SUPPLY CHAIN RISK MITIGATION IN PHARMACEUTICAL INDUSTRY IN KENYA

BY: SILAS FRANCIS OSUNDWA

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SUPERVISOR: MR. KONGERE

MODERATOR: DR. NJIHIA

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DECLARATION

I hereby declare that this my original work and has not been submitted for presentation and examination for any award of Degree in this university or any other university.

Signature ………………………………………..   Date ………………………

Name: Silas Francis Osundwa

D61/62862/2011

Signature ………………………………………..   Date…………………………

Supervisor: Tom Kongere

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DEDICATION

This project is dedicated to the almighty God, Son and Holy Spirit for granting me the academic journey mercies.

ABSTRACT

Supply chain risk mitigation is important in any organisation to eliminate the possibility of the risk occurring, shift a risk or outcome to a third party, reducing the impact of a risk, reducing the probability of an event occurring and to establish contingency plans that reduce the impact after an event occurs. Although a number of studies have been done on the concept and context of supply chain, none has been done within the context of Supply chain risk mitigation in pharmaceutical industry. The purpose of the study was to determine supply chain risk mitigation adopted by pharmaceutical firms in Kenya. The objectives of the study were to determine the supply chain risk mitigation by the pharmaceutical firms in Kenya, identify challenges faced in adoption of this Supply chain risk mitigations and to determine how pharmaceutical companies in Kenya overcome challenges in implementing supply chain risk mitigation. The study used descriptive design with the target population of study being all the pharmaceutical firms in Kenya. From the findings, one can conclude the following based on the objectives of the study; supply chain management processes in most pharmaceutical firms in Kenya are bad because of lack of supply chain risk management leadership teams in place and lack of computerized risk management system. However the safety management processes in most pharmaceutical companies in Kenya is good according to the findings of the study. The researcher recommended that pharmaceutical firms need to; have in place a supply chain risk management leadership team and computerize their risk management systems. Future research should be done to; determine impact of supply chain risks on the financial performance of pharmaceutical organizations in Kenya, impact of supply chain risks on product quality among pharmaceutical organizations in Kenya and Supply chain risk mitigation on other fast moving consumer industry in Kenya

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LIST OF ABBREVIATIONS

SCM   Supply Chain Management

KPI   Kenya Performance Indicators

GSK   GlaxoSmithKline

OTC   Over the Counter

S&OP   Sales and Operation planning

FMEA   Failure modes and effects analysis

VAT   Value added Tax

IDF   Imported declaration form

WHO   World health Organization

SPSS   Statistical Package for Social Sciences

STP   Situation target proposal

OHS   Occupational health and safety

IT   Information technology

MNC's   Multinational corporations

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

The impact of supply chain disruptions on company performance has increased over the past few years (Hendricks & Singhal, 2005). Single sourcing (Hendricks & Singhal, 2005), low inventories (Craighead, Blackhurst, Rungtusanatham, & Handfield, 2007), increased product complexity (Hendricks & Singhal, 2005) and a growing importance of purchasing as a value creation function (Zsidisin, Panelli, & Upton, 2000) allow only little margin for errors in this function and leave many supply chains highly vulnerable. At the same time, global organizations face an increasingly unstable environment in many of their markets (Manuj & Mentzer, 2008a; Wagner & Bode, 2008).

With more vulnerable supply chains on one hand and more dynamics and complexity in a globalized world on the other hand, disruptions hit supply chains more often and with much worse impact on the continuity of production (Barry, 2004). The negative consequences are immense when risks are poorly managed or remain undetected (Hendricks & Singhal, 2003). As firms continue focusing on market and financial performance, little efforts are being made on the area of supply chain risk mitigation which has great impact to achieve seamless supply chain. Managing risks in the modern environment is becoming increasingly challenging (Christopher & Lee, 2004), primarily because of uncertainties in supply and demand, global outsourcing and short product life cycles.

1.1.1 Supply chain risk mitigation

Supply chain risk mitigation is about reducing the impact of a risk in supply chain (Chakravarty, 2013). Kleindorfer and Saad (2005) argue that prevention is better than cure, requiring risk managers to act fast and treat urgent risks first. However, fast action can only be achieved when managers prioritize risk management activities and understand risk management as one of their core management tasks. Supply chain risk mitigation activities aim to reduce the probability of risk occurrences and reduce the negative impact of an occurred risk (Tomlin, 2006). Supply chain risks can, for example, be reduced by buffer inventories, information technologies, effective relationships with suppliers and downstream customers, involvement of alternative or multiple suppliers, risk pooling, and the conduct of "what if ' analyses (Choi,2007; Choi and Krause, 2006; Chopra and Sodhi, 2004; Cook, 2007; Mentzer et al., 2006; Stalk, 2006; Swaminathan and Tomlin, 2007).

Chakravarty (2013) suggested that the aftermath of the March 2011 earthquake and tsunami in Japan resulted to many manufacturers around the world suddenly discovering how exposed their operations were to unanticipated interruption in their supply chains. The hidden risk is that just-in-time supply chains often depend upon suppliers being located closely to an assembly facility. So when regional disasters like the Japanese earthquake strike, there's a greater likelihood that a number of co-located companies – perhaps the suppliers of their supplier –are all likely to be disrupted. In the opposite situation, when suppliers are located in widely separated facilities scattered around the world, the risk of transportation interruption in the event of a local calamity becomes of

paramount concern. Damaged chokepoints such as bridges, harbours and airports can halt the flow of goods despite thoughtful contingency planning. But even logistics systems with multiple redundancies can be rendered helpless by unexpected catastrophes such as the 2010 Icelandic volcano, which spewed clouds of ash that halted air travel across much of the North Atlantic.

Chakravarty (2013) identified four supply chain risk mitigation strategies which include risk management, safety management, people and production trade-offs. On risk management, he suggested at highest level companies must deploy risk management processes and systems that make visible risks and proposed remediation of risk. These identified risks should include external events and internal events for both supply and distribution chains. Construction of an integrated software-based simulation model that considers the consequences of interruptions to even small components of the value chain will provide an ongoing capability for identifying risk in addition to the costs and benefits of mitigation. On safety management, the safety problems that can interrupt business exist in multiple suppliers and suppliers to suppliers. Information about safety management practices that pose high risk of production interruption need to be reviewed and documented, often by third parties. Concerning people, organizations should review the people incentives, skills and knowledge within the organization to ensure that risk is understood by employees, and that decisions and practices that increase risk are revealed and discouraged. Finally on production trade-offs, explicitly modelling and managing the trade-offs between key logistic variables can lead to superior supply chain performance. These variables include duplication/redundancy, cost, capacity, inventory, lead time, customer service level and product portfolio complexity.

According to Hahn (2000) effective communication and coordination among all elements of the supply chain are essential to its success. Increasing the visibility of demand information across supply chain reduces the risks (Chopra & Sodhi, 2004). Henriott (1999) stated information sharing as a prerequisite for trust and current models for SCM agree that the sharing of business information is a crucial element, which binds supply chains together from end-to-end (Zhenxin, Yan, & Cheng, 2001; Schary & Skjøtt-Larsen, 2001). (Cachon & Fisher, 2000) and Lee et al. (2000) have analyzed the benefits of sharing real-time information on demands and/or inventory levels between suppliers and customers. In studies by Lee et al. (1997a, b) it was concluded that information sharing can significantly minimize the consequences of the bullwhip effect. The bullwhip effect occurs when the demand order variabilities in the supply chain are amplified as they moved up the supply chain. Distorted information from one end of a supply chain to the other can lead to tremendous inefficiencies (Hau, Padmanabhan, & Seungjin, 1997). Further Lee and Whang (2000) suggested that information is a basic enabler for tight coordination in a supply chain. Agility in the supply chain can as well help mitigate supply chain risk. Agility is the ability to thrive in a continuously changing, unpredictable business environment (Prater et al., 2001). According to Giunipero and Eltantawy (2004), organizations are moving to adopt closer relationships with key suppliers in order to mitigate supply chain risk.

1.1.2 Pharmaceutical industry in Kenya

A study conducted by Kalunda, Nduku, & Kabiru (2012) revealed that a pharmaceutical company is a commercial business licensed to research, develop, market and/or distribute

drugs, most commonly in the context of healthcare. They deal in generic and/or brand medications. There are 46 companies (See Appendix 1) listed as registered pharmaceutical companies in Kenya (pharmacy and poisons board, 2012). The key players in the industry in Kenya include multinational corporations (MNC's) like GlaxoSmithKline, Bayer, Aventis, Pfizer while key local establishments include Dawa Pharmaceuticals Ltd, Cosmos Pharmaceuticals. The pharmaceutical industry consists of three segments namely the manufacturers, distributors and retailers (Export Processing Zones Authority– Kenya, 2005). They support the country's health sector, which is estimated to have about 8,006 health institutions countrywide (Kenya National Bureau of Statistics, 2012). The industry compounds and packages medicines, repacking formulated drugs and processing bulk drugs into doses. The bulk of locally manufactured preparations are non-sterile, over-the counter (OTC) products. Kenya exported pharmaceutical products worth Kenya shillings 4,457 million in 2008 (Kenya National Bureau of Statistics, 2009).

1.2 Research Problem

Supply chain risk mitigation includes the development as well as the evaluation of diverse mitigation strategies towards their potential value and required investments (Chopra et al., 2007; Kleindorfer and Saad, 2005; Manuj and Mentzer, 2008b; Wagner and Bode, 2006). According to Vikram (2013), importance of supply chain risk mitigation is to eliminate the possibility of the risk occurring, shift a risk or outcome to a third party, reducing the impact of a risk, reducing the probability of an event occurring and establish contingency plans that reduce the impact after an event occurs. Vikram

(2013) identified four supply chain risk mitigation which include risk management, safety management, people capabilities in risk management and production trade-offs. However, effective communication and coordination among all elements of the supply chain are essential for the success of supply chain risk mitigation (Hahn, 2000).

Key challenges facing pharmaceutical industry in Kenya include; government taxes on import declaration form, illegal trade, inadequate legal framework for pharmaceutical quality control, lack of responsiveness to procurement of emergency medicine, increased production costs and lack of proper distribution network for products throughout the country (WHO, 2010). Other challenges include: growing influx of counterfeit and substandard medicines, deterioration of infrastructure and even higher utility costs, domestic political risk, adverse currency exchange rate and deteriorating terms of trade, global financial crisis—leading to financial constraints, inflation and high costs (United Nations Industrial Development Organization, 2010). Thus making a need to undertake this study on supply chain risk mitigation in Kenya.

Pankaj, Larry and Don (2004) undertook an analysis to establish methodology to mitigate supplier risk in an aerospace supply chains. In Kenya Simon Momanyi (2011) studied strategies adopted in GlaxoSmithKline in managing outsourced services; Fredrick Wafukho (2011) researched on effectiveness of lean sigma strategy on continuous improvement at GlaxoSmithKline; Kalunda et al.(2012) focused on the Pharmaceutical manufacturing companies in Kenya and their credit risk management practices; Guyo, Gakure, & Mwangi (2011) reserached on factors contributing to the employee turnover at

Ranbaxy Laboratories limited. They have majorly focussed on other areas of supply chain risk and performance improvement within supply chain. None of them focused on supply chain risk mitigation in pharmaceutical industry in Kenyan. This is therefore a clear indication of a research gap that exists that this study is currently addressing. This study therefore tries to address the following question: What is the supply chain risk mitigation in the pharmaceutical industry in Kenya?

1.3 Research General Objective

To determine supply chain risk mitigation in pharmaceutical firms.

1.3.1 Specific objectives

1. To determine the supply chain risk mitigation by the pharmaceutical firms in Kenya

2. Identify challenges faced in adoption of this Supply chain risk mitigations

3. To determine how pharmaceutical companies in Kenya overcome challenges in implementing supply chain risk mitigation.

1.4 Value of the study

Specifically, this study can benefit the following:-

1.4.1 The Pharmaceutical Companies

The study makes managerial contributions for players in the pharmaceutical industry, in that it provides a basis for the various companies to better understand supply chain risk

mitigations and its challenges. It creates awareness in pharmaceutical industry on supply chain risk mitigation thus help firms position themselves competitively.

1.4.2 The regulatory bodies and Government

The research findings can also aid in the improvement of the already formulated policies and enforcement of the same in order to facilitate supply of quality and safe pharmaceutical products to the public. It can also help the government in formulating policies to mitigate supply chain risk in pharmaceutical industry in Kenya.

1.4.3 Academic Researchers

The study makes a significant contribution to the growing body of research on the supply chain risk mitigation. The findings can also be used as a source of reference for other researchers. In addition, other academic researchers can use the study findings to stimulate further research in this area of supply chain risk mitigation in pharmaceutical industry and as such, form a basis of good background for further researches.

The paper assists corporate supply chain managers in making management decisions on supply chain risk mitigation.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter seeks to outline and discuss the risk mitigation in organizations with special focus on those arising from Supply Chain. This chapter discusses supply chain risk mitigation its variables which include risk management, safety, people capability and production trade off. It also looks at challenges in supply chain risk mitigation.

2.2 Supply chain risk mitigation

Recent studies focusing on transportation delays and port stoppages (Chapman et al., 2002), accidents and natural disasters (Cooke, 2002), poor communication, part shortages and quality issues (Craighead et al., 2006), operational issues (Chopra & Sodhi, 2004), labour disputes (Machalaba & Kim, 2002), and terrorism (Sheffi, 2001) have all documented the negative impacts of disruptions on supply chain structures. These studies have also illustrated the impact of frequent and/or severe disruptions on individual corporate or overall supply chain performance levels.

Skipper and Hanna (2009) noted that management of a highly interconnected supply chain is an ever-increasing challenge in today's competitive business environment. Higher levels of uncertainty in supply and demand, shorter technology and product life cycles, globalization of the market, and the increased use of distribution, manufacturing, and logistics partners all results in a complex international network. Given the complexity of many supply chains, experiencing a disruption is recognized by many organizations as being inevitable. In reality, it is not a matter of a supply chain system

encountering a problem, but rather a matter of when a problematic event will occur and the severity of the event. As the levels of complexity increase and supply chain interdependency becomes more prevalent, increased levels of risk occur (Christopher, 1992). Wagner and Bode (2008) suggested that managers pay particular attention to these risks and have issued a call for empirical research into supply chain performance, strategic choice, and the context of risk. While disruptions and heightened risk levels can cause serious challenges, several studies, including Fawcett et al. (1996), Goldsby and Stank (2000), Fredericks (2005), and Swafford et al. (2006) have found that organizations characterized by higher levels of flexibility are more capable of responding to unexpected events such as a disruption in a more successful manner when compared to their non-flexible counterparts.

Supply chain flexibility acts as a measure of risk management to organizations facing increased supply chain risk. Disruptions that impact the day-to-day operations of a given member of the supply chain are likely to have an impact on other supply chain network member organizations. Entities may not always be able to predict or avoid a disruption, but they can reduce their risk exposure by enhancing flexibility through the implementation of key strategic planning tools such as forecasting, conformance to plan, sales and operation planning(S&OP), contingency planning. These strategic planning tools can enhance the ability of the organization or network to respond to a disruption effectively, minimizing the negative impacts of the event on overall supply chain performance levels. Contingency planning is a valuable strategic planning tool for many organizations that can bring about enhanced flexibility. Specifically, contingency

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planning is a special type of planning that provides a blueprint for responding to the risks associated with an unknown event (La Londe, 2005). A properly prepared contingency plan should detail a timely and complete response to a specific risk or a cluster of risks (La Londe, 2005).

The increased globalisation of supply chains and the prevalent use of sub-contract manufacturing and offshore sourcing contribute to the length of time it takes to complete all the needed steps in the process. Associated with pipeline length is the lack of visibility within the pipeline. Visibility in supply chain is where important information is readily available to those who need it, inside and outside the organization, for monitoring, controlling and changing supply chain strategy and operations, from service acquisition to delivery (Schoenthaler, 2003). Hence, it is often the case that one member of a supply chain has no detailed knowledge of what goes on in other parts of the chain. The key to improved supply chain visibility is shared information among supply chain members (Mason-Jones and Towill, 1997, 1998).

In addition to visibility, supply chain confidence requires the ability to take control of supply chain operations. There has been much interest in the six sigma methodology as a way of reducing variability in processes (George, 2002). Six sigma tools such as control charts and failure modes and effects analysis (FMEA) can be very helpful in identifying the opportunities for reducing process variability in supply chains. However, these tools and methodologies are primarily of benefit within the business for the control of

repetitive activities. In looking to improve control across the wider supply chain a more collaborative approach to control is required

2.2.1 Risk management process

Supply chain risk management is relatively new and rapidly expanding discipline that is transforming the way that manufacturing and non-manufacturing operations meet the needs of their customers (Gunasekaran et al., 2004). Formulating an appropriate and effective organizational strategy can to a certain extent mitigate supply chain risks (Finch, 2004). At the highest level, companies must deploy risk management processes and systems that make visible risks and proposed remediation of risk. These identified risks should include external events and internal events for both supply and distribution chains. Construction of an integrated software-based simulation model that considers the consequences of interruptions to even small components of the value chain will provide an ongoing capability for identifying risk in addition to the costs and benefits of mitigation (Chakravarty, 2013).

2.2.2 Safety management

In a distributed supply chain, understanding the level of risk due to safety management is complex. The safety problems that can interrupt business exist in multiple suppliers and suppliers to suppliers. Information about safety management practices that pose high risk of production interruption need to be reviewed and documented, often by third parties (Vikram, 2013). He also noted that reviewing safety management practices may provide critical insights into the risk of interruption from doing business with an external supplier

or from risks that exist internally within a vertically integrated company. Safety problems can trigger expensive investigations. A pattern of safety incidents or employee deaths is not only costly and unconscionable, it provides justification for legal suits and governmental regulation (Vikram, 2013). To assess supply chain risk exposures, the company must identify not only direct risks to its operations, but also the potential causes or sources of those risks at every significant link along the supply chain (Norrman and Jansson, 2004). It is also necessary that a company identify risk indicators in its processes that enable the firm to measure risk in its supply chains (Zolkos, 2003b).

2.2.3 People

Lack of trust is one of the major factors that contribute to supply chain risks (Sinha et al., 2004). Lengnick-Hall (1998) argued that trust, developed through effective communication, can create resources that lead to a competitive advantage. Trust among people is an expectation that partners will not act in an opportunistic manner even if there are short-term incentives to do so (Chiles and McMackin, 1996) and can contribute significantly to the long-term stability of an organization and its supply chain (Spekman et al., 1998). According to Vikram (2013), organizations should review people incentives, skills and knowledge within the organization to ensure that risk is understood by employees, and that decisions and practices that increase risk are revealed and discouraged. Creating a culture where managers are both accountable for risk and remunerated for risk management decisions is a requirement for success.

2.2.4 Production trade-offs

Explicitly modelling and managing the trade-offs between key logistic variables can lead to superior supply chain performance. These variables include duplication/redundancy, cost, capacity, inventory, lead time, customer service level and product portfolio complexity (Vikram, 2013). A trade off is where an increased cost in one area is more than offset by a cost reduction in another, so that the whole system benefits (Lysons & Farrington, 2006).

2.3 Supply chain risk mitigation challenges

In Kenya, pharmaceutical importers are faced with a challenge as import Declaration Fees (IDF) are levied and amount to indirect tax on pharmaceuticals (WHO, 2010). Duty and Value added Tax (VAT) are also applicable to some packaging materials for pharmaceuticals, which affect the final price (WHO, 2010). Studies by Kalunda et al. (2012) identified pharmaceutical industry in Kenya as very competitive and is characterised by price wars. Managing supply chains in today's competitive world is increasingly challenging. The greater the uncertainties in supply and demand, shorter and shorter product and technology life cycles, increased use of manufacturing, distribution and logistics partners, have led to higher exposure to risks in the supply chain (Christopher et al., 2002). The closure of the US air space after the terrorist event of September 11, 2001 is an example of event that paralysed supply chain flows. It has also been suggested that the drive towards more efficient supply chains during recent years has resulted in the supply chains becoming more vulnerable to disruption (Christopher and Lee, 2004; McGillivray, 2000; Engardio, 2001). Studies carried out on transportation

delays and port stoppages (Chapman et al.,2002), accidents and natural disasters (Cooke, 2002), poor communication, part shortages and quality issues (Craighead et al., 2006), operational issues (Chopra and Sodhi, 2004), labor disputes (Machalaba and Kim, 2002), and terrorism (Sheffi, 2001) have all documented potentially negative impacts of disruptions on various supply chain structures in nearly every industry. These studies have also illustrated the impact of frequent and/or severe disruptions on individual corporate or overall supply chain performance levels.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology that was used in the study and has the following structure: research design, target population, sample design, data collection procedures, instruments, and the data analysis methods applied in the study.

3.2 Research Design

The study was a descriptive design. According to Uma Sekaran (2003), a descriptive study is undertaken in order to ascertain and be able to describe the characteristics of the variables of interest. Some empirical studies have employed the use of descriptive design in survey studies. Wairegi (2009) used descriptive design in a survey of the influence of competitive strategies on performance of oil firms in Kenya, while Wamiori (2009) used the design to study Survey of pricing studies adopted by manufacturers of Fast Moving Consumer Goods in Mombasa District and its environs. This study aimed at determining supply chain risk mitigation in pharmaceutical industry in Kenya.

3.3 Target Population

The target population of study was all the pharmaceutical firms in Kenya. However, the population of study was limited to pharmaceutical firms registered in Kenya, whose number stood at 46 as at December 2012, See Appendix 2.

3.4 Sampling design

The subject of the study was limited to Supply Chain Managers working in the various pharmaceutical firms in Kenya. The study was based on the assumption that these are the officers with knowledge of the supply chain risk mitigation and were best placed to offer valuable information to the study. A census of 46 companies was undertaken, involving one supply chain manager in each of the 46 pharmaceutical firms in Kenya. A self-administered questionnaire was considered for the study.

3.5 Data Collection

Both the primary data and the secondary data were collected. Primary data was collected by personally delivering semi-structured questionnaire to Supply chain managers in the pharmaceutical firms in appendix 2, personally delivered to them. This enabled the researcher to get clarifications where necessary. The questionnaire consisted of both open and close ended questions relevant to the study. The questionnaire was divided into three sections. Section A containing aspects of bio data of the company, second sections (B to E) containing questions on supply chain risk mitigation by the companies, and third section F containing questions on challenges that influence their adoption of supply chain risk mitigation (see Appendix 3).

Validity is the extent to which a test measures what we actually wish to measure (Cooper & Schindler, 2008). Validity was measured by seeking expert opinions and carrying out pilot study. Marczyk et.al (2005) observed that pilot test is the start phase in data gathering of the research process. The researcher undertook a pilot survey to pre test the validity and reliability of the questionnaire. This was done by administering the

questionnaire to three employees who were not part of the sample population. The questionnaires were then adjusted accordingly for consistency, clarity and relevance.

3.6 Data analysis

Responses in the questionnaires were tabulated, coded, and processed by use of a computer. The data was edited for consistency and completeness, coded, and classified so as to present the results of the data analysis in a systematic and clear way. Data was analyzed with the help of the Statistical Package for Social Sciences (SPSS) version 20. Data analysis was based on research questions designed at the beginning of the research. Descriptive statistics was used to analyze the data, including measures of central tendency, measures of dispersion and inferential statistics. Scatter diagrams were used to show if the relationships are linear. According to Mugenda and Mugenda (1999), descriptive statistics enable meaningful description of a distribution of scores or measures using statistics. The results of the study were compared with literature review to establish the supply chain risk mitigation in the pharmaceutical industry in Kenya.

CHAPTER FOUR: DATA ANALYSIS

4.1 Introduction

This chapter presents analysis and findings of the study, which sought to determine the supply chain risk mitigation, adopted by pharmaceutical companies in Kenya and further establish the challenges faced in adopting the supply chain risk mitigation. Data was collected from forty-six (46) managers involved in supply chain management roles in Pharmaceutical firms in Kenya. Out of the forty-six (46) managers who were sampled and the questionnaire administered, only thirty-seven (37) responded. This gave a response rate of 80.43%, which is an adequate representation of the study population. The collected data was presented in form of tables, figures, and charts. The analysis was based on the objectives of the study namely: to determine the supply chain risk mitigation by the pharmaceutical firms in Kenya; to identify challenges faced in adoption of this Supply chain risk mitigations; and to determine how pharmaceutical companies in Kenya overcome challenges in implementing supply chain risk mitigation.

4.2 Findings

In order to capture the general information of the respondents' issues such as name of the organization, respondent title, respondent department, gender, age, company ownership and duration of work was captured in the first section of the questionnaire. This was important because it enhanced reliability and gave the basic understanding of the respondents.

4.2.1 Respondents' Company by Name

The study findings indicate that most (16.2%) of the respondents were from GlaxoSmithKline Ltd, followed by 5.7% from Regal Pharmaceuticals. The remaining 35 respondent companies had 2.7% each as presented in table 4.1. The high number of respondents from GlaxoSmithKline Ltd was attributed to the fact that the researcher is an employee in the company, hence was able to access most respondents of the company.

Table 4.1: Name of company

Name of Company	Frequency	Percent	Valid Percent	Cumulative Percent
Abbott laboratories	1	2.7	2.7	2.7
Assia	1	2.7	2.7	5.4
Bayer	1	2.7	2.7	8.1
Beta Healthcare	1	2.7	2.7	10.8
Biodeal Lab. Ltd	1	2.7	2.7	13.5
Boehringer Ingelheim Gmbh	1	2.7	2.7	16.2
Bristol-Myers Squibb	1	2.7	2.7	18.9
Cosmos	1	2.7	2.7	21.6
Dawa	1	2.7	2.7	24.3
Ellys	1	2.7	2.7	27.0
Galaxy	1	2.7	2.7	29.7
GlaxoSmithKline Ltd	6	16.2	16.2	45.9
Globe	1	2.7	2.7	48.6
Goodman Agencies	1	2.7	2.7	51.4
Harley's Limited	1	2.7	2.7	54.1
Johnson & Johnson	1	2.7	2.7	56.8
Lab & Allied	1	2.7	2.7	59.5
Laborex	1	2.7	2.7	62.2
Metro Pharmaceuticals	1	2.7	2.7	64.9
Novartis Pharma Services	1	2.7	2.7	67.6
Pan Pharmaceuticals	1	2.7	2.7	70.3
Pfizer Labs Limited	1	2.7	2.7	73.0
Pharmaceuticals Manufacturing	1	2.7	2.7	75.7
Population Services International	1	2.7	2.7	78.4
Regal	2	5.4	5.4	83.8
Roche	1	2.7	2.7	86.5
Sai	1	2.7	2.7	89.2
Sanofi Aventis	1	2.7	2.7	91.9
Synermed Pharmaceuticals	1	2.7	2.7	94.6
Unicorn Pharma	1	2.7	2.7	97.3
Universal Corporation	1	2.7	2.7	100.0
Total	37	100.0	100.0	

Source: Field Survey, 2013

4.2.2: Respondents Title

The findings of the study indicate that most of the respondents (27.0%) were pharmacists.

As shown in table 4.2, 16.2% were head of supply chain and quality and compliance

each; quality assurance managers were 8.1%, and supervisor, directors, heads of

production, site director, and logistics heads were 5.4% each. Purchasing officers and

executive officers were 2.7% each. Respondents who were heads of supply chain

departments were mainly from large pharmaceutical organizations. This was because the

supply chain departments in the large organizations were well established, with clear

roles and responsibilities. In most small organizations, managers/heads of other

departments also took care of the day-to-day running of the supply chain departments of

their respective organizations. See figure 4.2 for a graphical representation of respondents

by title.

Table 4.2: Respondents title

Respondents Title	Frequency	Percent	Valid Percent	Cumulative Percent
Quality and Compliance	6	16.2	16.2	16.2
Director	2	5.4	5.4	21.6
Head Production	2	5.4	5.4	27.0
Head of Supply Chain	6	16.2	16.2	43.2
QA Manager	3	8.1	8.1	51.4
Pharmacist	10	27.0	27.0	78.4
Supervisor	2	5.4	5.4	83.8
Site Director	2	5.4	5.4	89.2
Logistics	2	5.4	5.4	94.6
Purchasing Officer	1	2.7	2.7	97.3
Executive	1	2.7	2.7	100.0
Total	37	100.0	100.0	

Source: Source: Field Survey, 2013

4.2.3: Respondents Departments

According to the study findings, most of the respondents (25.7%) were from Quality Assurance and Regulatory Departments each. As shown in table 4.3, those from GMS and Supply Chain & Logistics were 17.1% each, followed by Production Department at 11.4% and Purchasing Department at 2.9% (see figure 4.3 for a graphical representation of the findings). Most of the respondents from Supply Chain & Logistics Department were mainly from larger pharmaceutical companies. In most smaller organizations, the study found that heads of other departments such as Quality Assurance, Regulatory, GMS, Production, and Purchasing also assumed supply chain management roles. In some smaller organizations, supervisors were directly involved in the day-to-day management of supply chain management processes of their respective organizations.

Table 4.3: Respondents Departments

Name of Department	Frequency	Percent	Valid Percent	Cumulative Percent
GMS	6	16.2	17.1	17.1
Quality Assurance	9	24.3	25.7	42.9
Regulatory	9	24.3	25.7	68.6
Production	4	10.8	11.4	80.0
Supply Chain & Logistics	6	16.2	17.1	97.1
Purchasing	1	2.7	2.9	100.0
Total	35	94.6	100.0	
System	2	5.4		
Total	37	100.0		

Source: Source: Field Survey, 2013

4.2.4 Gender of the Respondents

Table 4.4 and figure 4.1 show that majority of the respondents (75.7%) were males and 24.3% were females. The high percentage of male respondents is attributed to the fact that males assume most of the supply chain management roles in the pharmaceutical industry compared to their female counterparts.

Table 4.4 Gender of the Respondents

Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	28	75.7	75.7	75.7
Female	9	24.3	24.3	100.0
Total	37	100.0	100.0	

Source: Source: Field Survey, 2013

Figure 4.1: Gender of Respondents
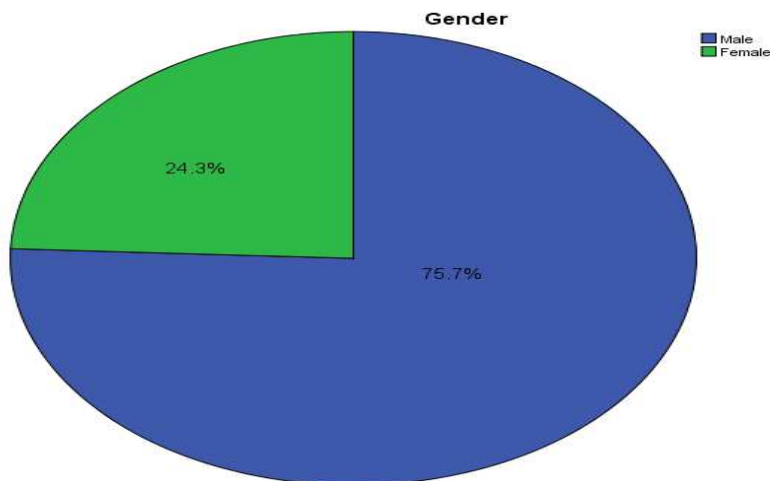
Source: Field Survey, 2013

4.2.5 Distribution of the Respondents by Age

The respondents were asked to indicate their age bracket from options that had been provided on the questionnaire. The results were as presented in the table 4.5 and Figure 4.2.

Table 4.5: Age of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
26-35	21	56.8	56.8	56.8
36-45	8	21.6	21.6	78.4
46-55	8	21.6	21.6	100.0
Total	37	100.0	100.0	

Source: Field Survey, 2013

Figure 4.2: A Geographical Presentation of Respondents by Age
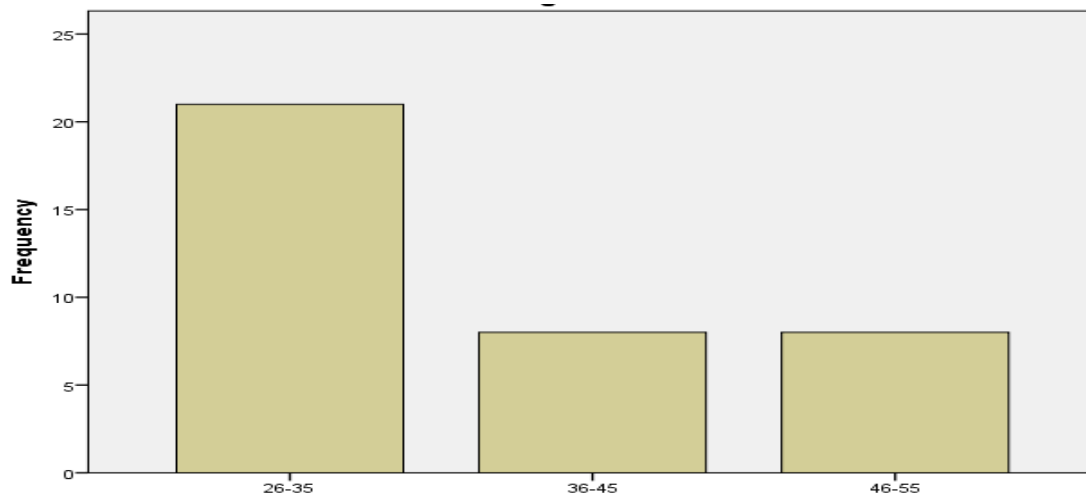
Source: Field Survey, 2013.

As shown in table 4.5 and figure 4.2, majority of the respondents (56.8%) were aged between 26-35 years, while 21.6% were between 36-45 and 46-55 years of age each. This study therefore establishes that majority of the supply chain management departmental heads in pharmaceutical companies fall within the 26-35 age brackets. This is considered

by most pharmaceutical organizations as a prime age that possesses the requisite supply chain management knowledge and skills, and is capable of understanding the risks associated with supply chain processes within the pharmaceutical industry, a view that is corroborated by Vikram (2013). According to Vikram (2013), there is need for organizations to review the skills and knowledge of their employees with a view of ensuring that they (the employees) have the effective understanding of the risks attributed to supply chain management processes.

4.2.6: Ownership of the Company

The respondents were also asked to indicate the nature of ownership of their respective companies as was provided in the questionnaires. The results were as presented in table 4.6. According to the findings of the study, majority of the respondents (54.1%) revealed their organizations were owned locally, while 45.9% of the respondents indicated that their organizations were foreign owned. The general indication therefore is that most pharmaceutical companies in Kenya are owned locally.

Table 4.6: Ownership of the Company

	Frequency	Percent	Valid Percent	Cumulative Percent
Local	20	54.1	54.1	54.1
Foreign	17	45.9	45.9	100.0
Total	37	100.0	100.0	

Source: Field Survey, 2013.

4.2.7: Duration Worked in the Organization

Information concerning the duration worked in the organization was another aspect that respondents were asked to provide. The findings are as provided in table 4.7 and figure

4.3. According to the study findings, most of the respondents (43.2%) had worked in their respective organizations for more than eight years. The study also established that 35.1% of the respondents had worked in their respective organizations for a period of less than three years, while 10.8% of the respondents had worked for durations of 3-5 and 6-7 years each. This shows that most of the respondents had worked long enough with their firms to give credible information.

Table 4.7: Duration Worked in the Organization

Duration Worked	Frequency	Percent	Valid Percent	Cumulative Percent
Below 3	13	35.1	35.1	35.1
3-5	4	10.8	10.8	45.9
6-7	4	10.8	10.8	56.8
Above 8	16	43.2	43.2	100.0
Total	37	100.0	100.0	

Source: Field Survey, 2013

Figure 4.3: Duration Worked
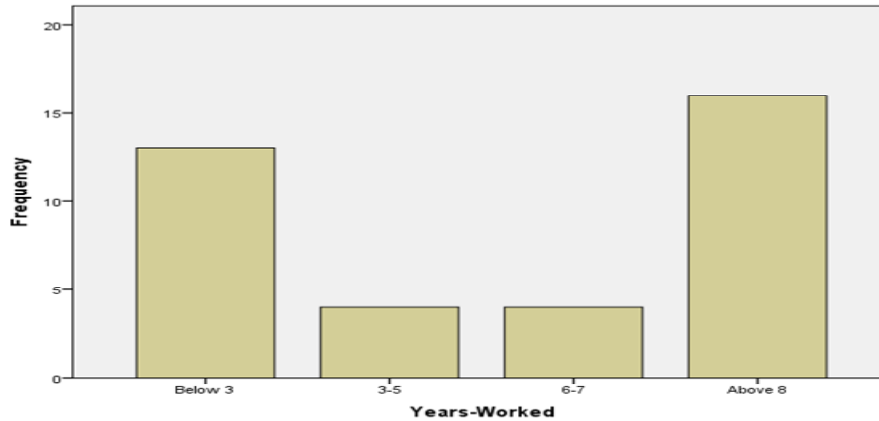
Source: Field Survey, 2013.

As shown in table 4.8, the study found out that all heads of supply chain department were individuals who had worked in their respective organizations for a period of more than eight years. This could be attributed to level of experience of those who had worked in their organizations for longer periods. The phenomenon could also be attributed to the

level of trust between the employees and the company. Sinha *et al.* (2004) point out that lack of trust is one of the major factors that contribute to supply chain risks. According to Lengnick-Hall (1998), trust between an organization and its employees can create resources that lead to a competitive advantage. Spekman *et al.* (1998) observe that trust between an organization and its employees can contribute significantly to the long-term stability of an organization and its supply chain.

Table 4.8: A Crostabulation of Respondent Title and Years-Worked

Respondent Title	Years-Worked				Total
	Below 3	3-5	6-7	Above 8	
Quality and Compliance	0	2	0	4	6
Director	0	2	0	0	2
Head Production	0	0	0	2	2
Head of Supply Chain	0	0	0	6	6
QA Manager	3	0	0	0	3
Pharmacist	8	0	0	2	10
Supervisor	0	0	2	0	2
Site Director	0	0	0	2	2
Logistics	0	0	2	0	2
Purchasing Officer	1	0	0	0	1
Executive	1	0	0	0	1
Total	**13**	**4**	**4**	**16**	**37**

Source: Field Survey, 2013.

4.3 Supply Chain Risk Management Process

Under this section, the study sought to explore the supply chain risk management process within the pharmaceutical organizations under study. The findings were as presented in the subsequent sub-sections. Table 4.9 presents the mean, median, mode, standard deviations, and percentiles for the questions that the respondents were asked under this section.

Table 4.9: Mean, Median, Standard Deviations, and Percentiles

		Qn8a	Qn8b	Qn8c	Qn8d	Qn8e	Qn8f	Qn8g	Qn8h	Qn8i	Qn8j	Qn8k	Qn8l
N	Valid	35	35	35	33	35	33	35	35	35	33	35	35
	Missing	2	2	2	4	2	4	2	2	2	4	2	2
Mean		2.97	2.29	2.54	3.21	2.71	3.30	3.31	2.71	2.86	2.48	3.03	3.17
Median		3.00	2.00	3.00	4.00	3.00	4.00	4.00	3.00	3.00	2.00	3.00	3.00
Mode		4	2	1	4	1	5	4	3[a]	4	2	1	5
Std. Dev.		1.124	1.126	1.379	1.431	1.467	1.591	1.451	1.250	1.353	1.00	1.581	1.63
	25	2.00	1.00	1.00	1.50	1.00	1.50	2.00	2.00	2.00	2.00	1.00	1.00
Percentiles	50	3.00	2.00	3.00	4.00	3.00	4.00	4.00	3.00	3.00	2.00	3.00	3.00
	75	4.00	3.00	4.00	4.00	4.00	5.00	4.00	4.00	4.00	3.00	4.00	5.00

Source: Field Survey, 2013

Table 4.10: Percentages of Responses per Question

Response	Qn8a	Qn8b	Qn8c	Qn8d	Qn8e	Qn8f	Qn8g	Qn8h	Qn8i	Qn8j	Qn8k	Qn
Strongly Agree	11.4%	28.6%	**37.1%**	24.2%	**34.3%**	24.2%	17.1%	22.9%	22.9%	18.2	**28.6%**	
Agree	22.9%	**31.4%**	8.6%	6.1%	8.6%	9.1%	17.1%	20.0%	17.1%	**33.3**	11.4%	
Neutral	28.6%	28.6%	22.9%	6.1%	20.0%	9.1%	5.7%	**25.7%**	22.9%	30.3	11.4%	
Disagree	**31.4%**	5.7%	25.7%	**51.5%**	25.7%	27.3%	**37.1%**	**25.7%**	**25.7%**	18.2	25.7%	
Strongly Disagree	5.7%	5.7%	5.7%	12.1%	11.4%	**30.3%**	22.9%	5.7%	11.4%		22.9%	
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**1**

Source: Field Survey, 2013

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According to the findings of the study, majority of the respondents (31.4%) disagreed that their respective organizations had a supply chain risk management leadership team in place, with most of them (31.4%) agreeing that their organizations had risk management processes in place. Most respondents (37.1%) strongly agreed that emerging risks formed part of the risk agenda item in the monthly risk management meetings of their organizations, while majority (51.5%) disagreeing that there was a computerized risk management system updated on regular basis within their organizations.

With regard to review of old risks, most respondents (34.3%) strongly agreed that their organizations proactively reviewed old risks and mitigated the same. However, majority of the respondents (30.3%) strongly disagreed that their organizations' risk log were updated, with majority (37.1%) disagreeing that there were key performance indicators (KPIs) on supply chain risk mitigation in their organizations. As for risk ownership, most respondents (25.7%) were neutral on whether each departmental manager in supply chain was accountable for all risks in their organizations, with a similar percentage disagreeing that each departmental manager in supply chain was accountable for all risks in their organizations.

Majority of the respondents (25.7%) disagreed that risk owners presented their own situation target proposal (STPs) on how they will mitigate supply chain risk, with most of them (33.3%) agreeing that supply chain risks were mitigated when they fell due. Most of the respondents (28.6%) strongly agreed that their organizations had risk escalation processes in place, while most of them (31.4%) strongly disagreeing that supply chain

risk-based audits were carried out in their organizations. Generally, majority of respondents (42.9%) rated the supply chain risk management processes in their organizations as bad.

Table 4.11: Correlations on supply chain risk management process

	1	2	3	4	5	6	7	8	9	10	11	12	13
Qn8m	1.000	.728	.887	.942	.868	.870	.903	.909	.919	.845	.788	.948	.938
Qn8a	.728	1.000	.657	.674	.701	.601	.626	.781	.580	.480	.578	.679	.802
Qn8b	.887	.657	1.000	.844	.742	.763	.771	.771	.853	.761	.889	.821	.771
Qn8c	.942	.674	.844	1.000	.807	.937	.780	.809	.911	.783	.718	.869	.831
Qn8d	.868	.701	.742	.807	1.000	.827	.872	.851	.733	.739	.630	.777	.853
Qn8e	.870	.601	.763	.937	.827	1.000	.801	.762	.804	.660	.615	.790	.793
Qn8f	.903	.626	.771	.780	.872	.801	1.000	.884	.741	.734	.647	.896	.930
Qn8g	.909	.781	.771	.809	.851	.762	.884	1.000	.732	.698	.700	.907	.894
Qn8h	.919	.580	.853	.911	.733	.804	.741	.732	1.000	.914	.745	.838	.787
Qn8i	.845	.480	.761	.783	.739	.660	.734	.698	.914	1.000	.722	.730	.729
Qn8j	.788	.578	.889	.718	.630	.615	.647	.700	.745	.722	1.000	.679	.685
Qn8k	.948	.679	.821	.869	.777	.790	.896	.907	.838	.730	.679	1.000	.908
Qn8l	.938	.802	.771	.831	.853	.793	.930	.894	.787	.729	.685	.908	1.000

Source: Field Survey, 2013

The study establishes that risk escalation process has the highest positive impact (.948) on the general supply chain risk management process, followed by the culture of making emerging risks part of the risk agenda item in the monthly risk management meetings of an organization (at .942). According to the findings of the study, having a supply chain risk management leadership team in place has the least positive impact on an organization's general supply chain risk management process at .728 (see table 4.11). These findings corroborate Chakravarty's (2013) call for the need for top organization's management to deploy risk management processes and systems that make visible risks and propose remediation of the same.

4.4 Safety Management

Under this section, the study sought to assess the safety management status of the pharmaceutical organizations under study. The findings were as presented in the subsequent sub-sections. Table 4.13 presents the mean, median, mode, standard deviations, and percentiles for the questions that the respondents were asked under this section

Table 4.12: Mean, Median, Standard Deviations, and Percentiles Statistic

Table 4.13 shows that majority of the respondents (51.4%) strongly agreed that their respective organizations had defined and documented their Occupational Health and Safety (OHS) policy, with most of them (the respondents) (59.5%) agreeing that there was evidence that safety management policy had been communicated and implemented throughout their organizations. Similarly, majority of them (40.5%) agreed that their organizations had a procedure to identify the appropriate OHS hazards and risks resulting from its activities, with majority (42.9%) further agreeing that supply chain safety risk assessments in their organizations addressed: processes, facilities, contractors, and off-site working.

With regard to regulatory operational requirements, majority of respondents (37.8%) agreed that all risks having legal and/or regulatory operational requirements had been identified by their respective organizations. Most of the respondent (54.1%) also agreed that there was a mechanism for communicating relevant safety information on legal and regulatory requirements to employees and interested parties. In addition, majority (56.8%) agreed that OHS objectives had been established at each relevant function and level in their organizations. On roles and responsibilities, majority of respondents (40.5%) agreed that responsibilities and levels of authority for all personnel managing OHS management system had been defined and documented in their organizations. Majority (40.5%) also agreed that core elements of the safety management system and their interaction, had been described in electronic form, with most of them (45.9%) agreeing further that systems were in place to communicate relevant procedures and/or requirements, regarding OHS hazards associated with purchased: products, equipment and services.

As for procedures, most of the respondents (54.1%) agreed that procedures had been implemented to identify the potential for and response to incidents, accidents, and emergencies within their organizations, while majority (54.1%) agreeing that there were procedures in place to prevent and mitigate the impacts of incidents, accidents and emergencies in their organizations. Majority (48.6%) also agreed that emergency preparedness and response procedures were reviewed and revised as appropriate through the risk assessment route, while most of them (45.9%) agreeing that emergency procedures were tested where practicable. Most of the respondents (64.9%) agreed that procedures in their organizations ensured that affected personnel were adequately trained for foreseeable situations including use of emergency equipment where appropriate. Moreover, most of them (43.2%) strongly agreed that internal safety audit procedures had been developed, while majority (48.6) strongly agreeing that there was periodic management reviews on safety management in their organizations. Overall, majority of the respondents (56.8%) rated the safety management in their respective organizations as good.

As shown in table 4.14, the findings of the study indicate that the independent variables have significant impact on the general safety management in an organization. Reviewing and revising emergency preparedness and response procedures appropriately through the risk assessment route has the highest positive impact (at .875) on the overall safety management in an organization (see table 4.14 for the correlations between the variables). This finding therefore confirms Vikram's (2013) assertion that information about safety management practices that pose high risk of production interruption need to be reviewed

and documented, often by third parties. According to Vikram (2013), reviewing safety management practices may provide critical insights into the risk of interruption from doing business with an external supplier or from risks that exist internally within a vertically integrated company. Therefore, to assess supply chain risk exposures, Norrman and Jansson (2004) maintain that the company must identify not only direct risks to its operations, but also the potential causes or sources of those risks at every significant link along the supply chain.

Table 4.14: Correlation on safety management

		Qn9r	Qn9a	Qn9b	Qn9c	Qn9d	Qn9e	Qn9f	Qn9g	Qn9h	Qn9i	Qn9j	Qn'
	Qn9r	1.000	.788	.758	.859	.585	.531	.813	.753	.797	.791	.856	.
	Qn9a	.788	1.000	.911	.790	.722	.497	.725	.574	.648	.656	.693	.
	Qn9b	.758	.911	1.000	.752	.651	.366	.725	.526	.471	.485	.674	.
	Qn9c	.859	.790	.752	1.000	.806	.647	.912	.621	.681	.755	.869	.
	Qn9d	.585	.722	.651	.806	1.000	.715	.765	.424	.593	.575	.648	.
	Qn9e	.531	.497	.366	.647	.715	1.000	.642	.311	.513	.469	.496	.
	Qn9f	.813	.725	.725	.912	.765	.642	1.000	.686	.692	.669	.882	.
	Qn9g	.753	.574	.526	.621	.424	.311	.686	1.000	.848	.616	.728	.
Pearson Correlation	Qn9h	.797	.648	.471	.681	.593	.513	.692	.848	1.000	.795	.676	.
	Qn9i	.791	.656	.485	.755	.575	.469	.669	.616	.795	1.00	.702	.
	Qn9j	.856	.693	.674	.869	.648	.496	.882	.728	.676	.702	1.000	.
	Qn9k	.865	.698	.601	.739	.478	.528	.703	.617	.710	.736	.653	1.
	Qn9l	.831	.801	.698	.775	.570	.481	.784	.621	.681	.750	.718	.
	Qn9m	.875	.807	.798	.751	.513	.235	.700	.627	.633	.785	.765	.
	Qn9n	.729	.856	.707	.754	.604	.434	.639	.396	.574	.781	.647	.
	Qn9o	.829	.839	.733	.647	.419	.343	.617	.524	.657	.721	.625	.
	Qn9p	.868	.760	.671	.799	.527	.313	.693	.638	.697	.760	.782	.
	Qn9q	.813	.613	.518	.587	.400	.199	.511	.681	.803	.696	.628	.

Source: Field Survey, 2013.

4.5: People Capability

Under this section, the study sought to explore the people capability within the pharmaceutical organizations under study. The findings were as presented in the subsequent sub-sections. Table 4.15 presents the mean, median, mode, standard deviations, and percentiles for the questions that the respondents were asked under this section

Table 4.15: Mean, Median, and Standard Deviations

		Qn10a	Qn10b	Qn10c	Qn10d	Qn10e	Qn10f	Qn10g	Qn10h	Qn10i
N	Valid	35	35	35	35	35	35	35	35	35
	Missing	2	2	2	2	2	2	2	2	2
Mean		2.77	2.46	2.51	3.17	2.43	2.66	3.09	3.11	2.80
Median		3.00	2.00	2.00	4.00	2.00	3.00	3.00	3.00	3.00
Mode		3	2	2	4	3	2	2	2	3
Std. Deviation		.877	.780	.919	1.071	.778	1.056	1.067	1.255	.797

Source: Field Survey, 2013.

Table 4.16 shows that most of the respondents (54.3%) were neutral as to whether all supply chain employees in their organizations were trained on supply chain risk management, with most of them (54.3%) agreeing that trading partners kept the organization fully informed about issues that affected the organization business. Similarly, majority of the respondents (42.9%) agreed that trading partners were informed of changing needs in advance, while majority (48.6%) disagreeing that current skill level of supply chain employees in their jobs in the organization was adequate. In addition, most of the respondents (42.9%) were neutral on whether managers within supply chain were accountable for supply chain risk, with most of them (37.1%),

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agreeing that people in supply chain demonstrated a high level of performance behavior. Moreover, most of the respondent (40.0%) agreed that supply chain risk management formed part of all personnel job description, with majority (34.3) agreeing further that all training records were available for people concerning supply chain risk. Overall most of the respondents rated the people capability of their respective organizations as average (see figure 4.11 for graphical presentation of the above findings).

According to the findings in table 4.17, the independent variables have significant impact on an organization's people capability, with informing trading partners of changing needs in advance having the most significant positive impact (at .867) on an organization's people capability, followed by training of supply chain employees on supply chain risk management at .816 (see table 4.17 for the relationships between the variables). The findings are in keeping with Vikram's (2013) call for the need for organizations to equip their employees with adequate skills and knowledge to be able to understand supply chain risks, while revealing and discouraging practices the increase supply chain risks.

Table 4.16: Percentages of Responses per Question (Question 10a-9i)

Response	Qn10a	Qn10b	Qn10c	Qn10d	Qn10e	Qn10f	Qn10g	Qn10h	Qn10i
Strongly Agree	11.4	5.7	11.4	-	11.4	11.4	-	5.7	5.7
Agree	17.1	54.3	42.9	42.9	40.0	37.1	40.0	34.3	25.7
Neutral	54.3	28.6	28.6	2.9	42.9	31.4	22.9	22.9	51.4
Disagree	17.1	11.4	17.1	48.6	5.7	14.3	25.7	17.1	17.1
Strongly Disagree	-	-	-	5.7	-	5.7	11.4	20.0	-
Total	**100**	**100**	**100**	100	**100**	100	100	100	**100**

Source: Field Survey, 2013

Table 4.17: Correlation

Correlations

		Qn10i	Qn10a	Qn10b	Qn10c	Qn10d	Qn10e
	Qn10i	1.000	.816	.577	.867	.765	.8
	Qn10a	.816	1.000	.243	.733	.700	.7
	Qn10b	.577	.243	1.000	.647	.291	.4
	Qn10c	.867	.733	.647	1.000	.685	.8
Pearson Correlation	Qn10d	.765	.700	.291	.685	1.000	.7
	Qn10e	.806	.751	.443	.834	.792	1.0
	Qn10f	.650	.643	.303	.551	.574	.8
	Qn10g	.678	.587	.446	.433	.450	.3
	Qn10h	.494	.452	.246	.151	.204	.3

Source: Field Survey, 2013

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4.6: Production tradeoffs

Under this section, the study sought to examine the production tradeoffs within the pharmaceutical organizations under study. The findings were as presented in the subsequent sub-sections. Tables 4.18 present the mean, median, mode, standard deviations, and percentiles for the questions that the respondents were asked under this section.

Table 4.18: Mean, Median, Mode, and Standard Deviation

Statistics

		Qn11a	Qn11b	Qn11c	Qn11d	Qn11e	Qn11f	Qn11g	Qn11h
N	Valid	35	35	33	35	35	35	35	35
	Missing	2	2	4	2	2	2	2	2
Mean		4.29	3.34	2.91	2.49	1.80	2.17	3.06	2.77
Median		5.00	3.00	3.00	2.00	2.00	2.00	3.00	3.00
Mode		5	2	2	2	2	2	3[a]	3
Std. Deviation		1.126	1.259	.843	.951	.797	.785	1.027	.547

a. Multiple modes exist. The smallest value is shown

Source: Field Survey, 2013

As shown in table 4.19, most of the respondents (57.1%) strongly disagreed on whether product availability was always a consideration than quality in their organizations. However, majority (37.1%) agreed that economy of scale was a main consideration in production; with most of them (39.4%), agreeing further that tradeoff was key consideration in making or buying decision within production. Similarly, most of those who respondent (57.1%) agreed that the production/service process was automated, with most of them (51.4%) agreeing that significant investments were being made in enterprise-wide information systems than manual work. With regard to informational

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integration, most of the respondents (54.3%) agreed that information applications were integrated within the firm, while majority (31.4%) remaining neutral on whether their organizations were flexible in terms of accommodating customers' special IT-based information system requests and others (31.4% disagreed. Overally, most of the respondents (65.7%) ranked the production tradeoffs of their respective organizations as average.

Table 4.20 shows that prioritizing product availability over quality (at -.368) has a negative impact on an organization's production tradeoffs. Nevertheless, the study established that integrating information application within the firm (.642) had the highest positive impact on an organization's production tradeoffs, followed by making significant investments in enterprise-wide information systems than manual work (at .634).

Table 4.19: Percentages of Responses per (Question 11a-i)

Response	Qn11a	Qn11b	Qn11c	Qn11d	Qn11e	Qn11f	Qn11g	Qn11h
Strongly Agree	5.7	-	-	8.6	37.1	17.1	5.7	-
Agree	5.7	37.1	39.4	57.1	51.4	54.3	25.7	28.6
Neutral	-	20.0	30.3	11.4	5.7	22.9	31.4	65.7
Disagree	31.4	14.3	30.3	22.9	5.7	5.7	31.4	5.7
Strongly Disagree	57.1	28.6	-	-	-	-	5.7	-
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Field Survey

Table 4.20: Correlation on production tradeoffs

Correlations

		Qn11h	Qn11a	Qn11b	Qn11c	Qn11d	
Pearson Correlation	Qn11h	1.000	-.368	.416	.227	.559	
	Qn11a	-.368	1.000	.095	-.296	-.463	
	Qn11b	.416	.095	1.000	-.083	.029	
	Qn11c	.227	-.296	-.083	1.000	.550	
	Qn11d	.559	-.463	.029	.550	1.000	
	Qn11e	.634	-.655	.217	-.074	.287	
	Qn11f	.642	-.456	.415	-.250	.358	
	Qn11g	.495	-.319	.189	-.261	-.059	

a. Dependent Variable: Qn11h

b. Predictors: (Constant), Qn11g, Qn11d, Qn11b, Qn11e, Qn11c, Qn11a, Qn11f

4.7: Supply chain risk mitigation challenges

This section purposed to explore the supply chain risk mitigation challenges faced by the

organizations under study. The findings were as presented in the subsequent sub-sections.

Table 4.21: Mean, Median, Mode, and Standard Deviation

Statistics

	Qn12a	Qn12b	Qn12c	Qn12d	Qn12e	Qn12f	Qn12g	Qn12h	Qn12i	Qn12j	Qn12k	Qn12l	Qn12m	Qn12n	Qn12o	Qn12p	Qn12q	Q
Mean	2.89	2.97	3.03	3.23	2.69	3.63	3.60	3.63	3.23	3.20	2.91	2.79	3.51	3.46	2.63	3.26	3.26	
Median	3.00	3.00	3.00	3.00	3.00	4.00	4.00	4.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	4.00	3.00	
Mode	3	4	4	2ᵃ	2	4	4	4	3	2	2	2	3	3	2	4	2	
Std. Dev.	.718	1.043	.954	1.031	1.051	.808	.946	.910	1.003	1.052	1.259	.820	1.011	1.146	1.190	1.120	1.094	

a. Multiple modes exist. The smallest value is shown

Majority of the respondents responded to different questions under this section as follows: 48.6% were neutral on whether their organizations lacked supply chain management knowledge; 40.0% disagreed that their organizations lacked adequate resources to implement supply chain initiatives sufficiently; with 45.7% disagreeing that their organizations were experiencing poor sales and operations planning process. On ethics, 31.4% of respondents agreed that there were ethical responsibility problems in the supply chain within their organizations, with a similar percentage disagreeing; 31.4% agreed that their organizations had inadequate supply chain performance measures; with 48.6% of the respondents disagreeing that there was lack of trust among supply chain members in their organizations.

40.0% of the respondents disagreed that there was lack of corporation among supply chain members their organizations, while 57.1% disagreeing that there was always stock availability to meet all customer full demand, on time, and 48.6% remaining neutral on whether their organizations lacked motivation among supply chain members. 34.3% of the respondents agreed that customers' geographical distance were high in their organizations, with 45.5% agreeing that suppliers' geographical distance was equally high, and 45.5% agreeing that there were inadequate information systems linkages within the supply chain of their organizations.

42.9% of the respondents were neutral on whether there was conflict among supply chain members in their organizations, with 37.1% remaining neutral on whether there was lack of top management support in their organizations, and 48.6% agreeing that government customs regulations were impacting on their organization's supply chain. 42.9% disagreed that there was poor visibility of demand in their organizations, with 31.4%

agreeing that terrorism was a key factor in supply chain buying and supply decision, and 31.4% disagreeing that there were complexities in the supply chain in their organizations. With regard to quality, 42.9% of the respondents disagreed that there were inconsistent quality supplies in their organizations, while 45.7% remaining neutral on whether there was lack of leverage within their organization's supply chain, and 45.5% disagreeing that their organizations experienced short product life cycles. 42.2% of the respondents were neutral on whether dealing with counterfeit goods was fully aligned in their organization, with 39.4% agreeing that their organizations experienced supply chain disruptions, and 57.5% disagreeing that product recall incidences were more often in their organizations. With regard to order delivery, most of the respondent (24.2%) strongly agreed that poor road infrastructure resulted in delay in order delivery. However, 24.4% of the respondents strongly disagreed that poor road infrastructure resulted in delay in order deliver in their organizations. Overall, most of the respondents (60.0%) rated the mechanisms put in place by their organizations to mitigate supply chain challenges as average (see table 4.22 on these findings).

Table 4.22: Response on supply chain risk mitigation challenges

	QUESTION	RESPONSE (%)					
		S/A	A	N	D	S/D	Total
a)	Lack of supply chain management knowledge		31.4	48.6	20.0	-	**100**
b)	Lack of adequate resources to implement supply chain initiatives sufficiently	11.4	20.0	28.6	40.0	-	**100**
c)	Poor sales and operations planning process		42.9	11.4	45.7	-	**100**
d)	Ethical responsibility problems in the supply chain	-	31.4	25.7	31.4	11.4	**100**
e)	Inadequate supply chain performance measures	14.3	31.4	25.7	28.6	-	**100**
f)	There is lack of trust among supply chain members		8.6	31.4	48.6	11.4	**100**
g)	There is lack of cooperation among supply chain members	-	14.3	28.6	40.0	17.1	**100**
h)	There is always stock availability to meet all customer full demand, on time.		17.1	14.3	57.1	11.4	**100**
i)	Lack of motivation among supply chain members	5.7	11.4	48.6	22.9	11.4	**100**
J)	Customers' geographical distance is high		34.3	22.9	31.4	11.4	**100**
k)	Suppliers' geographical distance is high	6.1	45.5	18.2	12.1	18.2	**100**
l)	Inadequate information systems linkages within the supply chain	-	45.5	30.3	24.2	-	**100**
m)	Conflicts among supply chain members	5.7	2.9	42.9	31.4	17.1	**100**
n)	Lack of top management support	5.7	11.4	37.1	22.9	22.9	**100**
o)	Government customs regulations impacting on the organization supply chain	11.4	48.6	17.1	11.4	11.4	**100**
p)	Poor visibility of demand		40.0	5.7	42.9	11.4	**100**
q)	Terrorism is a key factor in supply chain buying and supply decision		31.4	28.6	22.9	17.1	**100**
r)	Complexities in the supply chain		28.6	28.6	31.4	11.4	**100**
s)	Inconsistent quality supplies		34.3	11.4	42.9	11.4	**100**
t)	Lack of leverage within the organization's supply chain	5.7	8.6	45.7	28.6	11.4	**100**
u)	Short product life cycles		33.3	9.1	45.5	12.1	**100**
v)	Dealing with counterfeit goods is fully aligned	6.1	18.2	42.4	15.2	18.2	**100**
w)	Supply chain disruptions	-	39.4	36.4	18.2	6.1	**100**
x)	Product recall incidences more often	6.1	-	3.0	57.6	33.3	
y)	Poor road Infrastructure resulting to delay in order delivery	24.2	18.2	12.1	21.2	24.2	**100**
z	What is your general comment on your organization Supply chain risk mitigation challenges using a scale of 1-5 whereby 1 very good, 2 good, 3 average, 4 bad, 5 very bad	-	-	60.0	28.6	11.4	**100**

Source: Field Survey, 2013

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

This chapter provides a summary of the findings; the conclusion and the recommendations of the study which sought to determine the supply chain risk mitigation by pharmaceutical firms in Kenya and further establish the challenges faced in adopting the Supply chain risk mitigations and how to overcome them.

5.2   Summary of Findings

This section presents a summary of the findings of the study in relation to its objectives. The general objective of the study was to determine the supply chain risk mitigation in pharmaceutical firms in Kenya. In so doing, the study sought to specifically determine the supply chain risk mitigation by the pharmaceutical firms in Kenya, identify challenges faced in adoption of this Supply chain risk mitigations, and determine how pharmaceutical companies in Kenya overcome challenges in implementing supply chain risk mitigation.

On supply chain risk management process, majority of the respondents disagreed that their respective organizations had a supply chain risk management leadership team in place; majority agreed that their organizations had risk management processes in place, while most of them strongly agreed that emerging risks formed part of the risk agenda item in the monthly risk management meetings of their organizations. Majority of the

respondents disagreed that there was a computerized risk management system updated on regular basis within their organizations, with most of them strongly agreeing that their organizations proactively reviewed old risks and mitigated the same. However, majority strongly disagreed that their organizations' risk log were updated, with most of them disagreeing that there were key performance indicators (KPIs) on supply chain risk mitigation in their organizations. Generally, most of the respondents rated the supply chain risk management processes in their organizations as bad.

On safety management, majority of the respondents strongly agreed that their respective organizations had defined and documented their Occupational Health and Safety (OHS) policy, with most of them agreeing that there was evidence that safety management policy had been communicated and implemented throughout their organizations. Most respondents agreed that their organizations had a procedure to identify the appropriate OHS hazards and risks resulting from its activities, while majority agreeing that supply chain safety risk assessments in their organizations addressed: processes, facilities, contractors, and off-site working. Overall, most respondents rated the safety management in their respective organizations as good.

With regard to people capability, most of the respondents were neutral as to whether all supply chain employees in their organizations were trained on supply chain risk, with majority agreed that trading partners kept the organization fully informed about issues that affected the organization business. Most respondents agreed that trading partners were informed of changing needs in advance, with majority disagreeing that current skill

level of supply chain employees in their jobs in the organization was adequate. Overall most of the respondents rated the people capability of their respective organizations as average

On production tradeoffs, the study found that most respondents strongly disagreed that product availability was always a consideration than quality in their organizations, with majority agreeing that economy of scale was a main consideration in production. Majority agreeing further that tradeoff was key consideration in making or buying decision within production. Majority agreed that information applications were integrated within the firm, while most of them remaining neutral on whether their organizations were flexible in terms of accommodating customers' special IT-based information system requests. Overally, majority ranked the production tradeoffs of their respective organizations as average.

As for supply chain risk mitigation challenges, most respondents were neutral on whether their organizations lacked supply chain management knowledge; many disagreed that their organizations lacked adequate resources to implement supply chain initiatives sufficiently; with majority disagreeing that their organizations were experiencing poor sales and operations planning process, while majority agreeing that there were ethical responsibility problems in the supply chain within their organizations. Most of them agreed that their organizations had inadequate supply chain performance measures, with majority disagreeing that there was lack of trust among supply chain members in their organizations. Majority remained neutral on whether their organizations lacked

motivation among supply chain members, while most respondents agreeing that customers' geographical distance were high in their organizations. Majority agreed that suppliers' geographical distance was equally high, with most of the respondents agreeing that there were inadequate information systems linkages within the supply chain of their organizations. Most of them agreed that government customs regulations were impacting on their organization's supply chain, while majority disagreeing that there was poor visibility of demand in their organizations. Majority agreed that terrorism was a key factor in supply chain buying and supply decision, with most of them disagreeing that there were complexities in the supply chain in their organizations. Most of them strongly agreed that poor road infrastructure resulted in delay in order delivery, while majority strongly disagreeing that poor road infrastructure resulted in delay in order deliver in their organizations. Overall, majority rated the mechanisms put in place by their organizations to mitigate supply chain challenges as average.

5.3   Conclusion

In view of the findings of this study, this study concludes that the supply chain management processes in most pharmaceutical firms in Kenya are bad because of lack of supply chain risk management leadership teams in place, lack of computerized risk management system, which updated on a regular basis, and lack of an updated organization risk log. The bad state of supply chain risk management process in most pharmaceutical companies in Kenya is also attributed to lack of KPIs on supply chain risk mitigation, lack of presentation of STPs by risk owners, and supply chain risk-based audits. Even though this is the case in most companies in the pharmaceutical industry in

Kenya, most firms incorporate emerging risks in their monthly meetings, proactively reviews old risks, and mitigate the same, while also mitigating supply chain risks when they fall due.

The safety management processes in most pharmaceutical companies in Kenya is good according to the findings of the study. This is attributed to a number of factors, including inter alia: availability of defined and documented OHS policies, implementation of the same, availability of mechanisms for communicating safety information on legal and regulatory requirements to employees and other stakeholders, as well as well-defined responsibilities for the OHS personnel. Most companies also have systems to communicate relevant procedures /requirements on OHS hazards vis-à-vis purchased products, equipment, and services. The internal safety audit procedures in most of the companies have also been developed, with periodic management reviews on safety management being undertaken.

Even though most pharmaceutical organizations in Kenya get informed about issues that affect their businesses, inform their trading partners on changing needs in advance, and include supply chain risk management in their personnel job descriptions; the people capability in most pharmaceutical companies in Kenya is average. This is mainly attributed to inadequate supply chain management skills among employees of most organizations in the industry.

Even though most pharmaceutical organizations in Kenya consider tradeoff as key in making production-related decisions, have an automated production/service process, and have integrated information application systems; the production tradeoffs in most of these organizations remain average. This is due to lack of flexibility on the part of most organizations to accommodate the special IT-based information requests of their customers.

Finally, the mitigation mechanisms developed by most pharmaceutical organizations in Kenya to address supply chain risks are average according to the findings of the study. Most organizations face ethical responsibility problems in their supply chains, high customer/supplier-geographical distances, and inadequate information systems linkages within the supply chain. Furthermore, the government customs regulations impact on the supply chain of most organizations, with acts of terrorism being major concerns in making supply chain decisions. Most organizations also suffer supply chain disruptions.

5.4   Recommendations

Based on the findings of the study, this study makes the following recommendations: there is need for pharmaceutical organizations in Kenya assemble and have in place a supply chain risk management leadership team, pharmaceutical organizations also need to computerize their risk management systems and update them on a regular basis, organizations should also develop their risk logs and update them regularly, key performance indicators (KPIs) should also form part of supply chain mitigation systems of pharmaceutical organizations in the industry, organizations should carry out supply

chain risk-based audits on a regular basis, pharmaceutical organizations should provide their supply chain employees with adequate skills and knowledge to be able to perform their jobs in a more effective and efficient manner, all supply chain employees need to be trained on modern approaches to managing supply chain risks, pharmaceutical organizations need to be flexible in terms of accommodating special IT-based information system requests of their customers, there is need for organizations to provide adequate resources for implementing supply chain initiatives efficiently, organizations should address ethical responsibility problems in their supply chains effectively, pharmaceutical companies should also provide adequate supply chain performance measures.

There is need to adopt processes/approaches that will help in reducing the geographical distances between the customers and suppliers of pharmaceutical organizations within the industry i.e. sourcing closer to the market. Adequate information systems linkages within the supply chains of pharmaceutical companies in Kenya also need to be provided. On Government customs regulations that impact on the organizations within the pharmaceutical industry in Kenya, there is need to be reviewed with a view to eliminating those that impact negatively on the organizations' supply chains or have a strategy on managing this risk. Finally, causes of supply chain disruptions among pharmaceutical organizations in Kenya need to be identified and effective mechanism developed to address/eliminate/prevent them.

5.5 Limitation of the study

The research work was mainly focused on managers handling supply chain roles. Pharmaceutical companies have several other functional departments hence the response obtained from only supply chain related managers may not be representative of an entire organization. Moreover, staffs that are involved in the day to day supply chain activities and are not managers were not considered for the study, and hence the findings can only be used as a guide and can also provide a basis for future research. The research work was also accomplished with a lot of time constraints.

5.6 Areas for Further Study

Future researchers should investigate the following pertinent areas: The impact of supply chain risks on the financial performance of pharmaceutical organizations in Kenya, The impact of supply chain risks on product quality among pharmaceutical organizations in Kenya and Supply chain risk mitigation on other fast moving consumer industry in Kenya

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APPENDIX 1

COMPLIMENTARY LETTER TO THE RESPONDENTS

Dear Sir/Madam,

<u>To Whom It May Concern</u>

The bearer of this letter……………………………………………………….

Registration Number………………………..Telephone……………………...

Is a Master of Business Administration (MBA) student at the University of Nairobi.

The student is required to submit, as part of the course work assessment, a research project report on a given management problem. We would like the students to do their projects on real life problems affecting firms in Kenya today. We would therefore appreciate if you assist the student collect data in your organization to this end. The results of the report will be used solely for purpose of the research and in no way will your organization be implicated in the research findings. A copy of the report can be availed to the interviewed organizations on request.

Yours respectfully,

The Coordinator,

MBA Programme

APPENDIX 2: LIST OF REGISTERED PHARMACEUTICAL COMPANIES IN KENYA

1.	Abbott laboratories
2.	Assia
3.	Astra Zeneca
4.	Bayer Healthcare AC
5.	Boehringer Ingelheim Gmbh
6.	Bristol-Myers Squibb
7.	C. Mehta & Co
8.	Cadilla Pharmaceuticals
9.	Cosmos limited
10.	Dawa Limited
11.	Eli Lilly & Co Chemicals
12.	Framin Kenya
13.	Galaxy
14.	GlaxoSmithKline Limited
15.	Globe
16.	Goodman Agencies
17.	Harley's Limited
18.	Laborex
19.	Laboratory and Allied Kenya Limited
20.	Joshansen & Soehne
21.	Johnson & Johnson
22.	Lords Healthcare
23.	Menarini S.A
24.	Merc & Co Ltd
25.	Metro Pharmaceuticals
26.	Norbrook Kenya Limited
27.	Norvatis Pharma Services
28.	Pan Pharmaceuticals
29.	Pharmaceuticals Manufacturing Company
30.	Phillips
31.	Population Services International
32.	Regal
33.	Sai
34.	Sanofi Aventis
35.	Schering Plough corp
36.	Servier
37.	Synermed Pharmaceuticals
38.	Unicorn Pharma
39.	Unisupplies Limited
40.	Universal Corporation
41.	Wessex Pharmaceuticals
42.	Wockaine International Limited
43.	Wockhardt Limited
44.	Wyeth
45.	Pfizer Labs Limited
46.	Roche

Source: Pharmacy and Poisons board (2012)

APPENDIX 3: QUESTIONNAIRE
Instructions: Please answer questions by putting a tick [√] in the appropriate box or by writing in the space provided.

SECTION A: GENERAL INFORMATION

1) Name of company _____

2) Title of respondent _____

3) Division/Department _____

4) Gender of respondent

   a) Male   ( )

   b) Female   ( )

5) Age in years

     a) 20 – 25   ( )

     b) 26 – 35   ( )

     c) 36 – 45   ( )

     d) 46 – 55   ( )

     e) Above 55 ( )

6) Indicate ownership of your company

     a) Local   ( )

     b) Foreign   ( )

     c) Government ( )

     d) Others (Specify)_____

7) How many years have you worked in your organization?

     a) Less than 3 years   ( )

     b)   3 – 5 years   ( )

     c) 6 – 7 years   ( )

     d) Above 8years   ( )

SECTION B: SUPPLY CHAIN RISK MANAGEMENT PROCESS

8) **Using a scale of 1 – 5 where 1 is strongly agree, 2 – agree, 3 – Neutral, 4- Disagree and 5 – strongly disagree, respond to the following statements that describe supply chain risk management process in your organization.**

		1	2	3	4	5
a)	The organization has a supply chain risk management leadership team in place					
b)	There is risk management process in the organization.					
c)	Emerging risks form part of the risk agenda item in the monthly risk management meeting					
d)	Organization has computerized risk management system updated on regular basis.					
e)	There is proactive review of old risks and mitigation of the same					
f)	Organization risk log is updated.					
g)	There are key performance indicators (KPIs) on supply chain risk mitigation.					
h)	Each departmental manager in supply chain is accountable for all risks (risk owners)					
i)	Risk owners present their own situation target proposal (STPs) on how they will mitigate supply chain risk					
j)	Supply chain risks are mitigated when they fall due.					
k)	There is risk escalation process in place					
l)	Supply chain risk based audits are carried in organization.					

m) Please rate the overall Supply chain risk management process of your company using a scale of 1-5 whereby 1 very good, 2 good, 3 average, 4 bad, 5 very bad

SECTION C: SAFETY MANAGEMENT

9) **To what extent do you agree with the following statements on Safety Management in your organization? Use a scale of 1-5 where 1 – Strongly agree, 2 – Agree, 3 – Neutral, 4 – Disagree, 5 – Strongly disagree**

		1	2	3	4	5
a)	The organisation has defined and documented its Occupational Health and Safety (OHS) policy.					
b)	There is evidence that safety management policy has been communicated and implemented throughout the organisation.					
c)	The organisation has a procedure to identify the appropriate OHS hazards and risks resulting from its activities.					
d)	Supply chain safety risk assessments in the organization address: processes, facilities, contractors and off-site working.					
e)	All risks having legal and/or regulatory operational requirements have been identified.					
f)	There is a mechanism for communicating relevant safety information on legal and regulatory requirements to employees and interested parties					
g)	OHS objectives have been established at each relevant function and level in the organization					
h)	Responsibilities and levels of authority for all personnel managing OHS management system have been defined and documented					
i)	Core elements of the safety management system and their interaction, have been described in electronic form					
j)	Systems are in place to communicate relevant procedures and/or requirements, regarding OHS hazards associated with purchased: products, equipment and services.					
k)	Procedures have been implemented to identify the potential for and response to incidents, accidents and emergencies					

		1	2	3	4	5
l)	Procedures in place to prevent and mitigate the impacts of incidents, accidents and emergencies					
m)	Emergency preparedness and response procedures reviewed and revised as appropriate through the risk assessment route					
n)	Emergency procedures are tested where practicable					
o)	Procedures ensure that affected personnel are adequately trained for foreseeable situations including use of emergency equipment where appropriate					
p)	Internal safety audit procedures have been developed.					
q)	There is periodic management reviews on safety management					

r) What is your general comment on your organizational safety management using a scale of 1-5 whereby 1 very good, 2 good, 3 average, 4 bad, 5 very bad

_____

SECTION D: PEOPLE CAPABILITY

10) **Using a scale of 1- 5 where is 1 – Strongly agree, 2 – Agree, 3 – Neutral, 4 – Disagree, 5 – Strongly disagree, respond to the following   statements   that describe People capability in your organization.**

		1	2	3	4	5
a)	All supply chain employees are trained on supply chain risk management					
b)	Trading partners keep the organization fully informed about issues that affect the organization business					
c)	Trading partners are informed in advance of changing needs					
d)	Current skill level of supply chain employees in their jobs in the organization is adequate					
e)	Managers within supply chain are accountable for supply chain risk					

f)	People in supply chain demonstrate a high level of performance behaviour.					
g)	Supply chain risk management form part of all personnel job description					
h)	All training records are available for people concerning supply chain risk					

I) What is your general comment on your organizational Supply chain People capability using a scale of 1-5 whereby 1 very good, 2 good, 3 average, 4 bad, 5 very bad

_____

SECTION E: PRODUCTION TRADEOFFS

11) **In a scale of 1- 5 where is 1 – Strongly agree, 2 – Agree, 3 – Neutral, 4 – Disagree, 5 – Strongly disagree, respond to the following statements that describe your production tradeoffs in organization's supply chain.**

		1	2	3	4	5
a)	Product availability is always a consideration than quality					
b)	Economy of scale is main consideration in production					
c)	Trade off is key consideration in make or buy decision within production					
d)	The production/service process is automated					
e)	Significant investments are being made in enterprise wide information systems than manual work					
f)	Information applications are integrated within the firm					
g)	The organization is flexible in terms of accommodating customers' special IT – based information system requests					

h) What is your general comment on your Supply chain Production trade off using a scale of 1-5 whereby 1 very good, 2 good, 3 average, 4 bad, 5 very bad

_____

SECTION F: SUPPLY CHAIN RISK MITIGATION CHALLENGES

12) **Using a scale of 1- 5 where is 1 – Strongly agree, 2 – Agree, 3 – Neutral, 4 – Disagree, 5 – Strongly disagree, respond to the following statements on the challenges facing your organization in adoption of effective supply chain risk mitigation**

		1	2	3	4	5
a)	Lack of supply chain management knowledge					
b)	Lack of adequate resources to implement supply chain initiatives sufficiently					
c)	Poor sales and operations planning process					
d)	Ethical responsibility problems in the supply chain					
e)	Inadequate supply chain performance measures					
f)	There is lack of trust among supply chain members					
g)	There is lack of cooperation among supply chain members					
h)	There is always stock availability to meet all customer full demand, on time.					
i)	Lack of motivation among supply chain members					
J)	Customers' geographical distance is high					
k)	Suppliers' geographical distance is high					
l)	Inadequate information systems linkages within the supply chain					
m)	Conflicts among supply chain members					
n)	Lack of top management support					
o)	Government customs regulations impacting on the organization supply chain					
p)	Poor visibility of demand					
q)	Terrorism is a key factor in supply chain buying and supply decision					
r)	Complexities in the supply chain					
s)	Inconsistent quality supplies					
t)	Lack of leverage within the organization's supply chain					

u)	Short product life cycles					
v)	Dealing with counterfeit goods is fully aligned					
w)	Supply chain disruptions					
x)	Product recall incidences more often					
y)	Poor road Infrastructure resulting to delay in order delivery					

z) What is your general comment on your organization Supply chain risk mitigation challenges using a scale of 1-5 whereby 1 very good, 2 good, 3 average, 4 bad, 5 very bad

_____

13) Has your organization faced other challenges in trying to enhance effective supply chain risk mitigation other than the ones mentioned above in question 12?

    Yes   ( )

    No   ( )

    If yes, what are these challenges?

1.	
2.	
3.	
4.	

How does your company overcome supply chain risk mitigation challenges in one above?

1.	
2.	
3.	
4.	

THANK YOU FOR YOUR PARTICIPATION