

**REVERSE SUPPLY CHAIN MANAGEMENT PRACTICES IN  
LARGE SCALE MANUFACTURING COMPANIES IN NAIROBI, KENYA**

**By**

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## DECLARATION

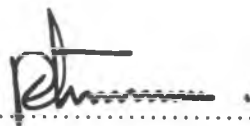
declare that this is my original work and has not been presented for a degree in any other university.

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This project has been submitted for examination with my approval as the University Supervisor:

Signature ..... 

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## **DEDICATION**

This research project is dedicated to my family for their inspiration, encouragement, understanding and prayers towards the successful completion of this course. I pay glowing tribute and gratitude to the Almighty God who has given me the wisdom to undertake this course.

## ACKNOWLEDGEMENT

My special and sincere thanks go to my supervisors Mr. Peterson Magutu and Mr. A.E. Akello for their guidance, support, suggestions, useful comments and constructive critique which were all instrumental to the successful completion of this research project. I also wish to appreciate the support and encouragement from my family and friends during the tough time that I had to balance between the demands of a rigorous academic program and an equally demanding work environment. My gratitude to God Almighty who renewed my strength at every single stage of this study.

God bless you all.

## ABSTRACT

Over the last decades, the issue of reverse supply chain has moved much higher up the agenda, owing to the increasing competitive environment, environmental awareness, regulatory initiatives and economic pressures. Individual companies have gradually included the backwards flows of end-of-life and end-of-use products within their scope of supply chain planning and control to increase their efficiency and effectiveness and create more sustainable supply chain. From a business perspective, the implementation and control of the reverse supply chain system indeed requires a large amount of investments. However, it could also result in an increase in the overall business profitability, a better corporate image and a higher customer satisfaction level for individual companies.

The purpose of the study was to determine reverse supply chain management practices in large scale manufacturing companies in Nairobi. The study adopted a descriptive survey research design. A structured questionnaire was prepared and distributed to all selected respondents. A five point scale was used to collect data and analysis was based on percentage, mean and standard deviation.

The findings of the study was that the adoption of reverse supply chain by the manufacturing companies has employed the type of material dealt with, operational procedures adopted, lack of an appropriate and customized system, the means of transporting the products from customers to, adoption of information technology in the process has improved product visibility, outsourcing of reverse supply chain duties has hastened and made it cost effective and adoption of the pre-return labels in the raw materials has hastened the process of reverse supply chain. The benefits derived by the companies from adoption of reverse supply chain management was improved customer satisfaction, increased corporate profitability, provides customers with superior service of inventory availability and delivery, improved corporate image, longer term inter-firm relationship, cost reduction and containment, increased sales, improved customer satisfaction, improved management of threats from competitors, improved stock performance, operational efficiency with customers, self-satisfaction, efficient utilization of resources, and sustainable production and consumption of products.

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## CHAPTER ONE: INTRODUCTION

### 1.1 Background to the Study

Today's competitive business environment has redefined management of product life cycle through supply chain management. Internal and external business environment has exerted pressure on improvement of service delivery to customers. Companies are therefore currently recognizing the increasing value of products and technology created at the end of the forward supply chain. This change in perspective coupled with the impact of environmental legislation, has started to shift these companies focus toward various types of recovery programs (Liu et al, 2008). According to Jack et al., (2010) these recovery programs commonly take the form of repair, refurbishment, remanufacturing and remarketing, cannibalization and recycling of raw materials and has been acknowledged more recently to represent an attractive business opportunity and a positive answer to sustainable development, and a way of achieving competitive advantage.

The importance of well-managed reverse supply is gaining widespread recognition from practitioners and academics alike (Knemeyer et al., 2002). This increased importance of the reverse supply chain can be attributed to the growth of green supply chain, green marketing and sustainability. Further, Nnorom and Osibanjo (2008) have attributed the growth of reverse supply chain to the tightening of environmental legislations, extended producer responsibility, economics and the improved customer service. As a result, Liu et al. (2008) point out that virtually all companies in the current manufacturing set up must deal with returns and typically do so by establishing their own reverse supply chain programs for managing those returns. Indeed, owing to increased public concern about the environment, most developed countries have for example, made legislations mandating manufacturers and importers to take back used

electronic products at the end of their useful lives. Consumers can at the same time return goods within warranty period as part of the after-sales service if the products fail to meet their needs or when the products have reached the end of their useful lives. The returned products may then be refurbished or remanufactured to extend their periods of usage or recycled to recapture value (Tang and Naim, 2004).

According to Smith (2005), depending on the size, internal constraints, and other considerations, different companies may adopt different attitudes towards reverse supply chain. He observed that for firms taking a reactive approach, reverse supply chain is implemented mainly to comply with legislations and the activity is considered as a cost function and the objective is to run it at lowest cost. On the other hand for firms taking a proactive approach, reverse supply chain forms part of the company's long-term strategy to gain competitive advantage over its competitors and thus the activity is seen as a unique capability that adds value to the product.

### **1.1.1 Reverse Supply Chain Management Practices**

Every organization has its own sequence of activities that is practiced in the firm for any given activity. Thus according to Bierderman (2006), different companies have adopted different reverse supply chain practices depending on the activities that they are engaged in by the firm. These companies set up their processes based on some knowledge of materials flows: inbound receiving, sorting, testing, storing, and outbound shipping. He points out that since different products may go through different routes; the same products with different types of damages also may undergo different operations.

Outsourcing to third party service providers has become a source of competitive advantage for most companies. They observe that problems with the vertical integration are that it requires significant capital investment and complex organizational structure.

As supply chains continue to develop and mature, a move towards more intense collaboration between customers and suppliers has occurred. The success of collaboration in forward supply has enabled firms to extend this to reverse supply chain in order to maximise the benefits of this practice that is gaining widespread use among stakeholders due to shared rewards. Firms are realizing the need to link it-self right from the consumer to the supplier. This is in terms of information flow and consumption of goods.

According to Reece (2005) the practice of reverse supply chain is a heavily IT-driven process because of the need to provide for and improve visibility of the goods in motion throughout the reverse supply chain. Some of the IT- driven processes in the reverse supplier chain practice include the execution of the transaction and communication systems including the use of internet, electronic data interchange (EDI), enterprise resource planning (ERP), and radio frequency identification (RFID) process. EDI is a set of standards for exchanging computer readable information among organizations; ERP is an information system integrating all facets of an organization on a common database while RFID consists of a radio frequency reader/emitter and an active or passive radio frequency tag applied to an inventory. Each company builds stand-alone customized solution and database solution with own decision rules, with communications through Internet and/or EDI. Some firms use customized solution integrating with ERP and RFID (Coia, 2005).

### **1.1.2 Large Scale Manufacturing Firms in Nairobi, Kenya**

Kenya has a large manufacturing sector serving both the local market and exports to the East African region. As per Kenya Association of Manufacturers findings, the sector which is dominated by subsidiaries of multi-national corporations, contributed approximately 21% of the Gross Domestic Product (GDP) in 2010. Improved power supply, increased supply of agricultural products for agro processing, favourable tax reforms and tax incentives, more vigorous export promotion and liberal trade incentives to take advantage of the expanded market outlets through AGOA, COMESA and East African Community (EAC) arrangements, have all resulted in a modest expansion in the sector of 2.3 % per cent in 2010 as compared to 1.8% in 2009.

According to the Kenya Association of Manufacturers (KAM), the manufacturing sector now comprises of more than 700 established enterprises and employs directly over 1,250,000 persons as at the year 2010. Large scale manufacturing companies are categorized by KAM to be those manufacturing firms with annual turnover greater than 1 billion Kenya shillings. This is because such categorization is more easily determinable than other parameters as number of employee or profits which might fluctuate from one period to another. A wide range of opportunities for direct and joint-venture investments exist in the manufacturing sector, including agro-processing, manufacture of garments, assembly of automotive components and electronics, plastics, paper, chemicals, pharmaceuticals, metal and engineering products for both domestic and export markets. The Economic Recovery Strategy for Employment and Wealth Creation Report, the manufacturing sector is a major source of growth, with still high potential of growth and investment.

With the rapid expansion of market and the complexity and dynamics of its operating environment, more focus and attention has been towards supply chain management, specifically reverse supply chain by large scale manufacturing firms in Nairobi, Kenya. This has been necessitated by the realization of the critical importance of the last frontier in their product lifecycle in recapturing value and meeting required regulation. Reverse supply chain management has been incorporated in their strategic plans as a business competitive tool. Firms are faced with challenges from return products, damaged goods or service depot returns. There is also the need to observe government and other regulatory body requirements on disposal, customer after sales service and value derived from returned goods. There has been advancement in application of reverse supply chain management practices brought about by emerging challenges in supply chain a competitive business environment.

## **1.2 Statement of the Problem**

Traditionally, commercial product returns have been viewed as a nuisance by most companies and as such, the concept of reverse supply chain has been designed to minimize costs. However, due to increased flow of product returns partly due to increased consumer awareness, legislation, green forces and product recalls, the flow of product returns is becoming a significant concern for many manufacturers (Closs et al., 2011). According to Andel (2007), by companies continuously ignoring the efficient return and refurbishment or disposal of products, they miss out a significant return on investment. Indeed if reverse supply chain is strategically managed, it can provide necessary competitive advantage to the organization by consolidating the market position with the overall benefit of improving company image. Further, it is acknowledged that organizations need to maintain traceability of their products throughout the supply chain in order

to instigate retrieval and to ensure efficient use and recycling of distributed stock and therefore be able to deliver superior customer value at less cost to the supply chain as a whole.

The Kenyan manufacturing sector is considered as one of the key segments of the economy. According to the Kenya Association of Manufacturers (KAM), the manufacturing sector employs more than 1.5 million employees. In addition, the Kenyan vision 2030 blue print, one of the key pillars of the attainment of the objectives of the strategy is the need for the manufacturing sector to grow at the rate of 8% over a period of 20 years. This can only be achieved if there is growth in performance of the sector and this will be dependent upon identifying all the variables that can influence performance of a firm including the streamlining the firms' supply chain stages. Further according to Vision 2030 blue print, the current emerging economies such as Singapore, Malaysia and Thailand have their manufacturing sectors contributing over 15% of their GDPs and it is through adoption of effective supply chain management that this is possible. However, according to KAM, out of the more 300 manufacturing firms registered with it, adoption of an effective reverse supply chain management is witnessed in less than 25 of the same firms (KAM, Annual report, 2010).

A number of studies have been undertaken locally in the area of supply chain management. Mukhwana (2010) undertook a research on the impact of supply chain management practices on performance at Safaricom Ltd. He found out that with the organization adopting effective supply chain practices, it has increased the efficiency and effectiveness of its reverse supply chain processes through development of clear guidelines for its operations such as identifying who is responsible for their handling. On his part, Barna (2010) carried out a research on the challenges facing supply chain management in the Oil Marketing companies in Kenya. The results of the

findings were that misconception, lack of management attention and company policies have led to poor management of the supply chain process in these companies. Murage (2011) on her part researched on supply chain initiative and challenges by manufacturing firms in Kenya. The research found out that incentives on the manufacturers should be on the forefront in this course since only incentives with an economic benefit will entice the business community to embrace GSCM as well as adoption of relevant technologies could also be subsidized where appropriate. Achieng (2011) carried out a research on information integration on supply chain management in the food processing firms in Kenya. She found out that the current information system among the food processing firms in Nairobi satisfy supply chain communications requirements in the organization as there is smooth communication flow between the customers and the firm leading to satisfaction of both. Wei Yin (2011) researched on the feasibility to incorporate forward supply chain strategy into the reverse supply chain in the electronic industry. The research found that when selecting proper strategy, the nature and characteristics of returns ought to be considered, including the market demand predictability, product life cycle, and replenishment lead time.

From the above studies, it is evident that there has not been a study on the reverse supply chain practices used by large scale manufacturing firms in Nairobi. This study aims to bridge this gap by identifying the common practices on reverse supply chain adopted by the manufacturing firms in Nairobi by answering the following questions; what are the reverse supply chain management practices used by large scale manufacturing firms in Nairobi, Kenya?

### **1.3 Objectives of the Study**

- i. To document the reverse supply chain management practices used by large scale manufacturing firms in Nairobi, Kenya;
- ii. To determine the benefits of reverse supply chain management among large scale manufacturing firms in Nairobi, Kenya;

### **1.4 Value of the Study**

The understanding of the reverse supply chain practices adopted by manufacturing firms will help policy makers – governments and other stakeholders – to design targeted policies and programs that will actively stimulate the growth and sustainability of the manufacturing firms in the country, as well as helping those policy makers to support, encourage, and promote the establishment of appropriate policies to guide the firms. Regulatory bodies such as KAM, Capital Markets Authority and the Kenya Revenue Authority can use the study findings to improve on the framework for regulation.

The study findings will benefit management and staff of manufacturing firms who will gain insight into how their institutions can effectively manage their reverse supply chain practices. This study will offer an understanding on the importance of maintaining an efficient reverse supply chain practices to offer competitive advantage to the firms. Several practices on reverse supply chain and their effects will be discussed and for the benefit of the managers. This is because manufacturing firms need to adapt to the changing needs of the current business set up and requirement of various customers and providers of services. As a result, manufacturing firms in the country and other affiliated firms will derive great benefit from the study.



This study will also create a monograph which could be replicated in other sectors of the economy. Most importantly, this research will contribute to the literature on the reverse supply chain practices in firms especially in developing countries like Kenya. It is hoped that the findings will be valuable to the academicians, who may find useful research gaps that may stimulate interest in further research in future. Recommendations will be made on possible areas of future studies.

This study is further justified since it will be of value to those interested in setting up manufacturing firms in the country since they will be able to understand what to do right to succeed and what if done wrong would bring the business down.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

The chapter provides information from publications on topics related to the research problem. It examines what various scholars and authors have said about the concept of reverse supply chain.

The chapter covers: concept of supply chain, benefits of supply chain, practices in reverse supply chain and challenges in managing reverse supply chain.

### **2.2 The Concept of Supply Chain Management**

The description of the concept of supply chain management has been varied as the number of different scholars in the field. Harland (1996) describes supply chain management as managing business activities and relationships internally within an organization, with immediate suppliers, with first and second-tier suppliers and customers along the supply chain, and with the entire supply chain. On their part Scott and Westbrook (1991) describe supply chain management as the chain linking each element of the manufacturing and supply process from raw materials through to the end user, encompassing several organizational boundaries. Thus, according to this definition supply chain management encompasses the entire value chain and addresses materials and supply management from the extraction of raw materials to its end of useful life.

The supply chain management in general aims at improving value delivery to customers; relying on just-in-time system; eliminating waste; getting the involvement of all stakeholders in the value creation process as well as working closely with suppliers. According to Ireland and Webb (2007), SCM continues to be adopted by organizations as the medium for creating and sustaining a competitive advantage and points out that such a displacement is understandable considering the potential benefits of successful supply chain management. These benefits attributed to supply

chain management include inventory reduction, improved delivery service, and shorter product development cycles. On their part Slack et al., (1995) observed that the objectives of supply chain management include focusing in satisfying end customers, to formulate and implement strategies based on capturing and retaining end-customer business and also to manage the whole chain effectively and efficiently.

According to Mehta (2004), the driving forces of SCM stem from two sources: external pressures and potential benefits from strategic supply chain alignment. The external pressures that will encourage adoption of an effective supply chain include advances in technology and increased customer demand across national borders; maintaining lower costs while meeting these diverse needs; and intensified competition utilizing relationships among vertically aligned firms. These pressures have begun shifting the focus of individual firms vying for market presence and power to supply chains. The second main driving force entails the potential benefits from successful supply chain collaboration. From this collaboration, increased inventory turnover, increased revenue, and cost reduction across the chain have been registered from those organizations that have adopted an effective SCM.

The success of a SCM system is dependent on adopters developing specific capabilities (Chandra and Kumar, 2000). These they observe include the ability to: develop a flexible organization; develop a trusting relationship with its suppliers; seek total supply chain coordination; enhance communication to reduce uncertainty and inventory levels; outsource non-core competencies; implement build-to-order manufacturing; reduce inventory; and reduce cost. Attaining these capabilities requires employees who are flexible in their roles, have a broad set of skills, adaptable to reorganization, able to work in boundary-spanning responsibilities and are innovative. Companies said to be effective in their SCM practice put a lot of emphasis on

developing their human resources through training and retraining of their employees (Gowen and Tallon, 2002).

### **2.3 Reverse Supply Chain Management**

RSCM is defined as the effective and efficient management of the series of activities required to retrieve a product from a customer in order to either dispose of it or recover value (Defee et al., 2009). On their part Rogers and Tibben-Lembke (1999, p. 2) defined reverse supply chain as “the process of planning, implementing and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing or creating value or for proper disposal”. What differentiate it from reverse logistics are the extended activities such as to creating secondary market for the recovered products, inspection and disposition and the need to remanufacture and refurbish.

Firm control has been recognized as a crucial component of SCM. Sanderlands (1994) noted that the first step (in SCM) is to introduce structure and discipline to the supply process, tightening up procedures, and taking control of all activities in the supply chain. An important way to introduce structure is to formalize logistics operations. Further, he points out that despite the growing recognition of the importance of RSC, many companies are not prepared to meet the challenges involved in handling returns. The rapid growth in the volume of returns often outpaces the abilities of firms to successfully manage the flow of unwanted product coming back from the market. The complex procedures and steps required for any RSC to be operational make most companies to shy away from undertaking the same process. Mollenkopf et al. (2007) outlined several processes involved in the RSC process that discouraged most organizations from

pursuing. These processes as they enumerated include: initiate returns; determine routing; receive returns; select disposition; credit the customer; and analyzing the performance.

## **2.4 Reverse Supply Chain Management Practices**

Each company has its own unique ordered sequencing of activities that is practiced in the firm for any given activity. In the same context, different authors have found that different companies have adopted different reverse supply chain practices depending on which activities are engaged in by the firm. According to Bierderman (2006), companies set up their processes based on some knowledge of materials flows: inbound receiving, sorting, testing, storing, and outbound shipping. Different products may go through different routes; same products with different types of damages also may undergo different operations. Companies have operational procedures for machine centers; however, returns flows among machine centers are informal in many cases or many factors are not considered. He observes that upon receipt of the products, they are sorted out into different categories such as serviceable and unserviceable with some test and repair. Serviceable products are then put back into inventory and the unserviceable ones are disposed. One good practice adopted by some companies is the use of a pre-paid return label, which goes out with the original shipment as it leaves the warehouse. If the product is to be returned, all that the customer needs to do is put the return label on a package and place it in any courier service (May et al., 2003).

### **2.4.1 Outsourcing**

According to Gol and Catay (2007), there is a substantial change in logistics practices between supply chain partners as they struggle to establish efficient, effective and relevant product or service solutions for end customers and emphasize the vertical to virtual integration. They

observe that since the problems with the vertical integration are that it requires significant capital investment and complex organizational structure, outsourcing reverse supply chain operations to third party service providers has been a source of competitive advantage for most companies. It allows the company to concentrate on its core business functions whilst the third party service provider uses its expertise on reverse delivery of goods from end customers in an efficient and effective manner. In outsourcing process, it is argued that determining the factors and the criteria used in selecting third party providers is vital.

In terms of transportation, the commonly used means of transportation in most of the developed and developing countries to deliver these products are trucks for short distance, and trains for long distance (Bierderman, 2006). In Taiwan for example door-to-door delivery service is unable to be realized because some highways are not yet in use, tolls are expensive, it is difficult to control the drivers, overtime work, overload, and traveling time; vehicles are restrained from movement and are only allowed for transport within its license plate registration region; and weather conditions vary across the country.

#### **2.4.2 Information Technology**

The practice of reverse supply chain is a heavily IT-driven process because of the need to provide for and improve visibility of the goods in motion throughout the reverse supply chain. Some of the IT- driven processes in the reverse supplier chain include the execution of the transaction and communication systems including the use of internet, electronic data interchange (EDI), enterprise resource planning (ERP), and radio frequency identification (RFID) process (Reece, 2005). EDI is a set of standards for exchanging computer readable information among organizations; ERP is an information system integrating all facets of an organization on a

common database while RFID consists of a radio frequency reader/emitter and an active or passive radio frequency tag applied to an inventory. Each company builds stand-alone customized solution and database solution with own decision rules, with communications through Internet and/or EDI. Some firms use customized solution integrating with ERP and RFID (Coia, 2005).

### **2.4.3 Collaboration**

The level of collaboration has gone beyond linking information systems to fully integrating business processes and organization structures across companies that comprise the full value chain. The ultimate goal of collaboration is to increase visibility throughout the value chain by aligning suppliers and customers to business process in an effort to make better management decisions and to ultimately decrease value chain costs. With the right tools, processes and organizational structure in place, collaboration provides key people throughout the value chain with the information needed to make business-critical decisions with the best available information.

Recent examples of collaboration have emerged in the expansion of Sales and Operations Planning (S&OP) processes that include upstream and downstream value chain partners as regular participants. S&OP processes help maintain a well-coordinated and valid, current operating plan in support of customer demand, a business plan and a strategy. Companies that expand the usage of Sales and Operations Planning have greater visibility across their owner enterprise and respective value chain, gain the agility necessary to improve the product lifecycle management process and execute customer service expectations.

Firms are now in a position to monitor flow of its goods right to the consumer and be able to get feedback on ways of improvement. This in turn is passed to the supplier who supplies raw material for this product. This has greatly reduced instances of goods being returned due to defects detected as well as improves on manufacturing process of the company. This practice has has therefore been used beyond demand planning by firms.

## **2.5 Benefits of Reverse Supply Chain Management**

Effective reverse supply chain is believed to result in direct benefits, including improved customer satisfaction, decreased resource investment levels, and reductions in storage and distribution costs (Andel, 1997). This is due to the concept significantly impacting on a company's bottom line by recapturing value. Recovery of products for remanufacturing, repair, reconfiguration and recycling can create profitable business opportunities and companies that take advantage of economies of scale may do well and the firm should be able to quickly and efficiently handle the return of products for necessary action.

### **2.5.1 Competitive Strategy**

As with all supply chain activities, returns are concerned with cost containment and reduction. However, according to Bowersox and Closs (1996), the real importance of reverse supply is its ability to give organisations a competitive advantage by providing customers with superior service through inventory availability, and speed and consistency of delivery. Nevertheless, supply chain does not stop with the delivery of goods to customers, but also offers the opportunity for stock to be returned to suppliers via a feedback loop.



The need or potential for the re-use or recycling of unwanted stock has become a major issue in many industries, and the process for achieving this has, for obvious reasons, been labeled “reverse supply” (Giuntini and Andel, 1995). They gave a prime example of the automotive industry which, since the early 1990s, has recognised the opportunities and challenges of reverse supply. This not only applies to dealers and garages returning unused stock, but also concerns the redesign of cars to make it easier to recycle their constituent parts once they have reached the end of their useful life (Distribution, 1994). The handling of reverse flows can contribute to the corporate image because the efficiency and effectiveness of the reverse suppliers operations can promote longer-term inter-firm relationships, higher customer satisfaction ratings, and higher corporate profitability (Daugherty et al., 2002).

### **2.5.2 Profit Center**

All business and non-profit oriented organizations have strong obligations to provide value for money. As a result of this need, there has been a great pressure on organizations to keep a tight rein on its operational cost and one such area where costs can be managed through a better supply chain management. According to Daugherty et al., (2002) some of the major issues being considered to reduce costs in the supply chain include developing supplier appraisal policies, sourcing policies, adopting appropriate distribution policy and storage as well as adopting a greater use of IT options such as electronic data interchange to speed up and reduce the cost of order processing.

According to Whipple and Russel (2007) sharing of information between firms has long been recognized as a competitive weapon that enhances firm performance. They point out that the type of information shared between the firms include typically production planning, inventory

levels/turns, fill rate, forecast accuracy, promotion performance, price levels and pricing, sales data, and on-time delivery. Such information exchange enhances operational efficiency in reverse supply and provides greater supply chain visibility, which can in turn lead to cost reductions, improved in-stock performance, increased sales, and improved customer satisfaction of the returns turnaround process. Information sharing has also been recognized to be an important prerequisite for effective collaboration (Sandberg, 2007).

### **2.5.3 Tool to Improve Customer Satisfaction**

Reverse supply chain is a complex process encompassing an entire reverse product life cycle. In order for the customers to be fully satisfied with the returns outcome, the process has to be robust and customer-focused (Leonard and Cronan, 2002). To win customer allegiance, firms must have what customers want when and where they want it. Accordingly, close relationships with suppliers leave room for special orders in unique times of high demand, helping satisfy the customer expectations. With improvement of customer satisfaction, the firm will be able improve its market responsiveness, added economic value, capital utilization, decreased product time to market, and logistics cost reduction (Lee, 2004).

An efficient and effective reverse supply chain management strategy has become a crucial weapon for a firm to defeat its rivals in the same industry due to increased and maintenance of the same market share (Deshmukh et al., 2006). Supply chain performance, forward and reverse alike, is positively impacted by a firm's supply chain management strategy. The two together positively affect marketing performance which, in turn, positively impacts financial performance of a firm (Green et al., 2008). For sustainable development, a good supply chain strategy enables

manufacturing plant to rescue and recover many parts and components from used products through reverse supply chain activities of remanufacturing and reuse.

#### **2.5.4 Impacts on Environment and Human Health**

Reverse supply chain has been found to contribute to the environmental strategy of many large corporations. Empirical study conducted by Murphy and Poist (2003) on management of environmental issues in supply by US and non-US firms reveals that these companies share similar perspectives, strategies, and practices. For sustainable development, a good supply chain strategy enables manufacturing plant to rescue and recover many parts and components from used products through reverse supply chain activities of remanufacturing and reuse. Closed-loop supply chains comprising forward and reverse supply chain can be combined to achieve more sustainable production and consumption. Thus, an efficient and effective reverse supply chain management strategy has become a crucial weapon for a firm to achieve sustainable environmental programs and avoid litigations.

Reverse supply chain strategies that have been identified to preserve the environment include materials recycle; materials reuse, consumption cut and environmental audits are the most important strategies. According to Melbin (1995), companies who establish reverse supply chain programs not only feel good about them for reducing the impact of their activities on the environment by eliminating waste, but also strengthen customer loyalty and increase profits. It is this potential for reverse supply to improve an organizations' financial performance which, according to Doherty (1996), accounts for the increasing number of US companies who are incorporating reverse supply into their business strategy. A sustainable strategy accounts for all shareholders, and an effective RL strategy may help firms to utilize resources more efficiently,

thus minimizing the toll on the number one shareholder, planet earth, and providing operational efficiency gains (Closs et al., 2011).

## **2.6 Challenges in Managing Reverse Supply Chain Management Practices**

A number of barriers have been identified that hinder the operations of reverse supply chain in organizations. As a result of these challenges, reverse supply chain processes have in some circumstances been poorly managed or not implemented all together. To be effectively implemented, reverse supply chain will need to be managed through collaboration with all stakeholders; both internal and external. The factors that affect implementation of reverse supply chain can be categorized as either external or internal factors.

### **2.6.1 Internal Challenges to Reverse Supply Chain**

The importance of reverse supply chain in a company's business strategy plays a significant role in determining the reverse supply chain system. Enterprises which regard reverse supply chain mainly as an extended producer responsibility or a need to abide by laws and those which see it as a strategic weapon to gain long-term profit will adopt totally different approaches. According to Stock (2001), organizations which tend to corroborate that self-support system or joint management (or collaborative) approach will likely be used when reverse supply chain is regarded as a source of long-term profit. If this is implemented mainly for observing environmental laws and regulations, outsourcing is usually used to allow the company to focus resources on its core competency.

Financial considerations comprising investment, profitability, and cost is yet another internal factor that affects adoption of reverse supplier chain processes. Developing a self-support

system, for example, will involve heavy financial investment because treatment of returned products requires special equipment and facilities. However according to Rogers and Tibben-Lembke (1999) outsourcing some of this functions may help shift the risk to third parties and save the company significant equipment and infrastructure costs. On the other hand, higher profitability can be achieved under the self-support model due to lower material cost and better customer service and corporate image in the long run. Further, the use of third parties to provide for reverse supply to comply with environmental laws and regulations can reduce risk and cost though it only achieve relative low or even no profit to the firm.

According to Wu and Cheng (2006), an organizational management skill is yet another internal factor affecting adoption of reverse supply chain in organizations. Management skills refer to the knowledge and capabilities to manage the facilities, equipment, people, and information involved in the different reverse supply chain systems. To run a self-support system, the demand for management skills is high as the company will be responsible for everything ranging from maintenance of equipment and facilities, training of staff, internal communication among departments, to proper management of information for integrating both forward and reverse supply of the whole supply chain. For information management, self-support system requires mainly internal communication whereas the outsourcing and the collaborative approaches demand effective joint management and information exchange among partners (Wells and Seitz, 2005).

### **2.6.2 External Factors Affecting Reverse Supply Chain**

The external barriers are closely linked together and a set of comprehensive improvement measures requiring efforts from both the government and the firms are needed to remove the

obstacles (Hult et al., 2004). Lack of public awareness on the need to return some of the used products has been found to be a factor in the process of reverse supply chain. While awareness of sustainable development and extended producer responsibilities are relatively high for large corporations, for example in the electronic industry of China, public awareness on environmental protection and conservation needs to be enhanced as end-of-life returns from consumers for recycling are still relatively small in volume (Wu and Cheng, 2006).. In this regard, the government can improve the situation by educating citizens on the need for waste reduction and recycling and promoting the use of environment-friendly products. It can also assist in establishing return collection channels and setting up collection points to encourage wider public participation. Manufacturers should also adopt more green designs for their products to reduce the use of hazardous materials and to facilitate recycling.

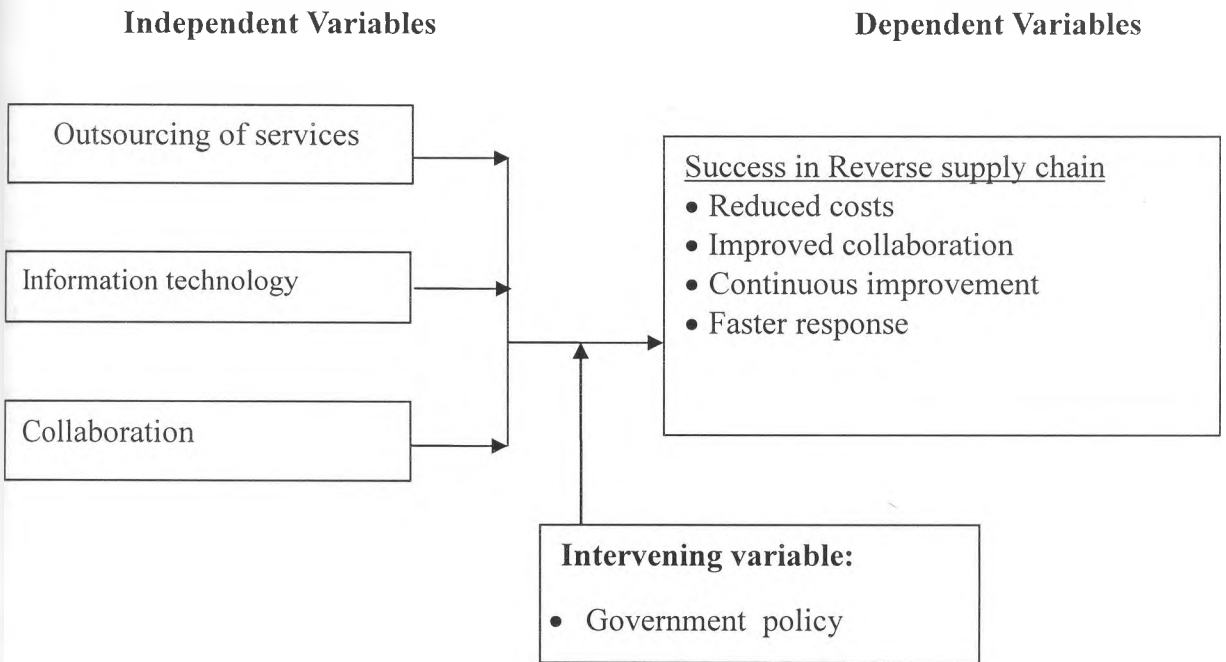
Another barrier to reverse supply chain in most of the countries is legislation that has led to a lack of enforceable laws and regulations. According to Park and Ungson (2001) for example, the growth in the Chinese economy over the last decade has made the central government to be hesitant to impose stringent environmental legislations to overly restrain economic growth. After all, small manufacturers competing on cost will find it difficult to maintain their competitive advantage or even survive if they are mandated to set up costly reverse supply chain systems to handle returns. For long-term sustainable development and competitiveness in the global market, however, the government has to set up as soon as possible regulations to promote, control, and standardize reverse supply chain management practices. It should also introduce to the industry corresponding laws and directives for end-of-life products like those implemented by the EU. They recommend that the government should play the role of coordinator or facilitator by

stipulating rules and regulations on the sharing of responsibilities and obligations among manufacturers, distributors, and end-users.

## **2.7 Research Gaps and Conceptual Framework**

The various supply chain management practices has been expounded in detail both in the literature as well as from the empirical studies done on the subject area. Different companies have adopted different reverse supply chain practices depending on the activities that are engaged in by the firm. These companies set up their processes based on some knowledge of materials flows: inbound receiving, sorting, testing, storing, and outbound shipping. Hence different products undergo different routes and therefore leading to different supply chain practices being adopted by different organizations. However, the different studies reviewed in the section do not spelt out the optimal or the preferred supply chain practices to be adopted by organization in different industries especially in manufacturing industries in developing countries.

**Fig. 2.1 Schematic Diagram Showing Variable Relationships**



## 2.8 Chapter Summary

The reverse supply chain practices has been expounded in detail both in the literature as well as from the empirical studies done on the subject area. Every organization has its own sequence of activities that is practiced in the firm for any given activity. Thus, different companies have adopted different reverse supply chain practices depending on the activities that they are engaged in by the firm. These companies set up their processes based on some knowledge of materials flows: inbound receiving, sorting, testing, storing, and outbound shipping. Since different products may go through different routes; the same products with different types of damages also may undergo different operations.

Further it was found out that the practice of reverse supply chain is a heavily IT-driven process because of the need to provide for and improve visibility of the goods in motion throughout the



reverse supply chain According to Mehta (2004), the driving forces of SCM stem from two sources: external pressures and potential benefits from strategic supply chain alignment.

However, it is evident from the literature that none of the studies has been able enough to develop a model that will assist managers to establish an appropriate reverse supply chain practice for different companies in different industries. Instead the literature and studies suggest the existence of different practices without necessarily suggesting the same level or how to be establishing it.

# CHAPTER THREE: RESEARCH METHODOLOGY

## 3.1 Introduction

The chapter describes the proposed research design, the target population, sampling design, data collection instruments and procedures, and the techniques for data analysis.

## 3.2 Research Design

The study to be adopted is a descriptive survey research design. According to Emory (1995), a survey is feasible when the population is small and variable and hence the researcher will be able to cover all the elements of the population. This research design is further deemed appropriate for this study because it will allow the researcher to draw conclusions about the variables under the study without the interviewee being manipulated and thus allow the measurements to be fully controlled.

## 3.3 Population of the Study

The population of the study will consist of all manufacturing firms in Nairobi with a turnover of over 1 billion Kenya shillings. According to the Kenya association of Manufacturers (KAM) large manufacturing firms in Kenya are those that have a turnover of more than 1B and currently there are 68 large manufacturing firms operating in Nairobi as at 31<sup>st</sup> Dec 2011 (Appendix II). The selection of the industry players has been necessitated by presents level of competition being experienced in the sector that has involved price wars and counter promotions among the players that has necessitated the adoption of modern manufacturing process as well adoption reverse

supply chain practices. In addition all the firms have their headquarters in Nairobi and thus it will be easy to collect adequate data by the researcher. Because of the number of the population targeted in the study, census survey will be undertaken.

### **3.4 Data Collection**

The study will use both primary and secondary data that will be collected through a self-administered questionnaire that will consist of structured questions made up of both open and closed ended questions that will be designed to elicit specific responses for qualitative and quantitative analysis respectively. The questionnaires will be administered in the organizations offices whereby the researcher will target respondents in the managerial level specifically in Supply Chain, Marketing, Business Development, Finance, Production and Procurement departments. The secondary data will be collected from organizations annual reports and releases from the Kenya Association of Manufacturers. The researcher with prior arrangement will visit the target firm's offices and seek to administer the questionnaires to staff in the respective departments.

### **3.5 Data Analysis and Presentation**

The data will be analyzed by the use of descriptive statistics to summarize and relate variables which will be attained from the administered questionnaires. The data will be classified, tabulated and summarized using descriptive measures, percentages and frequency distribution tables while tables and graphs will be used for presentation of findings. By adopting such an analysis, the researcher will be able to document the reverse supply chain management, determine the common benefits from the practice and also establish from the respondents the

common challenges from the respondents in the adoption of the reverse supply chain practices. However, before final analysis is performed, data will be cleaned to eliminate discrepancies and thereafter, classified on the basis of similarity and then tabulated. This method of analysis is most desirable as it will enable the researcher to have an insight on the reverse supply chain practices employed by manufacturing firms in Nairobi. In accomplishing all analysis details with efficiency and effectiveness, the researcher will utilize the Statistical Package for Social Sciences (SPSS) software

## CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

### 4.1 Introduction

The research objective was to establish the reverse supply chain management practices used by large manufacturing firms in Nairobi, Kenya. This chapter presents the analysis, findings and discussion of the same. The findings are presented in percentages and frequency distributions, mean and standard deviations. A total of 68 questionnaires were issued out and only 55 were returned. This represented a response rate of 81%.

### 4.2 Organizational Profile

The organizational profile information considered in this study included the duration the company has been in operation, ownership structure and operating areas.

#### 4.2.1 Duration of Company Operation

The respondents were asked to indicate the duration in which their company has been in operation.

**Table 4.1: Duration of Company Operation**

Years	Frequency	Percent	Cumulative Percent
6-10	4	7.3	7.3
11-15	15	27.3	34.6
Over 16	36	65.4	100.0
Total	55	100.0	

The results was that, 65.4% of the manufacturing companies have been in operation for more than 16 years, 27.3% of the companies have been in operation for 11 to 15 years while 7.3% of the companies have been in operation for 6 to 10 years. Majority of the companies have been in operation for more than 16 years and the long duration of existence has enabled them to understand the need for reverse supply chain.

#### 4.2.2 Ownership Structure of the company

The question sought to establish the ownership structure of the company.

**Table 4.2: Ownership Structure of the company**

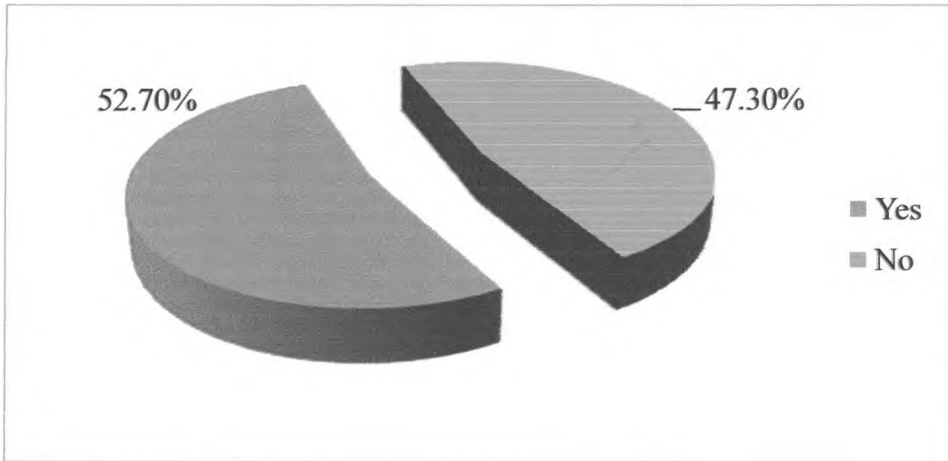
Ownership	Frequency	Percent	Cumulative Percent
Government owned	2	3.6	3.6
Public Ownership	7	12.8	16.4
Private ownership	46	83.6	100.0
Total	55	100.0	

The results established that majority of the manufacturing companies (83.6%) were privately owned while 12.8% of the companies were public owned and 3.6% were government owned companies. The results indicate that the companies' ownership structure varied.

#### 4.2.3 Operation in other countries

The respondents were asked to indicate whether their company operates outside Kenya.

**Figure 4.1: Operation in other countries**



The findings on operation of the companies in other countries were that 52.7% of the companies operate in other countries while 47.3% of the companies operate only in Kenya. The operation of the companies in other countries depends on several factors which some of the companies have not achieved thus still operate locally.

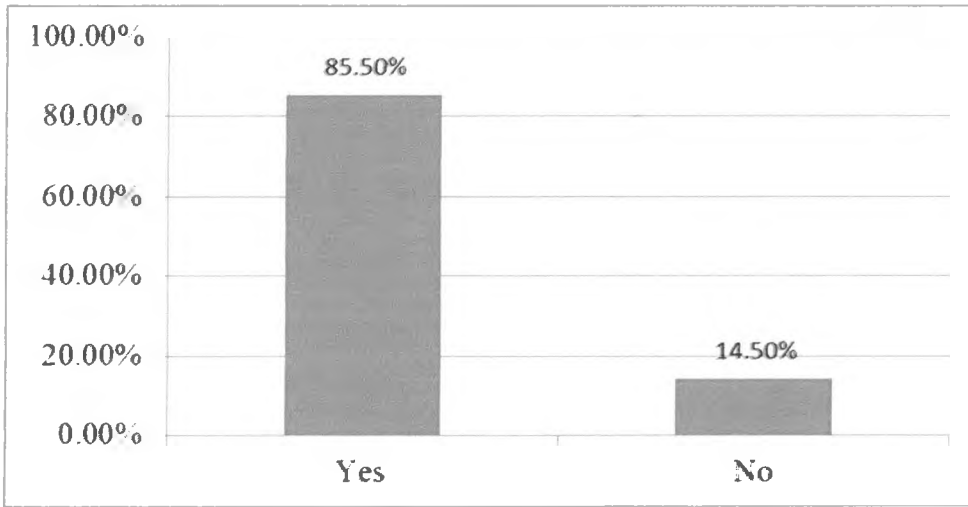
### **4.3 Reverse Supply Chain Management Practices**

Different companies have adopted different reverse supply chain practices depending on the activities that they are engaged in by the firm. These companies set up their processes based on some knowledge of materials flows: inbound receiving, sorting, testing, storing, and outbound shipping. The practice of reverse supply chain is a heavily information technology-driven process because of the need to provide for and improve visibility of the goods in motion throughout the reverse supply chain.

#### **4.3.1 Practices of Reverse Supply Chain**

The question sought to establish the practice of reverse supply chain by the manufacturing companies.

**Figure 4.2: Practices of Reverse Supply Chain**



The study results revealed that 85.5% of the companies were using reverse supply chain while 14.5% were not using reverse supply chain. Majority of the manufacturing firms operating in the country uses reverse supply chain and these makes the companies to expand and improves its goods and provide customers with quality and reliable goods.

#### 4.3.2 Level of usage of reverse supply chain management practices

The respondents were asked to indicate the extent to which their company uses reverse supply chain management practice.

**Table 4.3: Level of usage of reverse supply chain management practices**

Level of usage	Frequency	Percent	Cumulative Percent
Very great extent	9	16.4	16.4
Great extent	15	27.3	43.7
Moderate extent	13	23.6	67.3
Small extent	10	18.2	85.5
Not at all	8	14.5	100.0
Total	55	100.0	

The results indicate that 27.3% of the respondents use reverse supply chain to a great extent, 23.6% uses it to a moderate extent while 18.2% of the companies uses reverse supply chain to a



small extent, 16.4% indicated that they use it to a very great extent and the other 14.5% of the companies do not use reverse supply chain at all. The extent to which the companies use reverse supply chain varied and this can be attributed to the kind of goods they manufacture.

### 4.3.3 Factors influencing the introduction of reverse supply chain

The respondents were to indicate the extent to which the processes influenced the introduction of reverse supply chain practices in their company in a five point Likert scale. The range was ‘not at all (1)’ to ‘very great extent’ (5). The scores of not at all/small extent have been taken to represent a variable which had mean score of 0 to 2.5 on the continuous Likert scale; ( $0 \leq S.E < 2.4$ ). The scores of ‘moderate extent’ have been taken to represent a variable with a mean score of 2.5 to 3.4 on the continuous Likert scale:  $2.5 \leq M.E. < 3.4$ ) and the score of both great extent and very great extent have been taken to represent a variable which had a mean score of 3.5 to 5.0 on a continuous likert scale; ( $3.5 \leq L.E. < 5.0$ ). A standard deviation of  $> 0.7$  implies a significant difference on the impact of the variable among respondents. The results are presented in table 4.4.

**Table 4.4: Factors influencing the introduction of reverse supply chain**

Factors influencing the introduction of reverse supply chain	Mean	Std. Deviation
Initiating returns process	4.2545	.6616
Selecting disposition procedure	4.0182	.7815
Crediting the customer process	3.6909	.8136
Analyzing the performance of the reverse supply chain process	3.9273	.6340
Collaboration with suppliers and customers	4.1492	.6938

The findings in table 4.4 was that initiating returns process (mean 4.2545), collaboration with suppliers and customers (mean 4.1492), selecting disposition procedure (mean 4.0182), analyzing the performance of the reverse supply chain process (mean 3.9273) and crediting the

customer process (mean 3.6909) influenced the introduction of reverse supply chain by the manufacturing companies. The high variation of standard deviation indicates that the extent to which the factors influenced introduction of reverse supply chain was diverse.

#### 4.3.4 Employment of activities by reverse supply chain practices

The respondents were requested to indicate the extent to which the company’s reverse supply chain practices has employed the listed activities in a five point Likert scale. The range was ‘strongly disagree (1)’ to ‘strongly agree’ (5). The scores of strongly disagree and disagree have been taken to represent a variable which had mean score of 0 to 2.5 on the continuous Likert scale; ( $0 \leq S.E. < 2.4$ ). The scores of ‘moderate extent’ have been taken to represent a variable with a mean score of 2.5 to 3.4 on the continuous Likert scale: ( $2.5 \leq M.E. < 3.4$ ) and the score of both agree and strongly agree have been taken to represent a variable which had a mean score of 3.5 to 5.0 on a continuous likert scale; ( $3.5 \leq L.E. < 5.0$ ). A standard deviation of  $> 1.1$  implies a significant difference on the impact of the variable among respondents. The results are presented in table 4.5.

**Table 4.5: Employment of activities by reverse supply chain practices**

	Mean	Std. Deviation
Type of material dealt with at any given time affects the reverse supply chain practice adopted	4.2182	.8963
Operational procedures adopted in the factory influences the reverse supply chain process	3.9818	.7574
Adoption of the pre-return labels in the raw materials has hastened the process of reverse supply chain	3.5636	.9768
Outsourcing of reverse supply chain duties has hastened and made it cost effective	3.5818	.7862
The means of transporting the products from customers to the factory affects the success of reverse supply chain	3.7286	1.1200

Adoption of information technology in the process has improved product visibility	3.6909	1.1034
Lack of an appropriate and customized system has impacted the organization reverse supply chain process	3.7818	.9754

The results in table 4.5 established that reverse supply chain practices in the companies have employed the type of material dealt with at any given time affects the reverse supply chain practice adopted (mean 4.2182), operational procedures adopted in the factory influences the reverse supply chain process (mean 3.9818), lack of an appropriate and customized system has impacted the organization reverse supply chain process (mean 3.7818), the means of transporting the products from customers to the factory affects the success of reverse supply chain (mean 3.7286), adoption of information technology in the process has improved product visibility (mean 3.6909), outsourcing of reverse supply chain duties has hastened and made it cost effective (mean 3.5818) and adoption of the pre-return labels in the raw materials has hastened the process of reverse supply chain (mean 3.5636).

#### **4.4 Benefits of reverse supply chain management practices**

Reverse supply chain management result in direct benefits which includes improved customer satisfaction, decreased resource investment levels, and reduction in storage and distribution costs. This is due to the concept significantly impacting on a company's bottom line by recapturing value.

##### **4.4.1 Benefits realized as a result of reverse supply chain management practices**

The question sought to establish the benefits that have been realized by the companies as a result of practicing reverse supply chain. The results are presented in table 4.6.

	Mean	Std. Deviation
<b>Competitive Advantage</b>		
It has led to cost reduction and containment	3.7909	.6047
Provides customers with superior service of inventory availability and delivery	4.0182	.7574
Improved corporate image of the organization with all other stakeholders	4.0036	.8811
Improved customer satisfaction	4.1727	.7806
Promote longer term inter-firm relationship	3.9455	.8696
Increase corporate profitability	4.0909	.6168
<b>Profit centre</b>		
Sharing of information with suppliers has enhanced operational efficiency with customers	3.9091	.7763
Improved stock performance	4.0182	.9524
Increased sales	4.3818	.6233
Improved customer satisfaction	4.2909	.5985
Improved management of threats from competitors	4.2364	.7444
<b>Impact on Environment and Human Health</b>		
Sustainable production and consumption of products	4.0727	.8575
Self-satisfaction resulting from preservation of the environment	4.3273	.7947
Efficient utilization of resources	4.1091	.7116
Operational efficiency gains has resulted from adoption of reverse supply chain practice	4.2000	.6497

The results presented in table 4.6 on benefits of reverse supply chain management practices on competitive advantage was that it has improved customer satisfaction (mean 4.1727), increased corporate profitability (mean 4.0909), provides customers with superior service of inventory availability and delivery (mean 4.0182), improved corporate image of the organization with all other stakeholders (mean 4.0036), promote longer term inter-firm relationship (mean 3.9455) and cost reduction and containment (mean 3.7909).

The adoption of reverse supply chain management practices by the companies result in increased sales (mean 4.3818), improved customer satisfaction (mean 4.2909), improved management of threats from competitors (mean 4.2364), improved stock performance (mean 4.0182) and sharing of information with suppliers has enhanced operational efficiency with customers (mean 3.9091). Such information exchange enhances operational efficiency in reverse supply and provides greater supply chain visibility.

The findings in table 4.6 indicate that the environment and human health benefits the manufacturing companies have achieved as a result of reverse supply chain management practices was self-satisfaction resulting from preservation of the environment (mean 4.3273), operational efficiency gains has resulted from adoption of reverse supply chain practice (mean 4.2000), efficient utilization of resources (mean 4.1091) and sustainable production and consumption of products (mean 4.0727). The manufacturing companies not only feel good about them reducing the impact of their activities on the environment by eliminating waste, but also strengthen customer loyalty and increase profits. The low variations in the standard deviation indicate that the companies were unanimous on the benefits which they derive by practicing reverse supply chain management.

# CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1 Summary

The study found out that majority of the manufacturing firms practices reverse supply chain as it forms part of the company's long-term strategy to gain competitive advantage over its competitors and thus the activity is seen as a unique capability that adds value to the product, however the extent to which the companies' level of use of the supply chain varied and these can be attributed to the activities the companies engage. The introduction of supply chain management practices was indicated as being affected by initiating returns process, collaboration with suppliers and customers, selecting disposition procedure, analyzing the performance of the reverse supply chain process and crediting the customer process.

Every organization has its own sequence of activities that is practiced in the firm for any given activity. Thus the adoption of reverse supply chain by the manufacturing companies has employed the type of material dealt with at any given time affects the reverse supply chain practice adopted, operational procedures adopted in the factory influences the reverse supply chain process, lack of an appropriate and customized system has impacted the organization reverse supply chain process, the means of transporting the products from customers to the factory affects the success of reverse supply chain, adoption of information technology in the process has improved product visibility, outsourcing of reverse supply chain duties has hastened and made it cost effective and adoption of the pre-return labels in the raw materials has hastened the process of reverse supply chain.

The study found out that reverse supply chain management results in companies achieving benefits that include improved customer satisfaction, increased corporate profitability, provides

customers with superior service of inventory availability and delivery, improved corporate image of the organization with all other stakeholders, promote longer term inter-firm relationship, cost reduction and containment, increased sales, improved customer satisfaction, improved management of threats from competitors, improved stock performance, sharing of information with suppliers has enhanced operational efficiency with customers, self-satisfaction resulting from preservation of the environment, operational efficiency gains has resulted from adoption of reverse supply chain practice, efficient utilization of resources, and sustainable production and consumption of products. Indeed if reverse supply chain is strategically managed, it can provide necessary competitive advantage to the organization by consolidating the market position with the overall benefit of improving company image. The most important step however, in reverse supply chain is the decision of the company on who to handle reverse activities by taking into such criteria as cost, economies of scale, flexibility, profit and speed. This would ensure that the companies maintain costs at low levels.

## **5.2 Conclusion**

Due to the increasing environmental concerns, expanding sales opportunities in secondary markets and growing consumer pressure for environmentally friendly operations, supply chain management must expand from its traditional focus on the forward flow of materials, components and products to explicitly address the disposal, recycling, reprocessing and remanufacturing of used products. Therefore, the reverse supply chain management was coined to refer to the series of activities necessary to retrieve a used product from the consumer in order to either dispose of it or recover the remaining value. However, researchers suggest that investment in the reverse supply chain management should not be made in isolation, but instead must be integrated with investments selected to improve the forward supply chain.

The goods manufactured by the companies will in the long run determine the survival of these companies as customers will always look for goods that satisfy their needs. The benefits accruing to the manufacturing companies as a result of the adoption of supply chain have been found to include competitive advantage, profit centre and environment and human health and thus the companies that there is sustainability as it plays a vital role in their existing or future reverse supply chain operation plans. They should however be weary of the challenges which inhibit them from obtaining economies of scale and significantly reduces the economic value from product recovery.

### **5.3 Recommendations**

The study found out that not all companies practice reverse supply chain and at the same time those which practices it does so to a moderate extent, it is therefore recommended that the companies should consider adopting reverse supply chain fully as the benefits being realized are enormous while at the same time conserving the environment. At the same time the government has a role to play in ensuring that the manufacturing companies adopt the supply chain by coming up with a comprehensive plan involving collaborative efforts of the governmental bodies and the companies to encourage reverse supply chain management initiatives for the companies.

The achievement of reverse supply chain can only be possible with the consumers having sufficient knowledge about it and it is recommended that public awareness of product recovery activities be undertaken by the companies. At the same time legislative regulations should be enacted urgently if reverse supply chain management is to fully and successfully be implemented by the industries.



## **5.4 Recommendations for further research**

The results of this study can be further utilized to suggest several directions for future research. A field study can focus on investigating what consumers' demand would be for recovered products as they would not be willing to buy a remanufactured product. As there is no field study on this interesting issue, it is not possible to say if this conjecture reflects the truth, and to what extent or under which conditions it is true and therefore a study needs to be undertaken.

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## APPENDIX I

### COVER LETTER

Elisha Langat

P.O. Box 745, 00600

Nairobi.

August, 2012

Dear Respondent,

#### **RE: RESEARCH QUESTIONNAIRE**

This questionnaire (attached) is designed to gather information on reverse supply chain management practices in large manufacturing firms in Nairobi, Kenya. This study is being carried out for a management project paper as a requirement in partial fulfillment of the Master of Business Administration, University of Nairobi

Please note that this is strictly an academic exercise towards the attainment of the above purpose. You are hereby assured that the information will be treated with the strictest confidence. Your co-operation will be highly appreciated.

Thank you for your anticipated kind response.

Yours Sincerely,

Elisha Langat –D61/70944/2008

## APPENDIX II

### QUESTIONNAIRE

Please give answers in the spaces provided and tick (√) in the box that matches your response to the questions where applicable.

#### PART A: DEMOGRAPHIC AND RESPONDENTS PROFILE

1. Name of the company: .....
2. What is your designation at the organization.....
4. For how long has your company been in operation?
  - a) Under 5 years ( )
  - b) 6 – 10 years ( )
  - c) 11 – 15 years ( )
  - d) Over 16 years ( )
5. What would you say is the ownership structure of the company?
  - a) Government Owned ( )
  - b) Government/ Private Ownership ( )
  - c) Private Ownership ( )
7. Do you operate in other countries outside Kenya? Yes ( ) No ( )

If yes, please give the countries that you operate in.....

**PART B: REVERSE SUPPLY CHAIN MANAGEMENT PRACTICES**

8. Does your organization practice reverse supply chain?

Yes ( )

No ( )

9. To what extent do you categorize your organizations level of use of the reverse supply chain management practices?

a) Very great extent ( )

b) Great extent ( )

c) Moderate extent ( )

d) Small extent ( )

e) Not at all ( )

10. While introducing the reverse supply chain practices in your organization, please indicate the extent to which the following processes affected the introduction of reverse supply chain;

**Key:**

[5] **Very great extent** [4] **Great extent** [3] **Moderate extent** [2] **Small extent** [1] **Not at all**

<b>Factors</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
Initiating returns process					
Selecting disposition procedure					
Crediting the customer process					
Analyzing the performance of the reverse supply chain process					
Collaboration with suppliers and customers					

11.) Please tick appropriately the extent to which your organizations reverse supply chain practices has employed the following activities (use the scale below to tick the most appropriate response).

**Key:**

[5] **Strongly agree** [4] **Agree** [3] **Moderate extent** [2] **Disagree** [1] **Strongly disagree**

	5	4	3	2	1
The type of materials dealt with at any given time affects the reverse supply chain practice adopted					
The operational procedures adopted in the factory influences the reverse supply chain process					
Adoption of the pre-return labels in the raw materials has hastened the process of reverse supply chain					
Outsourcing of the reverse supply chain duties has hastened and made it cost effective					
The means of transporting the products from customers to the factory affects the success of reverse supply chain					
Adoption of information technology in the process has improved product visibility					
Lack of an appropriate and customized system has impacted the organization reverse supply chain process					



**PART C: BENEFITS OF REVERSE SUPPLY CHAIN MANAGEMENT PRACTICES**

1. To what extent has the following benefits been realized in your organization as a result of practicing reverse supply chain? Responses are in a scale from 5 to 1 defined as below.

**Key:**

[5] Very great extent [4] Great extent [3] Moderate extent [2] Small extent [1] Not at all

		Very Great Extent	Great Extent	Moderate Extent	Small Extent	Not at All
		5	4	3	2	1
	<b>Competitive Advantage</b>					
	It has led to cost reduction and containment					
	Provides customers with superior service of inventory availability and delivery					
	It has improved corporate image of the organization with all other stakeholders					
	Improved customer satisfaction					
	Promote longer term inter-firm relationship					
	Increase corporate profitability					
	<b>Profit Centre</b>					
	Sharing of information with suppliers has enhanced operational efficiency with customers					
	Improved stock performance has resulted					

		Very Great Extent	Great Extent	Moderate Extent	Small Extent	Not at All
		5	4	3	2	1
	Increased sales as resulted					
	Improved customers satisfaction has resulted					
	Improved management of threats from competitors					
	<b>Impact on Environment and Human Health</b>					
	Sustainable production and consumption of products has resulted					
	Self satisfaction resulting from preservation of the environment					
	Efficient utilization of resources has resulted					
	Operational efficiency gains has resulted from adoption of the reverse supply chain practice					

**THANK YOU FOR YOUR TIME**

**APPENDIX III**  
**LIST OF FIRMS**

**LARGE MANUFACTURING FIRMS IN NAIROBI & ITS  
SURROUNDING**

- 1 Alloy Steel Castings Ltd
- 2 Alpha Fine Foods Ltd
- 3 Aquamist Ltd
- 4 Associated Battery Manufacturers (EA) Ltd
- 5 Avery (East Africa) Ltd
- 6 Bamburi Cement Ltd
- 7 Bamburi Special Products Ltd
- 8 Basco Products (K) Ltd
- 9 Bata Shoe (K) Ltd
- 10 Baumann Engineering Ltd
- 11 Bayer East Africa Ltd
- 12 Belfast Millers
- 13 Beta Healthcare International Ltd
- 14 Bhachu Industries Ltd
- 15 Bobmil Industries Ltd
- 16 BOC Kenya Ltd
- 17 Breakfast Cereal Company (K) Ltd
- 18 British America Tobacco Kenya Ltd
- 19 C.Dormans Ltd
- 20 Cardbury Kenya Ltd
- 21 Carbacid (CO<sub>2</sub>) Ltd
- 22 Central Glass Industries Ltd
- 23 Coca-Cola East Africa Ltd
- 24 Cooper K-Brands Ltd
- 25 Crown Berger Kenya Ltd
- 26 East Africa Cables Ltd
- 27 East Africa Spectre
- 28 East Africa Breweries Ltd
- 29 Edible Oil Products
- 30 Erdermann Co. (K) Ltd
- 31 Farmers Choice Ltd
- 32 Galaxy Paints & Coating Co. Ltd
- 33 Glaxo Smithkline Kenya Ltd
- 34 Haco Tigerbrands East Africa Ltd

- 35 Jambo Biscuits (K) Ltd
- 36 Kartasi Industries Ltd
- 37 Kenpoly Manufacturers Ltd
- 38 Kentainers
- 39 Kenya Wine Agencies Ltd
- 40 Kuguru Foods Complex Ltd
- 41 London Distillers (K) Ltd
- 42 Manji Foods Industries Ltd
- 43 Mastermind Tobacco (K) Ltd
- 44 Nairobi Bottlers Ltd
- 45 Nairobi Flour Mills Ltd
- 46 Nestle Foods Kenya Ltd
- 47 New Kenya Co-operative Creameries Ltd
- 48 Orbit Chemical Industries Ltd
- 49 Osho Chemicals Industries Ltd
- 50 Palmhouse Diaries Ltd
- 51 Patco Industries Ltd
- 52 Pembe Flour Mills Ltd
- 53 PG Bison Ltd
- 54 Procter & Gamble East Africa Ltds
- 55 Protor & Alllan (EA) Ltd
- 56 Rafiki Millers Ltd
- 57 Reckitt Benckiser (EA) Ltd
- 58 Sadolin Paints (EA) Ltd
- 59 Sameer Afrca Ltd
- 60 SC Johnson & Son Ltd
- 61 Softa Bottling Co. Ltd
- 62 Syngenta East Africa Ltd
- 63 Tetra Pak Ltd
- 64 Twiga Chemical Industries Ltd
- 65 Unga Group Ltd
- 66 Unilever Kenya Ltd
- 67 Vitafoam Products Ltd
- 68 Wrigley Company (EA) Ltd

**Source: Kenya Manufacturers & Exporters Directory 2012**