VALUE CHAIN MANAGEMENT PRACTICES AND SUPPLY CHAIN PERFORMANCE OF LARGE MANUFACTURING FIRMS IN NAIROBI

SUBMITTED BY:

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DECLARATION

I, Margaret Muthoni Njuguna, do hereby declare that this project is my original work and has not been submitted for a degree to any other university

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This project has been submitted for examination with our approval as the university supervisor and moderator

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DEDICATION

To my family for their love and support throughout my studies I will forever be grateful.

ACKNOWLEDGEMENT

ABSTRACT

Firms exist in a dynamic environment that is unpredictable thus the need to efficiently and effectively of operations as they maintain consistency in ensuring value creation through the supply chain. Therefore this research seeks to explore on value chain management practices adopted by large manufacturing firms in Kenya and also determine the relationship between these practices and supply chain performance. The study outlines three categories of value chain management practices that include procuring and sourcing, operation excellence and supply chain design network and distribution. The large manufacturing firms differ in their scope of operation and therefore need to clearly identify their value chains and aim to manage them to ensure that value is created in the present and future undertakings

The study targeted 46 large manufacturing firms in Nairobi but managed to get response from 35 firms. This represented 76% response rate. Data was collected using closed- ended questionnaires applying the 5 Likert point scale (See Appendix I). Data analysis was done using Microsoft Office Excel 2007 application and facts analyzed to give results. The findings of the study were that value chain management practices determine supply chain performance and that different firms adopt practices that best suit their sector in order to enhance supply chain performance. Sales maximization was the main supply chain performance measure that clearly brought to light the needs to ensure right practices are adopted leading to the conclusion that there is a relationship between value chain management practices and supply chain performance.

Key Words: Value Chain Management Practices, Supply Chain, Performance, Manufacturing.

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CHAPTER ONE: INTRODUCTION

1.1 Background

Firms work to ensure that goods and services reach their customers quickly than their competitors through efficient and effective supply chains. The need to do so has driven them to ensure the use of well managed supply chains due to the interdependence among supply chain partners. The management of these supply chains becomes imperative in determining choices in modal analysis, load planning and route planning. However, supply chain management on the other hand faces such challenges as re-engineering, outsourcing and globalization leading to ensuring that supply chains yields value as products and/or services move from point of production to point of consumption. In view of this value management is therefore important along these chains (Zigiaris, 2000). The business environment is faced by such effects as globalization, competition and heightened customer expectations resulting in supply chains competing against supply chains. It is therefore important that operations and value chains are managed to ensure survival and prosperity (Dawei, 2011).

Interdependence amongst supply chains is a key factor and thus success or failure of a firm depends highly on activities adopted by supply chain partner. The need for value creation along these supply chains is important. Firms therefore need to clearly identify their value chains and aim to manage them to ensure that value is created in the present and future undertakings. Managing value requires a fundamental change in the way organization and individuals think, take decisions and behave (Andrew Fearne, 2009). The value added process affects the supply chain relationship and consequently supply chain performance (Quesada, Gazo and Sanchez, 2012).

1.1.1 Value Chain Management Practices

Value is defined as the amount buyers are willing to pay for what a firm provides, leading to conception of the term "value chain" which is defined as the combination of nine generic value added activities operating within a firm that is primary activities that include inbound and outbound logistics, marketing and sales, service and support activities that is procurement, technology development, human resource management and firm infrastructure – activities that work together to provide value to customers in a value chain model that demonstrates how a firm can generate more value to their customers by reducing non value adding activities. The value chain is a higher level model of how businesses receive raw materials as input, add value to raw materials through various processes and sell finished products to customers (Nikov, 2001).

According to Walters and Lancaster (2000), the value chain is a business system that creates end-user satisfaction and realizes the objectives other member stakeholders and therefore need for value chain management to facilitate the realization of these objectives. Value chain management requires "examining processes (physical, financial and informational) and uncertainties (opportunities for improvement and risks to achievement) from beginning to end of the chain (or network) in an integrated manner in order to optimize overall value"(Hardacre & Collins, 2008). Awino (2002) identified such universal value chain management practices as operating policies, linkages within supply chain firms, improved performance, information technology systems, strategic alliance, performance measure, goal orientation, customer relationships, guidelines and procedures, supplier selection and supplier evaluation found to compare with best practices globally.

However these practices although compared with best practices globally, require a further study to establish other value management practices that add value to both the firm and customers. This research therefore seeks to explore on such practices as procurement and sourcing, operational excellence, supply chain network design and distribution. Although not universal, value from these practices can only be achieved if and when an organization through connecting and convening key players, developing right strategies, practice seeing the system through one another's eyes, build partnership, evaluate and scale up the value chain and institutionalize successful approaches (Shweitzer, *et al.,* 2008).

1.1.2 Supply Chain Performance

The Supply Chain Council (1997) defines the supply chain as an activity that encompasses every effort involved in producing and delivering a final product, from the supplier's supplier to the customer's customer. These efforts require management and therefore management of these supply chains is important. Supply chain management concept defined as systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole. This results in such benefits as reduced operation costs, increased market share and sales and solid customer relations (Mentzer et al., 2001, p. 18).

Supply chain performance on the other hand ensures efficiency in providing goods as per market demand and thus the need for measuring performance as there exists interdependence among supply chain partners which is important for survival and

prosperity of a firm .Supply chain performance is defined as the operational excellence to deliver leading customer experience (Simchi-Levi *et al.*, 2003).

The performance of a supply chain is influenced by external factors, corporate supply chain factors and management of extended supply chain. Organizations have moved from individual company performance to supply chain performance with a view of improving the bottom line performance of the entire chain (Vogel, 2011). However such metrics as cost, time, quality, flexibility and innovativeness are some of the controls in behaviour facilitates greater understanding of the supply chain as well as improved overall performance. These metrics are not standard to every firm and so every frm has the disgression to choose relevant metrics to use in reducing chances of using wrong measures which may result in supply chain performance degradation (Lapide, 2000).

1.1.3 Large Manufacturing Firms

The manufacturing sector is a significant contributor to Kenya's economy resulting in a 10% Gross Domestic Product, 12.5% exports and a 13% formal employment (Osano *et al.*, 2008).The growth of the manufacturing industry has for years faced such challenges as depressed domestic demand, increased oil prices and transport costs. Rising operating costs mainly as a result of high power costs coupled with deteriorating road and rail networks further dampened growth in the sector.

The rise in increased output in the agro-processing industries has also facilitated growth in the manufacturing industry. These included sugar, milk, grain milling, fish, tea, oils and fats processing sub-sectors. Other key sub-sectors of manufacturing that

perform well include: manufacture of cigarettes, cement production, batteries (both motor vehicles and dry cells), motor vehicle assembly and production of galvanized sheets. However 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 (Awino, 2002).

The manufacturing environment has changed however with such considerations as globalization, technology development etc. therefore this has led to manufacturers of all sizes realizing that if their value chain was both efficient and effective they would be profitable. However with an appreciation of the presence of challenges and so proper analysis and improvements in the value chain would lead to greater benefits. The management of a value stream would result in improved service, growth in market share, suppliers and distribution channels and provides invaluable analytics for continuous improvement (Wilgus, 2011).

1.2 Statement of the Problem

Firms seek to ensure that consumer needs are met beyond expectation and with this the need to determine supply chain performance. Supply chain performance is usually affected by value chain optimization (Schultz *et al.,* 2007). One of the most significant changes in modern business management is that businesses focusing on value chain optimization are no longer competing solely autonomous entities but as supply chains (Lambert, 2008).As competitive efforts are put in place value chain management is key to ensuring organization goals are met. As much as value chain optimization affects supply chain performance, it is important that organizations seek to adopt measures that best suit them (Lapide, 2000).

Large Manufacturing companies are focusing on becoming more efficient and effective in their manufacturing methods in order to meet market demand and handle uncertainties in the business environment. The Kenyan private sector manufacturing is wide but is decreasing due to government's change of policy; the emphasis is now being given to privatization of the industrial sector. These companies are faced by high production costs, high taxes, poor infrastructure and cheap imports it is therefore important that the management of supply chain becomes imperative to ensure that as the business environment is dynamic, the private sector especially the large manufacturing firms survive and prosper. Value chain management is important in this sector and so does this influence supply chain performance this leads to the research to determine value chain management practices adopted by these firms and determine the relationship between value chain management practices and supply chain performance among large manufacturing firms in Nairobi.

Ketchen *et al*. (2008) conducted a research that attempted to develop the best value chain that can help firms realize their best value chain practices. They found that the best value chains leverage strategic value chain management, agility, adaptability, and alignment not simply to create low costs, but also to maximize the total value added to the customer they further suggested that firms should ensure consistency in performance across supply chain management aspects such as strategic sourcing, logistics management, supply chain information system and relational management. The main focus was on strategic supply chain management and so their approach was lacking as it focused only on the need to maximize speed.

Mwirigi (2012) carried out a study to interrogate the key value chain activities that characterized the sea food industry along the Kenyan Coastline. The aim was to establish their completeness and efficiency and identify the gaps that exist in the chain recommending measures that can be implemented to improve these chains. The main challenge in seafood sector in the Kenyan coast is value addition contributed by lack adequate value adding facilities, marketing channels are insufficient and have fairly weak linkages, market exploitation due to lack of international markets and weak value chain nodes as they are underdeveloped. The findings of this study were not conclusive on the value chain activities that would be most appropriate to enable performance or growth but instead the focus was on government's role in ensuring streamlined value chains, training to seafood farmers and redefining the chains. The main value chain practices to adopt and the impact on performance were not highlighted adequately.

Gunasekaran *et al.* (2001) observed that there should be several kinds of supply chain performance metrics which include balanced approach, strategic, tactical, operational levels and financial as well as non-financial measures; and that supply chain performance could be measured at various management or operation levels. This study was not conclusive as there was no clarity on most suitable measures or best combination of metrics used in an organization. Shepherd and Gunter (2005) highlighted the limitation of existing measurement systems for manufacturing companies to include: encouraging short termism; lack of strategic focus; encouraging local optimization rather than seek to improve continually; and failure to provide adequate information on what competitors is doing through benchmarking. These

findings do not adequately give suitable solution to these limitations but instead only highlighted them.

Following the above studies there was no study that was specific on value chain management versus supply chain performance, this led to the knowledge gap that this study attempts to fill. Therefore this sought to use the five main supply chain performance metrics, namely: cost, quality, time, flexibility, and innovativeness (Lapide, 2000). The objectives was to answer the following questions: What are the value chain management practices common to large manufacturing firms in Nairobi and their level of application? What is the relationship between value chain management practices and supply chain performance within the large manufacturing firms in Nairobi?

1.3 Research Objectives

The objectives of this study are:

 i.   To establish value chain management practices among large manufacturing firms in Nairobi and measure the level of application.

 ii.   To establish the relationship between value chain management practices and supply chain performance in large manufacturing firms in Nairobi.

1.4 Value of the Study

The findings of this study will benefits firms that are yet to adopt value chain management practices that will impact the overall organization performance through their supply chains. The management of these firms will be able to determine the practices to best adopt in order to enhance supply chain performance.

The study is also expected to be useful to researchers and academicians who may be interested on furthering the research on value chain management vis-à-vis supply chain performance in any industry. Its findings may also add into the body of supply chain management literature intended for scholarly as well as applied research purposes.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter highlights the concept of supply chain management, value chain management practices, and its facets clearly indicating past studies into this concept and finally supplies chain performance measures. The aim is to defining this concepts and review past studies done by other scholars.

2.1 Supply Chain Management

Supply chain management is one of the most essential aspects of conducting business. Different authors have defined supply chain management differently hence the problem of lack of universally accepted definition. However, to better understand the meaning of supply chain management, it is important to first define *supply chain.* According to Simchi-Levi *et al.* (2008), supply chain is a network of manufacturers and service providers that work together to move good from point of production to point of consumption linked through physical, information and monetary flows. Supply chain management, then, is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores; so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements (Ganeshan *et al.*, 1995).

Supply chain management is an experience felt only by customers depending on the effects on final product delivery. That is, either shortages leading to increase in price, delay in delivery of service, or manufacturers not meeting the needs of customers. This has consequences on supply chain practices adopted by firms and therefore

impacts on business to business transactions. These are some of the reasons why Toyota had to close some of its manufacturing facility in Japan due to supply shortage for its brake pedals. Nevertheless, some companies such as Dell computers, Wal-Mart have consistently outperformed competition due to their great strengths in supply chain management (Swaminatha, 2007).

2.2 Value Chain Management Practices

The value chain concept was first coined by Michael Porter (1985), the main focus being on cross-functional orientation in the company. He looked into two main activities the primary activities comprising of service, marketing and sales, operations and outbound and inbound activities. The others were the supporting activities such as procurement, technology development, human development and company infrastructure. Hardacre and Collins (2008) define value chain management as the examination of processes and uncertainties from beginning to end of the chain in an integrated manner in order to optimize overall value.

Accordingly, optimization of overall value requires the need for determining supply chain performance. Firms seek to ensure that consumer needs are met beyond expectation and with this the need to determine supply chain performance. Companies used to concentrate on management within these individual functions instead of focusing on cross-functional value chain optimization therefore resulting in management of the value chain to focus on optimizing volumes and values based on cross-functional management concepts and integrated decision making throughout the value chain (Schultz *et al*., 2007).

Olhager (2012) investigated the role of decoupling points in value chain management and found that there is one dominant customer order decoupling point (CODP) along the material flow of the value chain. From a company perspective, the CODP can be positioned inside their manufacturing operations or it can be positioned at the suppliers (first tier or even further upstream in the value chain), at the interface with the supplier (raw material inventory), at the border towards the customers (at some finished goods inventory), or even further downstream in the supply chain. Value chain management practices have been defined as a set of activities undertaken in an organization to promote effective management of its value chain. The practices of Supply chain management are proposed to be a multi-dimensional concept, including the downstream and upstream sides of the supply chain (Rao *et al*., 2004). Value chain management practices include procurement and sourcing; operational excellence; and supply chain network design and distribution.

2.2.1. Procurement and Sourcing

Organizations should seek to have a strategic approach to procurement, this enhances effectiveness and efficiency in an organization's operations as well as saving revenue through effective sourcing, transaction cost reductions and standardized procurement processes. Sourcing is the value added process of selecting suppliers. This is a process that should be supported by advanced analytics and market intelligence. Procurement is the process of acquisition of goods or services required as raw material (direct procurement) or for operational purposes (indirect procurement) for a company or a person (Cole, 2007). It is a key business function although there no universally agreed method of determining its contribution to the value creation process in a firm process is enhanced using five main strategies this include aggregation,

standardization, category management outsourcing and relationship management using three major tools- specifications, tenders and contracts (Hardacre, 2008).

An organization can use such approaches as spend analysis whereby analysis of past, present and future events before procuring and sourcing. This must span the entire organization and may include data collected from all departments. This information provides an organization with information and decision support required to develop supply strategies aligned with its objectives. Another approach is strategic sourcing which aims at achieving large and sustainable cost reductions, long-term supply sustainability and minimized supply risk. Strategies such as rationalizing supplier base, leveraging spending across departments, business units and geographical regions, reconfiguring supply specifications and developing strategic partnerships or alliances with selected suppliers.

The other approach is supplier management where organizations are moving from the traditional approach of selecting the lower cost supplier to "total cost of ownership" approach. Finally, procurement optimization the main focus is on transactional efficiency and reducing process- related costs and inefficiencies throughout the purchasing cycle by first identifying need and end with receipt. The best practice in procurement process should be lean.

2.2.2. Operational Excellence

Organizations strive to grow as they mature and go through different lifecycle phases through improving operating margins and asset efficiency to create value and thus the need for operation excellence. There are various methods applied to improve

performance resulting in eliminating waste by improving cost efficiency, quality and reliability and compliance safety. Therefore need to identify process inefficiencies by such tools as value streaming maps or calculating process capability Wright *et al.* (2009).

Operational excellence has resulted in efficiency and with efficient operations it is clear that these organizations do not necessarily enjoy the largest economies of scale. It is banked on their ability to deliver value that is, creating things that are compelling, exciting and wonderful. Creating value requires a deep understanding of unarticulated customer needs. It requires enormous creativity. It requires a degree of messiness – i.e. recursive cycles of experimentation and learning. It requires radical thinking in terms product configuration or value proposition. But the industrial age has given us organizations that are not very good at doing any of that. It has given us organizations that treat variety as the enemy – that believe variance from a quality standard, or from a budget, or from a production schedule is a fundamentally bad thing. Yet creating value for the customer often entails challenging and deviating from these norms (Gibson, 2013).

Operational Excellence in Supply Chain Management implies excellence within each of the individual processes and in the way the supply chain operates as a whole. Customers expect high levels of quality, cost and service in all of their interactions that may be achieved through efficient supply chains. Supply chain processes should work together, with seamless information flow and smooth material handoffs ensuring that another group should not be the cause of a late delivery and lose credibility for the entire supply chain (ARC Advisory group, 2002)

2.2.3. Supply Chain Network Redesign and Distribution

A supply chain should be a source of value to an organization and therefore requires that the supply chain network design should aim to analyze and design the infrastructure of the supply chain network which fits the supply chain strategy. Distribution on the other hand refers to the steps taken to move and store products from the supplier to the final customer in the supply chain. It is a key driver to the overall profitability of the firm and customer experience (Chopra, 2001).

This results in optimization of both level of service towards the customers as well as cost of the supply chains. Most supply chains are as a result of legacy operations and strategic sources instead of driving value for an organization. The dynamic environment of operation however requires a strong supply chain network as the chain may erode in any case of change in the business environment where there may be shifts in customer base, mergers and acquisitions or new products and markets. The business environment changes have great impact on efficiency of the supply chain network and lead to need for improvement (Selim *et al.,* 2006).

2.3 Supply Chain Performance Measures

The supply chain as earlier defined defines the supply chain as an activity that encompasses every effort involved in producing and delivering a final product, from the supplier's supplier to the customer's customer (Supply Chain Council, 1997).The supply chain performance measure is the process of qualifying the efficiency and effectiveness of the supply chain (Kess & Sillanpaa, 2011).

There are various studies on supply chain performance authors like Ramdas and Spekman (2000) looked at performance in view of Inventory, time, order fulfillment, quality, and customer focus and customer satisfaction. Li *et al.* (2005) looked into six construct approach of supply chain practices such as strategic supplier partnership, customer relationship, information sharing, information quality, internal lean practices and postponement. Gunasekaran *et al.* (2001) argues that there are both financial and non-financial measures looking into process and management based metrics. Shepherd and Günter (2006) categorize supply chain performance measures into five supply chain processes: plan, source, make, deliver and return or customer satisfaction, whether they measure cost, time, quality, flexibility and innovativeness and whether they are quantitative or qualitative measures.

There is also the view of performance based on System dynamics, operational research, logistics, marketing, organization and Strategy (Otto and Kotzab, 2003). The above authors clearly show that the supply chain performance measure are mainly internal logistics performance and do not capture the way the supply chain has performed as a whole. They also lack a balanced approach in integrating financial and non-financial measures, lack of system thinking where a supply chain is viewed as a whole entity and measurement system should span the entire supply chain and the loss of supply chain context.

Firms therefore seek to continually improve their core competitiveness in ensuring customers are satisfied using supply chain management. However, many firms have failed in maximizing their supply chain's potential because of failure to develop the

performance measures and metrics needed to fully integrate their supply chain to maximize effectiveness and efficiency.

There are three major approaches for supply chain performance for the manufacturing industry and they include: management approach which focuses on the three levels strategic, tactical and operational. (Gunasekaran *et al.,* 2004). Time based approaches identifies as most wide known supply chain management capability. It is identified as the important source of competitive advantage. Time is identified as the most accurate and useful measure. The organizations levels, strategic, tactical and operations use time measurement in terms of lead time, order cycle time, time- to market and other time measures are relevant (Sillanpää, 2010). Lastly qualitative and quantitative approaches-quantitative measures are cost that is distribution, manufacturing, inventory, incentive, warehouse and any other sensitivity cost that occur in the long-term. Resource utilization which covers labor, energy, machine and capacity where the under or over utilization of these resources is measured. Qualitative measures are quality, flexibility, visibility, trust and innovativeness. The type of measure chosen must coincide with organizations strategic goal (Kess & Sillanpaa, 2011).The main focus for this paper will be qualitative and quantitative measures.

The conceptual framework below shows the relationship between dependent and independent variables.

2.4 Conceptual Framework

Independent variable   Dependent variable

Value chain management practices

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┌─────────────────────────────┐
│ Procurement and sourcing    │──────────┐
└─────────────────────────────┘          │
                                          ▼
┌─────────────────────────────┐     ┌──────────────────────────────┐
│ Operational excellence      │────▶│ Supply chain performance     │
└─────────────────────────────┘     └──────────────────────────────┘
                                          ▲
┌─────────────────────────────┐          │
│ Supply chain network        │──────────┘
│ design and distribution     │
└─────────────────────────────┘
```
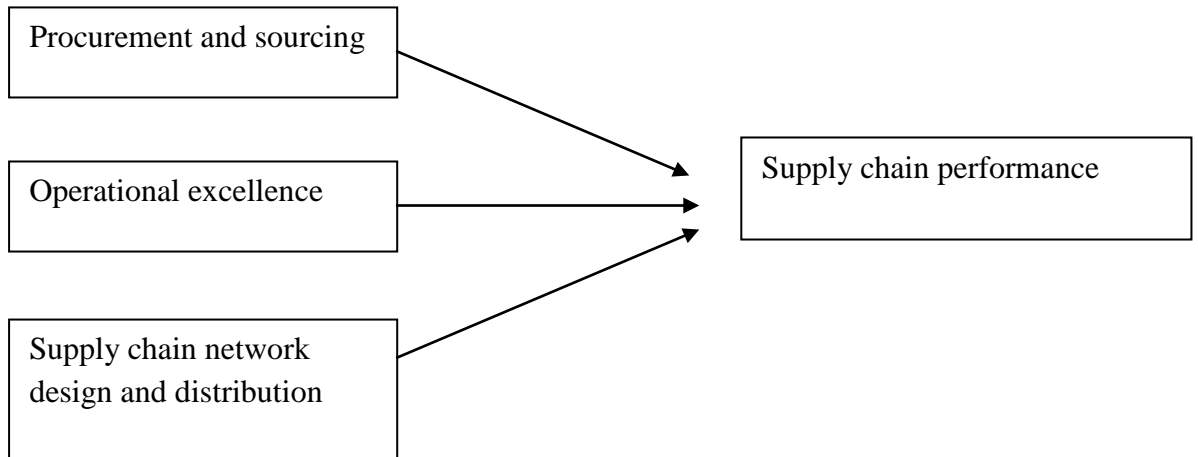
Source: Author

From the conceptual framework above, the value chain management practices include; procurement and sourcing, operational excellence and supply chain network design and distribution are the independent variables that result in supply chain performance.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0. Introduction

The intent of this section is to describe the methodology that is proposed for such a research effort. Included in the section is a description of the proposed research design, population of interest, sample design, proposed data collection methods and analysis efforts.

3.1. Research Design

The study employed descriptive research design. This type of research design is used to identify and classify the elements or characteristics of the subject, in this case the value chain management practices adopted by large manufacturing firms and how they relate to supply chain performance (Neville, 2007).

3.2. Population

The target population comprised all large manufacturing companies, members of Kenya Association of Manufacturers.

3.3. Sampling Design

The sample of was selected using proportionate stratified random sampling method (Van Dalen, 1979). This method was found appropriate as it ensured a greater representativeness in the sample of the population. A sample frame was drawn from Kenya Association of Manufacturers directory consisting of approximately 455 large manufacturing firms in Nairobi.

In the table below the sampling fraction calculated as n/N will be 0.10 therefore each stratum has the same sampling fraction that is Number of firms(X)*010 (Castillo, 2009). This results in a sample size of 46 respondents.

SECTOR	No. of Firms	%age	Respondents
Building	6	1.3	1
Food and beverage	100	22	10
Chemical	62	13.6	6
Energy	42	9.2	4
Plastic and rubber	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 vehicle assembly	17	3.7	2
Paper and paperboard	48	10.5	5
TOTAL	**455**	**100**	**46**

Source: KAM List (2013)

3.4. Data Collection

Primary data was collected using closed- ended questionnaires to determine the extent to which large manufacturing firms adopt certain value chain management practices and supply chain performance measures. This was done using a 5point Likert-type scale where 1-not at all and 5- a great extent.

This questionnaire had three sections: section one bio-data of the manufacturing firm, section two value chain management practices, and finally section three supply chain performance measures as well as the supply chain performance index adopted by various large manufacturing firms in Nairobi.

3.5. Data Analysis

To address the first objective, descriptive statistics was used to find mean scores on value chain management practices and standard deviation (Cooper et al., 2006)

Mean

$$\bar{x} = \frac{\sum x}{N}$$

$$= \frac{x_1 + x_2 + \cdots + x_N}{N}$$

Where:

$x = each\ value\ in\ the\ sample$

$\bar{x} = the\ mean\ of\ the\ values$

$N = the\ number\ of\ values\ (the\ sample\ size)$

Standard Deviation

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{N - 1}}$$

To address the second objective correlation and multiple regression models was used to determine the relationship between value chain management practices and supply chain performance. The model to be used is as below (Gupta,2000)

$Yi = B_0 + \beta_1 X1_i + \beta_2 X2_i + \beta_3 X3_i + \varepsilon_i$

Where

Yi = value of the dependent variable

B_0= (Alpha) constant or intercept

β_1, β_2, β_3= Slope (beta coefficient) for $X1_i$, $X2_i$, $X3_i$

ε_i = standard error of coefficient β_1, β_2, β_3

R2= proportion of variance in the values of dependent variable (Y) explained by the

independent variables (Xs)

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter presents analysis and finding of the research with the aim of fulfilling the aforementioned objectives of this research. The sample target comprised of 46 respondent but only 35 respondents were involved in the study generating a 76% response rate. A closed- loop questionnaire was used and comprised of three sections; firms bio date, value chain management practices and finally supply chain performance measures. The respondents were expected to rate the value chain management practices and supply chain performance measure which their firm adopted by using a scale (1- not at all, 2- small extent, 3-moderate extent, 4-great extent, 5-very great extent)

4.1. Large Manufacturing firms bio data

The firm's bio data consisted of such variables as designation, type of business; years of operation, involvement in other businesses and ownership. These were analyzed with the aim of being to better understand the different sectors and their background. The analysis was presented in the tables below.

4.1.1 Designation
Table 1: Designation

Designation	N	%age
Manufacturing Unit Manager	8	23
Supply Chain Officer	16	46
Procurement and Supply Chain Manager	6	17
Purchasing Manager	5	14
	35	100.0

Source: Research data

The above table clearly outlines the target respondents consisting of the manufacturing unit managers, supply chain officers, procurement and supply chain managers and the purchasing manager. The Supply Chain Officers had the highest participation of 14.3% this leading to the assumption that those left with the role of the supply chain activities were the supply chain officers.

Table 2: Type of industry

Type of industry	N	%age
Building	1	2.9
Food and beverage	5	14.3
Chemical	3	8.6
Energy	4	11.4
Plastic and rubber	5	14.3
Textile	3	8.6
Wood Products	2	5.7
Pharmaceutical	1	2.9
Metal and Allied	4	11.4
Leather	1	2.9
Motor vehicle assembly	2	5.7
Paper and paperboard	4	11.4
TOTAL	**35**	100

Source: Research data

The above table 2 clearly indicated that a large number of respondents were drawn from food and beverage and plastic and rubber sectors respectively with the lowest number being from pharmaceuticals, leather and building.

Table 3: Years of Operation

Years of operation	N	%age
10-20 years	5	14.3
21-40 years	12	34.3
41-60 years	11	31.4
61-80 years	7	20
TOTAL	**35**	100

Source: Research data

The table 3 above indicated that most manufacturing firms had been in operation between 21-40 years with a 34.3% leading to the conclusion that there is growth and the consistency of activities as well as efficiency and effectiveness in operations. However this was not entirely conclusive as firms have been operating between years 10-20 and others 41-60 years in consideration of their involvement in other businesses.

Table 4: Involvement in other businesses

Other business	N	%age
Yes	26	74.3
No	9	25.7
TOTAL	**35**	100

Source: Research data

The above table 4 led to the findings that 26 manufacturing firms were involved in other businesses.

Table 5: Ownership of company

Ownership of company	N	%age
Family	3	8.6
OTHER		
Sole Proprietor	2	5.7
Partnership	13	37.1
Private Limited	11	31.4
Public Limited	6	17.1
TOTAL	**35**	100

Source: Research data

From the above table 5 37.1% were in partnership businesses. These partnerships are a means through which the manufacturing firms ensure competitiveness.

4.2 Value Chain Management Practices
Table 6: Procuring and sourcing

PROCURING AND SOURCING	MEAN	Std Dev
Specifications	3.51	1.15
Tenders	**3.69**	1.11
Contracts	3.17	1.12
History in Spending(Spend Analysis)	3.34	1.19
Participation by all Departments	3.37	1.03
Strategic Partnerships	3.43	1.12
N= 35		

Source: Research data

The sample as a whole adopted tenders *(M=3.69, SD=1.11)*. This indicated that a large number of firms adopted tenders more although this is not conclusive as the average scores are marginal with specifications following closely *(M=3.51,SD=1.15)*with the lowest being contracts*(M=3.17,SD=1.12)*. According to

the above findings this was supported by Hardacre(2008) where he identified procuring and sourcing as a key business function although there no universally agreed method of determining its contribution to the value creation process in a firm process is enhanced using five main strategies this include aggregation, standardization, category management outsourcing and relationship management using three major tools- specifications, tenders and contracts.

Table 7: Operations Excellence

OPERATION EXCELLENCE	MEAN	Std Dev
Improved Cost Efficiency	4.66	0.48
Quality	**4.83**	0.38
Reliability	4.46	0.51
Innovativeness	3.91	1.01
Timely Delivery	4.4	0.65
N=35		

Source: Research data

The data provided in table 7 above indicated a higher adoption on quality *(M=4.83, SD=0.38)* followed by improved cost efficiency *(M=4.66, SD=0.48)* with the lowest being innovativeness *(M=3.91, SD=1.01)*. There is need for organizations to ensure improve performance so as to eliminate waste through improving cost efficiency, quality and reliability and compliance safety. Therefore there is need to identify process inefficiencies by such tools as value streaming maps or calculating process capability Wright *et al*. (2009). The efficiency of an organization is banked on their ability to deliver value that is, creating things that are compelling, exciting and wonderful. Creating value requires a deep understanding of unarticulated customer

needs. It requires enormous creativity. It requires a degree of messiness – i.e. recursive cycles of experimentation and learning. It requires radical thinking in terms product configuration or value proposition. But the industrial age has given us organizations that are not very good at doing any of that. It has given us organizations that treat variety as the enemy – that believe variance from a quality standard, or from a budget, or from a production schedule is a fundamentally bad thing. Yet creating value for the customer often entails challenging and deviating from these norms (Gibson, 2013). From the findings above quality is important in ensuring operation excellence if organizations seek to understand their customers and provide goods and services based on quality standards, at reasonable cost and scheduled tasks thus eliminating waste.

Table 8: Supply chain Network Design and Distribution

SUPPLY CHAIN NETWORK DESIGN AND DISTRIBUTION	MEAN	Std Dev
Analysis and Design of Infrastructure to Fit Supply Chain Strategy	4.57	0.49
Shifts in Customer Base	4.40	0.49
Mergers and Acquisition	2.54	0.51
New Product and Market	**4.66**	0.48
N=35		

Source: Research data

Finally from table 8 above the new product and market has the highest adoption *(M=4.66, SD=0.48)* while mergers and acquisition has the lowest adoption *(M=2.54, SD=0.51).* The above findings support the idea that the business environment changes

have great impact on efficiency of the supply chain network and lead to need for improvement (Selim *et al.,* 2006). This leads to the view that new product and market calls for efficient and effective supply chain networks that will ensure that end products reach their markets and in any case that new products and markets erupt they may be in a capacity to provide to them.

4.2.1 Value Chain Management Practices Adoption Responses

Value chain optimization is important to manufacturing organizations as it determines supply chain performance. Firms seek to ensure that consumer needs are met beyond expectation and with this the need to determine supply chain performance. In the past firms used to concentrate on management within their individual functions instead of focusing on cross-functional value chain optimization. Therefore firms' main focus should be on cross-functional value chain optimization and as a resulting in view of cross-functional management concepts and integrated decision making throughout the value chain (Schultz *et al.*, 2007). A paired t-test was used to determine if the value chain management practices have any significant effect on supply chain performance using an alpha level of .05 for all statistical tests.

A paired-sample t-test was conducted to compare the adoption rate between shift in customer base and new product and between mergers and acquisition and new product and market the findings were that fewer manufacturing firms studied the shift in customer base *(M=4.40, SD=0.49)* as compared to those who concentrated on developing of new product and market *(M=4.66, SD=0.48), t (34) =-2.17, p=0.04.* The second test led to the conclusion that fewer manufacturing firms considered entering into Mergers and acquisition *(M=2.54, SD=0.51)* as compared to those that

considered the adoption of new product and market *(M=4.66, SD=0.48), t (34) = -16.50, p=8.51 $^{-18}$* in determining the best supply chain network design and distribution channels. A paired-sample t-test was then conducted between timely delivery and innovativeness. The findings were that fewer manufacturing firms adopted the practice of ensuring timely delivery *(M=4.40, SD=0.65)* as compared to those that ensured Innovativeness *(M=3.91, SD=1.01), t (34) =-2.69, p=0.01.* in their activities as they sought to eliminate waste through operation excellence .

The movement of products and services from point of production to point of consumption should create value.   The findings of the above t-tests were clear that shifts in customer base were highly considered by the large manufacturing firms. However this is in line with ensuring operation excellence and in support of the above findings a research by Rishi (2009) was conducted to understand what the smarter supply chain future would be in the automotive industry. This study revealed that most automotive companies sought to improve on cost efficiency and took full advantage of increased instrumentation; interconnectivity and intelligence in reducing cost. The study also indicated that in determining best supply chain, there was need to use analytics to optimize distribution networks. For example, by analyzing production and customer locations, order quantities, transportation costs and delivery times, a manufacturer could determine the right number of distribution centers and their ideal locations. The optimized network reduced warehousing and transportation costs, while still maintaining high service levels. The need for analysis and design of infrastructure to fit supply chain strategy in regards to shift in customer base and new product and market is important in determining supply chain network and distribution to ensure efficiency.

4.3 Relationship between Value Chain Management Practices and Supply Chain Performance

The regression analysis method was used to determine the relationship between dependent and independent variables. From the analysis Sales Maximization (dependent Variable) has a positive relationship with the independent variables as indicated in the multiple regression value below. The R squared value indicated that 86% of the variation in dependent variable (sales maximization) was explained by the independent variables. From the ANOVAs table below our $p<0.05$ indicates that we should reject the null hypothesis.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.928362
R Square	0.861855
Adjusted R Square	0.752793
Standard Error	0.569271
Observations	35

ANOVA

	df	SS	MS	F	Significance F
Regression	15	38.41411	2.5609	7.9025	2.83083E-05
Residual	19	6.15731	0.3241		
Total	34	44.57143			

Table 8: Estimated regression line

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-5.03	3.85	-1.31	0.21	-13.08	3.02	-13.08	3.02
New Market and Product	-1.46	0.27	-5.41	0.00	-2.02	-0.89	-2.02	-0.89
Tenders	0.48	0.14	3.50	0.00	0.19	0.76	0.19	0.76
History of Spending(Spend Analysis)	-0.35	0.12	-2.97	0.01	-0.60	-0.10	-0.60	-0.10
Improved Cost Efficiency	0.70	0.29	2.45	0.02	0.10	1.30	0.10	1.30
Quality	1.27	0.32	3.98	0.00	0.60	1.94	0.60	1.94
Innovative ness	0.63	0.13	4.84	0.00	0.36	0.90	0.36	0.90

The independent variables that were statistically significant in explaining the variation in sales maximization were new market and product, tenders history of spending (spend analysis), improved cost efficiency, quality and innovativeness.

Table 9: Pearson's Correlation between Procuring and Sourcing and Supply Chain Performance

SUPPLY CHAIN PRFORMANCE MEASURES

VALUE CHAIN MANAGEMENT PRACTICES	Strategic supplier partnership	Customer relationship	Information quality	Information sharing	Lean practices	Cost Minimization	Sales Maximization	Profit Maximization	Inventory Investment Minimization	Return on Investment Maximization	Fill Rate Maximization	Product Lateness Minimization	Customer Response Time	Lead Time	Function Duplication	Capacity Utilization	Resource Utilization
Specifications	0.29	(0.32)	(0.05)	0.17	0.35	0.73**	0.58**	(0.49)	0.70**	(0.32)	0.70**	(0.33)	0.70**	(0.33)	(0.19)	0.38	0.08
Tenders	0.04	(0.25)	0.18	(0.17)	(0.08)	(0.03)	0.58**	0.26	(0.04)	0.08	0.05	0.77**	0.05	0.77**	0.36	0.29	0.76**
Contracts	0.17	-	0.16	(0.10)	(0.26)	0.15	-	0.76**	(0.40)	0.19	0.12	0.23	0.12	0.23	0.49*	0.11	(0.13)
Historic spending (Spend Analysis)	0.13	0.43	0.59**	0.53*	0.50*	(0.43)	0.26	(0.11)	0.59**	0.38	(0.04)	(0.05)	(0.04)	(0.05)	(0.03)	0.31	0.63**
Participation by all Departments	0.13	0.17	0.46	0.55*	0.53*	0.09	0.43	(0.03)	0.53*	0.11	0.29	(0.31)	0.29	(0.31)	(0.10)	0.20	0.08
Partnerships	0.38	(0.10)	0.07	(0.04)	(0.08)	0.07	0.23	0.60**	0.07	0.21	0.05	0.31	0.05	0.05	0.36	-	0.23

*Correlation is significant at the 0.05 level (2-tailed) **Correlation is significant at the 0.01 level (2-tailed).

Specifications have a positive correlation with cost minimization(r (33) $=0.73$, $p<0.01$ as with sales minimization, inventory investment minimization, fill rate maximization and customer response time at(r (33) $=0.70$, $p<.01$). Tenders have a positive correlation with sales minimization at(r (33) $=0.58$, $p<.01$), product lateness minimization and lead time at (r (33) $=0.77$, $p<.01$), and resource utilization(r (33) $=0.76$, $p<.01$). Contracts have a positive correlation with profit maximization at(r

(33) =0.76, p<.01) and significant correlation with function duplication at*(r (33) =0.49, p<.05).*History in spending has a positive correlation with information quality and inventory investment minimization at *(r (33) =0.59, p<.01)* and resource utilization at*(r (33) =0.63, p<.01)*, and a significant correlation with information sharing at*(r (33) =0.53, p<.05)*,and lean practices at*(r (33) =0.50, p<.05)*. Participation by all departments has significant correlation with lean practices and inventory investment minimization at*(r (33) =0.0.53, p<.05)* and information sharing at*(r (33) =0.55, p<.05)* and finally partnership has positive correlation with profit maximization at*(r (33) =0.60, p<.01)*,

Table 10: Pearson's Correlation between Operation Excellence and Supply Chain Performance

SUPPLY CHAIN PRFORMANCE MEASURES

VALUE CHAIN MANAGEMENT PRACTICES	Strategic supplier partnership	Customer relationship	Information quality	Information sharing	Lean practices	Cost Minimization	Sales Maximization	Profit Maximization	Inventory Investment Minimization	Return on Investment Maximization	Fill Rate Maximization	Product Lateness Minimization	Customer Response Time	Lead Time	Function Duplication	Capacity Utilization	Resource Utilization
Improved Cost Efficiency	0.12	(0.54)	(0.28)	(0.14)	(0.06)	(0.85)	(0.74)	0.06	(0.40)	**0.53***	**0.69****	-	0.11	(0.62)	(0.58)	**0.46***	0.18
Quality	0.13	(0.23)	0.11	0.01	0.05	0.04	(0.67)	(0.35)	(0.01)	0.02	0.19	**0.57****	0.39	0.05	(0.19)	0.36	**0.67****
Reliability	0.07	0.12	(0.05)	0.04	(0.27)	0.08	0.06	(0.96)	**0.47***	(0.02)	0.11	0.21	**0.71****	0.01	(0.20)	0.06	(0.19)
Innovativeness	0.08	0.44	0.40	**0.58****	**0.52***	0.37	(0.26)	0.17	(0.72)	(0.19)	-	(0.12)	-	**0.61****	(0.07)	0.22	**0.52***
Timely Delivery	(0.12)	(0.04)	0.20	0.34	0.34	0.05	(0.37)	0.03	(0.54)	(0.03)	0.09	(0.37)	(0.29)	0.15	(0.13)	0.00	0.09

*Correlation is significant at the 0.05 level (2-tailed) **Correlation is significant at the 0.01 level (2-tailed).

Improved cost efficiency has significant correlation with return on investment maximization at ($r\ (33) = 0.53,\ p < .05$), and capacity utilization at ($r\ (33) = 0.46,\ p < .05$) and positive correlation with fill rate maximization at ($r\ (33) = 0.69,\ p < .01$), quality has positive correlation with product lateness minimization at($r\ (33) = 0.57,\ p < .01$) and resource utilization at($r\ (33) = 0.67,\ p < .01$),, reliability has significant correlation with inventory investment minimization at ($r\ (33) = 0.47,\ p < .05$) and positive correlation with customer response time at($r\ (33) = 0.71,\ p < .01$), innovation has positive correlation with information sharing at($r\ (33) = 0.58,\ p < .01$) and lead time at ($r\ (33) = 0.61,\ p < .01$) and significant relationship with lean practices and resource utilization at($r\ (33) = 0.52,\ p < .05$).

Table 11: Pearson's Correlation between Supply Chain Network Design and Distribution and Supply Chain Performance

SUPPLY CHAIN PRFORMANCE MEASURES

VALUE CHAIN MANAGEMENT PRACTICES	Strategic supplier partnership	Customer relationship	Information quality	Information sharing	Lean practices	Cost Minimization	Sales Maximization	Profit Maximization	Inventory Investment Minimization	Return on Investment Maximization	Fill Rate Maximization	Product Lateness Minimization	Customer Response Time	Lead Time	Function Duplication	Capacity Utilization	Resource Utilization
Analysis and Design of infrastructure to fit Supply Chain Strategy	0.12	(0.54)	(0.28)	(0.14)	(0.06)	0.85 **	0.74 **	(0.06)	0.40	(0.53)	0.69 **	-	0.11	(0.62)	(0.58)	0.46*	0.18
Shifts in Customer AcquisitionBase	0.13	(0.23)	0.11	0.01	0.05	(0.04)	0.67 **	0.35	0.01	(0.02)	0.19	0.57 **	0.39	0.05	(0.19)	0.36	0.67 **
Mergers and Acquisition	0.07	0.12	(0.05)	0.04	(0.27)	(0.08)	(0.06)	0.96 **	(0.47)	0.02	0.11	0.21	0.71 **	0.01	(0.20)	0.06	(0.19)
New Product and Market	0.08	0.44	0.40	0.58 **	0.52 *	(0.37)	0.26	(0.17)	0.72	0.19	-	(0.12)	-	0.61 **	(0.07)	0.22	0.52*

35

*Correlation is significant at the 0.05 level (2-tailed) **Correlation is significant at the 0.01 level (2-tailed).

The above table indicated that analysis and design of infrastructure to fit supply chain strategy has significantly positive correlation with cost minimization at($r\ (33)\ =0.85$, $p<.01$), sales maximization at ($r\ (33)\ =0.74$, $p<.01$), and fill rate minimization at($r\ (33)\ =0.69$, $p<.01$), shift in customer base has positive correlation with sales maximization and resource utilization at ($r\ (33)\ =0.67$, $p<.01$) and product lateness minimization at ($r\ (33)\ =0.57$, $p<.01$), mergers and acquisition has positive correlation with profit maximization at ($r\ (33)\ =0.96$, $p<.01$), and customer response time at ($r\ (33)\ =0.71$, $p<.01$), and new product and market has positive correlation with information sharing at ($r\ (33)\ =0.58$, $p<.01$),and lead time at ($r\ (33)\ =0.61$, $p<.01$), and significant correlation with lean practices and resource utilization at ($r\ (33)\ =0.52$, $p<.05$).

The above findings show that the value chain management practices adopted have significant relationships to supply chain performance. Ketchen *et al*. (2008) conducted a research on an attempt to develop the best value chain that can help firms realize their best value chain practices. They found that the best value chains leverage strategic value chain management, agility, adaptability, and alignment not simply to create low costs, but also to maximize the total value added to the customer they further suggested that firms should ensure consistency in performance across supply chain management aspects such as strategic sourcing, logistics management, supply chain information system and relational management. It is therefore important to note that although these practices may not be universal, manufacturing firms in Nairobi should ensure that value from these practices can only be achieved if and when

organizations through connecting and convening key players, develop right strategies, as well as practice seeing the system through one another's eyes, building partnership, evaluating and scaling up the value chain and institutionalizing successful approaches (Shweitzer, *et al.,* 2008).

Performance of individual processes can be measured by two characteristics. First, how good is average performance in terms of quality, cost, service, reliability, lead time, etc. Second, how responsive is the process with respect to changes in requirements and reacting to internal problems. Customers expect their preferred suppliers to provide good performance all the time and to accommodate their every whim, regardless of how late it may occur in the order cycle. Operational Excellence in Supply Chain Management implies Operational Excellence within each of the individual processes and in the way the supply chain operates as a whole. Customers have many touch points with supply chains and expect high levels of quality, cost and service in all of their interactions. They likewise expect all supply chain processes to work together, with seamless information flow and smooth material handoffs. Excuses that another group is the cause of a late delivery lose credibility for the entire supply chain (ARC Advisory group, 2002). From the above it is evident that all value chain management practices used in this research are relevant in determining the relationship with supply chain performance although a further study should be conducted to determine additional practices that may be relevant in influencing supply chain performance.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The main objective of this study was to determine the value chain management practices adopted and their relationship to supply chain performance of large manufacturing firms in Nairobi. Value chain management is important in every sector and the value chain management practices adopted determine supply chain performance resulting in survival and prosperity of manufacturing firms. This research sought to identify the value chain practices most adopted by large manufacturing firms in Nairobi and determine the relationship to supply chain performance. This chapter contains a summary of the results of the study, limitations and proposed future research.

5.1.1 Summary

The manufacturing industry in Kenya is growing as is evident in 34.3% of the firms being in operation for at least 20 years with the majority being in food and beverage and plastic and rubber sectors respectively. These manufacturing firms had 74.3% diversifying into other businesses. This has also resulted in 37.1% of the large manufacturing firms entering into partnerships. The value chain management practices were categorized into three where in procuring and sourcing tenders was most preferred by most firms and in operation excellence innovativeness while in supply chain network design and distribution new product and market were adopted. The research also tried to establish if there was any correlation between the independent variables and concluded that participation by all departments and spend analysis had a positive relationship in the procuring and sourcing, and timely delivery

and innovation in ensuring operation excellence in ensuring waste elimination. The level to which dependent variables was explained by the independent variable was established when 86% of the value chain management practices (Independent variables) explained Sales maximization.

5.2 Conclusion

The large manufacturing firms in Nairobi operate in a dynamic environment faced with highly competitive firms. In every sector there are two or more firms competing against each other. This results in adoption of relevant practice as is evident in the above research that affects the supply chain performance the value chain management practices under consideration in the above research consisted of procuring and sourcing, operation excellence and supply chain network design and distribution. These practices adopted by every sector should fit their scope of operation so as to be relevant in ensuring performance along the supply chain and also in ensuring the creation of value along these supply chains.

Majority firms' efforts are driven by profitability through increased sales from their operations. This research showed evidence of the need for determining the new markets and new products in consideration quality and innovativeness as well as past spending ensuring improved cost efficiency. The value chain management practices adopted by the large manufacturing firms have a great impact on supply chain performance. This research is evident that the value chain management practices adopted by different firms affect supply chain performance.

5.3 Recommendations

The manufacturing industry being the major contributor to Kenya's gross domestic product requires that firms to endeavor to remain competitive. This requires that firms adopted value chain management practices best suited for their sector of operation. They need to establish the supply chain performance measures that best determine the appropriateness of the practices adopted.

5.4 Limitations of the study

This research aimed at drawing information from 46 respondents. However only 35 respondents participated and therefore led to the conclusion that the results may have been different if there was 100% participation.

Time was also a major constraint considering that most respondents were either busy or out of office and repeated reminders had to be made to them. Most of the respondent could not spare time for face to face interviews due to their nature of work and their busy schedules it therefore required pick and drop later method and emailing of questionnaires this explaining the difference in number of respondents.

5.5 Recommendations for Further Research

Value chain management practices research in other industries should be conducted in future in order to shed light on the effect on supply chain performance. The involvement of Kenya's manufacturing industry in international trade require that a future research into more value chain management practices that may be adopted be done in order that this industry is conversant with not only regional practices but international practices to better trade with international firms and also avoid the

emergence of multinationals into the country that have more knowledge in ensuring value creation along their supply chains.

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APPENDIX 1: QUESTIONNAIRE

PART ONE: GENERAL BACKGROUND

1. Designation

2. Name of organization

3. Number of years of operation

4. Is your organization engaged in any other business (a) Yes (b) No

5. Ownership of company

    i.   Predominantly family (above 5%)

    ii.   Predominantly non-family (above 5%

    iii.   All family

    iv.   Any other…………………………..

PART TWO: VALUE CHAIN MANAGEMENT PRACTICES

Please use Tick (√) in relevant box

NB: 1= Not at all 2= Small extent 3= Moderate extent 4= Great extent 5= very great extent

1. The extent to your organization has adopted the below value chain management practices in procuring and sourcing

	1	2	3	4	5
a. Specifications	☐	☐	☐	☐	☐
b. Tenders	☐	☐	☐	☐	☐
c. Contracts	☐	☐	☐	☐	☐
d. History in spending(Spend Analysis	☐	☐	☐	☐	☐

e. Participation by all departments   ☐   ☐   ☐   ☐   ☐

f. Strategic partnerships   ☐   ☐   ☐   ☐   ☐

2. The extent to which your organization implemented the following practices in relation to operation excellence to ensure elimination of waste

	1	2	3	4	5
a. Improved cost efficiency	☐	☐	☐	☐	☐
b. Quality	☐	☐	☐	☐	☐
c. Reliability	☐	☐	☐	☐	☐
d. Innovativeness	☐	☐	☐	☐	☐
e. Timely delivery	☐	☐	☐	☐	☐

3. The extent to which your organization implemented the following practices in determining supply chain network design and distribution to ensure efficiency in light of changing business environment.

	1	2	3	4	5
a. Analysis and design of infrastructure to fit supply chain strategy	☐	☐	☐	☐	☐
b. Shifts in customer base	☐	☐	☐	☐	☐
c. Mergers and acquisition	☐	☐	☐	☐	☐
d. New product and market	☐	☐	☐	☐	☐

PART THREE: SUPPLY CHAIN PERFORMANCE MEASURES

4. The extent to which your organization has adopted the following qualitative supply chain performance measures.

	1	2	3	4	5
a. Strategic supplier partnership	☐	☐	☐	☐	☐
b. Customer relationship	☐	☐	☐	☐	☐
c. Information quality	☐	☐	☐	☐	☐
d. Information sharing	☐	☐	☐	☐	☐
e. Lean practices	☐	☐	☐	☐	☐

5. Please indicate the extent to which the following measures are used to determine supply chain performance based on cost

	1	2	3	4	5
a. Cost minimization	☐	☐	☐	☐	☐
b. Sales Maximization	☐	☐	☐	☐	☐
c. Profit Maximization	☐	☐	☐	☐	☐
d. Inventory investment minimization	☐	☐	☐	☐	☐
e. Return on investment maximization	☐	☐	☐	☐	☐

6. Please indicate the extent to which the following measures are used to determine supply chain performance based on customer responsiveness

	1	2	3	4	5
a. Fill rate maximization	☐	☐	☐	☐	☐
b. Product Lateness Minimization	☐	☐	☐	☐	☐
c. Customer response time	☐	☐	☐	☐	☐
d. Lead time	☐	☐	☐	☐	☐
e. Function duplication	☐	☐	☐	☐	☐

7. Please indicate the extent to which the following measures are used to determine supply chain performance based on efficiency

	1	2	3	4	5
a. Capacity Utilization	☐	☐	☐	☐	☐
b. Resource utilization	☐	☐	☐	☐	☐

APPENDIX 2: 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	Rayal 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	Elex Products Ltd	Synresins Ltd

Limited		
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-Plastcis 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 Limited	Kenya Builders & Concrete Ltd	Mombasa Cement Ltd

Paper and paper board 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 Friers-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	Statpack Industries Ltd

	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 Ltd	
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
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 & Shirtliff 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