

**SUPPLIER BASE RATIONALIZATION PRACTICES AND SUPPLY
CHAIN PERFORMANCE OF LARGE MANUFACTURING FIRMS
IN NAIROBI, KENYA**

By

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DECLARATION

I declare that this research project is my original work and has never been submitted to any other University for assessment or award of a degree.

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Signature..... Date.....

This project has been submitted with our authority as the university supervisors.

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Signature..... Date

DEDICATION AND ACKNOWLEDGEMENTS

I would like to dedicate this project to my father, Mr. Joseph Luthubua. Without his continued support and counsel I could not have completed this project.

I would like to acknowledge the inspirational instruction, guidance and mentorship of my supervisor Dr. Peterson Obara Magutu who has been instrumental in my undertaking of this project.

I would also like to acknowledge the support and assistance given to me by my husband, Peter Ngugi Njenga and his continuous encouragement not to give up on completing the project.

LIST OF ABBREVIATIONS

BSI	British Standards Institution
CIPS	Chartered Institute of Purchasing and Supply
GDP	Gross Domestic Product
KAM	Kenya Association of Manufacturers
KPI	Key performance Indicators
KNBS	Kenya National Bureau of Statistic
RFQs	Request for Quotations
ISO	International Standard Organization
ISM	Institute of Supply Chain Management
SC	Supply Chain

ABSTRACT

This project examines the relationship between supplier base rationalization practices and supply chain performance of large manufacturing firms in Nairobi, Kenya. The research sought to establish the supply base rationalization practices used by large manufacturing firms in Nairobi, Kenya, and also to determine the relationship between supplier base rationalization practices and supply chain performance of large manufacturing firms in Nairobi, Kenya.

Descriptive study was chosen for this study since it will enable the researcher to involve both qualitative and quantitative techniques of data analysis. The population of the study comprised 455 large manufacturing firms based in Nairobi, Kenya, with a sample size of 46 respondents as a representation of that population. The data was collected by the use of questionnaires administered through the drop-and-pick method, and analysis of the data collected was done using SPSS.

The results of the data collected indicate that there is a high degree of correlation between supplier base rationalization practices and supply chain performance of large manufacturing firms in Nairobi, Kenya.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The business environment in which firms compete today is markedly different from that in past decades. Improvements in computational power coupled with the advent of the internet have decreased the coordination costs needed to successfully integrate disparate firms across the globe into a single supply chain (Friedman, 2005). In the past, firms commonly contracted with a huge number of suppliers and currently there is a significant movement from the traditional adversarial buyer-seller relationships to the use of a few qualified suppliers with close relationships. This trend is attributed to the customers' demand for higher quality, wider range of products, shorter time to market and faster deliveries. This has forced the producing companies to keep up with these demands in order to survive (Karlsson 2011).

One key aspect of managing the complex global supply chain is through strategic sourcing decisions. However, as the concept of strategic sourcing gains momentum many firms seeking to shift to this strategy have found themselves riddled with a supply base that does not support implementation as they have too many suppliers. Supply base rationalization thus becomes a key to change from transactional to strategic purchasing (Womak et al., 2013; Ogden et al., 2008).

Large manufacturing firms in Kenya play an important role in employment of the populace, production of needed goods and service and overall economic growth. However, the sector is faced with the challenge of becoming flexible and efficient in their manufacturing methods as customers demand for quality, speed, reliability and service (Awino et al., 2009).

In order to deal with the unpredictable environment that they operate in, the private large manufacturing firms in Nairobi, need different strategies to enable them manage the movement of goods from the source to consumption as they turn to global suppliers (Awino et al., 2009). One such strategy is supply base rationalization (Monczka et al., 2009). Supply base rationalization results in real improvement in manufacturability, design, costs, quality, delivery, and improved information sharing between buyer and supplier. And since the process identifies the best suppliers in terms of quality and

number, the remaining suppliers become able to improve performance to the buyer-supplier relationship leading to longer term relationships and joint value addition (Ogden et al., 2008; Fawcett et al., 2010; Womak et al., 2013).

1.1.1 Supplier Base Rationalization

Supplier base rationalization is a conscientious effort to determine the right number of suppliers to do business with (Institute for Supply Management, 2005). The beginning point of the process is determining the optimal number of suppliers that a firm should maintain and then focusing on identifying which incumbent firms should remain in the supply base in a given commodity team or division (Womak et al., 2013). The idea is to reduce purchases from marginal or poor performing suppliers while increasing and concentrating purchases among their more desirable top-performing suppliers (Wisner, 2008). According to Monczka et al., (2009), there are many methods that are commonly used to rationalize the supply base. These methods include: twenty/ eighty rule, “improve or else” approach, triage approach, and the competency staircase approach.

Rationalization of the supplier base also requires an organization to categorize its spend and identify current and potential suppliers for each category. According to Charles Dominick (Charles Dominick 2006), after identifying its categories and suppliers, an organization has five options for its supply base: reduce it, increase it, maintain it, keep the size but change the mix or expand then reduce.

The effect of these sourcing decisions is not trivial and a lot has been written concerning its implications for cost, design, manufacturability and quality (ISM, 2005). Rationalizing the supply base equally leads to buying from world class suppliers, reduction of supply base risks, use of full-service suppliers and ability to pursue complex supply management strategies, enabling an organization to increase its potential to deliver real competitive advantage to its customers (Monczka et al., 2009).

1.1.2 Supplier Base Rationalization Practices

According to Monczka et al., (2009), supplier base rightsizing is a continuous process that begins with elimination of marginal and small-purchase volume suppliers. It is then

followed by replacement of good suppliers with better suppliers or initiating supplier development projects with existing suppliers to improve performance, development of supplier evaluation and measurement systems to identify the best performing suppliers and then the development of long term relationships. Studies by Monczka et al., (2009); CIPS, (2012) shows that many organizations employed the same process in supply base rationalization with the major practices including: the twenty/ eighty rule, “improve or else” approach, triage approach, and the competency staircase approach.

1.1.3 Supply Chain Performance

A supply chain refers to a system of organizations, people, activities, information and resources that are involved in moving a product or service from a supplier to a customer. The activities of a supply chain entail the transformation of natural resources, raw materials and components into a finished product that is delivered to the end customer. (Wieland et.al, 2011)

Supply chains are fluid and are continuously adjusting to changes in supply and demand for the products they handle. To show improvement in operations, many supply chain management specialists consider implementing supply chain performance indicators or metrics as one of the simplest, least expensive, and least time-consuming activities. It is a well-known fact that, “people behave based on the way they are measured”. Large private manufacturing firms’ supply chains are no different; unless clear measurable indicators are in place, staff may not completely understand what is expected of them; as a consequence, they may not carry out their tasks as well as they could (U.S. Agency for International Development, 2010). To get the performance that is desired from a supply chain requires that an organization continuously monitors and controls its operations. That is achieved through continuous measuring and monitoring of supply chain performance indicators commonly referred to as KPIs (Key Performance Indicators). (Geary et. al., 2002) The increasing level of competition and globalization in the world economy has a major impact on the need for organizations to improve their supply chain performance. Many companies pay millions of dollars in order to improve their supply chain performance through process reengineering, new systems and training their employees. (Douglas et. al., 2004)

Supply chain performance is measured in terms of the output to the customer-quality, price, delivery, cost reduction and other data relating to supplier's engineering support, suppliers' responsiveness to requests for quotations (RFQs) and suppliers' response to unique issues in a timely manner. By measuring the above aspects, an organization is able to determine what strategy to employ in the rationalization of its supplier base. (Handfield et.al, 2009)

Analysis of a supply chain's performance is usually meant to provide a more in-depth look at operations to identify key bottle necks and ways to strategically improve supply chain performance.

1.1.4 Large Manufacturing Firms in Nairobi, Kenya

Kenya has a large manufacturing sector which serves both the local market and East African region. The sector which is dominated by subsidiaries of multinational corporations, contributes to an average of 15% towards the Gross Domestic Product (GDP) as it has the potential of generating foreign exchange earnings through export and diversification of the country's economy (Kinya, 2013). The manufacturing sector in Kenya has been growing since the late 1990s and into the new century. The most common industries in Kenya include: small-scale consumer goods (plastic, furniture, batteries, textiles, clothing, soap, cigarettes, and flour), agricultural products, horticulture, oil refining, aluminum industries, steel industries, lead industries, cement industries and commercial ship repair. Most of these industries are located in Nairobi due to its proximity to most important markets (Awino et al., 2011).

According to Parker and Torres (1994) manufacturing firms in Kenya can be classified on the basis of quality of service or production, the size of the work force, and the numbers of facilities. Awino et al., (2011) says that manufacturing firms in Kenya can be classified on the basis of the number of employees they have engaged and whether private or public depending on the number of shares that the government owns. He further posits that large scale manufacturing firms have more than 100 workers; medium scale firms have from 51 to 100 workers while small scale manufacturing firms have between 11 to 50 workers.

Though the sector has blossomed over time both in terms of its contribution to the country's GDP and job creation, the sector is still very small compared to that in developed countries. Its average size for tropical Africa is 8 %. This is largely due to depressed domestic demand, increased oil prices and transport costs. The sector is equally going through a major transition period largely due to the structural reform process, which the Kenya Government has been implementing since the mid-eighties with a view to improving the economic and social environment of the country (Awino et al., 2011).

1.1. Statement of the Problem

As the clock ticks, so does demand for better quality, faster delivery, and better overall value increase; leading to a few visionary leaders to start to consciously differentiate between the things that create value and those that do not and thus leading to adoption of supply chain best practices such as supply base rationalization and value engineering that seek to help firms have a competitive advantage over rivals and position themselves for future success (Moore et al., 2002, Karlsson, 2011). Supply base rationalization is important to any organization since it leads to improved design, quality and cost, which means an improvement in supply chain performance.

A number of studies have been conducted on supply base rationalization globally. For instance, Cousins (1999) conducted a survey on 174 firms in the UK and found out that though 92% claimed supply base reduction seemed to have reduced transaction costs, however, they had no proof of it. The studies found that the investigated firms looked at negotiating savings instead of focusing on streamlining the inter-organizational processes. This study was however, conducted in a developed country and not in Kenya. Another study by the Institute for Supply Chain Management (2005) wanted to determine the extent to which organizations had adopted spend analysis and supply base rationalization techniques in their operations. The study found that 86% are pursuing supply base rationalization initiative and 14% are not. This research however did not focus on the relationship between rationalization and supply chain performance.

Other studies have been conducted on large manufacturing firms in Kenya. Kinya (2013) looked into the extent of E-procurement implementation among large manufacturing firms and found out that E-procurement accounted for 57% of integration among large

manufacturing firms. The study too found five barriers hindered E-procurement implementation: getting users to accept the system; lack of internal integration of functions; resistance from suppliers; lack of willingness from other stakeholders and lack of enough finances to support the system implementation. Another study by Mose, et al., (2012) found out that there are five main factors that determine the success of e-procurement implementation among large manufacturing firms in Nairobi Kenya: employees and management commitment to success of adoption; reliability of information technology and supplier performance; monitoring the performance of e-procurement systems; user acceptance of e-procurement systems and top management support. These studies however, do not look at supply base rationalization practices among these firms.

It is on the basis of these gaps that this study therefore seeks to answer the following questions:

What are the supplier base rationalization practices used by private large manufacturing firms in Nairobi Kenya? What is the relationship between supplier base rationalization and performance of large manufacturing firms in Nairobi, Kenya?

1.2. Objectives of the Study

The study sought to achieve the following two objectives:

- i. To establish the supply base rationalization practices used by large manufacturing firms in Nairobi, Kenya.
- ii. To determine the relationship between supplier base rationalization practices and supply chain performance of large manufacturing firms in Nairobi, Kenya.

1.3. Value of the Study

The study may be of significance to Management practitioners who would use the findings and recommendations to optimize their organizations' supply chains. Different

supplier base rationalization practices will be brought out and will be of importance to firms that have not yet implemented supplier base rationalization.

It may also be useful to research and academic institutions by adding to existing stock of literature in the field of procurement and supply chain management. Other scholars may validate the findings and use the study as a reference text. Other researchers and institutions may follow the areas recommended for further research as a means of increasing knowledge on supply base rationalization.

Other organization intending to rationalize or improve on their supplier base rationalization practices can also benefit from the findings of this research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter will review some of the studies that have been conducted in the area of supply base rationalization. It seeks to find out the supply base rationalization practices and to determine the relationship between supply base rationalization and performance of firms and conceptual framework.

2.2 Supplier Base Rationalization

Competing in the 21st century will require firms to rely increasingly on their suppliers (Monczana et al., 2011). For a firm to deliver maximum value to its customers, it must receive maximum value from all its suppliers in the supply chain (Moore et al., 2002). Commercial firms are increasingly finding out that, working in isolation will not lead to lowest costs, best quality, or shortest cycle times in their firms if their suppliers do not get involved (Lewis, 1995). Intel, for instance, concluded that it could not improve the quality of its products if it did not improve the quality of its suppliers (Morgan, 1990). Sun concluded that to be more responsive to its customers its suppliers needed to be more responsive (Carbone, 1996). There is therefore need for supplier rationalization (Monczka, 2011, Moore et al., 2002).

Supplier base rationalization according to the Chartered Institute of purchasing and Supplies (2012) is concerned with determining roughly how many suppliers the buying firm wants to do business with. It is concerned with making decisions regarding the size and the mix of the firm's supplier base (Monczka et al, 2011). According to Goffin et al., (1997) the objective is to find out the current and future need of suppliers for every purchased item with the intention of managing suppliers more effectively. At the beginning of this process the result is often a significant reduction of the supplier base but for some groups or families of purchased items it could also mean an increased number of suppliers. When performing supply base optimization or rationalization it is vital to analyze the overall system efficiency and the total cost not to sub optimize (Monczka et al, 2011). Since the process of supply base optimization and rationalization aims at

maintaining only the most capable suppliers in the supply base this should result in real improvements when it comes to cost, quality, delivery and information sharing between buyer and supplier(Eriksson et al.,2011).

Even though many buyers realize the potential of reducing the number of suppliers there are potential risks in trusting a smaller supply base, many of them related to eventual disruptions of supply (CIPS,2012). This risk has very often been argued to be the single most important disadvantage with a limited number of suppliers but many buyers have now concluded that carefully managed relationships with fewer and the right suppliers can actually reduce this risk (Monczka et al, 2011). Many of the benefits and risks when reducing the supplier base are dependent on making the right choice when deciding which suppliers to maintain and which suppliers to eliminate. Cousins (1999) conclude that significant cost reduction and competitive advantage can be drawn from a smaller supplier base but this process need to be managed in a strategic framework and also not too aggressive to avoid risks of inadequate capacity of the remaining suppliers (Monczka et al, 2011).

The consolidation of purchases to a smaller number of suppliers might not be without difficulties. Managers with experience from supply rightsizing conclude that the process is initially easy but as the amount of suppliers is reduced it gets more difficult (Goffin et al., 1997). In a case study made by Lonsdale and Watson (2005) they identify drivers for fragmentation of the supplier base, some technical and organizational, but it was merely politics and power that amplified the issue. It was first after the power shifted somewhat from the divisions to purchasing that the first step towards consolidation was made, immediately resulting in significant financial results.

2.3. Supplier Base Rationalization Practices

According to Monczka et al., (2011), supplier base rightsizing is a continuous process that begins with elimination of marginal and small-purchase volume suppliers. It is then followed by replacement of good suppliers with better suppliers or initiating supplier development projects with existing suppliers to improve performance, development of supplier evaluation and measurement systems to identify the best performing suppliers

and then the development of long term relationships. Studies by Handfield et al., (2008); CIPS, (2012) shows that many organizations employed the same process in supply base rationalization with the major practices including: the twenty/ eighty rule, “improve or else” approach, triage approach, and the competency staircase approach.

2.3.1 The Twenty/ Eighty supplier base rationalization practices

The approach is based on the Pareto principle or the 20/80 rule. The rule was formulated by the Italian economist Vilfred Pareto (1848-1923). It is also called the ABC analysis (Handfield et al., 2009). The proposition of the rule is that in any series of elements to be controlled, a selected small factor in terms of number of elements (20%) almost always accounts for a large factor in terms of effort (80%). The Pareto principle is very useful tool in supplier base rationalization as it helps leverage the buyer’s time, effort and resources for the biggest benefits (CIPS, 2012). The CIPS further posits that the 20/80 rule in sourcing context can be interpreted as 80% of spend, risk, or value resides in 20 % of suppliers or supplies.

According to Handfield et al., (2009) the rationalization practice identifies those few suppliers (20%) that cause the bulk of spend or cause the most quality problems or risks and are then considered for elimination. Handfield adds that this approach is usually used when firms require a rapid reduction in number of suppliers. The CIPS (2012) is in agreement with Handfield. They argue that the Pareto principle can be used to separate the critical few suppliers that supply important, high value,

2.3.2 “Improve or Else” supplier base rationalization practices

This supplier base rationalization practice gives every supplier, regardless of their past performance, an opportunity to remain in the supply base. It entails giving suppliers a notice that they have a specified period of time in which to meet new performance requirements—from improved quality levels and delivery performance to lead time and cost reductions, or any other key performance indicator or risk elimination from the supply base. The practice has the ability of driving rapid performance improvement in the

supply base but can also be a heavy-handed method of dealing with suppliers and was used by General Motors' chief purchasing officer, Arriortua Lopez in the 1990s by to demand that GM's suppliers reduce their prices by 3 to 22% or risk losing their existing supply contracts (Handfield et al., 2009).

2.3.3 Triage supplier base rationalization practices

These practices involve systematically evaluating the performance of different suppliers and putting it into one of three categories. According to Handfield et al., (2009) marginally performing suppliers or those incapable of meeting purchase performance requirements, now or in the future are targeted for immediate removal from the supply base. The second category, which includes suppliers that do not consistently meet purchase requirements in all areas but have potential for improvement, becomes a target for supplier assistance and development. The third category on the other hand, includes high-quality, capable suppliers requiring no improvement assistance, who become candidates for more collaborative buyer-seller relationships, which may include offering longer-term contracts in exchange for continuous improvement, as well as being considered for alliance.

2.3.4 Competency Staircase supplier base rationalization practices

These practices need suppliers to successfully navigate a series of performance hurdles for them to remain in the supply base. To start with, all suppliers must meet a buyer's basic quality requirements for consideration as potential suppliers. Suppliers must then pass a series of milestones akin to climbing a staircase. Each barrier is one step closer to the supplier's ultimate goal of remaining in the buyer's supply base. The next hurdle may be a supplier's ability to meet a buyer's technical specifications and product performance requirements. Subsequent hurdles can include demonstrating sustained production competency, delivery capability (such as just-in-time requirements), and willingness to share information, supplier size, and physical proximity to the buyer. Note that different purchase requirements will present varying sets of hurdles. Each hurdle results in fewer and fewer suppliers remaining in the supply base. The result is a strong

and flexible supply base comprised of highly capable and motivated suppliers (Handfield et al., 2009).

2.3.5 Spend Categorization supplier base rationalization practices

According to CIPS, (2004) the first stage of the rationalization process is a detailed analysis of how much is spent with each supplier. For the success of supplier base rationalization, there is need for the development of a commodity sourcing strategy (Handfield et al., 2009). Studies show that half of the companies studied employed outside consultants in coming up with sourcing strategy. To come up with the strategy there is need to understand the corporate goals and objectives, understand the purchasing goals and objectives, determine the stakeholders and benchmark with other organizations among other things (Ogden et al., (2008). Two tools are commonly used in this process: portfolio analysis matrix and supplier evaluation scorecard (Handfield et al., 2009)

The Kraljic Matrix (1983) is a comprehensive portfolio approach which categorizes products in a 2x2 matrix, which enables guidelines for designing commodity strategies and managing the supplier relationships in a differentiated way. This model has a specific focus on commodities categorized as strategically important to a firm and the general idea is to minimize supply risk and make the most of buying power. The portfolio analysis structures and segments the supply base into four types: critical, routine, leverage and bottleneck (Fenson et al., 2005).

The non-critical or routine items are those that are low in terms of both risks and strategic importance to the organization. And due to this the a firm needs to reduce procurement costs on the items through arm's length approaches such as vendor managed inventories, blanket ordering among other techniques. For bottleneck items the risks are high but the importance of the items is low. The procurement strategy here is developing alternative or back up suppliers including penalties in contracts to ensure reliability of supplies. The leverage items are high in strategic importance but low in risks. The strategy here is standardization of specifications to make supplier switching easier and using competitive bidding to secure best deals. For strategic items both importance and risks are high thus

calling collaborative ties with suppliers (CIPS, 2012; Lysons et al., 2009) as seen in the figure below.

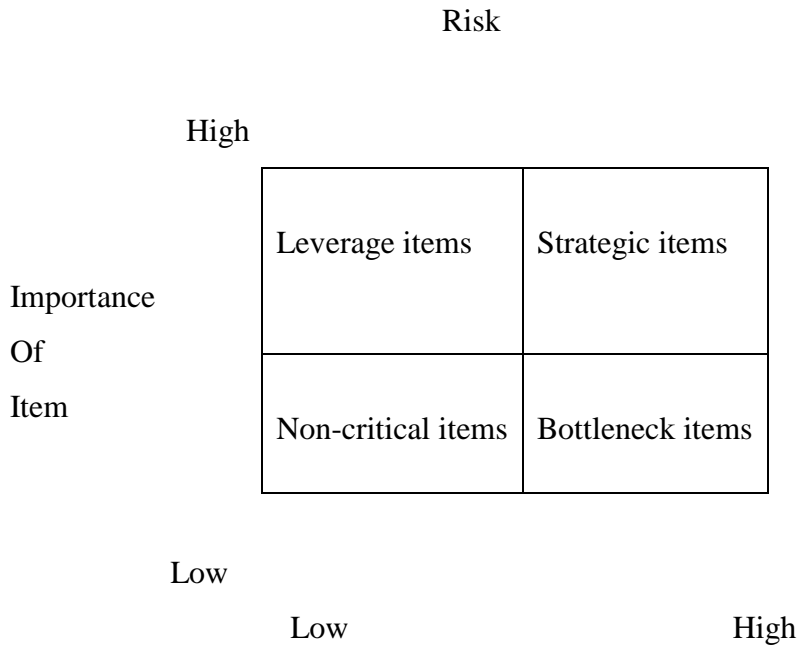


Figure 2.2: Kraljic Matrix (Source: Fenson et al., 2008).

2.4 Large Manufacturing Firms in Nairobi, Kenya

Kenya has a big manufacturing sector which serves both local market and exports to the East African region. The sector contributes an average of 15% toward GDP OF Kenya (Pricewaterhouse Coopers, 2006). The firms can be classified using different methods. There are 500 large manufacturing firms in Kenya (Awino et al., 2011). According to Kinya (2013) manufacturing these firms can be classified on the basis of quality of service or production, the size of the work force and the numbers of facilities. According to Parker and Torres (1994) manufacturing firms in Kenya can be classified on the of basis quality of service or production, the size of the work force, and the numbers of facilities. Awino et al., (2011) says that manufacturing firms in Kenya can be classified on the basis of the number of employees they have engaged and whether private or public depending on the number of shares that the government owns. He further posits that large

scale manufacturing firms have more than 100 workers; medium firms have from 51 to 100 workers while small scale manufacturing firms have between 11 to 50 workers.

Though the sector has grown over time both in terms of its contribution to the country's economy, the average size of this sector for tropical Africa remains small (United Nations Industrial Development Organization ((UNIDO) 1987). Kenya's manufacturing sector is going through a major transition period largely due to the structural reform process, which the Kenya Government has been implementing since the mid-eighties with a view to improving the economic and social environment of the country.

The removal of price controls, foreign exchange controls and introduction of investment incentives have, however, not resulted in major changes in the overall economy. In particular, they have not improved the manufacturing performance (Kenya Association of Manufacturers, 2002). Therefore, to build a self-sustaining industrial sector, it is necessary to establish strategic linkages within the domestic economy. Some efforts have to be made to promote strategic options among supply chains so as to enhance spread effects of industrial growth and to facilitate transfer of technology, skills and growth of small and medium scale sub-contractors. The linkages of the study variables in SCM in Kenya are weak and because of this, there exists little inter-industry integration in the country. This has resulted in consistently low manufacturing value added in the sector (KAM 1989).

The Kenya Government has always been committed to developing a mixed economy where both public and private sector companies are present (Kenya Government, Development Plan 1989-1993). But the public sector participation in manufacturing is much smaller than the private sector and is still decreasing due to government's change of policy; the emphasis is now being given to privatization of the industrial sector.

Though the sector has blossomed over time both in terms of its contribution to the country's GDP and job creation, the sector is still very small compared to that in developed countries. Its average size for tropical Africa is 8 %. This is largely due depressed domestic demand, increased oil prices and transport costs. The sector is equally going through a major transition period largely due to the structural reform process,

which the Kenya Government has been implementing since the mid-eighties with a view to improving the economic and social environment of the country (Awino et al., 2011).

2.5 Supply Chain Performance measures

In current world, supply chain management (SCM) is an important strategic factor for increasing a firm's effectiveness and for better realization of organizational goals like as enhanced competitiveness, better customer care and increased profitability. And in order to develop an efficient and effective supply chain, SCM needs to be assessed for its performance (Gunasegaram et al., 2001). A purchasing and supply chain performance system represents a formal, systematic approach to monitor and evaluate performance. The measures fall into two categories: effectiveness and efficiency. Effectiveness is the extent to which by choosing a certain course of action, management can meet a previously established goal or standard and efficiency to the variance between the planned and the actual sacrifice made to realize an established goal (Handfield et al., 2009).

There are financial and non-financial supply chain performance measures and all the measures have importance in SCM which include: support for better decision making, support for better communication, provide performance feedback and motivate and direct behavior (Lyons et al., 2009). As indicated earlier, there are a hundreds of performance measure which include: price performance, cost-effectiveness, revenue, quality, time/responsiveness, innovation, physical environment and safety, administration efficiency, internal customer satisfaction, supplier performance and strategic performance (Handfield et al., 2008).

2.5.1 Price performance measure

SCM can evaluate price performance by looking at how effectively it spends purchase dollars. The common price performance is looking at actual purchase price against planned purchase price (CIPS, 2012).

2.5.2 Cost effectiveness measures

These measures fall under two categories: cost changes and cost avoidance. A cost change is the increase or decrease in cost resulting from a change in purchasing strategy.

Cost avoidance represents the difference between a price paid and a potentially higher price which might have occurred if a purchase had not been obtained at a lower price (Handfield et al., 2009).

2.5.3 Quality measures

A number of measures are available to evaluate quality of a supply chain these include: parts per million, customer defects per supplier and field failure rates by purchase item and by supplier (Lysons et al., 2009). Parts per million expresses a maximum number of levels of defects allowable for any particular product, assembly, or service. Customer defects per supplier on the other hand measures the number of defects from individual suppliers to indicate comparative quality performance among competing suppliers.

2.5.4 Time / Delivery/ Responsiveness

This measures the amount of time in weeks or months from concept to first shipment or delivery of final product to the market. The aim is continuous reduction of time to the market. The measures here include: on time delivery, cycle time reduction, responsiveness to schedule changes, mix changes and design or service changes and achieving new product introduction (Lysons et al., 2009; Handfield et al., 2008).

2.5.5 Production level measures and metrics

As an important part of SCM, the performance of the production process also needs to be measured, managed, improved, and suitable metrics for it should be established (Gunaserakan, 2001). The performance of this production has a major impact on product cost, quality, speed of delivery, and on delivery reliability and flexibility (Mapes et al., 1997; Slack et al., 1995). Another measure of production performance is range of product and services offered. According to Mapes et al., (1997), a company that manufactures a wide range of products is likely to introduce new products at a slower rate than companies with a narrow product range. According to Fisher (1997), the selection of a right supply chain strategy depends upon the nature of product variety and innovation. This also implies that the range of products and services acts as an important strategic metric, and hence, it should be considered in performance evaluation.

Capacity utilization equally measures performance of SC. According to Wild (1995) all the operations planning takes place within the framework set by capacity decisions. From the above statement, the role of capacity in determining the level of all supply chain activities is clear. This highlights the importance of measuring and controlling the capacity utilization. According to Slack et al. (1995), capacity utilization directly affects the speed of response to customers' demand. Hence, by measuring capacity, gains in flexibility, lead-time and deliverability will be achieved.

Effectiveness of scheduling techniques is another way of measuring performance of supply chains. Scheduling refers to the time or date at which activities are to be carried out. Such fixing determines the way in which the resources move through an operating system. The effectiveness of this has a major effect on the performance of a SC. For example, scheduling based on JIT has tremendous influence on inventory levels. As well, computer generated schedules based on systems like MRP, and more recently ERP, provide a detailed and accurate BOM (Gunaserakan, 2001). Delivery of goods and services is another measure of performance in a supply chain management and since it directly deals with customers it is referred to as "driver of customer satisfaction" (Gunasekaran, 2001). Some of the measure of delivery include: on-time delivery, delivery-to-request date; delivery-to-commit date; and order fill lead-time. Supply performance measurement must be linked to customer satisfaction (Lee and Billington, 1992). There is therefore need for measurement of integration of the customer specification in design, to set the dimensions of quality, for cost control, and as a feedback for the control of process. The following are some of the related performance metrics: flexibility, customer query time (time it takes for a firm to respond to a customer inquiry with the required information), reduction in warranty claims, number of customer complaints and percentage of orders with complaints, customer satisfaction, and order entry accuracy (Pohlen, 2003; Handfield et al., 2009; Lapide, 2013).

The financial performance of a supply chain can be assessed by customer sales growth and profitability which parameters look at the sale and profits generated each year with sales expected to grow each year or remain constant at the worst (Makori,2013). The Return on supply chain investment is another measure used to gauge supply chain

performance. Return on supply chain investment is worked out on operating profits in excess of capital employed (Pohlen, 2003; Lapide, 2013). Performance be measured through inventory performance or fill rate which can be measured in terms of: number of Stock-keeping units, order cycle time, percentage of quality rejections, percentage, average safety inventory, percentage fraction of time out of stocks, percentage of seasonal inventory and inventory turn-over (Pohlen, 2003; Lapide, 2013).

Transportation performance can be measured through: total transportation costs, number of vehicles operated, percentage of outbound shipments, average outbound shipment size, percentage of inbound shipments , percentage average inbound shipment size, fraction of transportation mode , percentage on timely delivery, percentage of accidents , average kilometers vehicles running full load or empty per day (Lyson et al., 2006). Cash conversion cycle and percentage of internal and external complaints for data unavailability also measure optimization (Lapide, 2013).Cash to cash cycle measures the time it takes from point of purchase of raw material to conversion of raw materials and to sales and final collection of cash from sales (Makori,2013).

Other performance measures include price and cost with common price performance looking at actual purchase price against planned purchase price (CIPS, 2012) and cost looking at cost changes and cost avoidance. A cost change is the increase or decrease in cost resulting from a change in purchasing strategy while cost avoidance represents the difference between a price paid and a potentially higher price which might have occurred if a purchase had not been obtained at a lower price (Handfield et al., 2009).

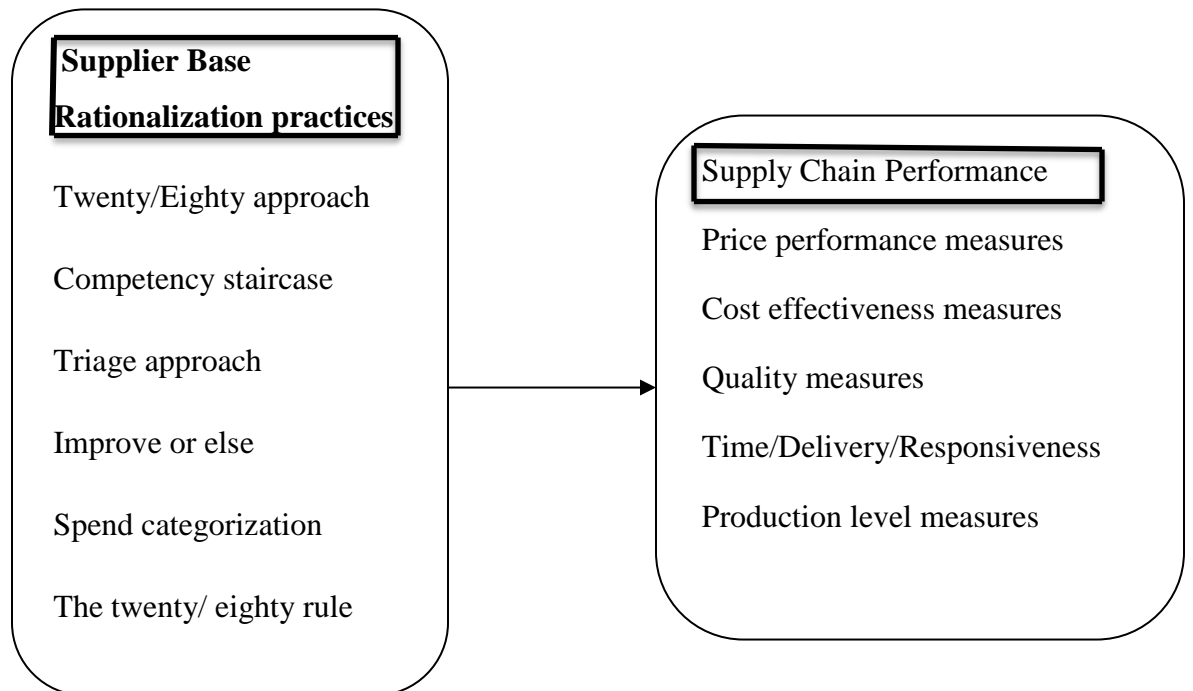
2.6 The Conceptual Framework

The conceptual framework explains the relationship between independent and dependent variables in the study. In this study performance is the dependent variable as its success depends on the outcome of supplier base rationalization practices which are independent variables. The performance of a firm depends on the success of supplier base rationalization.

**Independent Variable: Supply Base Rationalization
Supply**

Dependent Variable:

Practices **Chain**
performance



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology that will be used in conducting the study. The elements to be discussed include the research design, the target population, the sampling design, data collection methods and data analysis and data presentation method.

3.2 Research Design

This study will adopt a descriptive research design. Burns and Grove indicate that a descriptive research design is important when trying to give a picture of a situation the way it is without any manipulation of existing variables. Descriptive study was chosen for this study since it will enable the researcher to involve both qualitative and quantitative techniques of data analysis.

3.3 Target Population

This study will target all the large scale manufacturing firms in Nairobi. There are approximately 455 large scale manufacturing companies in Nairobi (Kinya, 2013). This implies that the population of this will be 455 large scale manufacturing firms that are based in Nairobi

3.4 Sampling Design

The Kenya Association of manufacturers confirms that the large scale manufacturing companies in Nairobi are divided into a total of 12 sectors. This study will adopt stratified sampling in selecting the firms that will be included in the study. In order to select the sample size, the study will adopt Cooper and Schindler (2006) formula which was also used by Kinya (2012) in identifying a sample size from the large scale manufacturing firms in Nairobi. Taking a nonzero probability of selection of 0.101 the sample size will be:

Sample size
 $0.101 = \frac{\quad}{455}$ this gave a sample size of 46 respondents.

The respondents will be selected from the different sectors as shown in the table below:

Sector	No. of Firms	Percentage in Sector	Respondents
Building	6	1.3	1
Food, Beverages	100	22	10
Chemical	62	13.6	6
Energy	42	9.2	4
Plastics	54	11.9	5
Textile	38	8.4	4
Wood Products	22	4.8	2
Pharmaceutical	20	4.4	2
Metal and Allied	38	8.4	4
Leather	8	1.8	1
Motor	17	3.7	2
Paper	48	10.5	5
Total	455	100	46

Figure 3.1: Sampling structure

3.4 Data collection

Primary data will be collected by means of closed ended questionnaires. According to Nachimias and Nachimias (1996), answers to closed ended questions can be more elaborate. The questionnaire will have three sections. Section A, will deal with general information of the organization. Section B, will seek to find out information on supply base rationalization practices in private large manufacturing firms in Nairobi. Section C; will aim to find information on the relationship between supply base rationalization and performance of large manufacturing firms.

The respondents to the questionnaire will be procurement and supply chain managers or their equivalents at the head offices of the private large manufacturing firms in Nairobi Kenya with more than one branch and from the location of those with one branch. The questionnaire will be administered on drop and pick later method.

3.5 Data Analysis

Data will be collected and analyzed using Statistical Package for Social Scientists (SPSS) in order to find out the supplier base rationalization practices used by private large manufacturing firms in Nairobi Kenya. Descriptive statistics analysis methods such as the use of frequency distribution, cumulative frequencies and standard deviation will be used to analyze quantitative data. Factor analysis will also be used to this effect to determine the relationship between supplier base rationalization practices and supply chain performance of large manufacturing firms. Regression analysis will be done to determine the relationship between supplier base rationalization practices and supply chain performance of large manufacturing firms.

The regression model to be used will be as below:

$$y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 \dots + b_kx_k + e$$

Where: y is the dependent variable (supply chain performance)
 x is the independent variables (supplier base rationalization practices)
 a is a constant
 b is the weights of the independent variables
 e is the error term

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 Introduction

This study presents and discusses the analysis of data collected from the respondents. The data was derived from questionnaires filled by respondents and was interpreted in relation to research objectives and research questions. The findings were analyzed in SPSS and presented through the simple report, tables, graphs and simple descriptive statistical tables.

The data was obtained by administering questionnaires to sixty respondents so as to increase the chance of attaining the desired sample size of forty nine completely filled. Out of the sixty questionnaires distributed, fifty four were received back which was considered a good number for the purpose of the analysis. Six of them were however not completely filled.

4.1.1 Section A: Organization profile

1. Level of Education

Education Level

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Doctorate degree	2	4.3	4.3
	Masters Degree	5	10.9	15.2
	Bachelors degree	31	67.4	82.6
	Diploma	5	10.9	93.5
	Certificate	3	6.5	100.0
	Total	46	100.0	100.0

Table 4.1: Education Level

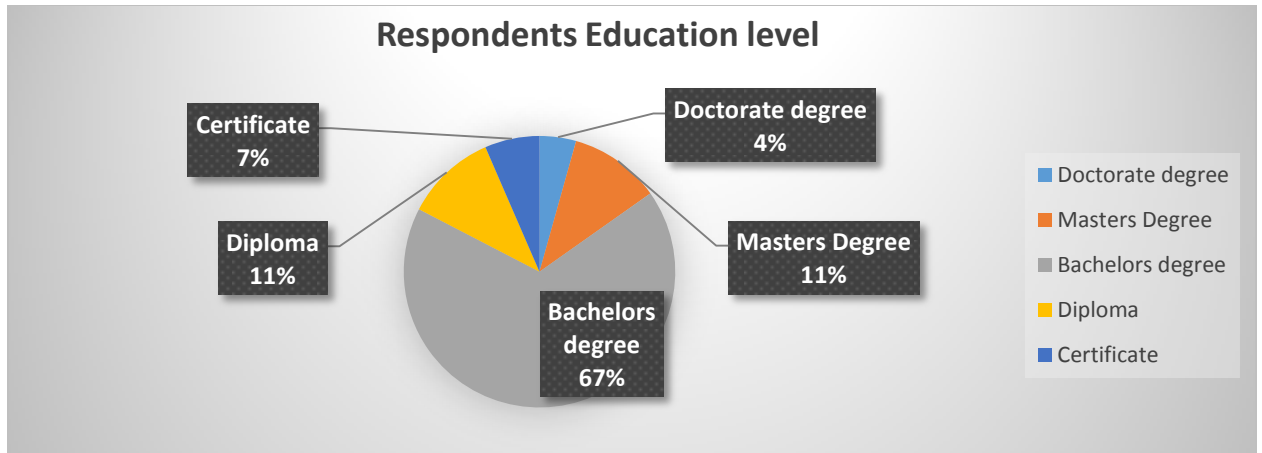


Figure 4.1: Chart showing distribution of education level

From an SPSS frequency table Majority of respondents (67%) have bachelor’s degree. The population is normally distributed with 4% having Doctorate Degrees and 6% with Certificate level.

2. Years of experience

Similarly from the frequency table below 60% of the respondents have more than four years of experience. This basically means they have good knowledge of the job and the responses are credible.

Years of experience

	Frequency	Percent	Valid Percent	Cumulative Percent
1	8	17.4	17.4	17.4
2	10	21.7	21.7	39.1
Valid 3	28	60.9	60.9	100.0
Total	46	100.0	100.0	

Table 4.2 Years of experience

4.1.2 Section B: Supplier Base Rationalization Practices

1. Triage supplier base rationalization practices

Incapable suppliers

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Very Great extent	17	37.0	37.0	37.0
	Great extent	9	19.6	19.6	56.5
	Moderate extent	11	23.9	23.9	80.4
	Small extent	5	10.9	10.9	91.3
	Very small extent	4	8.7	8.7	100.0
	Total	46	100.0	100.0	

Table 4.3: identification of suppliers incapable of meeting requirements

Only 37% of the firms always identify suppliers incapable of meeting purchase performance requirements to a very great extent now or in the future and targets them for immediate removal from the supply base. We also see that 8% of them do it to a very small extent while 23% do it moderately.

Very few firms always identify suppliers that do not consistently meet purchase requirements in all areas but have potential for improvement and targets them for supplier assistant and development. From the below table we see that 39% and 47% of the respondents do this at a small extent and very small extent consecutively.

Potential suppliers

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Very Great extent	1	2.2	2.2	2.2
	Great extent	3	6.5	6.5	8.7
	Moderate extent	2	4.3	4.3	13.0
	Small extent	18	39.1	39.1	52.2
	Very small extent	22	47.8	47.8	100.0
	Total	46	100.0	100.0	

Table 4.4: potential suppliers

Potential suppliers for contracts

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Very Great extent	25	54.3	54.3	54.3
	Great extent	14	30.4	30.4	84.8
	Moderate extent	4	8.7	8.7	93.5
	Small extent	2	4.3	4.3	97.8
	Very small extent	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

Table 4.5: potential suppliers for contracts

Majority of the firm’s (54%) always identify high-quality, capable suppliers requiring no improvement assistance and makes them candidates for more collaborative buyer-seller relationships and consider long-term contracts in exchange for continuous improvement of their supplies quality.

Potential suppliers for strategic alliance

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Very Great extent	26	56.5	56.5	56.5
	Great extent	14	30.4	30.4	87.0
	Moderate extent	4	8.7	8.7	95.7
	Small extent	1	2.2	2.2	97.8
	Very small extent	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

Table 4.6: potential suppliers for strategic alliance

Similarly 56% of the firms always identify high-quality capable suppliers for strategic alliance and partnerships.

2. Twenty/eighty supplier base rationalization practices

Bulk spend

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Very Great extent	12	26.1	26.1	26.1
	Great extent	15	32.6	32.6	58.7
	Moderate extent	12	26.1	26.1	84.8
	Small extent	3	6.5	6.5	91.3
	Very small extent	4	8.7	8.7	100.0
	Total	46	100.0	100.0	

Table 4.7: Identification of 20% bulk spend customers

More than 80% of the firms always identifies the few suppliers (20%) that cause the bulk of spend. This population consist of 26% do this moderately 32% to a great extent while 26% to a very great extent.

Quality problems

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Very Great extent	20	43.5	43.5	43.5
	Great extent	14	30.4	30.4	73.9
	Moderate extent	4	8.7	8.7	82.6
	Small extent	5	10.9	10.9	93.5
	Very small extent	3	6.5	6.5	100.0
	Total	46	100.0	100.0	

Table 4.8: Identification of firms with quality problems

43% of the firms always identify the few suppliers that cause quality problems and considers them for elimination to a very great extent. 30% do it to a great extent while only 6% do it to a very small extent.

In the frequency table below we see that majority of the firm always identify the few suppliers that cause quality risks and considers them for elimination. 47% do it to a very great extent while 32% do this to a great extent.

Quality risks

	Frequency	Percent	Valid Percent	Cumulative Percent
Very Great extent	22	47.8	47.8	47.8
Great extent	15	32.6	32.6	80.4
Moderate extent	3	6.5	6.5	87.0
Small extent	4	8.7	8.7	95.7
Very small extent	2	4.3	4.3	100.0
Total	46	100.0	100.0	

Table 4.9 identification of firms with Quality risks

3. “Improve or else” supplier base rationalization practices

There was a question asking if firms always give suppliers a notice that they have a specified period of time in which to meet the following performance requirements or risk elimination from the supply base:

- i. improved quality levels
- ii. delivery performance
- iii. lead time reduction
- iv. cost reduction
- v. contract compliance

Varied responses were evident from this section of the questionnaire and are summarized in the SPSS statistics table below derived from independent frequency tables.

Statistics

	Improved quality_levels	delivery_perform	lead_time	cost_redu	contract_co mpl
N	46	46	46	46	46
Valid	46	46	46	46	46
Missing	0	0	0	0	0
Mean	1.87	1.93	2.78	2.98	1.89
Mode	1	2	4	3	1
Skewness	1.434	1.450	.053	.197	1.351
Std. Error of Skewness	.350	.350	.350	.350	.350

Table 4.10: Performance requirements

Over 80% of the firms give notice for improving quality levels to their customers either to a great or very great extent giving rise to a negative skew with a mean of 1.87. We also see that 45% of the firms give delivery time frames to a great extent while 39% do it to a very great extent raising further the mean to 1.93. the skew was lowest in lead time raising the picture of not being a key requirement. Only 10% of these firms give timelines for cost reduction to their suppliers to a very great extent while 15% do it to a very small extent hence a mode of 3 in the response. 47% observe contract compliance to a very great extent. 32% also set time frames for contract compliance to a great extent recording a mean of 1.89. This clearly shows how important delivery time is for the firms.

4. Competency staircase supplier base rationalization practices

The firm ensures that suppliers meet its basic quality requirements for consideration as potential suppliers

Meeting quality requirements

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Very Great extent	13	28.3	28.3	28.3
	Great extent	14	30.4	30.4	58.7
	Moderate extent	8	17.4	17.4	76.1
	Small extent	7	15.2	15.2	91.3
	Very small extent	4	8.7	8.7	100.0
	Total	46	100.0	100.0	

Table 4.11: Meeting quality requirements

Meeting quality requirements for the firms is very important and 28% insist on their suppliers meeting this to a very great extent while 30% of the firms consider this to a great extent.

The firms also ensure that in addition to meeting the basic quality requirements, the suppliers also navigate the below hurdles to determine whether or not they remain in the supply base through:

- 1) Meet the technical requirements

- ii) Meet product performance requirements
- ii) Demonstrate sustained production competency
- iv) Demonstrate delivery capability

- v) Demonstrate willingness to share information
- vi) Supplier size
- vii) Physical proximity to the buyer

The chart below is developed from the above threshold though SPSS analysis

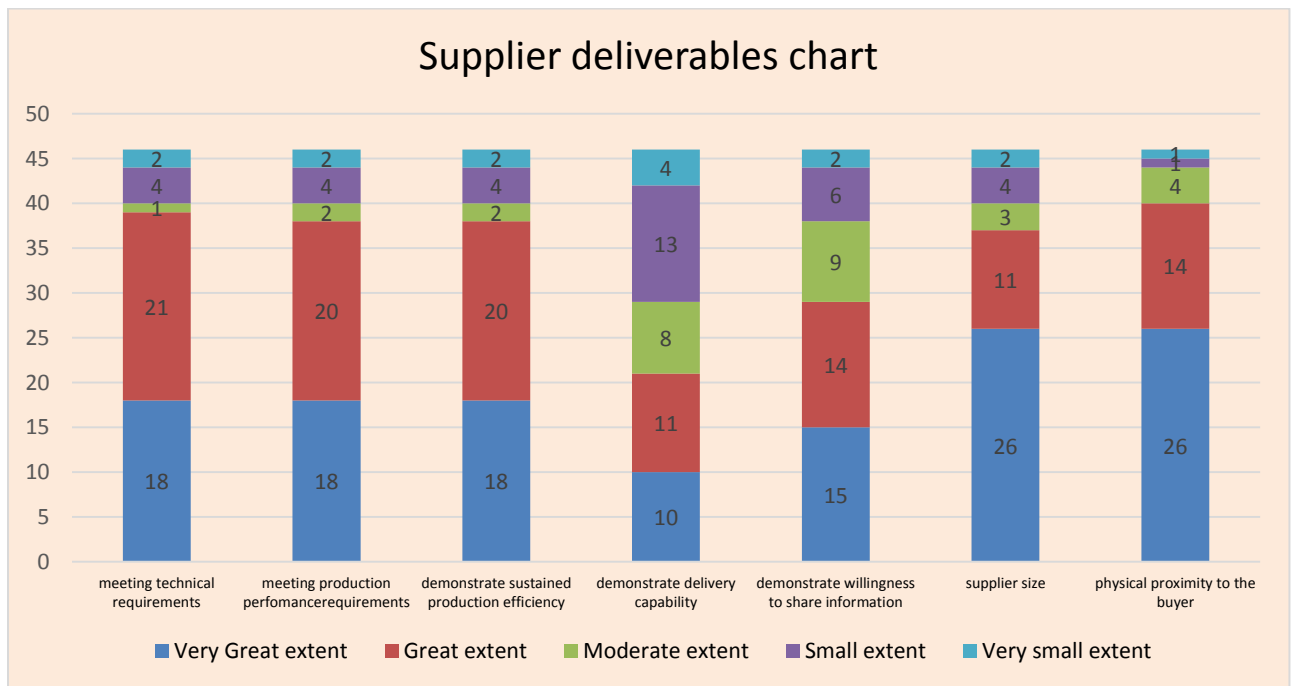


Figure 4.2: supplier deliverables chart

High importance factors like physical proximity to the buyer have high ratings and considered to great and very great extent.

Further Analysis on the supplier deliverables chart	Very Great extent	Great extent	Moderate extent	Small extent	Very small extent
	41%	34%	9%	11%	5%

From a frequency analysis of the responses above we clearly see 41% firms observe the deliverables to a very great extent, 34% great extent and only 5% do it to a very small extent.

Statistics

		prod_perform	prod_competency	delivery_capability	share_inf	suppl_size
N	Valid	46	46	46	46	46
	Missing	0	0	0	0	0
Mean		1.96	1.96	2.78	2.26	1.80
Mode		2	2	4	1	1
Skewness		1.365	1.365	.053	.647	1.453
Std. Error of Skewness		.350	.350	.350	.350	.350

Table 4.12: Supplier deliverables statistics

A simple SPSS univariate analysis of the above highlighted requirements paints the picture of supplier rationalization. From the means distribution we see that a good number of firms were able to meet production performance requirements to great and very great extent with a mean of 1.96. This scenario was similar to production competency. This is however not the same for the ability to meet delivery capability which had the least skew of 0.053. This clearly comes out by the mean registered of 4. This means that most suppliers have good delivery capability hence the spread registered.

5. Spend categorization practices

The firm has structured and segmented suppliers as suppliers of critical items and engaged in collaborative ties with them

collaborative

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Very Great extent	27	58.7	58.7	58.7
	Great extent	14	30.4	30.4	89.1
	Moderate extent	3	6.5	6.5	95.7
	Small extent	2	4.3	4.3	100.0
	Total	46	100.0	100.0	

Table 4.13: Collaborative ties

As we see in the frequency table above 30% of the firms have segmented suppliers of critical items for collaborative ties to a great extent while 27% have done it to a great extent. This appears to be a critical factor for the procurement officers with over 90% doing it to a moderate extent and above.

Supplier switching

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Very Great extent	7	15.2	15.2	15.2
	Great extent	5	10.9	10.9	26.1
	Moderate extent	13	28.3	28.3	54.3
	Small extent	12	26.1	26.1	80.4
	Very small extent	9	19.6	19.6	100.0
	Total	46	100.0	100.0	

Table 4.14: Supplier switching

From table 4.14 above, we see a normal curve slightly skewed to the left. This means that the firms structure and segment suppliers to a moderate extent as suppliers of leverage items and standardized specifications to make supplier switching easier, and also use competitive bidding to secure best deals

The firms also have well managed inventory techniques as seen on able 4.15 below. Over 60% of the firms has structured and segmented suppliers as suppliers of non-critical items

and employed blanket ordering and vendor managed inventory techniques at moderate extent and above.

inventory techniques

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Great extent	11	23.9	23.9	23.9
	Great extent	10	21.7	21.7	45.7
	Moderate extent	11	23.9	23.9	69.6
	Small extent	6	13.0	13.0	82.6
	Very small extent	8	17.4	17.4	100.0
	Total	46	100.0	100.0	

Table 4.15: Inventory techniques

On table 4.16 below we see that 52% of the firms have structured and segmented suppliers as suppliers of bottleneck items to a very great extent and 32% to a great extent. This means they have developed alternative suppliers as well as penalties in contracts to ensure reliability of their suppliers

reliability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Great extent	24	52.2	52.2	52.2
	Great extent	15	32.6	32.6	84.8
	Moderate extent	2	4.3	4.3	89.1
	Small extent	5	10.9	10.9	100.0
	Total	46	100.0	100.0	

Table 4.16: Supplier Reliability

2. The extent to which respondents firms have enjoyed the benefits of rationalization of their supplier base in an effort to improve supply chain performance?

This is an analysis of responses on whether the firms have reduced the number of purchases from poor performing suppliers by concentrating on desirable top performing suppliers and the extent to which the benefits have been enjoyed.

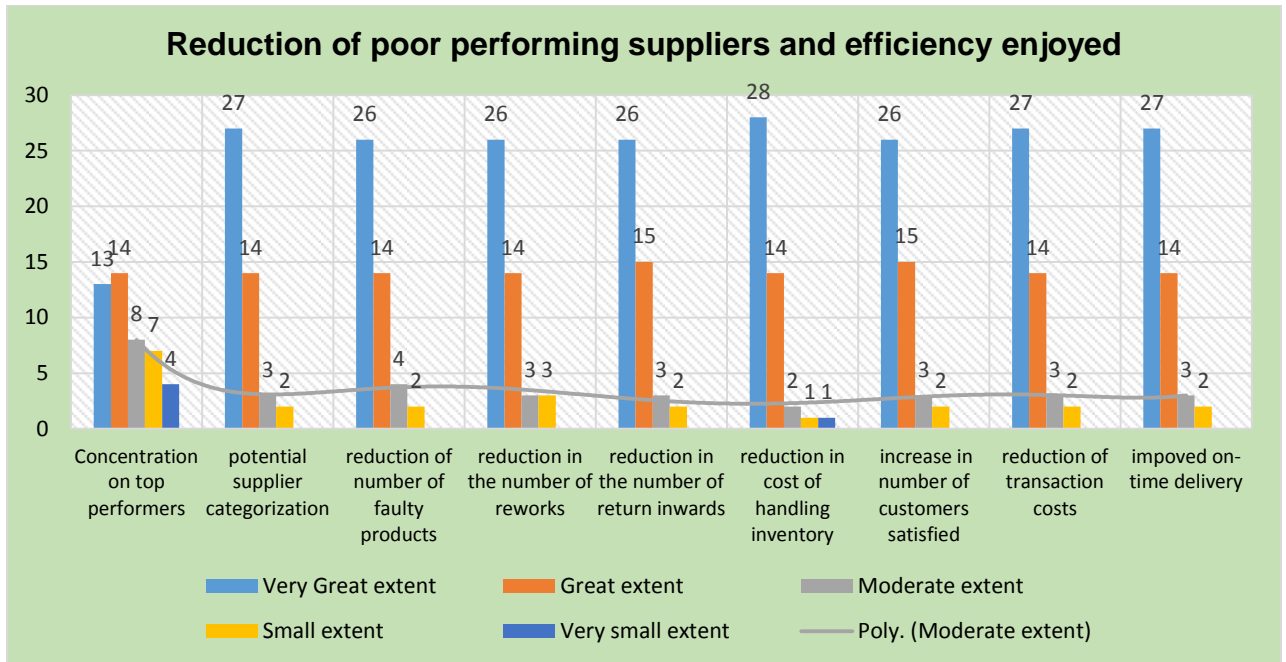


Figure 4.3: Reduction of poor performing suppliers and efficiency enjoyed

This is evident from the summary on the above chart. We consequently see that firms have identified the right number of suppliers to deal with in an effort to maximize customer value. 27 out of 46 firms do this at either a great extent or very great extent. The pie chart below shows the distribution of the means of all the responses clearly showing the extent to which rationalization has reduced costs and increased efficiency. 55% respondents indicate efficiency to a very great extent while 31% of the responses lie at a great extent.

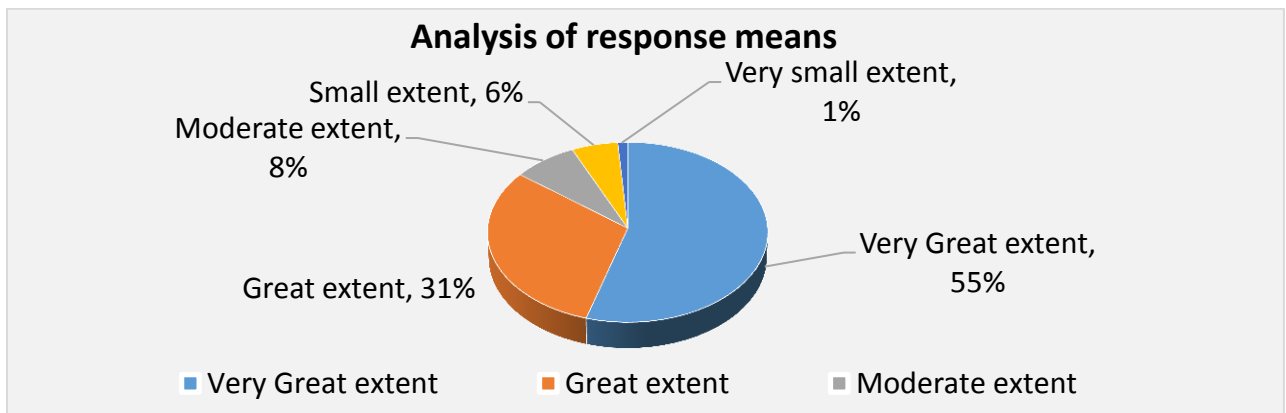


Figure 4.4: Analysis of response means

We also see a further analysis of the extent to which supply chain rationalization has an impact on time to market, rate of new product introduction, reduced cycle time, reduction of customer complaints in the year, reduced number of warranty claims, orders with complaints, increased supply chain reliability, utilizing capacity and reduction in product cost.

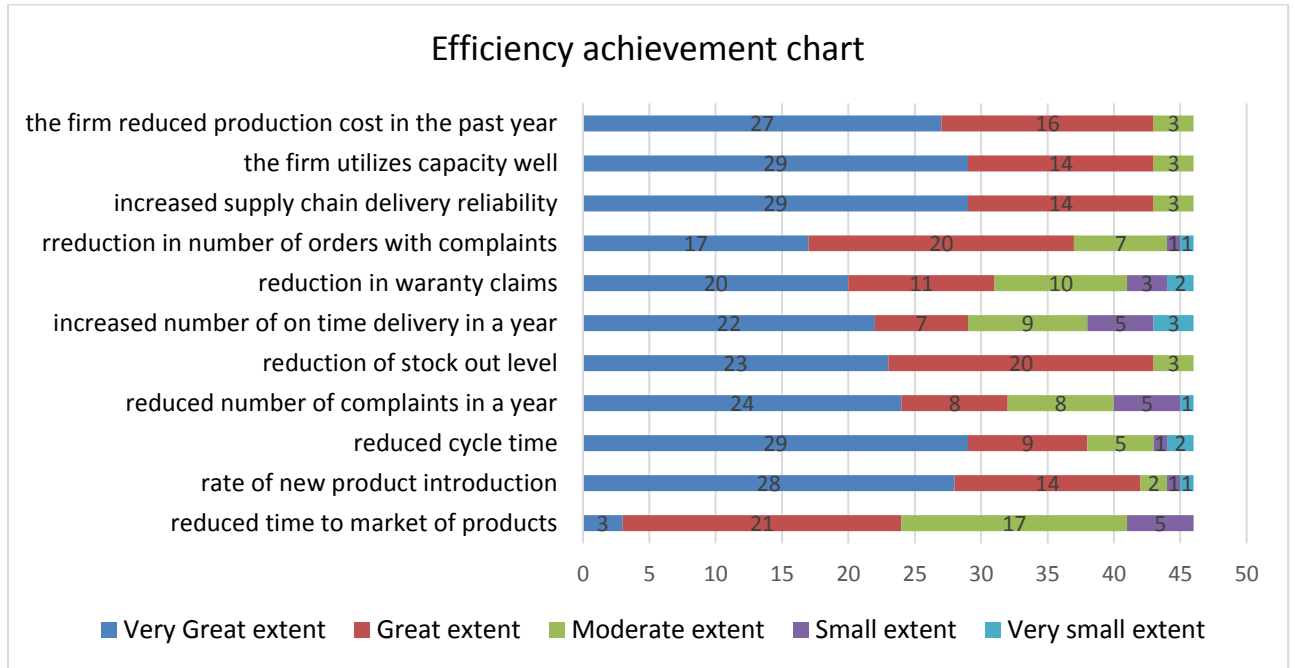


Figure 4.5: Efficiency achievement chart

Overall efficiency of the above analyzed responses is 50% to a very great extent. This simply shows a good achievement for the firms that did supplier rationalization. Increased supply chain delivery and reduced cycle time are the greatest achievements in this analysis having attained 29 very great extent responses each. This accounts for 63% distribution of the responses. A simple analysis of the means below shows the means of the distributions.

Very Great extent	Great extent	Moderate extent	Small extent	Very small extent
50%	30%	14%	4%	2%

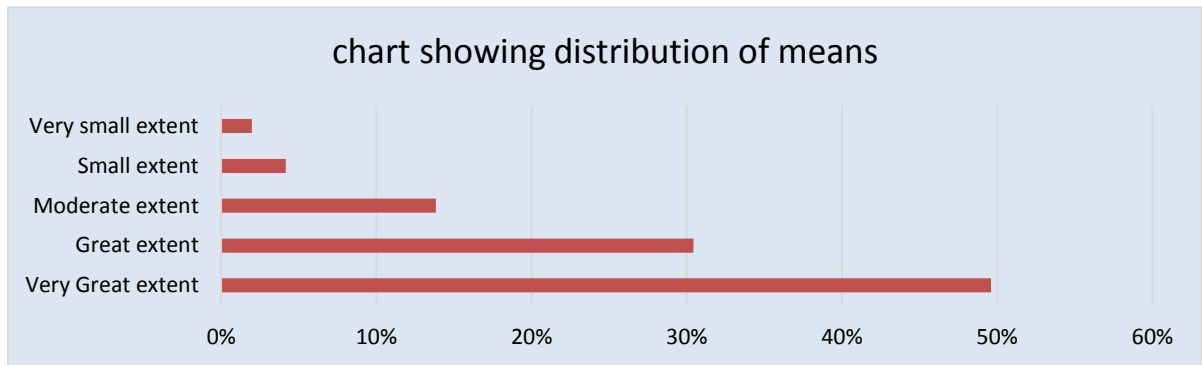


Figure 4.6: distribution of means

4.1.3 Section C: Supply Chain Performance

In this section of the questionnaire analysis supply chain performance measures were compared for year 2013 and 2014. 2014 performance was measured against a constant level of 1 for 2013; assuming 1 for 100% base year 2013, 2014 responses could either be >1, remain at 1 or <1.

Both non-financial and financial measures took the same form of response and analysis using the regression model

$$y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 \dots + b_kx_k + e$$

- Where:
- y is the dependent variable (supply chain performance)
 - x is the independent variables (supplier base rationalization practices)
 - a is a constant
 - b is the weights of the independent variables
 - e is the error term

To avoid bulk of similar analysis I decided to use three factors with the most weight on any manufacturing firm in Kenya which are; Bulk spend, Quality requirements and inventory techniques for our dependent variables

Model Summary for bulk spend

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.389 ^a	.151	-.005	1.324

a. Predictors: (Constant), Credit for goods Returned 2014, Revenue from goods Sold2014, Inventory levels 2014, CycleTime2014, Customer Service level 2014, Activity Based Costs 2014, Resource Utilization 2014

Responses giving rise to this model summary realized the coefficients table below:

The resultant regression model is:

$$y_1 = 16.555x_1 - 28.4x_2 + 2.568x_3 + 26.334x_4 - 0.347x_5 + 23.987x_6 - 37.951x_7 - 0.123$$

Where: y_1 is bulk spend while x_1 is cycle time 2014; x_2 is customer service 2014; x_3 is inventory 2014 etc.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1		-.123	2.873		-.043	.966
	CycleTime2014	16.555	10.525	1.527	1.573	.124
	CustomerServlev2014	-28.400	69.223	-3.433	-.410	.684
	Inventory2014	2.568	4.910	.298	.523	.604
	ResourceUt2014	26.334	71.891	3.197	.366	.716
	RevgoodsSold2014	-.347	12.599	-.042	-.028	.978
	ActBasedCost2014	23.987	17.995	2.314	1.333	.190
	CredgudsRcu2014	-37.951	20.833	-3.660	-	.076
					1.822	

Table 4.17: Dependent Variable: bulk spend

R-squared is 0.151, meaning that approximately 15.1% of the variability of bulk spend is accounted for by the model. The coefficients for each of the variables indicates the amount of change one could expect in bulk spend given a one unit change in the value of that variable, given that all other variables in the model are held constant. For example consider CycleTime2014. We would expect an increase of 16.555 in the bulk spend score for every one unit increase in CycleTime2014, assuming that all other variables are kept constant. R stands for the coefficient of determination which basically refers to the variability of our predictor variables.

Quality requirements

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.464	3.214		1.078	.288
	CycleTime2014	-10.299	11.775	-.882	-.875	.387
	CustomerServlev2014	-12.964	77.439	-1.454	-.167	.868
	Inventory2014	-.970	5.493	-.105	-.177	.861
	ResourceUt2014	17.605	80.424	1.983	.219	.828
	RevgoodsSold2014	-4.656	14.095	-.516	-.330	.743
	ActBasedCost2014	-20.482	20.130	-1.834	-	.315
	CredgudsRcu2014	31.114	23.306	2.785	1.017	.190

Table 4.18: Dependent Variable: quality requirements

Resultant regression model is:

$$y1 = -10.299x1 - 12.964x2 - 0.970x3 + 17.605x4 - 4.656x5 - 20.482x6 + 31.114x7 + 3.464$$

In this model, Activity Based Cost2014 has the largest Beta coefficient, -20.482 (in absolute value) compared to other predictor variables. Thus a one standard deviation increase in Activity Based Cost 2014, leads to a 20.482 decrease in predicted quality requirement; with other variables kept constant. Thus the strength of the coefficient for ActBasedCost2014 is the strongest in the model compared to other predictor variables.

Inventory techniques Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.975	3.377		1.473	.149
	CycleTime2014	1.262	12.372	.099	.102	.919
	CustomerServlev2014	34.216	81.368	3.517	.421	.676
	Inventory2014	2.524	5.771	.249	.437	.664
	ResourceUt2014	-	84.504	-6.631	-.760	.452
	RevgoodsSold2014	64.242	14.810	2.671	1.775	.084
	ActBasedCost2014	24.899	21.152	2.043	1.177	.246
	CredgudsRcu2014	-	24.488	-2.219	-1.105	.276
		27.052				

Table 4.19: Dependent Variable: inventory techniques

Resultant regression model is: $y_1 = 1.262x_1 + 34.216x_2 + 2.524x_3 - 64.242x_4 + 26.282x_5 + 24.899x_6 - 27.052x_7 + 4.975$

In this model, Resource Utilization 2014 has the largest Beta coefficient, -64.242 (in absolute value), compared to other predictor variables in the model. Thus a one standard deviation increase in Resource Utilization 2014, leads to a 64.242 decrease in predicted inventory technique; with other variables held constant. Thus the strength of the coefficient for Resource Utilization 2014 is strongest compared to other coefficients of the predictor variables in the model.

CHAPTER FIVE: SUMMARY CONCLUSION AND RECOMMENDATION

5.1: Introduction

This chapter captures a summary of the results discussed in the previous chapters, in addition it answers the research questions and puts forward recommendations, conclusion made and suggestion for further studies in the field. Performance management is an integrated set of activities; a major component to it is the performance appraisal and the link to organizational objectives giving a more holistic view of the organization.

5.2: Summary and Conclusions

The research findings bring out suppliers base rationalization aspects and form a sound basis upon which theoretical policy formulation or analysis can be based.

Form the analyzed data and findings we see that supplier base rationalizing is a continuous process that begins with elimination of marginal and small-purchase volume suppliers. 37% of the firms always identify suppliers incapable of meeting purchase performance requirements to a very great extent now or in the future and targets them for immediate removal from the supply base. 19% do it to a great extent while 23% do it moderately. This is then followed by replacement with better suppliers or initiating supplier development projects with existing suppliers to improve performance, development of supplier evaluation and measurement systems to identify the best performing suppliers and then the development of long term relationships.

My two main objectives are clearly achieved. This is evident from the responses and we see that an average of more than 50% of the firms take the highlighted key factors of rationalization with utmost importance; factors like meeting contract requirements, potential for strategic alliance, 80/20 Pareto rule, meeting quality requirements and reliability are highly skewed in favor of great extent and very great extent.

The second objective was to determine the relationship between supplier base rationalization practices and supply chain performance. There is a similar skew in part C of the questionnaire analysis having a 50% cut out responses which reflected a positive change from year 2013 to year 2014. Several factors are evident from the summary of response means for section B of the questionnaire shown table below. There is sufficient evidence of Improvement in reduced time to market of products, reduced cycle time, reduction of stock out level, reduction in warranty claims, the firm utilizes capacity well and also the firm reduced production cost in the past year.

Very extent	Great	Great extent	Moderate extent	Small extent	Very extent	small
50%		30%	14%	4%	2%	

5.3: Recommendation for further studies

Procurement department is the custodian and organizing department for supply chain management. Even though many procurement practitioners are aware of supply chain rationalization, not all of them apply it. This study may be of significance to Management practitioners who would use the findings and recommendations to optimize their organizations' supply chains.

It may also be useful to research and academic institutions by adding to existing stock of literature in the field of procurement and supply chain management. Other scholars may validate the findings and use the study as a reference text. Other researchers and institutions may follow the areas recommended for further research as a means of increasing knowledge on supply base rationalization. Different supplier base rationalization practices will be brought out and will be of importance to firms that have not yet implemented supplier base rationalization.

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APPENDIX I: LETTER OF INTRODUCTION

DOREEN MUTHONI LUTHUBUA

P.O BOX30881-00100

NAIROBI

25/08/2014

Dear Sir/Madam,

RE: REQUEST FOR RESEARCH INFORMATION

I am an MBA student in the school of business at the University of Nairobi. Currently I am undertaking a research project on “Supplier Base Rationalization Practices and Supply Chain Performance of Large Manufacturing Firms in Nairobi”.

Your company has been selected to form part of this study. Kindly fill the attached questionnaire. The information and data collected will be exclusively used for this study and will be treated with utmost confidence.

Thank you in advance.

Yours Faithfully,

Doreen Muthoni Luthubua

D61/75991/2012

APPENDIX 2: QUESTIONNAIRE

SECTION A: ORGANIZATION PROFILE

1. Please indicate below your highest level of education:

- Doctorate degree
 Masters degree
 Bachelors degree
 Diploma
 Certificate

2. How long have you been in this position?

1-2 years	<input type="checkbox"/>
2-4 years	<input type="checkbox"/>
over 4 years	<input type="checkbox"/>

SECTION B: SUPPLIER BASE RATIONALIZATION PRACTICES

1. To what extent has your organization implemented the following in an effort to improve supply chain performance?

Use the scale below:

1= Very great extent 2= Great extent 3= Moderate extent 4= Small extent 5= Very small extent

1. Triage supplier base rationalization practices	1	2	3	4	5
The firm always identifies suppliers incapable of meeting purchase performance requirements now or in the future and targets them for immediate removal from the supply base	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The firm always identifies suppliers that do not consistently meet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

purchase requirements in all areas but have potential for improvement and targets them for supplier assistant and development					
The firm always identifies high-quality, capable suppliers requiring no improvement assistance and makes them candidates for more collaborative buyer-seller relationships:					
i) long-term contracts in exchange for continuous improvement					
ii) alliance					
2. Twenty/eighty supplier base rationalization practices	1	2	3	4	5
The firm always identifies the few suppliers (20%) that cause the bulk of spend					
The firm always identifies the few suppliers that cause quality problems and considers them for elimination					
The firm always identifies the few suppliers that cause quality risks and considers them for elimination					
3. “Improve or else” supplier base rationalization practices	1	2	3	4	5
The firm always gives suppliers a notice that they have a specified period of time in which to meet the following performance requirements or risk elimination from the supply base:					
i) improved quality levels					
ii) delivery performance					
iii) lead time reduction					
iv) cost reduction					
v) contract compliance					
4. Competency staircase supplier base rationalization practices	1	2	3	4	5
The firm ensures that suppliers meet its basic quality requirements for consideration as potential suppliers					
The firm ensures that in addition to meeting the basic quality					

requirements, the suppliers also navigate the below hurdles to determine whether or not they remain in the supply base:					
i) meet the technical requirements					
ii) meet product performance requirements					
iii) demonstrate sustained production competency					
iv) demonstrate delivery capability					
v) demonstrate willingness to share information					
vi) supplier size					
vii) physical proximity to the buyer					
5. Spend categorization practices	1	2	3	4	5
The firm has structured and segmented suppliers as suppliers of critical items and engaged in collaborative ties with them					
The firm has structured and segmented suppliers as suppliers of leverage items and standardized specifications to make supplier switching easier, and also use competitive bidding to secure best deals					
The firm has structured and segmented suppliers as suppliers of non-critical items and employed blanket ordering and vendor managed inventory techniques					
The firm has structured and segmented suppliers as suppliers of bottleneck items and developed alternative suppliers as well as penalties in contracts to ensure reliability of suppliers					

2. To what extent has your firm enjoyed the following benefits after rationalization of its supplier base in an effort to improve the supply chain performance?

	1	2	3	4	5
The firm has reduced the number of purchases from poor performing suppliers by concentrating on desirable top performing suppliers					

The firm has identified the right number of suppliers to deal with in an effort to maximize customer value					
The firm has categorized its spend and identified current and potential suppliers for each category					
The firm has reduced the number of defects i.e. faulty products					
The firm has reduced the number of reworks i.e. making changes on products					
The firm has reduced the number of returns inwards					
The firm has reduced the overall cost of handling inventory					
The firm has increased number of customers satisfied with service/year					
The firm has reduced the administrative/ transactions cost due to reduced supplier base					
The firm has improved On-Time delivery					
The firm has reduced time to market of products					
The firm has increased rate of new product introduction					
The firm has reduced the cycle time i.e. time for start to finish of a task					
The firm has reduced the number of customer complaints in a year					
The firm has reduced stock-out level					
The firm has increased number of On-Time delivery in a year					
The firm has reduced number of warranty claims					
The firm has reduced number of orders with complaints in a year					
The firm has increased supply chain delivery reliability					
The firm utilizes capacity well					
The firm has reduced product cost					

SECTION C: SUPPLY CHAIN PERFORMANCE

SUPPLY CHAIN PERFORMANCE MEASURES	2013	2014
NON-FINANCIAL MEASURES		
Cycle time		
Customer service level		
Inventory levels		
Resource utilization		
FINANCIAL MEASURES		
cost of raw material		
revenue from goods sold		
Activity Based Costs such as material handling, manufacturing, assembling, etc.		
inventory holding costs		
transportation costs		
cost of expired perishable goods		
penalties for incorrectly filled or late orders delivered to customers		
credits for incorrectly filled or late deliveries from suppliers		
cost of goods returned by customers		
credits for goods returned to suppliers		

APPENDIX 3: LIST OF LARGE SCALE MANUFACTURING FIRMS IN NAIROBI

ENERGY SECTOR		
A.I Records (Kenya) Ltd	Modulec Engineering Systems Ltd	Kenwestfal Works Ltd
Amedo Centre Kenya Ltd	Mustek East Africa	Kenya Power & Lighting Co. Ltd
Assa Abloy East Africa Ltd	Nationwide Electrical Industries	Kenya Scale Co. Ltd/ Avery Kenya Ltd
Aucma Digital Technology Africa Ltd	Nationwide Electrical Industries Ltd	Kenya Shell Ltd
Avery (East Africa) Ltd	Optimum Lubricants Ltd	Libya Oil Kenya Limited
Baumann Engineering Limited	PCTL Automation Ltd	Power Technics Ltd
Centurion Systems Limited	Pentagon Agencies	Reliable Electricals Engineers Ltd
Digitech East Africa Limited	Power Engineering International Ltd	Sanyo Armo (Kenya) Ltd
Manufacturers & Suppliers (K) Ltd	Eveready East Africa Limited	Socabelec East Africa
Marshall Fowler (Engineers) Ltd	Frigorex East Africa Ltd	Sollatek Electronics (Kenya) Limited
Mecer East Africa Ltd	Holman Brothers (E.A.) Ltd	Specialised Power Systems Ltd

Metlex Industries Ltd	IberaAfrica Power (EA) Ltd	Synergy-Pro
Metsec Ltd	International Energy Technik Ltd	Tea Vac Machinery Limited
East African Cables Ltd	Kenwest Cables Ltd	Virtual City Ltd
CHEMICAL SECTOR		
Anffi Kenya Ltd	Maroo Polymers Ltd	Imaging Solutions (K) Ltd
Basco Product (K) Ltd	Match Masters Ltd	Interconsumer Products Ltd
Bayer East Africa Ltd	United Chemical Industries Ltd	Odex Chemicals Ltd
Continental Products Ltd	Oasis Ltd	Osho Chemicals Industries Ltd
Cooper K- Brands Ltd	Rumorth EA Ltd	PolyChem East Africa Ltd
Cooper Kenya Limited	Rumorth East Africa Ltd	Procter & Gamble East Africa Ltd
Beiersdorf East Africa td	Sadolin Paints (E.A.) Ltd	PZ Cussons Ltd
Blue Ring Products Ltd	Sara Lee Kenya Limited	Royal Trading Co. Ltd
BOC Kenya Limited	Saroc Ltd	Reckitt Benckiser (E.A) Ltd
Buyline Industries Limited	Super Foam Ltd	Revolution Stores Co. Ltd
Carbacid (CO2) Limited	Crown Berger Kenya Ltd	Soilex Chemical Ltd
Chemicals & Solvents E.A. Ltd	Crown Gases Ltd	Strategic Industries Limited

Chemicals and Solvents E.A. Ltd	Decase Chemical (Ltd)	Supa Brite Ltd
Coates Brothers (E.A.) Limited	Deluxe Inks Ltd	Unilever Kenya Ltd
Coil Products (K) Limited	Desbro Kenya Limited	Murphy Chemical E.A Ltd
Colgate Palmolive (E.A) Ltd	E. Africa Heavy Chemicals (1999) Ltd	Syngenta East Africa Ltd
Johnson Diversity East Africa Limited	Elex Products Ltd	Synresins Ltd
Kel Chemicals Limited	European Perfumes & Cosmetics Ltd	Tri-Clover Industries (K) Ltd
Kemia International Ltd	Galaxy Paints & Coating Co. Ltd	Twiga Chemical Industries Limited
Ken Nat Ink & Chemical Ltd	Grand Paints Ltd	Vitafoam Products Limited
Magadi Soda Company Ltd	Henkel Kenya Ltd	
Food Sector		
Africa Spirits Ltd	Annum Trading Company Limited	Premier Flour Mills Ltd
Agriner Agricultural Development Limited	Aquamist Ltd	Premier Food Industries Limited
Belfast Millers Ltd	Brookside Dairy Ltd	Proctor & Allan (E.A.) Ltd
Bidco Oil Refineries Ltd	Candy Kenya Ltd	Promasidor (Kenya) Ltd

Bio Foods Products Limited	Capwelll Industries Ltd	Trufoods Ltd
Breakfast Cereal Company(K) Ltd	Carlton Products (EA) Ltd	UDV Kenya Ltd
British American Tobacco Kenya Ltd	Chirag Kenya Limited	Unga Group Ltd
Broadway Bakery Ltd	E & A Industries Ltd	Usafi Services Ltd
C. Czarnikow Sugar (EA) Ltd	Kakuzi Ltd	Uzuri foods Ltd
Cadbury Kenya Ltd	Erdemann Co. (K) Ltd	ValuePak Foods Ltd
Centrofood Industries Ltd	Excel Chemical Ltd	W.E. Tilley (Muthaiga) Ltd
Coca cola East Africa Ltd	Kenya Wine Agency Limited	Kevian Kenya Ltd
Confec Industries (E.A) Ltd	Highlands Canner Ltd	Koba Waters Ltd
Corn Products Kenya Ltd	Super Bakery Ltd	Kwality Candies & Sweets Ltd
Crown Foods Ltd	Sunny Processor Ltd	Lari Dairies Alliance Ltd
Cut Tobacco (K) Ltd	Spin Knit Dairy Ltd	London Distillers (K) Ltd
Deepa Industries Ltd	Highlands Mineral Water Co. Ltd	Mafuko Industries Ltd
Del Monte Kenya Ltd	Homeoil	Manji Food Industries Ltd
East African Breweries Ltd	Insta Products (EPZ) Ltd	Melvin Marsh International
East African Sea Food Ltd	Jambo Biscuits (K) Ltd	Kenya Tea Development Agency

Eastern Produce Kenya Ltd	Jetlak Foods Ltd	Mini Bakeries (Nbi) Ltd
Farmers Choice Ltd	Karirana Estate Ltd	Miritini Kenya Ltd
Frigoken Ltd	Kenafric Industries Limited	Mount Kenya Bottlers Ltd
Giloil Company Limited	Kenblest Limited	Nairobi Bottlers Ltd
Glacier Products Ltd	Kenya Breweries Ltd	Nairobi Flour Mills Ltd
Global Allied Industries Ltd	Kenya Nut Company Ltd	NAS Airport Services Ltd
Global Beverages Ltd	Kenya Sweets Ltd	Rafiki Millers Ltd
Global Fresh Ltd	Nestle Kenya Ltd	Razco Ltd
Gonas Best Ltd	Nicola Farms Ltd	Re-Suns Spices Limited
Hail & Cotton Distillers Ltd	Palmhouse Dairies Ltd	Smash Industries Ltd
Al-Mahra Industries Ltd	Patco Industries Limited	Softa Bottling Co. Ltd
Alliance One Tobacco Kenya Ltd	Pearl Industries Ltd	Spice World Ltd
Alpha Fine Foods Ltd	Pembe Flour Mills Ltd	Wrigley Company (E.A.) Ltd
Alpine Coolers Ltd		
PLASTICS AND RUBBER		
Betatrad (K) Ltd	Prestige Packaging Ltd	Haco Industries Kenya Ltd
Blowplast Ltd	Prosel Ltd	Hi-Plast Ltd
Bobmil Industries Ltd	Qplast Industries	Jamlam Industries Ltd
Complast Industries Limited	Sumaria Industries Ltd	Kamba Manufacturing

		(1986) Ltd
Kenpoly Manufacturers Ltd	Super Manufacturers Ltd	Keci Rubber Industries
Kentainers Ltd	Techpak Industries Ltd	Nairobi Plastics Industries
King Plastic Industries Ltd	Treadsetters Tyres Ltd	Nav Plastics Limited
Kingway Tyres & Automart Ltd	Uni-Plasteis Ltd	Ombi Rubber
L.G. Harris & Co. Ltd	Wonderpac Industries Ltd	Packaging Masters Limited
Laneeb Plastics Industries Ltd	ACME Containers Ltd	Plastic Electricons
Metro Plastics Kenya Limited	Afro Plastics (K) Ltd	Raffia Bags (K) Ltd
Ombi Rubber Rollers Ltd	Alankar Industries Ltd	Rubber Products Ltd
Packaging Industries Ltd	Dune Packaging Ltd	Safepak Limited
Plastics & Rubber Industries Ltd	Elgitread (Kenya) Ltd	Sameer Africa Ltd
Polyblend Limited	Elgon Kenya Ltd	Sanpac Africa Ltd
Polyflex Industries Ltd	Eslon Plastics of Kenya Ltd	Silpack Industries Limited
Polythene Industries Ltd	Five Star Industries Ltd	Solvochem East Africa Ltd
Premier Industries Ltd	General Plastics Limited	Springbox Kenya Ltd
BUILDING SECTOR		
Central Glass Industries Ltd	Kenbro Industries Ltd	Manson Hart Kenya Ltd
Karsan Murji & Company	Kenya Builders & Concrete	Mombasa Cement Ltd

Limited	Ltd	
PAPER SECTOR		
Ajit Clothing Factory Ltd	Paper House of Kenya Ltd	General Printers Limited
Associated Papers & Stationery Ltd	Paperbags Limited	Graphics & Allied Ltd
Autolitho Ltd	Primex Printers Ltd	Guaca Stationers Ltd
Bag and Envelope Converters Ltd	Print Exchange Ltd	Icons Printers Ltd
Bags & Balers Manufacturers (K) Ltd	Printpak Multi Packaging Ltd	Interlabels Africa Ltd
Brand Printers	Printwell Industries Ltd	Jomo Kenyatta Foundation
Business Forms & Systems Ltd	Prudential Printers Ltd	Kartasi Industries Ltd
Carton Manufacturers Ltd	Punchlines Ltd	Kenafric Diaries Manufacturers Ltd
Cempack Ltd	Conventual Franciscan Friars-Kolbe Press	Kitabu Industries Ltd
Chandaria Industries Limited	Creative Print House	Kul Graphics Ltd
Colour Labels Ltd	D.L. Patel Press (Kenya) Limited	Label Converters
Colour Packaging Ltd	Dodhia Packaging Limited	Modern Lithographic (K) Ltd

Colour Print Ltd	East Africa Packaging Industries Ltd	Pan African Paper Mills (EA) Limited
Kenya Stationers Ltd	Elite Offset Ltd	Ramco Printing Works Ltd
Kim-Fay East Africa Ltd	Ellams Products Ltd	Regal Press Kenya Ltd
Paper Converters (Kenya) Ltd	English Press Limited	SIG Combibloc Obeikan Kenya
TEXTILE SECTOR		
Africa Apparels EPZ Ltd	Kenya Trading EPZ Ltd	Spinners & Spinners Ltd
Fulchand Manek & Bros Ltd	Kikoy Co. Ltd	Storm Apparel Manufacturers Co. Ltd
Image Apparels Ltd	Le-Stud Limited	Straightline Enterprises Ltd
Alltex EPZ Ltd	Metro Impex Ltd	Sunflag Textile & Knitwear Mills Ltd
Alpha Knits Limited	Midco Textiles (EA) Ltd	Tarpo Industries Limited
Apex Appaels (EPZ) Ltd	Mirage Fashionwear EPZ Ltd	Teita Estate Ltd
Baraka Apparels (EPZ) Ltd	MRC Nairobi (EPZ) Ltd	Thika Cloth Mills Ltd
Bhupco Textile Mills Limited	Ngecha Industries Ltd	United Aryan (EPZ) Ltd
Blue Plus Limited	Premier Knitwear Ltd	Upan Wasana (EPZ) Ltd
Bogani Industries Ltd	Protex Kenya (EPZ) Ltd	Vaja Manufacturers Limited
Brother Shirts Factory Ltd	Riziki Manufacturers Ltd	Yoohan Kenya EPZ

		Company Ltd
Embalishments Ltd	Rolex Garments EPZ Ltd	YU-UN Kenya EPZ Company Ltd
J.A.R Kenya (EPZ) Ltd	Silver Star Manufacturers Ltd	
TIMBER SECTOR		
Economic Housing Group Ltd	Transpaper Kenya Ltd	Wood Makers Kenya Ltd
Eldema (Kenya) Limited	Twiga Stationers & Printers Ltd	Woodtex Kenya Ltd
Fine Wood Works Ltd	Uchumi Quick Suppliers Ltd	United Bags Manufacturers Ltd
Furniture International Limited	Rosewood Office Systems Ltd	Statpack Industries Ltd
Hwan Sung Industries (K) Ltd	Shah Timber Mart Ltd	Taws Limited
Kenya Wood Ltd	Shamco Industries Ltd	Tetra Pak Ltd
Newline Ltd	Slumberland Kenya Limited	
PG Bison Ltd	Timsales Ltd	
MOTOR VEHICLE ASSEMBLY AND ACCESSORIES		
Auto Ancillaries Ltd	General Motor East Africa Limited	Megh Cushion industries Ltd
Varsani Brakelining Ltd	Impala Glass Industries Ltd	Mutsimoto Motor

		Company Ltd
Bhachu Industries Ltd	Kenya Grange Vehicle Industries Ltd	Pipe Manufacturers Ltd
Chui Auto Spring Industries Ltd	Kenya Vehicle Manufacturers Limited	Sohansons Ltd
Toyota East Africa Ltd	Labh Singh Harnam Singh Ltd	Theevan Enterprises Ltd
Unifilters Kenya Ltd	Mann Manufacturing Co. Ltd	
METAL AND ALLIED		
Allied Metal Services Ltd	Morris & Co. Limited	Khetshi Dharamshi & Co. Ltd
Alloy Street Castings Ltd	Nails & Steel Products Ltd	Nampak Kenya Ltd
Apex Street Ltd Rolling Mill Division	Orbit Engineering Ltd	Napro Industries Limited
ASL Ltd	Rolmil Kenya Ltd	Specialized Engineer Co. (EA) Ltd
ASP Company Ltd	Sandvik Kenya Ltd	Steel Structures Limited
East Africa Foundry Works (K) Ltd	Sheffield Steel Systems Ltd	Steelmakers Ltd
Elite Tools Ltd	Booth Extrusions Limited	Steelwool (Africa) Ltd
Friendship Container Manufacturers	City Engineering Works Ltd	Tononoka Steel Ltd

General Aluminum Fabricators Ltd	Crystal Industries Ltd	Welding Alloys Ltd
Gopitech (Kenya) Ltd	Davis & Shirliff Ltd	Wire Products Limited
Heavy Engineering Ltd	Devki Steel Mills Ltd	Viking Industries Ltd
Insteel Limited	East Africa Spectre Limited	Warren Enterprises Ltd
Metal Crown Limited	Kens Metal Industries Ltd	
PHARMACEUTICAL AND MEDICAL EQUIPMENT		
Alpha Medical Manufacturers Ltd	Madivet Products Ltd	KAM Industries Ltd
Beta Healthcare International Limited	Novelty Manufacturing Ltd	KAM Pharmacy Limited
Biodeal Laboratories Ltd	Oss. Chemie (K)	Pharmaceutical Manufacturing Co.
Bulks Medical Ltd	Dawa Limited	Regals Pharmaceuticals
Cosmos Limited	Elys Chemical Industries	Universal Corporation Limited
Laboratory & Allied Limited	Gesto Pharmaceutical Ltd	Pharm Access Africa Ltd
Manhar Brothers (K) Ltd	Glaxo Smithkline Kenya Ltd	
LEATHER PRODUCTS AND FOOTWEAR		
Alpharama Ltd	C & P Shoe Industries Ltd	East Africa Tanners (K) Ltd

Bata Shoe Co. (K) Ltd	CP Shoes	Leather Industries of Kenya Limited
New Market Leather Factory Ltd	Dogbones Ltd	

Source: Kenya Association of Manufacturers (KAM) Directory. July, 2013