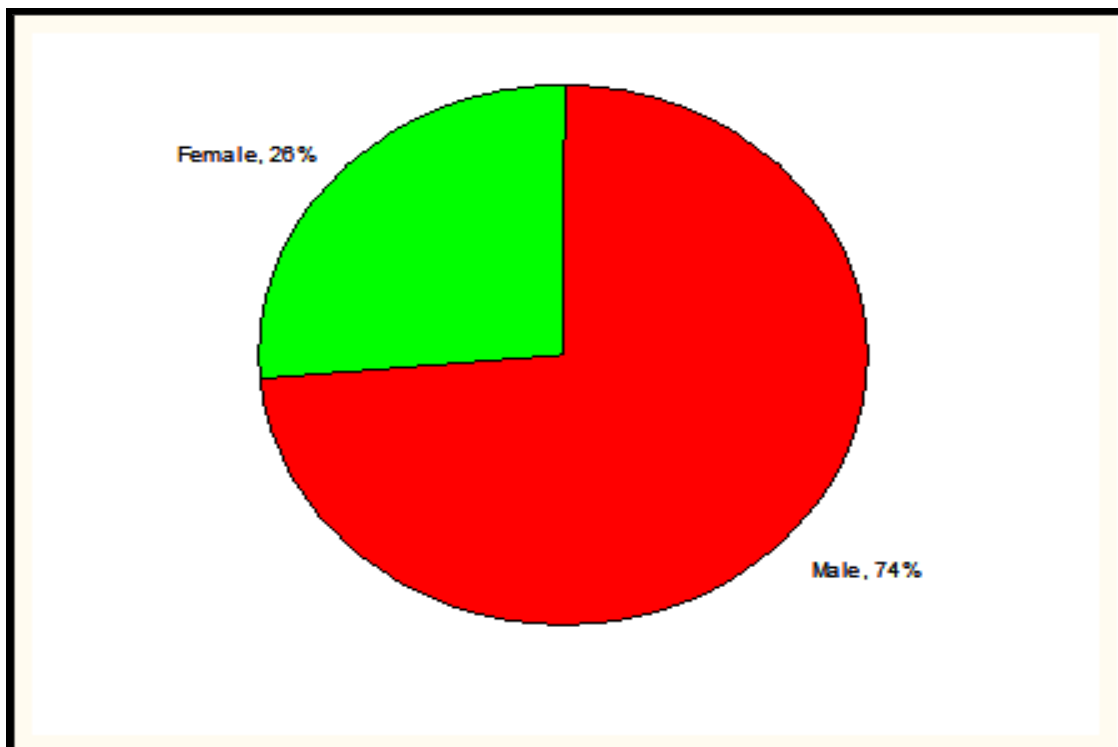
Figure 7.2: Column chart of the age brackets which the respondents fall into



- Gender of the buyer

The respondents were asked to specify their gender. The results are shown in Figure 7.3 and this indicate that 73.7% of the buyers were male and 26.3% were female. The high percentage of the buyers (73.7%) being male is attributed to the industry being male-dominated. The reason for this is that the parts that are purchased are motor vehicle parts which males generally find easier to understand and comprehend. Also, the automotive industry in its production department employs a higher percentage of males than females. For example, when the researcher was employed at Delta Motor Corporation there were two female buyers and the remainder were male buyers. The researcher also found that the majority of the suppliers in this industry were male. According to Jenkin, (2013), women are still the minority in the automotive industry.

Figure 7.3: Pie chart of the gender of the respondents



- Sub-sectors in the automotive industry

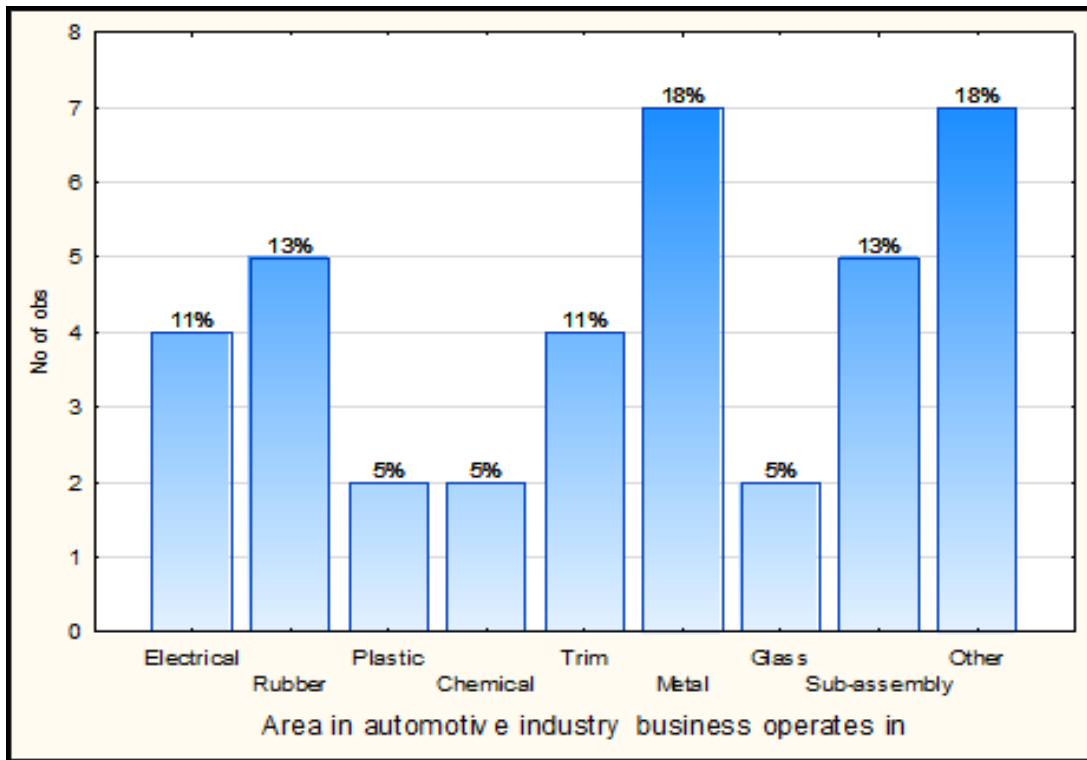
The respondents were requested to indicate in which sub-sector in the automotive industry their firm operates within. The results for the different sub-sectors were as follows:

- Electrical - 10.5%
- Plastic - 5.3%
- Chemical - 5.3%
- Trim - 10.5%
- Metal - 18.4%
- Glass - 5.3%
- Rubber - 13.2%
- Sub-assembly - 13.2 %
- Other - 18.4%

The percentage of 18.4% for the sub-sector 'other' could be attributed to the firm being an OEM or the firm's operations covered a combination of the sub-sectors mentioned above, or the firm not being part of any of the sub-sectors above. As the survey did include questionnaires being sent to the four motor vehicle assemblers, it was an error of the researcher not to include a sub-sector 'OEM'. The majority of the respondents (81.6%) were, however, from the range of sub-sectors mentioned above.



Figure 7.4: Column chart of the response rate of the different sub-sectors in the automotive industry within which the respondents firm operate



It can be concluded from the results of the survey that the majority of buyers in the automotive manufacturing industry are male in gender, between the age of 40-49 and are senior buyers.

## 7.5 LIMITATIONS OF THE EMPIRICAL STUDY

The Cronbach's Alpha statistical analysis method was not used to analyse the responses from the buyers as the factors within each section (Pricing, Quality and Supplier Management) are not supposed to have the same construct. Another limitation of the study was that one was not able to conduct a sophisticated statistical analysis as the unit of analysis in this study was business firms.

## 7.6 CONCLUDING REMARKS

The results of the empirical study were presented, analysed and interpreted with the aid of various tables and figures in this chapter. The main findings of this

study are firstly, that the respondents (purchasing and supply departments in the automotive manufacturing industry) believe that the key factors mentioned in the questionnaire on pricing, quality and supplier management, with the exception of outsourcing and long-term contracts, are required to be a world-class purchasing and supply department.

Secondly, other than negotiating with suppliers to avoid or reduce price increases and implementing co-operative cost reduction programmes with suppliers, the key factors on pricing required to achieve excellence are not implemented by purchasing and supply departments in the automotive manufacturing industry. Thirdly, the factors on quality required to achieve excellence, with the exception of developing suppliers to become world-class suppliers and working in and leading cross-functional and cross-organisational teams, are implemented in practice by purchasing and supply departments.

Fourthly, as only three of the nine questions on supplier management had a combined score of above 65%, it can be concluded that the purchasing and supply departments in the manufacturing automotive industry do not implement the key factors on supplier management that are required to achieve excellence.

The researcher is satisfied that objectives of this study have been addressed comprehensively. The findings of the empirical study were also in line with the literature study.

Chapter Eight will contain a short summary of the chapters in the study, as well as recommendations and suggestions for future research.

## CHAPTER EIGHT

### SYNOPSIS, RECOMMENDATIONS AND FINAL CONCLUSIONS

#### 8.1 INTRODUCTION

In the previous chapter, the results of the empirical study were presented, analysed and interpreted. The results of the empirical study were integrated with the literature study. Chapter Eight will provide a synopsis of the research, followed by recommendations and suggestions for future research.

#### 8.2 SYNOPSIS OF THE STUDY

The main objective of this study was to determine the key factors required by world-class purchasing and supply departments in the automotive manufacturing industry. In support of this, the study focused on achieving the following five sub-objectives:

- To determine the extent to which the purchasing and supply departments in the automotive industry believe that certain key factors in pricing, quality, and supplier management are required to achieve excellence.
- To identify whether the purchasing and supply departments in the automotive industry implement the key factors in pricing, quality, and supplier management required to achieve excellence.
- To determine if there are any additional factors other than the factors mentioned on pricing, quality, and supplier management that business firms regard as key factors for world-class purchasing and supply departments.
- To analyse why purchasing and supply departments in the automotive industry do not implement the key factors in pricing, quality, and supplier management required to achieve excellence.

- To identify any other factors that could have a significant negative impact on the performance of the purchasing and supply departments.

In order to achieve the objectives relating to the topic of this dissertation, eight chapters were delineated in this study.

Chapter One gave a structured outline of the research problem, the study objectives, as well as the research design and methodology for the study. In the second chapter a general overview of the purchasing and supply department and the latest developments regarding purchasing and supply management in modern business were discussed. Chapter Three provided an explanation of the suppliers' pricing methods and cost structures, as well as basic negotiation concepts. The fourth chapter concentrated on explaining the buyer's role in the management of supplier quality and the methods/techniques to ensure supplier quality.

Chapter Five gave an explanation of the growing importance of supplier selection and the management of the supplier base, as well as the different sourcing policies and strategies. In the sixth chapter an explanation of the research methodology, data collection method, design of the questionnaire and the response rate was given. Chapter Seven provided the results of the empirical study and these results were analysed and interpreted. The purpose of Chapter Eight is to summarise the chapters and provide recommendations and suggestions for future research.

### 8.3 RECOMMENDATIONS

The following recommendations are given to assist purchasing and supply departments in the automotive industry to achieve excellence and become world-class departments:

- Suppliers need to be educated on how to understand their costing models and to check their own sustainability, rather than receiving the business and discovering later on that it costs more to manufacture the products than was expected.

- Local purchasing and supply departments require training in the purchasing skills required, such as incoterms, delivery times, minimum and maximum order quantity, as well as the payment terms, to purchase from international suppliers. For example, in South Africa 30 days is regarded as the norm for payment terms, but in Europe 90 days is the norm. This all affects the sustainability of the business firm purchasing the products.
- Buyers should be trained to become experts in their products and packaging, as well as the manufacturing process of the product they are purchasing.
- The logistics involved in purchasing a product, as well as the supply chain of the product needs to be understood by the buyer. Logistics and supply chain management are key areas where costs can be reduced.
- Buyers need to master the in-house systems and work procedures involved in purchasing a product. Once the buyer has mastered the in-house system s/he must train the suppliers in completing all the necessary documentation. For example, the supplier needs to know how to complete the costing sheet used in a quote, how to sign a contract and confidentiality agreement, as well as explaining why a confidentiality agreement needs to be signed.
- The business firm should only employ qualified buyers who have financial and administration skills, as well as the ability to adapt to change and work in teams.
- Resources such as warehouse space and freight consolidation should be 'pooled' on a regional basis to reduce costs.

These recommendations were given as a result of the survey that was conducted and the responses received from the buyers in the automotive manufacturing industry.

#### 8.4 SUGGESTIONS FOR FUTURE RESEARCH

It is proposed that logistics and supply chain management in the automotive industry be researched in order to assist the organisations to develop towards world-class standards. In particular, the purchasing and supply department's knowledge and understanding of logistics and supply management and whether this department has benefited financially by being skilled in these areas, require further study.

It is also proposed that research be conducted on how the introduction of E-tolling has affected transport costs and the suppliers in the Gauteng area. Another area that could be researched is the impact that the importation of materials has had on the suppliers in South Africa.

#### 8.5 CONCLUDING REMARKS

This chapter gave a synopsis of the research study by reviewing the main aspects covered in the preceding chapters. A number of recommendations for the implementation of a world-class purchasing and supply department in the automotive industry were provided. Finally, it concluded with suggestions for further research projects.

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**ANNEXURE A**  
**THE RESEARCH INSTRUMENT**

NMMU  
2<sup>nd</sup> Ave Campus  
Summerstrand  
Port Elizabeth  
6001  
Tel: 083 781 2288

Dear Sir/Madam

**RESEARCH QUESTIONNAIRE: DEPARTMENT OF LOGISTICS MANAGEMENT**

I am employed at the Nelson Mandela Metropolitan University as a lecturer in the Logistics Department. I am currently busy with research for the department and would greatly appreciate it if you could complete the attached questionnaire.

Your participation in completing the questionnaire will make an invaluable contribution in my successful completion of my research project. The questionnaire has been designed so that it should take no longer than 10 minutes to complete. Please be assured that all respondents will remain anonymous, that all information received will be regarded as strictly confidential, and will only be used for research purposes.

Should you require any additional information, I can be contacted on my cell phone on 083 781 2288 or on e-mail [Jean.Howell@nmmu.ac.za](mailto:Jean.Howell@nmmu.ac.za).

Thank-you for your time and co-operation. Your assistance is greatly appreciated.

Kind regards

Jean Howell (Researcher)

**GENERAL INFORMATION**

Please answer the following questions by marking the appropriate box with an "X".

1. Please indicate your job position in the business firm:

- Junior buyer
- Buyer
- Senior Buyer
- Purchasing Manager

2. Please indicate which age bracket you fall into:

- 20-29
- 30-39
- 40-49
- 50-59
- 60 and older

3. Please specify your gender below:

- Male
- Female

4. Please indicate in which area in the automotive industry your business firm operates within.

- Electrical
  - Rubber
  - Plastic
  - Chemical
  - Trim (Upholstery)
  - Metal
  - Glass
  - Sub-assembly
  - Other (Specify below)
-



<b>Question 1</b>										<b>Question 2</b>					
To what extent <b>do you believe</b> each of the factors mentioned in the table below are required for a world-class purchasing and supply department?					Please note that question 1 relates to the boxes on the left-hand side and question 2 to the boxes on the right-hand side of the table.					To what extent <b>do you implement</b> the factors mentioned in the table below in your purchasing and supply department?					
<i>To a very little extent</i>	<i>To a little extent</i>	<i>To a moderate extent</i>	<i>To a large extent</i>	<i>To a very large extent</i>	<b>ELEMENT 2: QUALITY</b>					<i>Not at all</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Frequently</i>	<i>All the time</i>	
					10	Sources suppliers who implement quality assurance and continuous improvement programs									
					11	Includes suppliers in the early stages of the design of a product									
					12	Develops suppliers to become world-class suppliers									
					13	Works in and leads cross-functional and cross-organisational business teams									
					14	Provides the suppliers feedback on their performance									
					15	Implements the goal of zero-defect with the supplier									
					16	Establishes supplier improvement targets									

<b>Question 1</b>										<b>Question 2</b>				
To what extent <b>do you believe</b> each of the factors mentioned in the table below are required for a world-class purchasing and supply department?					Please note that question 1 relates to the boxes on the left-hand side and question 2 to the boxes on the right-hand side of the table.					To what extent <b>do you implement</b> the factors mentioned in the table below in your purchasing and supply department?				
<i>To a very little extent</i>	<i>To a little extent</i>	<i>To a moderate extent</i>	<i>To a large extent</i>	<i>To a very large extent</i>	<b>ELEMENT 3: SUPPLIER MANAGEMENT</b>					<i>Not at all</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Frequently</i>	<i>All the time</i>
					17	Conducts an in-depth analysis of the supplier's capabilities								
					18	Co-ordinates and collaborates with the supplier								
					19	Assists the supplier with implementing cost reductions								
					20	Works with suppliers to introduce concepts such as lean manufacturing, continuous improvement and JIT								
					21	Demonstrates knowledge of global supply markets and suppliers								
					22	Visits the supplier premise on a regular basis								
					23	Rates the supplier on a periodic basis								
					24	Acknowledges that the supplier is an extension of the buying firm's business								
					25	Encourages the suppliers to reduce their lead times								

Are there any other factors that are **not** mentioned above in questions 1 – 25 that you regard as key factors required by world-class purchasing and supply departments in the automotive industry?

.....

.....

.....



Please indicate the reasons or obstacles that contribute to your purchasing and supply department not implementing these key factors mentioned in questions 1-25.

.....  
.....  
.....

Indicate any other factors that have a significant **negative impact** on the performance of your purchasing and supply department .

.....  
.....  
.....

Thank you for your participation.