

**THE INFLUENCE OF REVERSE LOGISTICS PRACTICES OF
RETURNED NEW PRODUCTS ON PERFORMANCE OF
PHARMACEUTICAL FIRMS IN NAIROBI CITY COUNTY, KENYA**

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT
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DECLARATION

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

Signature.....

Date.....

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(D61/68170/2013)

This Research Project has been submitted for examination with my approval as the University supervisor

Signed.....

Date.....

Prof. Francis Kibera

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DEDICATION

To my family, for your love and support.

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Glory be to God for giving me the opportunity and ability to complete this project. My sincere gratitude goes to the University of Nairobi for granting me the opportunity to pursue my postgraduate degree and to my supervisor, Prof.Francis Kibera for his guidance and advice throughout the project.

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ABBREVIATIONS AND ACRONYMS

SCOR	Supply Chain Operation Reference Model
COMESA	Common Market for Eastern and Southern Africa
WHO	World Health Organization
NASA	National Aeronautics and Space Administration
SD	Standard Deviation
RL	Reverse Logistics

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ABSTRACT

This study was carried out to establish the influence of returned new products on performance of pharmaceutical firms in Nairobi City County. The population of study consisted of the 23 pharmaceutical manufacturing firms as per the Export Processing Zones. The objectives of study were to determine the extent to which pharmaceutical firms in Nairobi County have adopted reverse logistics practices; to establish the influence of reverse logistics practices of returned new products on performance of pharmaceutical firms in Nairobi County; and to establish the challenges faced by the firms in implementing reverse logistics practices. The research design was a descriptive cross-sectional research design. Data was collected using semi-structured questionnaires administered through emails and drop and pick later method. Eighteen questionnaires were returned, representing a 78.26% response rate. Mean scores, standard deviations and percentages were the outputs of the first and third objectives. Correlation analysis was used to determine if there was a relationship between the pertinent variables. The relationship between reverse logistics of returned new products and performance of the firms was then analyzed using multivariate regression analysis and the findings presented in frequency tables. Relationship between reverse logistics and financial performance had an R^2 of 0.61 implying that 61% of the variation in the financial performance was explained by reuse, recycle and landfill reverse logistics practices. The relationship between reverse logistics and market performance had an R^2 of 0.781 implying that 78.1% of the variation in the market performance was explained by the reverse logistics practices. It was therefore concluded that pharmaceutical firms in Nairobi have adopted reverse logistics practices with reuse and landfill being predominant although they face challenges that need to be addressed in order to further increase efficiency. To increase financial performance, the firms should increase reuse and landfill reverse logistics with minimal recycling, while increase in reuse reverse logistics would increase market performance. The study recommends that firms should invest in appropriate technology for reverse logistics and have detailed disposition strategies for their returned new products so as to improve efficiency and productivity of the reverse logistics processes.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Awareness of the art and science of logistics continues to increase. Many companies that previously did not devote much time or energy to the management and understanding of reverse logistics have begun to pay attention. Third parties specializing in returns have seen huge increase in the demand for their services (Tibben-Lembke & Rogers, 2001). In day to day business activities, returns are bound to happen and organizations have to come up with better strategies of handling reverse flow of products by according reverse logistics importance and incorporating it as a component of overall business strategy as a profitable and sustainable business strategy. Reverse logistics is becoming a key initiative because cost of returns is on the rise, shorter product life cycle and focus on environmental responsibility. By utilizing reverse logistics, companies aim at maximizing product revenue while reducing cost of product returns (Bonev, 2012). Reverse logistics as a field is unique enough to warrant specialized research (Tibben-Lembke & Rogers, 1998). According to Stock et al (2001) reverse logistics costs are as high as 4% of total logistics costs. With increasing competition in pharmaceutical industry, industry players have to come up with new ways of increasing profit margins, customer satisfaction and environmental conservation hence improved firm image, reverse logistics may be the solution.

Some companies have reaped benefits from having a well organized reverse logistics system in place. One such a case is that of McNeil Laboratories, a Division of Johnson & Johnson who responded very quickly the second time their product

Tylenol was contaminated with cyanide. They efficiently removed the contaminated product completely from the channel since they had a good reverse logistics system in place having learnt a lesson from the first incident where several people were poisoned. 3 days after the incident, McNeil Laboratories experienced an all time record sales (Rogers & Tibben-Lembke, 1998). The most recent case is that of GlaxoSmithKline (GSK) which recalled the infant panadol syrup due to errors in dosage labelling. This necessitates preparedness on the part of firms so as to handle reverse logistics in the best way possible enabling them to turn it into an opportunity to reap benefits by earning public confidence, through building an image of a company concerned about the welfare of consumers. According to Smith et al (1997) efficient recalls ensures minimal public risk through creating awareness of the situation, getting back as many faulty products as possible and minimizing costs and inconveniences for customers and the company.

1.1.1 Reverse Logistics and Practices

Reverse logistics is the process of planning, implementing and controlling the efficient flow of raw materials, in process inventory, finished goods and related information from point of consumption to the point of origin for the purpose of recapturing value or proper disposal (Rogers & Tibben-Lembke, 1998). Reverse logistics has been stretching out worldwide, involving all the layers of supply chains in various industry sectors. While some actors in the chain have been forced to take back products, others proactively do so, attracted by the value in used products (Brito & Dekker, 2002). The return as a process was added to the supply chain operation reference (SCOR) model, stressing its importance for supply chain management in the future (Schultz, 2002). The goal in reverse logistics is to achieve practice excellence so as to enhance customer equity by investing in resources to build customer loyalty and

satisfaction (Rust et al, 1999). This can be achieved by reducing cycle time through taking back returned items quickly and crediting them in a timely manner. As a by-product of enhancing customer equity and through its asset recovery efforts, reverse logistics yields other benefits to the firms including revenue generation, expense reduction, asset efficiency improvement and environment protection (Carbone & Moatti, 2008). Firms should efficiently and effectively get the products from where they are not wanted to where they can be processed, reused and salvaged. The firms must also determine the disposition of each product. That is, for each product inserted into the reverse logistics flow, the firm must decide its final destination (Rogers & Tbben-Lembke, 1998).

1.1.2 Returned New Products

New products can be returned to one of the supply chain business units within a specific time frame. Returned products come from one of the actors of the supply chain or from the consumers themselves and the returned products can be different from the original state. Returned products can then be directed to one of the actors of the original supply chain or toward an actor of a different supply chain, in preparation for its processing for its possible reuse, in its original form or not (Daoud et al, 2012). Products are usually returned and the manufacturer or seller notified before so as to give the return authorization before the products are dispatched. The products can then be replaced, repaired or the account credited unless the manufacturer or retailer is able to prove that the damage was the buyers fault.

Olorunniwo and Xiaoming (2011) found out that the number one reason for return of products is wrong product ordered at 72.41%, followed by customer changing their minds at 58.62%, shipping damage at 55.17%, quality complaints at 55.17%, shipped to wrong direction at 36.21%, other 31.03%, obsolescence at 31.03%, missing parts at

31.03%,unsold consignment at 20.77% and unclear use information at 8.62%.The findings conferred with observations made by Chinger (2007) that more than 75% of returned products are not defective but are returned because of misinformation at the time of purchase, hence most of the products are put back on the shelf without or with little repair or refurbishing.

1.1.3 Firm Performance

Performance is a set of financial and non-financial indicators that offer information on degree of achievement of results and objectives (Lebans & Euseke 2006).Organizational performance comprises the actual output of an organization as measured against its objectives or goals. Organizational performance can be measured as an overall outcome of the strategy implemented by the organization for a product or an industry (Neely, 2007).Organizational performance encompasses three specific areas of firm outcomes namely financial performance, product market performance and shareholder or capital market return (Richard et al, 2009).The success and sustainability of an organization depends on performance of the organization and how their objectives are carried out to its effect (Sahoo & Jena, 2012). According to Keller and Prince (2011), the nature of competition has shifted from scale and stability to innovation and change. Scale is therefore no longer the key driver of a company value. Companies that are innovative and embrace change are likely to survive in the current dynamic business environment.Mckinsey investigated organizations and found out that performance alone cannot explain corporate success, there is need to have a balance between performance(what an organization delivers to stakeholders in financial and operational terms) versus health(the ability of an organization to align, execute and renew itself better than competition).Measuring and analyzing organizational performance has an important role in turning goals into reality, which

in today's competitive environment is paramount to the success and survival of an organization (Popova & Sharpanskykh, 2010). There has been recent increased interest among researchers seeking to move beyond the focus on financial performance and develop a comprehensive understanding of the connection between a firm's financial performance and its social performance (Wang & Choi, 2010). Social performance refers to the organization's application of principles to achieve outcomes that are socially and environmentally responsible and related to societal relationships (Wood, 1991).

Modern management is under constant pressure from the shareholders and the financial community to improve performance in both the short and the long term. Companies adopting customer focused and continuous improvement policy have been able to meet the relentless pressure even with the often conflicting short and long term objectives (Cartin, 1999). Several frameworks to assess logistics and supply chain performance have been developed in the last few years (Gunasekara et al, 2004). Some of them only detail evaluation dimensions that should be covered, others also propose specific performance indicators. The SCOR model (Supply Chain Council, 2006) proposes operational and cost indicators for each main manufacturing and logistics processes: plan, source, make, deliver and return. The balanced scorecard (Kaplan & Norton, 1996) and the performance prism (Neely et al, 2002) take another perspective and assess organizational performance from point of view of the most important stakeholders, such as investors, customers, suppliers, employees and regulators. The major economic performance indicators in reverse logistics context are cost containment, improved profitability, recovery of assets and reduced investments (Daugherty et al, 2001). Inclusion of both economics and service quality performance measures provides a comprehensive statement of a firm's competitiveness and

performance potential (Genchev, 2007). For an organization to continuously improve its performance, it needs to know where it is in the transformation journey, where it wants to go, what needs to be done to reach there, how success will be managed and how to keep moving forward (Keller & Prince, 2011).

1.1.4 Pharmaceutical Industry in Kenya

Kenya's local pharmaceutical sector is made up of firms engaged in production and manufacturing, retailing and distributing of health products in the local market as well as in the COMESA region. The range of pharmaceutical products manufactured in Kenya includes antibiotics, antimalarials, antiamoebics, analgesics, antiulcertreatments, vitamins, anti-diarrhoeal, tranquilizers and antispasmodics (Export Processing Zones Authority, 2005). Health innovation in Kenya is relatively successful when compared to other countries in East Africa, with a presence of private sector enterprise where several firms only distribute and retail.

The pharmaceutical industry consists of about 30 licensed manufacturers including local manufacturers and multinationals companies, subsidiaries or joint ventures. Most are located within Nairobi and its environs. These firms collectively employ over 2000 people, about 65% work in direct production. The number of companies engaged in manufacturing and distribution of pharmaceutical products in Kenya continue to expand driven by the government's efforts to promote local and foreign investment in the sector. Pharmaceutical products are channelled through pharmacies, health facilities and shops. There are about 700 registered wholesale and 1300 retail dealers in Kenya manned by registered pharmacists and pharmaceutical technologists (Export Processing Zones, 2005).

1.2 Research Problem

Environmentally responsible practices in supply chain management are referred to as green operation. Reverse logistics, which involves flow of products or materials back upstream through the supply chain, is an important element of green operation. Research examining effect of reverse logistics practices on firm performance is scarce especially in developing countries.

Companies and their supply chain managers can no longer afford to treat reverse logistics as an afterthought. There is just too much at stake in terms of brand protection, sustainability requirements and ultimately profitability (Rogers et al, 2013). Supply chains have been busy fine tuning logistics of products from raw materials to end customer. Products are obviously flowing in the opposite direction but an increasing flow of products is coming back (Brito & Dekker,2003).However, in developing countries many firms do not take reverse logistics seriously denying them a chance to harness the benefits if any. The WHO estimates that 10% of global pharmaceutical commerce involves counterfeit drugs, with annual earnings from the sale of counterfeit pharmaceutical products estimated to be \$32 billion (WHO Factsheet N275, 2003). Pharmaceutical firms have not capitalized this opportunity by taking back counterfeits and replacing them with genuine products and creating significant differences between genuine and fake products such as using company logos. This will go a long way in protecting the consumer and protecting the brand as well. This research seeks to find out if there is a significant influence of reverse logistics of returned new products on pharmaceutical firm performance.

In the pharmaceutical industry, inventory deemed unsuitable must be identified by customers and returned to suppliers in a timely and cost effective manner. This is

particularly important where the health of patients may be put at risk if drugs are not withdrawn from retail environments expeditiously and completely. Given the number of locations where drugs are kept including hospital wards, operating theatres, local clinics and retail pharmacies, this can be complicated and time consuming (Ritchie et al, 2000). Many firms shy away from reverse logistics practices because of the cost and the complication involved ignoring the benefits that could accrue from having an organized reverse logistic system in place.

Angela (2013) focused on relationship between green management practices and supply chain performance of pharmaceutical firms in Nairobi and touched on reverse logistics as a green management practice but did not break down reverse logistics into recycle, reuse and landfill as this study plans to do. She found out that there is a strong relationship between green management practices and supply chain performance of pharmaceutical firms in Nairobi. She also found out that pharmaceutical companies in the country are currently considering green supply chain management practices. Muttimmos (2014) focused on relationship between reverse logistics and performance of manufacturing firms in Kenya and found out that enhanced organizational performance of manufacturing firms was dependent on increased adoption of remanufacture and reuse reverse logistic practices with minimal adoption of recycle reverse logistic practices. Only 2 out of the 23 manufacturing pharmaceutical firms were sampled, this study will take into account the 23 pharmaceutical firms. The research question is: To what extent do reverse logistics practices of returned new products influence performance of pharmaceutical firms in Nairobi County?

1.3 Research Objectives

The broad objective of the study is to determine the influence of reverse logistics practices of returned new products on the performance of pharmaceutical firms in Nairobi County. The specific objectives are:

- i) To determine extent to which pharmaceutical firms in Nairobi have adopted reverse logistics practices of returned new products.
- ii) To establish the influence of reverse logistics practices of returned new products on performance of pharmaceutical firms in Nairobi County.
- iii) To establish the challenges faced by pharmaceutical firms in implementing reverse logistics practices.

1.4 Value of the Study

The findings of this study will benefit management of pharmaceutical firms by providing them with a deeper understanding and appreciation of the impact of reverse logistics on firm performance and help them take it as an opportunity to make a difference in their supply chain. It will provide insights on the extent to which reverse logistics has been adopted in developing countries and the challenges faced in implementation.

It will aid policy makers in decision making process when coming up with legislations that promote adoption of reverse logistics practices in pharmaceutical industry. This study will also stimulate interest for further research on this topic by academicians on the knowledge gaps and future studies can draw ideas from it and improve on it.

1.5 Summary

The chapter has introduced the research project by giving a background of the study including reverse logistics and practices, returned new products and firm performance. The chapter has also highlighted the pharmaceutical Industry in Kenya in terms of players in the Industry and the range of products manufactured in Kenya. Included in this chapter is an in-depth discussion of the research problem, objectives of the study and the value of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides information from publications on related topics. It examines findings from various authors about logistics practices. This chapter covers theories of distribution, theory of reverse logistics and reverse logistics and firm performance.

2.2 Theoretical Foundation

This study is anchored on two distribution theories, bargaining theory of distribution channels and channel power and conflict theory that shed light on the influence of channel members on reverse logistics.

2.2.1 Bargaining Theory of Distribution Channels

Bargaining involves negotiations between a buyer and seller on the price of a good or service giving the seller room to discriminate prices among buyers depending on their bargaining power and need for the good. Bargaining theory revolves around the behaviour and relationship between channel members depending on their bargaining power. Iyer and Boas (2002) observed that greater retail power promotes channel coordination therefore a presence of a powerful retailer might actually be beneficial to all channel members. Powerful bargaining power of a retailer will result in lower buying prices that translate into low selling prices hence benefiting consumers. Sales are likely to increase therefore the manufacturer can benefit from low production costs due to economies of scale. Bargaining power also influences choice between return or no return contracts ultimately influencing reverse logistics process. Iyer and Boas (2002) argue that when bargaining power of retailers is high he is likely to benefit more from a no return contract since he is more of an order taker and the

goods have a high probability of selling. However, when retailer bargaining power is low, return contract will be a better deal just in case the stock is not totally sold out. From the manufacturer's point of view, returns will be more beneficial as long as salvage value will be greater than marginal cost of production. However there are cases where by a powerful manufacturer will still accept a return contract even when the salvage value of the good is small as long as the marginal cost of production is small.

2.2.2 Channel Power and Conflict Theory

Power is the ability to influence another to do what they would have otherwise not have done. Simon (1953) defines power as an asymmetrical relationship between the behaviour of two persons whereby a change in behaviour of one (the influencer) alters behaviour of the other (the influencee). Wilenton (1972) on the other hand describes power as the ability of a channel member to cause another channel member to change its behaviour in favour of the influencer. Emerson (1962) argues that the more dependent one is on another, the more power they will have over the dependant. He describes power as the amount of resistance on the part of B which can be potentially overcome by A, in that case A has power over B. French and Raven (1959) looked into sources of power and found out that they include reward, coercive, legitimate, referent and expert power. Companies today are forced to take back products due to legislations that have been effected to conserve the environment hence legitimate power has influence on reverse logistics. Reward power has influenced company policies concerning reverse logistics practices since firms see reverse logistics as a strategic weapon to lock in customers, increase profitability and improve company image. Expert power also comes into play in reverse logistics as many companies are

now outsourcing reverse logistics process to other companies that are more competent in this field.

Brown and Frazier (1978) observed that the nature and sources of power possessed by a channel member may affect presence and level of conflict. Raven and Kruglanski (1970) describe conflict as tension between two or more social entities (individuals, groups or larger organizations) which arises from incompatibility of actual or desired responses. According to Etgar (1979), channel conflict is present when a channel member perceives behaviour of another channel member as impeding him from achieving his goals. In reverse logistics, conflict is likely to arise among channel members in negotiating return contracts and the level of conflict will be influenced by the power possessed by the channel members.

2.3 Theory of Reverse Logistics

A number of scholars have published literature on reverse logistics, Rogers and Tibben-Lembke (1998) published a study that focused on size and importance of reverse logistics as well as how to manage reverse logistics. It concentrated on the American situation and found out that reverse logistics accounted for 4% of total logistics of the firms, magnitude and impact of reverse logistics varies by industry and channel position. They argue that although efficient handling of returned products is not the primary reason on which a firm competes, it can make a competitive difference. Blumberg (2004) states that materials and products no longer used by buyers need to be returned if they have value or if they pose a hazard to the environment or population arguing that their return presents a real economic opportunity for the business. He also observed that reverse logistics can be found as a sub set of closed loop systems or standing alone. Kopicki et al (1993) focused on opportunities in recycling and reuse through implementing waste reduction programs.

Brito and Decker (2002) looked at the why, what and how of reverse logistics through examining the driving forces for reverse logistics, reasons for returns, processes and the actors involved. They also provide a decision framework for reverse logistics. Daugherty et al (2004) stresses on the importance of committing resources for reverse logistics so as to achieve superior performance highlighting the fact that the resources should be focused on developing information technology capabilities for authorizing, tracking and handling returns. Sound tracking of operational costs is critical when pursuing logistics objectives of providing desired customers service at the lowest total cost (Goldsby & Closs,2000).They present a case study that illustrates application of activity based costing to reverse logistics activities in a Michigan beverage distributor and retailer that collects empty beverage containers for recycling.

2.4 Reverse Logistics Practices

Once a product has been returned, the firm has many disposal options from which to choose. If the product can be returned to the supplier for a full refund, the firm may choose this option first. If the product has not been used, it may be resold to a different customer. If the product cannot be sold 'as is' or if the firm can significantly increase the selling price by reconditioning, refurbishing or remanufacturing the product, the firm may perform these activities before selling the product. If the product cannot be reconditioned in any way, because of its poor condition, legal implications or environmental restrictions, the firm will try to dispose of the product at the least cost. Any valuable materials can be reclaimed, any recyclable materials removed before the remainder is sent to a landfill (Rogers & Tibben-Lembke, 1998).There are three concepts on which reverse logistics is based and these are reuse, remanufacturing and recycling (Eltayeb et al, 2011).

2.4.1 Reuse Reverse Logistics

Involves taking back the product and selling it to another customer as it is or to a salvage company that takes the product to a secondary market. Mainly involves products returned by retailers back to manufacturers due to slow movement on the shelves, wrong orders or oversupply and packaging materials taken back such as beer and soda bottles. Kleber et al (2003) conducted a case study on reverse logistics in Schering (a pharmaceutical firm in Germany) and found out that there is reuse of solvents in the production process mainly for economic reasons although environmental concerns play a role. After use, impure solvents are cleaned in a distillation facility then re-used as long as this option is economically attractive. If cleaning is too expensive due to a high degree of pollution, the impure solvents are thermally recycled if possible or disposed off.

2.4.2 Recycle Reverse Logistics

Involves dismantling the product and removing parts or materials from a returned product, so that they can be utilized as raw materials for a new product or package. The waste is then sent to a landfill or burnt, this reduces consumption of fresh raw materials. This type of reverse logistics was also taking place in Schering (Kleber et al, 2003), the by-products obtained from many stages of the production process contain valuable materials hence reusing them is economically attractive since it reduces the need for virgin materials. They found that in Schering, about 630 tons of active ingredients are produced resulting in 14 tons of by-products and more than 90 percent of the by-products are recycled.

2.4.3 Remanufacture Reverse Logistics

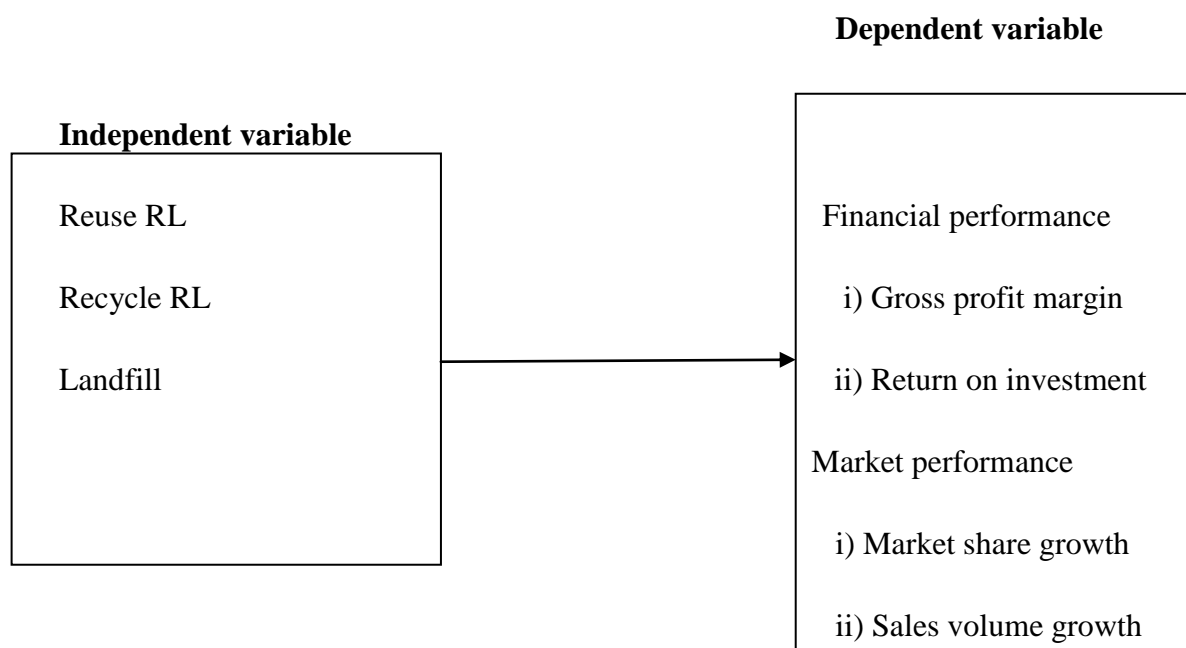
Remanufacturing is a form of product recovery that involves rebuilding of the product to manufacturers specification using a combination of reused, repaired and new parts. Repair involves the least amount of effort to upgrade the product and remanufacture involves the greatest. Remanufacturing and refurbishing of products is on the rise, even NASA spacecrafts are being built with remanufactured and refurbished tools (Rogers & Tibben-Lembke, 1998).

2.5 Reverse Logistics and Firm Performance

Reverse logistics differs from forward logistics hence posing challenges to many firms on how to handle product returns and recalls. Scholars have published articles on reverse logistics and firm performance, Kumar and Putnam (2008) analyzed reverse logistics in automobile and electronic appliances manufacturers and found out that there is potential for profit from recycled and manufactured products through reuse services such as equipment leasing. According to Rao and Holt (2005), green supply chains lead to competitiveness and economic performance, their study focused on organizations in South East Asia. Ramirez and Morales (2013) argue that firms should be careful when selecting reverse logistics activity since based on the type of activity, reverse logistics has different costs hence affecting organizational performance. They analyzed how different reverse logistics activities affect costs. Skinner, Bryant and Richey (2008) examined the type of impact that different disposition strategies have on performance in reverse logistics process. According to them, managers may get superior performance by destroying, recycling, refurbishing or remanufacturing but in cases where a firm does not have adequate resources to support reverse logistics, they should destroy the product. Abdullah et al (2014) found

out that there was no significant relationship between level of reverse logistics adoption and firm performance among Malaysian manufacturing firms. Vlachos and Ilias (2014) examined reverse logistics factors that influence firm performance which included resource based view and relational theory. They measured firm performance in terms of profitability, cost, innovativeness, perceived competitive advantage and perceived customer satisfaction. Greve and Davis (reverse logistic experts, UPS) argue that a balanced return policy can grow revenue and that firms need to have return policies which establish guidelines governing when a product is to be returned and what condition will be accepted. They concluded that return policies that provide a basis for protecting the maker of the product from fraudulent claims and unethical customers while at the same time reducing customers risk when purchasing the goods would drive sales and increase customer loyalty.

2.6 Conceptual Framework



Source: Researcher

The study sought to establish the relationship between reverse logistics practices of returned new products and performance of pharmaceutical firms in Nairobi County. The hypothesis was that reuse, recycle and landfill reverse logistics practices influenced market and financial performance of pharmaceutical firms in Nairobi County.

2.7 Summary

This chapter has reviewed literature on reverse logistics practices and organisational performance. The chapter has discussed the theoretical foundation of the study which is anchored on two distribution theories, bargaining theory of distribution channels and channel power and conflict theory. From the available literature, most research on reverse logistics has been done in USA and Asia, with Rogers and Tibben-lemcke (USA) publishing several papers on reverse logistics. Eltayeb et al (2011), Rao and Holt (2005) and Kumar and Putnam (2008) from Asia have also published research papers on reverse logistics. In Kenya, Muttimos (2014) carried out a research on relationship between reverse logistics and performance of manufacturing firms in Kenya. Mugabe (2015) looked at green supply chain practices and supply chain performance and included reverse logistics as one of the green management practices.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology that was used in conducting the research. It includes the research design, population of the study, sample design and data collection.

3.2 Research Design

A descriptive cross-sectional survey design was used. Descriptive research studies are concerned with describing the characteristics of a particular individual, or of a group. Studies concerned with specific predictions, with narration of facts and characteristics concerning individuals, group or situations are all examples of descriptive research studies (Kothari & Garg, 2014). This design enabled the researcher to determine if there is a link between reverse logistics practices of returned new products and pharmaceutical firm performance and to assess the level of adoption of reverse logistics practices of returned new products in the pharmaceutical Industry.

3.3 Population of Study

The study population consisted of registered pharmaceutical firms in Nairobi, Kenya. According to Export Processing Zones on Kenya pharmaceutical industry, there are 23 pharmaceutical companies. All the 23 firms were included in the study hence there was no sampling.

3.4 Data Collection

Primary data was collected using semi-structured questionnaires, which were dropped and picked later, some were emailed to the respondents. The target respondents were country managers, sales managers and marketing managers of the 23 pharmaceutical firms in Nairobi. The questionnaires contained questions on the firm profile, reverse logistics practices in the firm, relationship between reverse logistics and firm performance and challenges of implementing reverse logistics.

3.5 Data Analysis

The questionnaires were checked for consistency and completeness, the data was then edited and coded. Data was analyzed using measures of central tendencies and dispersion such as mean scores, percentages and standard deviations to determine the extent to which pharmaceutical firms in Nairobi have adopted reverse logistics of returned new products and the findings presented in tables. Correlation coefficient was used to establish if there was a relationship between the variables. The relationship between the variables was then analyzed using multivariate regression analysis to allow simultaneous investigation of more than two variables. Reverse logistics practices was the independent variable while organizational performance was the dependent variable. Reverse logistics practices included reuse, recycle and landfill. Organizational performance measures included financial performance, market share growth and sales growth.

3.6 Summary

The chapter has discussed the research methodology used in conducting the research. A descriptive cross sectional survey was used. The population of study consisted of

23 registered manufacturing pharmaceutical firms in Nairobi according to the Export Processing Zones. Semi-structured questionnaires were used to collect data through emails and drop and pick later method. This chapter also discusses methods used to analyze the data collected including measures of central tendencies such as mean scores, standard deviations and percentages, correlation coefficient and multivariate regression analysis.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents analysis of data and discusses the findings on the relationship between reverse logistics practices of returned new products and performance of pharmaceutical firms in Nairobi County, Kenya.

4.2 Demographic Characteristics of the Respondents

The study targeted 23 pharmaceutical firms, 18 questionnaires were returned representing a 78.3% response rate (Table 4.1).

Table 4.1 Respondents Demographic Characteristics

Characteristics	Frequency	Percentage
Ownership: Fully Owned	9	50
Locally Owned	9	50
Partly locally and foreign owned	0	0
Total	18	100
Length of Operation of the firm: 15years and below	4	22.22
16-30 years	6	33.33
31 -45 years	4	22.22
46 years and above	4	22.22
Total	18	100
Duration of employment : 2 years and below	1	5.56
3-5 years	12	66.67
6-10 years	4	22.22
11 years and above	1	5.56
Total	18	100
Number of staff in the firm: Less than 100	1	5.56
101-500	9	50
501-1000	2	11.11
1001 and above	6	33.33
Total	18	100

Source: Primary Data

4.2.1 Ownership of the Firm

Data collected showed that 9 (50%) of the pharmaceutical manufacturing firms were locally owned while the other 9 (50%) were foreign owned, therefore half of the firms were indigenous to the country.

4.2.2 Length of operation of the Firms

The researcher established from the data collected that 22.22% of the firms have been in operation for 15 years and below, while a majority (33.33%) have been in operation between 16- 30 years. The other 22.22% have operated between 31-45 years, with the remaining 4 (22.22%) operating for more than 46 years. The data depicts that a majority of the firms have been in operation for a long period hence necessitating the need to establish reverse logistics practices.

4.2.3 Duration of Employment

The respondents were asked to indicate length of time they had served their respective companies. The findings in Table 4.1 indicate that 66.67% of the respondents had worked for their respective firms between 3-5 years, indicating that the respondents are familiar with the operations of the firms.

4.2.4 Number of employees

The data collected showed that only 1 firm (5.56%) had less than 100 employees, 9(50%) had between 101 and 500 employees, with 2(11.11%) having between 501 and 1000 employees. Firms with 1001 employees and above were 6 representing 33.33% of the population. The data indicates that the firms have adequate human resource base enabling them to attempt reverse logistics practices.

4.2.5 Duration of Establishment of Reverse Logistics Practices

The respondents were asked to indicate the number of years their respective firms have established reverse logistics practices from the options provided. The data confirmed that all the firms (100%) had established reverse logistics practices of returned new products for more than 6 years. This indicates that the firms have realised the importance of putting measures in place to handle reverse logistics.

4.3 Extent of Adoption of Reverse Logistics

The study sought to establish the extent which pharmaceutical firms in Nairobi County have adopted RL practices of returned new products. A 5 point likert scale was used to rate the extent of adoption of reuse, recycling and landfill RL practices, with 1 indicating 'not at all', 2 'to a small extent', 3 'to a moderate extent', 4 'to a large extent' and 5 'to a very large extent'. The results are presented in the Table 4.2

Table 4.2 Extent of Adoption of Reverse Logistics

Reverse Logistics	Mean	SD
Set quality standards for reuse	4.00	0.907
Design products for reuse	3.00	1.189
A well documented policy for recycling	2.67	1.085
Taking waste to landfill	4.44	0.615
Total	14.11	3.796
Grand Mean	3.528	0.949

Source: Primary Data

From the data collected, majority of the respondents indicated that the firms set high quality standards for reuse of returned new products as indicated by a mean score of 4.00. Taking waste to landfill was also highly practised scoring a mean score of 4.44. Designing products for reuse scored a mean of 3.00, while majority of the respondents indicated that their firms did not have well documented policy for recycling or if they did, it was to a small extent, with a mean score of 2.67 which was the lowest score. The average mean score was 3.528.

4.4 Reverse Logistics and Organisational Performance

The researcher sought to establish if there was a relationship between reverse logistics practices of returned new products and organizational performance using Pearson's correlation coefficient. The relationship was analyzed and explained using multivariate regression analysis.

4.4.1 Pearson's Coefficient of Correlation

Pearson's coefficient of correlation was used to measure the relationship between reverse logistics and financial performance as well as reverse logistics and market performance. The results were as indicated in Table 4.3 and Table 4.4

Table 4.3 Coefficient of Correlation between RL and Financial Performance

Correlations

		Reverse Logistics	Financial Performance
Reverse Logistics	Pearson Correlation	1	.709**
	Sig. (2-tailed)		.001
	N	18	18
Financial Performance	Pearson Correlation	.709**	1
	Sig. (2-tailed)	.001	
	N	18	18

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

Source: Primary Data

Table 4.4 Coefficient of Correlation between RL and Market Performance

Correlations

		Reverse Logistics	Market Performance
Reverse Logistics	Pearson Correlation	1	.751**
	Sig. (2-tailed)		.000
	N	18	18
Market Performance	Pearson Correlation	.751**	1
	Sig. (2-tailed)	.000	
	N	18	18

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

Source: Primary Data

From the results, there is a strong positive relationship between reverse logistics practices and financial performance depicted by a correlation coefficient(r) of 0.709 which is close to 1. There is also a strong positive relationship between reverse logistics practices and market performance with a correlation coefficient of 0.751

which tends towards 1. The result is significant at 0.01 level (99.99% confidence level).

4.4.2 Reverse Logistics and Financial Performance

Multivariate regression analysis of reverse logistics practices and financial performance was carried out using SPSS statistical package. The study adopted the following regression model to depict the expected relationship between the variables: $F = a + b_1X_1 + b_2X_2 + b_3X_3 + e$, where F =Financial performance, a = F intercept, b_1 , b_2 and b_3 are the regression coefficients for the respective variables, e is the error term, x_1 =Reuse, x_2 =Recycle and x_3 =Landfill.

SPSS was used to carry out a regression analysis of RL practices and financial performance that yielded the results in Table 4.5.

Table 4.5 T TEST FOR COEFFICIENTS

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.160	.836		.192	.851
1 Reuse	.499	.166	.804	3.004	.009
1 Recycle	-.042	.138	-.080	-.301	.768
1 Landfill	.371	.155	.405	2.386	.032

a. Dependent Variable: Financial

Source: Primary Data

$F = 0.16 + 0.499x_1 - 0.042x_2 + 0.371x_3 + e$, where x_1 =Reuse, x_2 =Recycle and x_3 =Landfill

From the above model, when all variables are held constant, financial performance would be at 0.160. However, holding all other variables constant, a unit increase in reuse RL would lead to a 0.499 increase in financial performance, a unit increase in recycle RL would lead to a 0.042 decrease in financial performance while a unit increase in landfill RL would lead to a 0.371 increase in financial performance. The firms should therefore put more emphasis on reuse RL and landfill RL and minimize recycle RL to increase financial performance.

Regression analysis was carried using SPSS and Table 4.6 is the second table of the SPSS outcome.

Table 4.6 COEFFICIENT OF DETERMINATION

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.781 ^a	.610	.526	.38799

a. Predictors: (Constant), Landfill, Recycle, Reuse

Source: Primary Data

From Table 4.6, R^2 value is 0.610, implying that reuse, recycle and landfill RL explains 61% of the variance in financial performance. This means that regression explains most of the variability in financial performance hence the fitted model is good, the unexplained variance is only 49%. Reverse logistics practices make a significant contribution to financial performance of the pharmaceutical firms.

Data analysis of SPSS was used to fit the regression model and Table 4.7 is the last table of the outcome.

Table 4.7 F TEST FOR THE FULL MODEL-ANOVA

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	3.295	3	1.098	7.297	.004 ^b
Residual	2.108	14	.151		
Total	5.403	17			

a. Dependent Variable: Financial

b. Predictors: (Constant), Landfill, Recycle, Reuse

Source: Primary Data

F test was used to test the overall validity of the model (if any of the explanatory variables was having a linear relationship with the response variable).The null hypothesis was that no explanatory variable was significant, while the alternate hypothesis was that at least one explanatory variable was significant. Significance F is the p-value, from the table the p-value was 0.004, which is less than 0.05 therefore, at 5%, level of significance the null hypothesis was rejected. It was concluded that at least one explanatory variable had a linear relationship with the response variable (financial performance) therefore the fitted model was valid.

4.4.3 Reverse Logistics Practices and Market Performance

Multivariate regression analysis of reverse logistics practices and market performance was carried out using SPSS statistical package. The study adopted the following regression model to depict the expected relationship between the variables: $M = a + b_1X_1 + b_2X_2 + b_3X_3 + e$, where M=Market performance, a= M intercept, b_1 , b_2 and b_3

are the regression coefficients for the respective variables, e is the error term, X_1 =Reuse, X_2 =Recycle and X_3 =Landfill.

SPSS was used to carry out a regression analysis of RL practices and market performance that yielded the results in Table 4.8.

Table 4.8 T TEST FOR COEFFICIENTS

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.027	.980		1.048	.312
	Reuse	1.025	.195	1.055	5.260	.000
	Recycle	-.211	.162	-.260	-1.305	.213
	Landfill	-.096	.182	-.067	-.526	.607

a. Dependent Variable: Market

Source: Primary Data

$$M=1.027+1.025x_1-0.211x_2-0.096x_3+e, \text{ where } x_1=\text{Reuse}, x_2=\text{Recycle and } x_3=\text{Landfill}$$

From the above model, when all variables are held constant, market performance would be at 1.027..However, holding all other variables constant, a unit increase in reuse RL would lead to a 1.025 increase in market performance, a unit increase in recycle RL would lead to a 0.211 decrease in market performance while a unit increase in landfill RL would lead to a 0.096 decrease in market performance. The firms should therefore put more emphasis on reuse RL, minimize landfill RL and recycle RL practices to increase market performance.

Regression analysis was carried using SPSS and Table 4.9 is the second table of the SPSS outcome.

Table 4.9 COEFFICIENT OF DETERMINATION**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.884 ^a	.781	.734	.45482

a. Predictors: (Constant), Landfill, Recycle, Reuse

Source: Primary Data

From Table 4.9 , R^2 value is 0.781, implying that reuse, recycle and landfill RL explain 78.1% of the variance in market performance. This means that regression explains most of the variability in market performance hence the fitted model is good, the unexplained variance is only 21.9%.Reverse logistics practices make a significant contribution to market performance of the pharmaceutical firms. The contribution of reverse logistics on market performance (78.1%) is higher than its contribution on financial performance (61%) by 17.1%.

Data analysis of SPSS was used to fit the regression model and Table 4.10 is the last table of the outcome.

Table 4.10 F TEST FOR THE FULL MODEL-ANOVA**ANOVA^a**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	10.308	3	3.436	16.610	.000 ^b
Residual	2.896	14	.207		
Total	13.204	17			

a. Dependent Variable: Market

b. Predictors: (Constant), Landfill, Recycle, Reuse

Source: Primary Data

F test was used to test the overall validity of the model (if any of the explanatory variables was having a linear relationship with the response variable). The null hypothesis was that no explanatory variable was significant, while the alternate hypothesis was that at least one explanatory variable was significant. Significance F is the p-value, from the Table 4.10 the p-value was 0.000 which is less than 0.05 therefore at 5% level of significance the null hypothesis was rejected. It was concluded that at least one explanatory variable had a linear relationship with the response variable (market performance) therefore the fitted model was valid.

4.4.4 Challenges in Implementing Reverse Logistics Practices

The study established the challenges faced by pharmaceutical firms in implementing reverse logistics of returned new products, the findings are summarized in Table 4.11

Table 4.11 Challenges in Implementing Reverse Logistics Practices

Challenges	Mean	SD
Lack of appropriate technology in implementing reverse logistics practices	4.167	0.786
Retailer manufacturer conflict i.e. on condition of item or its value on return or timeliness of response	4.0	0.84
Lack of information on regulations regarding reverse logistics process	3.5	0.857
Managing cost of reverse logistics	4.11	0.832
Total	15.78	3.315
Grand Mean	3.944	0.829

Source: Primary Data

From the findings on Table 4.11, majority of the respondents cited lack of appropriate technology in implementing reverse logistics practices as the major challenge with a mean score of 4.167 and a standard deviation of 0.786. Managing cost of reverse logistics had a mean score of 4.11 while retailer manufacturer conflict on condition or value of item at the time of return or on timeliness of response had a mean score of 4.0 with a standard deviation of 0.840. Lack of information on regulations regarding reverse logistics had the least score with a mean of 3.5 and a standard deviation of 0.857.

4.4.5 Discussion of Results

The researcher established that there is a strong relationship between RL practices and financial performance depicted by correlation coefficient of 0.709 and also between RL and market performance depicted by correlation coefficient of 0.751. The regression equation adopted on RL and financial performance was $F = 0.16 + 0.499x_1 - 0.042x_2 + 0.371x_3 + e$ where x_1 =reuse, x_2 =recycle and x_3 =landfill. The equation indicates that a unit increase in reuse RL would lead to a 0.499 increase in financial performance while a unit increase in recycle RL would lead to a 0.042 decrease in financial performance. A unit increase on landfill RL would increase financial performance by 0.371. The researcher concluded that firms should focus more on reuse and landfill RL practices and minimize recycle RL so as to increase financial performance. Muttimos (2014) also found out that increase in adoption of reuse RL had a positive impact on financial performance while increase in recycle RL had a negative impact on financial performance of the manufacturing firms according to the

probit ordered model that was used. With regard to market performance of the pharmaceutical firms, the following regression equation was used: $M=1.027+1.025x_1-0.211x_2-0.096x_3+e$, where x_1 =reuse, x_2 =recycle and x_3 =landfill. From the equation, increase in reuse RL would lead to a 1.027 increase in market performance, while a unit increase in recycle and landfill RL would lead to a 0.211 and 0.096 decrease in market performance respectively. The researcher concluded that firms should focus more on reuse RL and minimize recycle and landfill RL to increase market performance. Similarly, Muttimos (2014) found out that recycling RL had a negative impact on market performance according to the ordered probit model used.

4.5 Summary

The chapter has presented study results in terms of frequency tables and discussed the relevant findings. The tables embrace demographic characteristics of respondents, extent of adoption of reverse logistics, and reverse logistics and organisational performance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This study was carried out to determine the extent to which pharmaceutical firms in Nairobi have adopted reverse logistics practices of returned new products, to establish the influence of reverse logistics practices of returned new products on performance of pharmaceutical firms in Nairobi County and to establish the challenges faced in implementing reverse logistics practices of returned new products. This chapter presents the summary of findings, conclusions, recommendations and limitations made based on the findings and suggestions for further research.

5.2 Summary

The summary of findings covers respondent's biodata, extent of adoption of reverse logistics practices, relationship between reverse logistics practices and performance of pharmaceutical firms and challenges faced in implementing reverse logistics practices.

5.2.1 Respondents Bio-data

Out of the 23 questionnaires, 18 were returned representing a 78.3% response rate. The study established that 50% of the firms are locally owned while the other 50% are

foreign firms. Majority of the firms (77%) have operated for more than 15 years with 17 firms having more than 100 employees.

5.2.2 Extent of Adoption of Reverse Logistics Practices

The findings showed that taking waste to landfill had the highest mean score of 4.4, setting quality standards for reuse had a mean score of 4.0 while designing products for reuse scored a mean of 3.0. Majority of the respondents cited that their firms did not have well documented policy for recycling scoring a mean of 2.67.

5.2.3 Reverse Logistics Practices and Organizational Performance

Multivariate regression analysis was used to establish the relationship between reverse logistics practices and firm performance, reuse, recycle and landfill RL practices were regressed against financial and market performance. From the findings, it was deduced that a unit increase in reuse and landfill RL would increase financial performance of the firms by 0.499 and 0.371 respectively all other factors held constant. A unit increase in recycle RL would decrease financial performance by 0.042. With regard to market performance, increasing reuse RL by one unit would lead to increase in market performance by 1.025 while market performance would decrease upon a unit increase of recycle and landfill RL practices by 0.211 and 0.096 respectively.

5.2.4 Challenges of Implementing Reverse Logistics practices

From the data collected, it was clear that there were challenges faced by the firms in implementing reverse logistics with majority of the respondents citing lack of appropriate technology in implementing reverse logistics practices as the major

challenge. Pharmaceutical firms therefore need to allocate more resources in improving their reverse logistics capabilities.

5.3 Conclusion

From the data collected, it was concluded that pharmaceutical firms in Kenya have adopted reverse logistics practices with reuse and landfill reverse logistics being predominant. Correlation coefficient showed that there was a strong relationship between reverse logistics and financial and market performance of the firms. Pharmaceutical firms can increase their financial performance by increasing reuse and landfill reverse logistics, to achieve objective of increasing market performance pharmaceutical firms should increase only reuse reverse logistics practices while minimizing recycle and landfill reverse logistics practices.

5.4 Recommendations

The study recommends that pharmaceutical firms should invest in appropriate technology for their reverse logistics processes such as having codes that can be used to track reason for each return and work towards eliminating the root causes for the returns. This can be achieved by gaining senior management support on reverse logistics practices through raising awareness of its importance at senior level by marketing managers and those in charge of logistics. Firms should have clear agreements with their clients indicating time limit within which the products can be returned and who is to pay for each element of reverse logistics process to avoid conflicts that arise at the time of return. Pharmaceutical firms should consider developing detailed disposition strategies for the returned new products and asses costs of returns to be able to manage the cost of returns to bare minimum. The firms

should also offer seminars to their employees to raise awareness of reverse logistics practices across board facilitating its implementation. Lastly, pharmaceutical firms should embrace a continuous improvement policy that will involve putting key performance indicators in place to assess progress in implementing reverse logistics practices.

5.5 Limitations and Suggestion for Further Research

The study focussed on pharmaceutical firms as per the Export Processing Zones, 2005 ignoring the fact that there could be other pharmaceutical manufacturing firms not included in the list. The study also included only manufacturing firms leaving out those that are only involved in importing and marketing of drugs yet they also have returns. The study therefore recommends further research that will include both manufacturing and non-manufacturing pharmaceutical firms.

REFERENCES

- Bonev, M. (2012). *Managing Reverse Logistics Using System Dynamics: Generic End To End Approach*. Amazon Publishers.
- Britto, M. P., Decker. R., & Flapper. S. D. (2003). *Reverse logistics: A Review of Case Studies*. Springer Berlin Heidelberg.
- Cartin, T. (1999). *Principles and Practices of Organizational Performance Excellence*. ASQ Quality Press.
- Dahlstrom, R. (2011). *Green Marketing Management*. South Western Cengage Learning.
- Daugherty, P., Richey, G., Genchev, S., & Haozhe, C. (2004). *Superior performance through focussed resource commitments to information technology*. Elsevier.
- Dyckhoff, H., Lackes, R., & Reese, J. (2004). *Supply Chain Management and Reverse Logistics*. Springer Publishers.
- Fleishmann, M., Bloemhof-Ruwaard, J.M., & Decker. R. (1997). *Quantitative Models for Reverse Logistics*. European Journal of Operation & research 103.
- Gaski. F. J. (1984). *The theory of Power and Conflict in Channels of Distribution*, Journal of Marketing vol 48 9-29.
- Gattorna, J. (2003). *Gower Handbook of Supply Chain Management*. Gower Publishing Ltd.
- Goldsby, J. T., & Closs. D. (2000). *Using Activity Based Costing to Reengineer Reverse Logistics Channel*. International Journal of Physical Distribution & Logistics Management, vol 30 155, 6, pp 500-514.
- Greve. C., & Davis. J. *Recovering Lost Profits by Improving Reverse Logistics* UPS.

- Iyer. G., & Villas-Boas. J. M. (2003). *A Bargaining Theory of Distribution channels*. Journal of Marketing Research vol XL, 80-100.
- Kabir, M. (2013). *Reverse Logistics in The Pharmaceutical Industry*. International Journal Of supply Chain management Vol 2, No.1.
- Keller. S., & Price. C. (2011). *Beyond Performance: How great organizations build ultimate competitive advantage* .McKinsey & company.
- Kopicki, R., Berg. M. J., & Legg. L. (1993). *Reuse & Recycling: Reverse logistic opportunities*. Council of Logistic Management, Oak Brook.
- Kothari, R., & Garg, G. (2014). *Research Methodology: Methods & Techniques 3rd Edition* .New age International Publishers.
- Kumar, S. & Putnam, V. (2008). *Cradle to Cradle: Reverse Logistics Strategies & Opportunities Across Three Industry Sectors*. International Journal of Production Economics, Elsevier.
- Misra, S., & Mohanty. S. (2004). *Estimating Bargaining Games in Distribution Channels* .Simon Graduate School of Business University of Rochester.
- Mugabe, A. (2013). *Green management Practices and Supply Chain Performance of Pharmaceutical companies in Nairobi Kenya*. Unpublished MBA Project, UON, Kenya.
- Muttimos, E. (2014). *Relationship between Reverse Logistics Practices and Organizational performance of Manufacturing Firms in Kenya*. Unpublished MBA Project, UON, Kenya.
- Olorunniwo, F., & Xiaoming, L. (2011). *An Overview of Some Reverse Logistics Practices in the United States*. An International Journal Supply Chain Forum, Vol 12.

- Ramirez, A., & Morales. G. (2013) *Improving Organizational Performance through Reverse Logistics*. Journal of operation research society.
- Richard, P. J., Dievinney, T., Johnson, G.(2009).*Measuring Organizational Performance: Towards Methodological Best Practice*. Journal Of Management,Vol 35,No.3.
- Rogers, D.S., & Tibben-Lembke, R. S. (1998). *Going Backward: Reverse Logistics Trends and practices*. Reverse Logistics Executive council.
- Rogers, D.S., & Tibben-Lembke, R. (2001). *An Examination of Reverse Logistics Practices*. Journal of Business Logistics Vol 22, pg129-148.
- Teunter, R., Inderfurth, K., Minner. S., & Kleber. R. (2003). *Reverse Logistic in a pharmaceutical industry: A case study* Economic institute report E12003-30.
- Vijayan., & Abdullah, A. (2014). *An insight into adaptation of Reverse Logistics by Food Retailers in Klang Valley*. Malaysia Research Gate.

APPENDICES

Appendix 1: Letter to Respondents

Lilian Moraa

University of Nairobi

School of Business

Dear Respondent,

I am a student at the University of Nairobi currently carrying out a research to be submitted to school of business in partial fulfilment of the requirements for the award of the degree of Master of Business Administration (MBA). The title of my research topic is **“Influence of reverse logistics practices of returned new products on performance of pharmaceutical firms in Nairobi County, Kenya”**

Attached please find a copy of self-administered questionnaire. Kindly answer the questions as comprehensively and honestly as possible. The information from the questions is needed purely for academic purposes and will be treated with strict confidence. In no way will your name or name of your organization appear in the final report. In case of any questions, please call me on 0721325565.

Your participation in this exercise will be highly appreciated and thank you in advance.

Yours faithfully,

MBA Student

APPENDICES

Appendix 2: Questionnaire

Introduction

This questionnaire has been designed for collecting data on reverse logistics practices and performance of pharmaceutical firms in Nairobi County. The research intends to find out the extent to which pharmaceutical firms in Nairobi County have adopted reverse logistics practices of returned new products and the relationship between reverse logistics practices of returned new products and performance of the pharmaceutical firms. Information obtained will be treated with high level of confidentiality and will be used for academic purposes only. Your participation will be highly appreciated.

SECTION A: General Information

1. Ownership of firm: Please tick the appropriate box

Fully locally owned

Fully foreign owned

Joint/locally and foreign owned

Others (please specify)

2. How long has your firm been operating? _____ Years

3. How long have you worked in this firm? _____ Years

4. How many employees does the firm have (both full & part time)? _____

5. How long has your firm established reverse logistics practices?

Not yet

Up to 2 years

3-4 years

5-6 years

More than 6 years

SECTION B: Extent of adoption of reverse logistics Practices

6. Indicate the extent to which your firm has adopted the following reverse logistics practices of returned new products by ticking the appropriate box using the following scale:

1= Not at all 2=Small extent 3=Moderate extent 4=Large extent 5=Very large extent

Reverse Logistics practices	1	2	3	4	5
Reuse					
1.Set quality standard for reuse					
3.Design products for reuse					
Recycling					
A well documented policy for recycling					
Landfill					
Taking waste to landfill					

SECTION C: Relationship between reverse logistics practices and organizational performance

7. To what extent has your organization experienced the following financial performance outcomes as a result of adopting reverse logistics practices of returned new products? Tick the appropriate box by using the following scale:

1= Not at all 2= Small extent 3= Moderate extent 4=Large extent 5= Very large extent

Financial performance measures	1	2	3	4	5
Gross profit Margin					
Return on Investment					
Others(Specify)					

8. To what extent has your organization experienced the following marketing performance outcomes as a result of adopting reverse logistics practices of returned new products? Tick the appropriate box by using the following scale:

1= Not at all 2= Small extent 3= Moderate extent 4=Large extent 5= Very large extent

Market performance measures	1	2	3	4	5
Market share growth					
Sales volume growth in units					
Sales volume growth in shillings					
Others (Specify)					

SECTION D: Challenges of implementing reverse logistics practices

9. To what extent are the following challenges experienced in your firm when implementing reverse logistics practices of returned new products? Use the scale of 1= Not at all 2= Small extent 3= Moderate extent 4=Large extent 5= Very large extent

Challenges	1	2	3	4	5
Lack of appropriate technology in implementing reverse logistics practices					
Retailer manufacturer conflict i.e. on condition of item or value on return or timeliness of response.					
Lack of information on regulations regarding reverse logistics process					
Managing cost of reverse logistics					
Others (Specify)					

Please indicate any other relevant comments.....

Thank you for participating

APPENDICES

Appendix 3: List of Pharmaceutical Firms in Nairobi County

	Company Name	Location
1	Alpha Medical Manufacturers	Nairobi
2	Aventis Pasteur SA East Africa	Nairobi
3	Bayer East Africa Ltd	Nairobi
4	Beta Healthcare (Shelys pharmaceutical)	Nairobi
5	Cosmos Ltd	Nairobi
6	Dawa pharmaceutical Ltd	Nairobi
7	Didy Pharmaceutical	Nairobi
8	Diversey Lever	Nairobi
9	Eli-Lilly(Suisse)SA	Nairobi
10	Ellys chemical industries Ltd	Nairobi
11	Glaxo SmithKline	Nairobi
12	High Chem East Africa Ltd	Nairobi
13	Ivee Aqua EPZ Limited	Nairobi
14	Mac's Pharmaceutical Ltd	Nairobi
15	Manhar Brothers (Kenya) Ltd	Nairobi
16	Novartis Rhone Poulenc Ltd	Nairobi
17	Novelty Manufacturers Ltd	Nairobi
18	Pfizer Corp(Agency)	Nairobi
19	Pharmaceutical Manufacturing Co(K) Ltd	Nairobi
20	Pharmaceutical Products Limited	Nairobi
21	Phillips Pharmaceutical Limited	Nairobi
22	Regal Pharmaceutical Ltd	Nairobi
23	Universal Pharmaceutical Ltd	Nairobi

Source: Kenya's Pharmaceutical Industry 2005 Export Processing Zones
Authority