EFFECTS OF SUPPLY CHAIN RISK MANAGEMENT ON ORGANIZATION PERFORMANCE: CASE OF ACCELAR GLOBAL LOGISTICS

BY

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UNITED STATES INTERNATIONAL UNIVERSITY AFRICA

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EFFECTS OF SUPPLY CHAIN RISK MANAGEMENT ON ORGANIZATION PERFORMANCE: CASE OF ACCELAR GLOBAL LOGISITSICS.

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SUMMER 2017
DECLARATION

This project report is my original work and has not been presented for a degree in any other university.

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

PAUL MUSYOKA NGII (REG. NO. 646283)

This project has been submitted for examinations with my approval as University Supervisor.

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

Prof. Paul Katuse.

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

Dean Chandaria School of Business
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ABSTRACT

The project sought to assess the effects of supply risk management on organization performance. Three research questions were formulated to facilitate the realization of this: The study sought to establish how supply chain risk management process affects organization performance, how exactly do the supply chain risk management sources and their consequences affect the performance of the organization. Three main supply chain risk management variables were identified, namely, supply chain risk identification, supply chain risk sources and supply chain risk mitigation.

The population for the research included staff at Accelar Global logistics services. The study was a quantitative research with target population of 50 members of the management of Accelar Global Logistics Company. Stratified sampling technique was used to select 50 members of management drawn equally from different departments.

The research methodology included both primary and secondary data; both interviews and questionnaires were used, questionnaires being the main instrument of data collection. The upside of a survey over different instruments incorporate the way that polls are: Practical and a lot of data can be gathered from countless in a brief timeframe and in a moderately financially savvy way, they can be done by the analyst or by any number of individuals with restricted effect to its legitimacy and unwavering quality and the aft ereffects of the surveys can be rapidly and effectively measured by either a specialist or using a product bundle The scientist utilized poll Tables, reference diagrams and pie outlines were utilized amid the examination utilizing the factual of science bundle programming so as to concoct precise investigation and displayed in unthinkable and graphical strategies.

The results obtained showed that there was indeed a relationship between supply chain risk management and organization performance. It was concluded that supply chain risks affect organization performance in the event they materialize and therefore there was need for organization to identify risk exposure, analyze the risk exposure and have in place mitigation plans for the risk identified within their supply chain. The study found that risk identification is the most crucial in the whole risk management process. We have to be aware that risks that are not identified and defined in the first stages of risk management are not later treated and therefore go unseen and
unmanaged. The main sources of risks as identified during the study were technological risks, political risks, market risks, environmental risks and financial risks. The study concluded that risk identification strategies affected organization performance at Accelar logistics. The study concentrated only on supply chain risk identification, risk sources and risk mitigation strategies and how they impact the organization performance. A broader research should be done on the specific impact of these factors to financial, operational performance of firms in Kenya.
DEDICATION

This Research Project Report is dedicated to my mentor Eng. Daniel Ngii, and my parents, Mr. Patrick Musili and Victoria Aphia. They have been my constant source of inspiration; given me the drive and discipline to undertake this task with enthusiasm and determination. Without their love and support this project would not have been made possible.
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LIST OF ACRONYMS

ISO- International Standards organization

SC- Supply chain

SCRM- Supply chain risk management

ESI –Early supply chain involvement

SPSS - Statistical Package for Social Sciences

EOQ – Economic Order Quantity

BCP- Business continuity plan

R & D – Research and Development
CHAPTER ONE

1.0 INTRODUCTION

1.1 Back Ground of Study.

According to Chopra and Sondhi (2004) risk in the concept of supply chains maybe associated with the production/procurement process, the transportation/shipment of goods, and or the demand markets. In today’s volatile era with businesses and, more specifically, supply chains becoming increasingly global, the industrial environment is heavily affected by uncertainty, which can potentially turn into unexpected disruptions. Economic and political turmoil, socio-cultural changes, highly fragmented and demanding behavior of consumers, rapid development and changeover of products, have seriously modified the economic and industrial environment in which companies act, bringing out new issues related to assuring the continuity of the business against potential disruptive events.

Moreover, one of the key factors contributing to disrupting supply chains is the focus on lean supply chains in academia and industry during the 90s. Zero-inventory and just-in-time movement of goods became the dominant model that increased the sensitivity of supply chains. Little issues quickly become big issues. In addition, supply chains have become more global, increasing the order to delivery cycle times by a factor of four or five. This acts to amplify the potential of a disruption and the impact. Outsourcing has also become the dominant model, increasing the forces driving disruptions such as other customers competing for volume and attention, information flow issues, mistrust, win-lose negotiations, financial stress, misalignment of interests and goals. These have increased the likelihood of a disruption exponentially.

As a common term to designate the likelihood of occurrence of such events we use the word risk: Risk is a concept that has applications in everything we do. It has several components, not the least of which is the lack of knowledge about the events that may impact us and our ability to manage them. In order to understand risk we first need to define and decompose it, specifically as it pertains to the supply chain. Under these statements, a common sense definition of risk – acknowledged by the International Organization for Standardization (ISO, 2002) – mainly deals with two of its essential components: losses (along with related amounts) and uncertainty of their occurrence. Another similar definition given by Culp (2001) states that risk can be defined as any source of
randomness that may have an adverse impact on a person or a corporation. In the financial industry, operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events (“New Basel Capital Accord”, 2006).

Although the concept of risk is multi-dimensional and not univocally defined, it is generally established the fact that it is linked to uncertainties associated with events.

Managing risk in the supply chain has never been as challenging as it is today. As more companies have outsourced production to overseas locations, supply chains have been extended, the number of nodes increased, and the complexity of the networks have moved exponentially. In the past, supply chain managers were mainly concerned with reducing cost, reducing purchase price variance, and managing inventory. Today, supply continuity is the single biggest business driver. Indeed, organizations now recognize that “preservation of shareholder value” is of paramount importance in supply chain management, and it has been assessed that disruptions can exert a tremendous impact on the company’s overall performance of supply chain operations, if there are not suitable mechanisms or tools able to prevent or smooth their negative effects, as many real cases have showed in the past few years Sheffi, (2005).

Such supply chain risks are directly reflected in firms’ financial performances, and priced in the financial market. For example, it has been estimated that the average stock price reaction to supply-demand mismatch announcements was approximately -6.8%. In addition, supply chain disruptions can cause firms’ equity risks to increase by 13.50% on average after the disruption announcements. Once the importance of managing risk has been assessed, the further step is to define suitable models to analyze, assess, manage and communicate risk within a company as well as in a complex, geographically dispersed supply chain composed by several, legally independent entities. There are many business benefits to be derived from an increased focus on managing procurement and supply chain risk. These include a higher profit margin through recognizing where risks can be reduced. Outcomes may include paying lower insurance costs; guaranteeing supply chain excellence and contract performance; managing intellectual property rights and dramatically enhancing the negotiation of contract terms and conditions. The reputational benefit from being able to demonstrate effective procurement and supply chain risk management will be a business differentiator when the organization is tendering for new contracts or retaining existing contracts.
Supply chain risk management is a high-level skill. Procurement leaders need to understand how they are key to improving the profitability and reputation of their companies by successfully managing these risks.

1.2 Problem Statement

According to Sheffie (2005) supply continuity is the single biggest business driver. Indeed, organizations now recognize that “preservation of shareholder value” is of paramount importance in supply chain management, and it has been assessed that disruptions can exert a tremendous impact on the company’s overall performance of supply chain operations, if there are not suitable mechanisms or tools able to prevent or smooth their negative effects, as many real cases have showed in the past few years.

However, different firms have different supply chain but what is similar in most organizations supply chain is the risk involved in achieving the desired organizations supply chain. As globalization increases and competition amongst different industries, so does the supply chain become more complex and largely affecting overall performance of an organization? A supply chain disruption due to foreseen and unforeseen events adversely affects the performance of any organization. Lee (2003) the risk of not meeting material requirements for production in any company will largely affect the customer order fulfillment which will lead to reduced sales thus affecting the organization profits. Johnson (2003)

However, despite the huge impact supply chain disruptions have on organization bottom line profits, many organizations still don’t have a supply chain risk management program where they identify the potential risk within their supply chains and come up with contingency plans and mitigations for the supply chain risks that may affect the organization performance. There is need therefore for organization to clearly identify the risks involved in the supply chains and all the uncertainties in delivering value to the customers and supply chain managers should come up with robust mitigation strategies to increase supply chain efficiencies and effectiveness. Kouvellis (2003) the researcher sought to investigate this scenario in Accelar Logistics Ltd

1.3 General Objective

The broad objective of this study was to assess the effects of supply chain risk management on organization’s performance.
1.4 Specific Objectives

1.4.1. To assess the effect of supply chain risk identification process in Accelar Global Logistics

1.4.2. To find out the main supply chain risk sources and their effect on organizations performance in Accelar Global Logistics

1.4.3. To find out the mitigation strategies in place to contain the supply chain risk identified in Accelar Global Logistics

1.5 Significance of study

The results of this study were aimed at reviewing the importance of supply chain risk management in enhancing organization performance. The study also intended to provide a basic framework for which organization can identify supply chain risks and come up with contingent plans to mitigate the risk and improve the efficiency and effectiveness of the supply chains.

The study also aimed at benefiting the potential scholars of the social science in the research field as it would provide insights to the study and make reference. This study was conducted in order to investigate how supply chain disruptions affects organizations performance and how a sound risk management framework if implemented could positively contribute to organization performance.

The research findings were also aimed at benefiting the following categories of persons in the manner suggested:

1.5.1 Research Institutions

The research institutions will benefit from this study by evaluating the findings. The recommendations will be evaluated by researchers to find out if there are meaningful improvements in the supply chain risk management. The areas of further research recommended will be followed by other research institutions as a means of increasing more knowledge on Supply Chain Management.

1.5.2 Policy Makers

This study will benefit policy makers both private and public entities that will use the findings and recommendations to enhance organization performance through sound supply chain risk management practices. The factors contributing to supply chain disruptions will be identified and
mitigation strategies suggested could be used by both private and public entities to improve on their organization performance

1.6 Scope of Study
The scope of the study was mainly to determine and understand the effect of supply chain risk management on organization performance at Accelar logistics. This study sought to find out how organization performance is affected by having a robust supply chain risk management in place. Since supply chain risk management is broad with upstream supply chain process and the downstream process, the study mainly focused on the downstream supply chain process within Accelar Global logistics Ltd Kenya. The study was carried out within Accelar Logistics Ltd Kenya mainly due its complex supply chain. From 1st January to March 23rd 2017…

1.7 Definition of terms
The following terms were used in this document in the sense in which they are defined below:

1.7.1 Risk
According to Jutter (2006), It refers to the potential for loss or failure to meet business objective

1.7.2 Supply chain
According to Lyson (2006) It is a system of organizations, people, activities, information, and resources involved in moving a product or service from supplier to customer. Supply chain activities transform natural resources, raw materials, and components into a finished product that is delivered to the end customer.

1.7.3 Risk management
According to Sheffi (2005) refers to the identification, assessment, control and monitoring of any uncertainties in business that may cause failure or loss

1.7.4 Supply chain Risks
According to Kersten et al., (2006) Supply Chain Risk is defined as the damage assessed by its probability of occurrence that is caused by an event within a company, within its supply chain or
its environment affecting the business processes of more than one company in the supply chain negatively

1.7.5 Risk register

According to Garvin and Levesque (2006), it is list of identified risks with their importance rating

1.7.5 Supply Chain Risk Management

According to Christopher and Peck, (2004), it is the identification and management of risks for the supply chain, through a co-ordinated approach amongst supply chain members, to reduce supply chain vulnerability as a whole.

1.7.6 Business Continuity

Hiles and Barnes, (2001) define it as the development of strategies, plans and actions which provide protection or alternative modes of operation for those activities or business processes which, if they were to be interrupted, might otherwise bring about a seriously damaging or potentially fatal loss to the enterprise.

1.8 Chapter Summary.

This chapter has looked at the background of the study which introduces the reader to the research issue and problem at hand. The chapter clearly provides a rationale for the proposed research as well as a justification about what the researcher did by logically leading into a statement of the problem, research objectives and finally establishing the three research questions that the researcher used in the study. The chapter clearly outlines what the researcher sought to achieve with the study and the gaps to be filled and the significance of undertaking the study.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter reviewed literature materials on how supply chain risk management affects organization performance. This describes in detail, the work of other scholars on supply chain risk management.

2.2 How supply chain risk management affects organizational performance

According to Giunipero and Eltantawy, (2004), In recent years, many companies have observed that beside their “traditional” risks arising from their business activities new risks emerge from sources that are often related to the close collaboration within their supply chain networks. As a consequence, their risk portfolio changes. This development is triggered by drivers originating Inside and outside their supply chains.

According to Jutter (2005), the main drivers are related to the trends of globalization and lean supply chains.

Christopher and Peck (2004) states that in literature, the definitions of the term “risk” as well as the instruments that are used for risk measurement strongly depend on the chosen field of research.

According to Baird and Thomas (1990), common definitions of risk are based on the volatility of possible return, on the concept of uncertainty caused by information deficits and on the willingness to accept a potential loss if positive returns are expected (In traditional decision theory, risk is defined as the variation in the distribution of potential results, their probability of occurrence and their subjective value Arrow, (1965). Thus, risk may indicate both positive and negative deviations from an expected outcome. However, according to March and Shapira (1987) empirical investigation showed that risk is often reduced to its negative component in practical business, whereas positive deviations are considered as “chances”. Correspondingly, risk may be defined as the product of the probability of occurrence of a (negative) event and the resulting amount of damage March et al (1987). With respect to the supply chain networks and based on March and Shapira’s general definition, Supply Chain Risk is defined as the damage - assessed by its probability of occurrence - that is caused by an event within a company, within its supply chain or
its environment affecting the business processes of more than one company in the supply chain negatively Kersten et al., (2006).

The first part of the definition describes the two dimensions needed for risk assessment: the probability of occurrence and the caused damage. However, in contrast to March and Shapira’s general definition of risk management, this definition includes no rule of how those two dimensions have to be combined. The combination of these dimensions strongly depends on a person’s individual attitude towards risk. Therefore it is useful for a practical risk appraisal to use a matrix representing dimensions, probability and damage. The second part of the definition deals with the difference of supply chain risk and usual business risks. Therefore the range of risk is introduced, which distinguishes between usual risks and supply chain risks. Supply chain risks are only those risks that affect at least two companies of a supply chain. However, it is irrelevant whether a company is affected directly or indirectly by a supply chain risk. If companies pass their own, mostly internal risks on to their supply chain partners, the partners are affected indirectly by these risks, whereby consequential damages occur. This effect is not limited to one level of a supply chain. Even companies which are only affected indirectly emit these risks to further members of their network. Companies are often unable to handle indirect supply chain risks because the origins of these risks are simply out of their visibility horizon. According to Svensson, (2004) this phenomena which is responsible for the increasing supply chains risk portfolios is also called vulnerability in literature. The level of vulnerability and therewith the extent of the described effect is proportional to the level of the temporal, functional and relational dependencies within that supply chain. Since the mutual dependency of companies within a supply chain is closely linked to their cooperation and since the importance of this cooperation for company’s performance is growing continuously, the vulnerability of the whole supply chain and individual companies will increase further.

2.2.1 Organization Performance

According to Richard et al. (2009) organizational performance encompasses three specific areas of firm outcomes: (a) financial performance (profits, return on assets, return on investment, etc.); (b) product market performance (sales, market share, etc.); and (c) shareholder return (total shareholder return, economic value added, etc.). Social responsibility (e.g. corporate citizenship, community outreach.)
Hendricks and Singhal (2003) use the event study methodology to estimate the economic impact of supply chain disruptions on shareholder wealth. Based on a sample of 519 publicly announced disruptions they find that after adjusting for normal market movements, shareholders on average lose about 10% of their stock value over a two-day period that spans the day of the announcement and the day before the announcement. Given that the underpinnings of event study methodology is that in an efficient capital market the shareholder wealth effect of an announcement will be immediately reflected in stock prices, one might conclude that the announcement effect of disruptions documented by Hendricks and Singhal measures the overall economic impact of disruptions.

According to Hendricks and Singhal (2003) the risk effects of disruptions are important because changes in risk can have meaningful impact on the firm and its various stakeholders including investors, management, employees, suppliers, and customers. Increased risk may increase the rate of return required by investors, thereby increasing the cost of capital. It might make the firm’s equity a less attractive currency for acquisitions as potential targets may be less willing to do deals that depends on volatile equity prices. It may also increase the probability of financial distress as the chances of the firm not being able to cover its fixed commitments increases as the risk increases. Increases in risk may also result in downgrading of debt by credit rating agencies, making it more expensive and difficult to raise capital.

Risk changes can also create conflicts between the various stakeholders. Galai and Masulis (1976) and Smith and Warner (1979) show that in increase in equity volatility transfers wealth from bondholders to shareholders, a potential source of conflict that may require management time and attention. Risk-averse employees may demand higher compensation to work for a firm that has high risk. Suppliers and customers may also be wary of dealing with the firm that has high risk and may demand some form of assurances and guarantees before doing business with the firm, thereby raising the cost of doing business for the firm. Since changes in risk have economic implications, it is important to understand how disruptions affect risk.

### 2.2.2 Business Continuity Management

Business Continuity Management is one common concept to limit the effects of an incident. Hiles and Barnes, (2001) define it as the development of strategies, plans and actions which provide protection or alternative modes of operation for those activities or business processes
which, if they were to be interrupted, might otherwise bring about a seriously damaging or potentially fatal loss to the enterprise. The basis of business continuity management is the existence of buffers such as inventory, capacity or time buffer.

According to Norrman and Jansson, (2004) the following are the elements of Business Continuity Management:

- Crisis management: Overall process to manage the incident.
- Disaster recovery: Recovery of critical systems, applications, data and networks.
- Business recovery: Critical business processes.
- Contingency planning: Recovery from impact external to the organization.

Essential for the success of all these elements is that they are initiated immediately after an incident occurs. Therefore, the strategy of risk bearing can be best applied if there are early warning systems installed along the supply chain.

Zsidisin and Ellram, (2003) gives another approach for risk management as risk avoidance. The main target here is to reduce its probability of occurrence. By applying this strategy, companies try to eliminate the causes of incidents pro-actively. The methods used within this strategy are e.g. tools to protect processes and data, audits and the risk-oriented revision of new business contracts and projects.

Companies should try to influence the attitude towards active risk management of their suppliers positively, so that potential risks do not arise. According to Sheffie (2002) there is need for trade of decisions of the supply chain strategies:

1. Repeatability versus unpredictability, i.e., trading the benefits of repeatable processes against the cost of a lack of flexibility;
2. The lowest bidder versus the known supplier;
3. Centralisation versus dispersion decisions in production and distribution;
4. Collaboration versus secrecy, i.e., while sharing more information on e.g. the results of risk audits would better place organisations to manage supply chain risks, it could also deter potential customers or weaken the bargaining position;
5. Redundancy versus efficiency, i.e., managing the conflict between excess capacity in a supply chain and the efficiency-focused lean paradigm aiming at the elimination or reduction of waste.

A final, maybe paramount supply chain trade-off decision is between ‘managing risk and delivering value’. This is the trade-off between the extra costs related to most of the mitigating strategies and the total costs of supply as a main principle of contemporary supply chain management. Sheffie (2002). Kouvelis et al. (2006) view SCRM in terms of managing the...
uncertainty of demand, supply and costs. Carter and Rogers (2008) define SCRM as “the ability of a firm to understand and manage its economic, environmental, and social risks in the supply chain” which could be materialized by the adoption of contingency planning and having a resilient and agile supply chains.

There are also other notations related to risk management in supply chains. Rice and Caniato (2003) define supply chain resilience as the ability of an organisation “to react to an unexpected disruption and maintain operations after the event”. Resilience can be achieved by employing high flexibility and adequate redundancy in the organization. A more content oriented definition of resilience as “the ability of a system to return to its original state or move to a new, more desirable state after being disturbed” is provided by Christopher and Peck (2004). To Peck (2006), resilience brings the concept of an organisation’s “ability to absorb or mitigate the impact of the disturbance”.

Contingency planning, which is interchangeably referred to as business continuity planning, is an approach to prepare for the possibility of future emergency or disruption. This approach involves continuous supplier assessment, development and maintenance of alternative capacities, mirrored and backup information systems and specific emergency response plans (Rice and Caniato, 2003).

In a recent study, Sodhi et al.(2012) claim that there are three gaps in SCRM. Similar to the study presented by Tang and Musa (2011), they identify that there is no clear definition of SCRM definitions, a lack in research on mitigating supply chain risk and a clear deficiency of empirical studies in this area.

Similar ideas have been presented by Chopra and Sodhi (2004), Johnson (2001) and Spekman and Davis (2004), who all identify the dimension of risk in the form of supply chain flows.

Spekman and Davis (2004) however go further, and concentrate on information sharing and network relationships and add the security of internal information systems, relationships forged among supply chain partners and corporate social responsibility to their risk dimensions. One
important change in managing supply chain is the emphasis on integrating activities into key supply chain processes instead of looking at individual functions.

2.2.3 Limitations.

According to Douglas (2009) prioritizing the risk management processes too highly could keep an organization from ever completing a project or even getting started. This is especially true if other work is suspended until the risk management process is considered complete. It is also important to keep in mind the distinction between risk and uncertainty. Risk can be measured by impacts multiplied by probability.

If risks are improperly assessed and prioritized, time can be wasted in dealing with risk of losses that are not likely to occur. Spending too much time assessing and managing unlikely risks can divert resources that could be used more profitably. Unlikely events do occur but if the risk is unlikely enough to occur it may be better to simply retain the risk and deal with the result if the loss does in fact occur. Qualitative risk assessment is subjective and lacks consistency. The primary justification for a formal risk assessment process is legal and bureaucratic.

2.3 How the supply chain sources and their consequences affect the performance of an organization

According to Brindley, (2000), Pfohl, (2002), Christopher and Peck, (2004), Spekman and Davis, (2004). Supply chain risks can be typed according to different classifications in literature (Ritchie and For instance, Pfohl (2002) distinguishes between endogenous risks emerging in a supply chain and exogenous risks whose origin is located in the environment of the focal network. However, this taxonomy mainly concentrates on company’s internal risks. Christopher et al (2004) introduces a common classification where supply chain risks are categorized into five sources. These five sources can be summarized in three groups: company internal risks, supply chain internal risks, and environmental risks. Christopher et al (2004)

Two risk sources, process and control risks, are located within the company considered. These sources cover all risks emerging out of production and logistics processes as well as managerial risks, which fulfill the definition of supply chain risks. The second group consists of two other risk sources, supply and demand risks. These sources contain all risks emitted by supply chain partners,
thus all indirect supply chain risks. The last group is formed by the environmental risks. These risks represent all potential damage caused by socio-political, macroeconomic or natural disasters Christopher (2005).

According to Kothari (2004), a concept which can take on different qualities of qualitative values is called a variable. If one variable depends on or is a consequence of another variable, it is dependent variable. The variable that is antecedent to the dependent or that makes it to change is called an independent variable. A conceptual framework consists of independent variables which cause changes in the dependent variable. According to Kothari (2004), a concept which can take on different qualities of qualitative values is called a variable. If one variable depends on or is a consequence of another variable, it is dependent variable. The variable that is antecedent to the dependent or that makes it to change is called an independent variable. A conceptual framework consists of independent variables which cause changes in the dependent variable.

The independent variables in this case are: Identifying supply chain risks, Assessing risk sources for supply chain and mitigation of supply chain risk. The dependent Variable is organization performance.

The independent variables in this case are: Identifying supply chain risks, Assessing risk sources for supply chain and mitigation of supply chain risk. The dependent Variable is organization performance.

2.3.1 Supply chain risk Identification

There are many ways to identify and categorize risks, and each organization has its own way for developing its risk register: a list of identified risks with their importance rating. Possible reasons include helping us to understand the distinctions among these risks and to prioritize different risk mitigation investment decisions.

According to Garvin and Levesque (2006) there are different ways of risk identification including identifying critical uncertainties in scenario planning. In identifying risks, supply chain researchers
have used the terms *uncertainty* and *risk* interchangeably although economics researchers have attempted to narrow *risk* to only those situations where possible outcomes can be assumed to follow a known probability distribution.

Developing an initial risk register, which is a one-time effort, is necessary to identify baseline risks. Too many organizations start a risk management program without knowing what threats the organization faces, or what consequence a disruption would have. As a result, they focus too much protecting against the wrong threats or too little protecting against threats that matter. Worse, they may fail to anticipate important threats, or fail to recognize the consequence an apparently minor threat may have.

Risk identification might begin with brainstorming sessions, previous risk assessments, surveys, or still other efforts to identify and list potential risks within supply-chain processes. A business-impact analysis can help a firm evaluate the threats a firm might face and their consequences. Such analysis might start with a “worst-case” scenario focusing on the business process that are most critical to recover and how they might be recovered remotely. A business-impact analysis should identify critical business functions and assign a level of importance to each function based on the operational or financial consequence. It should also set recovery-time objectives and the resources required for these.

### 2.3.2 Assessing supply chain risk sources

Supply chain risk sources are any variables which cannot be predicted with certainty and from which disruptions can emerge. From an inter-organizational supply chain understanding, Mason-Jones and Towill (1998) suggested five overlapping categories of supply chain risk sources: environmental risk sources, demand and supply risk sources, process risk sources and control risk sources.

Environmental risk sources comprise any external uncertainties arising from the supply chain such as disruption caused by political (e.g. fuel crisis), natural (e.g. foot and mouth outbreak, fire, earthquake) or social (e.g. terrorist attacks) uncertainties.

Compared with external, environmental risk sources, demand and supply sources are internal to the supply chain. Supply risk is the uncertainty associated with supplier activities and in general supplier relationships, i.e. “the transpiration of significant and/or disappointing failures with inbound goods and services” Zsidisin et al., (2000).
Similarly, demand risk is any risk associated with the outbound logistics flows Svensson, (2002) and product demand, which can be caused either by inbound disruptions or, e.g. by seasonality, volatility of fads, new product adoptions or short product life cycles Johnson, (2001). Environmental risks can cause supply or demand risk for the supply chain, which means that the three sources overlap. For example, a fire caused by lighting in a supplier factory will trigger a supply risk for all parties further down in the supply chain. A number of empirical and conceptual studies investigating supply and/or demand risks from the dyadic perspective of the relationship between a focal company and its supplier/customer have been published. From our supply chain perspective, supply and demand risks describe the direction of potential disruptive effects (from supplier of raw materials to the end consumer or vice versa) and are not restricted to dyadic relationships between two directly related vendor and customer organizations.

Processes can either amplify or absorb the effect of risks in the supply chain and refer to the design and implementation of processes within and between the entities in the supply chain. Robust processes are built on a thorough understanding of variability, e.g. in manufacturing or forecasting, supply chain bottlenecks or dependencies on IT systems, and may need to have planned process redundancies or excess capacities where necessary Mason-Jones et al (1998). For example, the impact of supplier insolvency as a supply risk is either amplified or absorbed by the level of excess capacity held within the chain.

Similarly, supply chain control mechanisms like decision rules and policies regarding order quantities, batch sizes and safety stocks can either amplify or absorb risk effects. For example, the effect of a sudden trough in demand is amplified in the presence of inflexible rules regarding order quantities.

It is suggested here that a characteristic of supply chain risk sources is that they can be inextricably linked to the supply chain structure. Supply and demand risk sources are supply chain specific and are likely to affect several interdependent parties in the Supply chain risk management

Moreover, demand and supply risks, as internal supply chain risk sources, imply that any company in the supply chain can be responsible for SCRM implementation and become a source of risk to the supply chain at the same time.

Expanding the idea of supply chain risk it can be argued that a supply chains’ risk exposure determines its vulnerability. Thus, supply chain vulnerability is defined as “an exposure to serious
disturbance arising from supply chain risks and affecting the supply chain’s ability to effectively serve the end customer market”.

The remit of SCRM as a managerial activity can be defined as: “the identification and management of risks for the supply chain, through a co-ordinated approach amongst supply chain members, to reduce supply chain vulnerability as a whole”. This definition is similar to the one proposed by Lindroth et al (2001). However, they take a more restricted view by stating that SCRM deals with “risks caused by, or impacting on, logistics-related activities or resources”. By contrast, this definition adopts the basic tenet of the overarching concept of supply chain management, that logistics is only one of the functions contained in the concept, Guinipero (1996); Hence, SCRM like supply chain management entails the same multiplicity of business functions and processes. Based on these characteristics of SCRM the field work described in the next section was designed to explore the concept from a practitioner perspective.

2.4 How supply chain risk mitigation strategies affect origination performance.

According to Chopra and Sodhi (2004) there are many means available to control risks within supply chains. A fundamental strategy would be to try to do a great job in the fundamental supply chain performance measures of consistent fulfillment of orders, delivery dependability, and customer satisfaction. Of course, many effective organizations have failed when faced with changing markets or catastrophic risks outlined in the last section as external risks. Some strategies proposed for supply chains are reviewed.

Chopra (2004) developed a matrix to compare relative advantages or disadvantages of each strategy with respect to types of risks. Adding capacity would be expected to reduce risk of needing more capacity of course, and also decrease risk of procurement and inventory problems, but increases the risk of delay. Adding inventory is very beneficial in reducing risk of delays, and reduces risk of disruption, procurement, and capacity, but incurs much greater risk of inventory-related risks such as out-dating, spoilage, carrying costs, etc. Having redundant suppliers is expected to be very effective at dealing with disruptions, and also can reduce procurement and inventory risk, but can increase the risk of excess capacity. Other strategies had no negative expected risk impacts (increasing responsiveness, increasing flexibility, aggregating demand, increasing capability, or increasing customer accounts), but could have negative cost implications.
From a single organization view, Miller (1992) distinguishes five generic strategies companies undertake in order to mitigate risk, four of which can be adapted to supply chain contexts: (1) avoidance, (2) control, (3) cooperation and (4) flexibility.

2.4.1 Avoidance
Avoidance occurs when risks associated with operating in a given product market or geographical area are considered to be unacceptable Miller, (1992) from a supply chain perspective, avoidance can be related to products/geographical markets and/or supplier and customer organizations. A company could drop specific products, suppliers or geographical markets if supply is seen to be unreliable.

2.4.2 Control
Companies may seek to control contingencies from the various risk sources, rather than passively treat uncertainties as constraints within which they must operate Miller, (1992).

2.4.3 Cooperation
Compared with control initiatives, cooperative responses involve joint agreements, rather than unilateral control, as a means of achieving uncertainty reduction Miller, (1992). From a supply chain perspective, the focus is on joint agreements among organisations in the supply chain to improve supply chain visibility and understanding, to share information on exposures to specific risk sources and finally, to prepare joint business continuity plans.

2.4.4 Flexibility
Unlike the strategic moves of control, which attempt to increase the predictability of contingencies from the various risk sources, flexibility increases responsiveness while leaving the predictability of factors unchanged Miller, (1992). One supply chain example is postponement, where companies delay the decision to make, configure, label or ship a product to a particular destination. Postponement reduces their dependence on forecasts and increases the ability to respond to variability or even disruptions in demand. A second supply chain example is multiple sourcing, which one manager classified as the traditional form of managing risk through spreading.
According to Kersten et al., (2006) three basic strategies can be used, risk bearing, risk avoidance and risk transfer. By applying the strategy of risk bearing to a specific risk, companies try to reduce the potential damage caused by the occurrence of this risk. The minimization of the probability of occurrence is not the focus of this strategy, the occurrence of a risk is rather accepted.

2.5 Chapter Summary
Effective supply-chain risk management (SCRM) is essential to a successful business. As globalization increases, so too do the critical interdependencies and complexities between suppliers, logistics providers, and a successful enterprise. A breakdown in any part of the supply chain connecting these entities can potentially lead to catastrophic consequences. These principles should be integrated into the other key corporate procedures and policies you follow for procurement and general risk management including supplier-management routines.

While no risk management program can fully predict, mitigate, or prevent all risks or consequences, companies that proactively implement a supply-chain risk-management program will be more resilient and prepared for the day when a "risk" becomes "real."
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

The chapter dealt with the research methodology that was used by the researcher towards the attainment of the objectives set out in chapter one. It specifically highlighted the research methods that were used in carrying out the study in order to answer the research questions. In addition, various methodological issues such as population, sampling technique, sampling frame and size, data collection and analysis methods that were adopted in the conduct of the study were discussed.

3.2 Research Design

A research design is a presentation of the plan, the structure and strategy of investigation, which seeks to obtain or answer various questions. It is a detailed plan for how research study was conducted according to the data required in order to investigate the research questions in an economical manner. It is the framework that guided the collection and analysis of the data.

The researcher carried out a descriptive research using quantitative data. Use of descriptive research method enabled the researcher become more familiar with the situation, acquire a new understanding about the situation, and formulate specific research problem or hypothesis.

Descriptive design method was used in this study. Descriptive research design is aimed at obtaining data that defines the physiognomies of the topic of interest during a research (Hair et al., 2007). The descriptive method helped in establishing priorities specific to areas under research. The research design was appropriate because it enabled the researcher to examine the effects of supply chain management (dependent variables) affecting organizational performance (independent variables) in institutions with a focus on Accelar Global Logistics Company.

In this study, a descriptive research design was adopted. Saunders, Lewis and Thornhill (2012) state that descriptive studies give a clear picture of the phenomenon a researcher wishes to collect data. However data collected in descriptive studies requires researchers to draw conclusions from the data collected through data evaluation and synthesis skills. Descriptive study is appropriate for this study as it sought to identify and explain variables that exist in a
given scenario. It allows the collection of data and formation of a distribution of the occurrence of a specific phenomenon or involve interaction of two or more variables, and is a versatile method across various disciplines (Cooper and Schindler, 2011). This method was therefore considered appropriate as it provides information that responded to the research questions.

### 3.3 Population and Sampling design

#### 3.3.1 Population.

Target population refers to the larger population to which the researcher ultimately would like to generalize the results of the study (Berg, 2001). It is therefore the entire group of individuals, events or objects having a common observable characteristic. The researchers target population was about 50 employees at Accelar Global Logistics.

#### 3.3.2 Sampling Design

According to Pearson (2016), sampling enables one to reduce the amount of data they need to collect by considering only data from a sub-group rather than all possible cases or elements.

##### 3.3.2.1 Sampling frame

According to Kothari (2004) sampling frame is a list of all items where a representative sample is drawn for the purpose of research. In this study, the sampling frame was a list of fifty (50) employees at Accelar Global Logistics.

##### 3.3.2.2 Sampling Technique

A systematic random sampling technique was applied to select the sample size. Systematic random sampling was considered appropriate since it gave every respondent in the target population an equal chance of being selected as a study respondent and thus it had no bias and eased generalization of the gathered findings.

##### 3.3.2.3 Sample Size

According to Burns and Grove (2009), sampling size should be large enough to identify relationships among variables or determine differences between groups. Sample sizes can either be determined in advance of the study or sequential (Iacobucci & Churchill, 2005). Because the
population was less than 100, the study undertook census. The use of a sample size enables a researcher save time and money, and gets more detailed information (Bluman, 2009)

3.4 Data Collection Methods
Data collection tools are the instruments which are used to collect the necessary information to serve or prove some facts (Mugenda and Mugenda, 2003).
Both primary and secondary data were used in the study. Secondary data on company records within the supply chain were used. This study used questionnaires and interviews to collect primary data.
The mention of areas of confidentiality and anonymity including the motives and intentions of the researcher and how the information was to be used and an inclusion of open ended questions was developed to guide both the researcher and respondent on the questionnaire. The questionnaire contained both closed and open-ended questions. The closed ended questions were aimed at giving information which minimized information bias and facilitated data analysis, while the open-ended questions gave respondents freedom to express themselves.

3.5 Research procedures
The researcher administered the questionnaires by way of self-administered questionnaires, which were used in the context of individual administration. With the help of a trained research assistant the researcher administered the questionnaires to the target participants. The researcher and the research assistant delivered the questionnaires to the respondents and waited for them to fill. Respondents who were not in a position to fill that day were given a week after which the research assistant went back to collect the questionnaires.

3.5.1 Pre-testing of the questionnaire
The questionnaire was pretested to ensure clarity and content validity prior to them being administered. The researcher conducted a pilot test for the questionnaire at African Banking Corporation Ltd, which is also a private entity and any disruptions to its supply chain could adversely affect its performance. These was due to its high risk of strategic exposure in case of disruption of its supply chain. The pilot test was done with ten employees within the procurement department. This helped to determine the cost and time needed to carry out the study and helped
to clarify any ambiguities in the questionnaire. Reliability and the internal consistency of the data items was also conducted.

3.6 Data Analysis and Presentation
Data analysis seeks to make general statements on how categories or themes of data are related (Mugenda and Mugenda, 1999). Descriptive statistics method were used for analysis. Statistical Package for Social Sciences (SPSS) computer software was used to generate frequency, tables, and percentages. The results and analysis were discussed in the data interpretation and summary of findings.

3.7 Chapter Summary
The chapter describes the research methodology used in the study, including the population, sampling design and size, data collection and analysis methods. The researcher also clearly outlined the data collection tool used in the study and also provided the data analysis and presentation methods followed.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction
The objectives of this study aimed at determining the effects of supply chain risk management on organization performance. Descriptive statistics were used to analyze the data which was collected through questionnaires, interview guides and observation guides. This included percentages, pie charts, graphs and tables.

4.2 Response rate
The researcher issued fifty questionnaires at Accelar logistics. The researcher personally delivered the questionnaires to all the respondents and later collected them for study. All the questionnaires that were issued out were all successfully collected. This was achieved by researchers prompt efforts to make follow-ups on responses from all the participants.

The table below shows how the respondents responded to the questionnaires.

Table 4.1 Response Rate.

<table>
<thead>
<tr>
<th>Response rate</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>42</td>
<td>84%</td>
</tr>
<tr>
<td>Non response</td>
<td>8</td>
<td>6%</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.3 Demographic distribution

4.3.1 Gender of the respondents

The respondents were required to state their gender and the data showed that majority (73%) of them were male while 27% were female, this indicates that more males participated in the study than Females as shown in figure 4.1 below
Figure 4.1 Gender distributions of the Respondents

Figure 4.2 Age Distribution of Respondents
4.4 How supply chain risk management process affects organizations performance

4.4.1 Department

The study aimed to establish the department the respondents worked in. As presented in figure 4.3 majority 50% of the respondents worked in logistics, 10 % were in finance, 20 % were in purchasing and the remaining 20% worked in stores. These results indicate more logistics personnel participated in the study than personnel from other departments.

![Figure 4.3 Department at work](image)

4.4.2 Position in the Organization.

Table 4.2 Respondent position in the organization

The study also sought to establish the position in the organization of the respondents.

The table below clearly outlines this information. The study covered 42 respondents of which 1 was the general manager, 3 senior managers, 5 middle level managers, 25 officers and 8 clerks.
Table 4.2

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General manager</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Senior manager</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Middle manager</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Officer</td>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td>Clerks</td>
<td>8</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>42</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: research data

The study covered 42 respondents of which 1 was the general manager, 3 senior managers, 5 middle level managers, 25 officers and 8 clerks.

4.4.3 Working experience

The study also sought to establish the work experience of the respondents. The figure 4.4 shows that majority (40%) of the respondents had a working experience of above 9 years, 27% had a working experience of 6 - 9 years, 13% of the respondent had a working experience of less than 2 years and finally 20% of the respondents had a working experience of 3-5 years. This indicates that majority of the respondents had been working for a long period of time and thus stood higher chances of providing the study with reliable and accurate information.
The study aimed to determine the effect of supply chain risk management implementation on organization performance at Accelar. Among the respondents who participated in the study. The findings in Table 4.3 established that there are clear working standards affecting supply chain risk management implementation at a mean of 3.71 and a standard deviation of 1.032. This was followed by the organization having rules and regulations to ensure reasonable predictability in the organization that enhance supply chain risk management implementation at a mean of 3.62 (Std dev. of 1.112), work specialization affects supply chain risk management implementation in the organization at a mean of 3.56 and a standard deviation of 1.029 and the lines of authority in the organization affect the successful implementation of supply chain risk management at a mean of 3.31 and a standard deviation of 1.021 as the main factors leading to the successful implementation of supply chain risk management. On the other hand, a small number of the respondents agreed that employee knowledge of their roles and responsibilities affects the supply chain risk management in the Organization at mean of 3.16 and a standard deviation of 1.167. Fewer respondents agreed that the coordination of departments affects successful implementation of supply chain risk management in my organization at mean of 3.09 (Std dev. of 1.025) and very few respondents agreed that the coordination of efforts in the organization affects the successful implementation of supply chain risk management at a mean of 2.73 and a standard deviation of 1.079.
**Table 4.3. Supply chain risk management Implementation.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean</th>
<th>Std.Devi.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The lines of authority in my organization affect the successful Implementation supply chain risk management.</td>
<td>3.31</td>
<td>1.02</td>
</tr>
<tr>
<td>The coordination of efforts in my organization affects the Successful supply chain risk management.</td>
<td>2.73</td>
<td>1.079</td>
</tr>
<tr>
<td>Employee knowledge of their roles and responsibilities affects the successful implementation supply chain risk management.</td>
<td>3.16</td>
<td>1.167</td>
</tr>
<tr>
<td>Coordination of departments affects successful implementation of supply chain risk management in my organization</td>
<td>3.09</td>
<td>1.025</td>
</tr>
<tr>
<td>Clear working standards affects supply chain risk management implementation</td>
<td>3.71</td>
<td>1.032</td>
</tr>
<tr>
<td>Work specialization affects performance management systems implementation in m organization.</td>
<td>3.56</td>
<td>1.209</td>
</tr>
<tr>
<td>Having rules and regulations to ensure reasonable predictability in my organization enhances performance management systems implementation</td>
<td>3.62</td>
<td>1.112</td>
</tr>
</tbody>
</table>

**4.4.5 Correlations Organization Structure and Implementation of supply chain risk management.**

This section intended to measure the correlation between the organization structure and implementation of supply chain risk management. The findings in Table 4.4 suggested that there was a strong correlation between the coordination of efforts in the organization affecting the successful implementation of supply chain risk management in the organization and work specialization at (r=.546, <0.05). The relationship was extended to the coordination of efforts in the organization at (r=.443, <0.05) and the coordination of efforts in the organization affecting the successful implementation of performance management system at (r=.357, <0.05).
Table 4.4

<table>
<thead>
<tr>
<th></th>
<th>Pearson Correlation</th>
<th>Sig (2 tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>The lines of authority in my organization affect the successful implementation of supply chain risk management in my organization</td>
<td></td>
<td></td>
<td>.180</td>
</tr>
<tr>
<td>The coordination of efforts in my organization affects the successful implementation of supply chain risk management in my organization</td>
<td></td>
<td></td>
<td>.375**</td>
</tr>
<tr>
<td>Employee knowledge of their roles and responsibilities affects the successful implementation of supply chain risk management in my organization</td>
<td></td>
<td></td>
<td>.443**</td>
</tr>
<tr>
<td>Coordination of departments affects successful implementation of supply chain risk management in my organization</td>
<td></td>
<td></td>
<td>-.155</td>
</tr>
<tr>
<td>Work specialization affects supply chain risk management implementation in my organization</td>
<td></td>
<td></td>
<td>.546**</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).  
*. Correlation is significant at the 0.05 level (2-tailed)
4.4.6 Regression Analysis of Organization Structure and Implementation of Supply chain risk management.

The regression equation between organization structure and supply chain risk management had a strong regression. In the model summary, the \( (F (4, 99)=17.5; R^2=.414;p<.05) \) indicating that the leadership causes 41.4 percent variation in the implementation of supply chain risk management while the remaining 58.6 are attributable to other factors not considered in the study and one error term. This is outlined in Table model summary below.

Table 4.5: Regression of Organization Structure and Implementation of Supply chain risk management

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.644a</td>
<td>.414</td>
<td>.391</td>
<td>.713</td>
</tr>
</tbody>
</table>

a. Predictors: Organization Structure

4.4.7 Analysis of Variance of Organization Structure and Implementation of supply chain risk management.

Analysis of variance results, \( F=17.511(p<0.001) \), show that organization structure has a significant influence on implementation of performance management system. The analysis of variance Table 4.6 is presented below.

Table 4.6 Analysis of variance

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F.</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression 1</td>
<td>35.618</td>
<td>4</td>
<td>8.905</td>
<td>17,511</td>
<td>0.000b</td>
</tr>
<tr>
<td>residential</td>
<td>50.313</td>
<td>99</td>
<td>.509</td>
<td></td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>85.962</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent: supply chain risk management
b. Predictors: Organization Structure
4.4.8 Coefficient of Organization Structure and Implementation of supply chain risk management

The key aspects of organization structure which significantly contributed to implementation of supply chain risk management use employee who have knowledge of their roles and responsibilities at (β1=0.336, t=5.227, p<0.001) and work specialization affecting the performance management systems (β1=0.237, t=2.665, p<0.001). Table 4.7 below indicates the coefficients.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1.555</td>
<td>1.467</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The coordination of efforts in my organization affects the successful implementation of supply chain risk management in my organization</td>
<td>.105</td>
<td>.125</td>
<td>5.227</td>
<td>.000</td>
</tr>
<tr>
<td>Employee knowledge of their roles and responsibilities affects the successful implementation of supply chain risk management in my organization</td>
<td>.336</td>
<td>.433</td>
<td>2.665</td>
<td>.009</td>
</tr>
<tr>
<td>Work specialization affects Supply chain risk management implementation in my organization</td>
<td>.237</td>
<td>.246</td>
<td>.875</td>
<td>.384</td>
</tr>
<tr>
<td>Having rules and regulations to ensure reasonable predictability in my organization enhances supply chain risk management implementation</td>
<td>.071</td>
<td>.079</td>
<td>.064</td>
<td>.143</td>
</tr>
</tbody>
</table>
4.5 How supply chain risks sources affect organization performance

Table 4.8 Extent to which identification of supply chain risk involves

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal process</td>
<td>2 (5%)</td>
<td>37 (87%)</td>
<td>3 (8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of occurrence</td>
<td>1 (2%)</td>
<td>2 (4%)</td>
<td></td>
<td>39 (94%)</td>
<td></td>
</tr>
<tr>
<td>Awareness</td>
<td></td>
<td></td>
<td>1 (10%)</td>
<td></td>
<td>38 (90%)</td>
</tr>
<tr>
<td>Risk matrix</td>
<td>2 (5%)</td>
<td>34 (80%)</td>
<td>6 (15%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: SA (strongly agree), A (agree), D (disagree), DS (Strongly disagree), N (Neutral)

Respondents rated the extent to which identification of supply chain involved. Majority respondents 87% agreed that there was a need for the organization to have a formal risk identification process. 94% strongly agreed the importance to identify supply risks by the way of frequency of occurrence and impact on business. 90% of the respondents strongly agreed the need for an organization to create awareness on risk identification and tools used in risk identification. 80% of the respondents agreed that a risk register is the main tool used by many organizations to record identified risks.

4.5.1 Supply chain Risk sources

Table 4.9 Extent to Which Sources of Supply Chain Risks Affect Performance in organization

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Internal and external</td>
<td>2 (5%)</td>
<td>2 (5%)</td>
<td>38 (90%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>External risk sources</td>
<td>2 (5%)</td>
<td>36 (85%)</td>
<td>4 (10%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal risks</td>
<td>4 (10%)</td>
<td>2 (5%)</td>
<td>34 (80%)</td>
<td>2 (5%)</td>
<td></td>
</tr>
</tbody>
</table>

Key: SA (strongly agree), A (agree), D (disagree), DS (Strongly disagree), N (Neutral)
From table 4.4, respondents rated the extent to which Supply chain risks emanate from both internal and external sources. Majority of the respondents 90% strongly agreed. In addition majority of the respondents 85% agreed to the statement that Environmental risk sources comprise any external uncertainties arising from the supply chain such as political disruptions (e.g. fuel crisis), natural (e.g. foot and mouth outbreak, fire, earthquake) or social (e.g. terrorist attacks) uncertainties. Lastly the 80% of the respondent agreed that internal risks are within a business control since they emanate from the organizations on operations.

4.6 How Supply chain risk mitigation strategies affect organization performance

Table 4.10 Extent to Which Risk mitigation Strategies Affect organization Performance

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business impact analysis</td>
<td>2 (5%)</td>
<td>6 (15%)</td>
<td>34 (80%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business continuity plan</td>
<td>2 (5%)</td>
<td>6 (15%)</td>
<td>34 (80%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost benefit analysis</td>
<td></td>
<td></td>
<td>38 (90%)</td>
<td>4(10%)</td>
<td></td>
</tr>
<tr>
<td>Risk appetite</td>
<td></td>
<td></td>
<td>40 (95%)</td>
<td>2 (5%)</td>
<td></td>
</tr>
</tbody>
</table>

Key: SA (strongly agree), A (agree), D (disagree), DS (Strongly disagree), N (Neutral)

From table 4.5, respondents rated the extent to which risk mitigation strategies affected organization performance in Accelar Global Logistics. 80% of the respondents strongly agreed that business impact analysis needed to be conducted in assessing the need for mitigation and that business continuity plan was the key to any organization in planning for disruptions. In addition, 90% of the respondents agreed that when choosing a mitigation strategy there was need to conduct a cost benefit analysis. Also 95% of the respondents agreed the need for an organization to clearly define its risk appetite and tolerance levels for the various risks its supply chain poses.
### 4.6.1 Organization performance

#### Table 4.11 Organization performance

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overriding element</td>
<td>2 (5%)</td>
<td>2 (5%)</td>
<td>34 (80%)</td>
<td>4 (10%)</td>
<td></td>
</tr>
<tr>
<td>Disruptions</td>
<td>2 (5%)</td>
<td>38 (90%)</td>
<td>2 (5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottom line profits</td>
<td></td>
<td>40 (95%)</td>
<td>2 (5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigation and contingency plans</td>
<td>2 (5%)</td>
<td>38 (90%)</td>
<td>2 (5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective supply chain</td>
<td></td>
<td>34 (80%)</td>
<td>8 (20%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: SA (strongly agree), A (agree), D (disagree), DS (Strongly disagree), N (Neutral)

From table 4.6, respondents rated the statements about organization performance. 80% of the respondents agreed that Organization performance was an overriding element in all organizations. 90% of the respondents agreed that disruptions of an organization supply chain can adversely affect its performance. In addition 95% of the respondents agreed that Supply chain inefficiency and ineffectiveness affect the bottom line profits of the organizations. Also 90% of the respondents agreed that Identifying, measuring and putting mitigation and contingency plans for all supply chain risks is a key to organization gaining a competitive advantage. 80% of the respondents agreed that Effective and efficient supply chains contribute largely to organization profitability.

### 4.7 Chapter Summary

This chapter has provided the results and findings in regards to the data collected from the respondents at Accelar Global. The chapter provided analysis on the response rate, background information, internal factors, external factors and industrial factors of Accelar.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction.

This chapter provides a summary of the study findings in light of the objectives highlighted in chapter one. Discussions, recommendations and suggestion for further research will also be provided in this chapter.

5.2 Summary of the study.

Effective supply-chain risk management (SCRM) is essential to a successful business. As globalization increases, so too do the critical interdependencies and complexities between suppliers, logistics providers, and a successful enterprise. The study sought to determine the effects of supply chain risk management on organization performance in Kenya with Accelar Global Logistics as a case study.

Age, gender and working experience were viewed as important demographic factors as they helped in providing an understanding about the background of the respondents and hence better determinations of the effects of supply chain risk management on organization performance in Kenya.

The study revealed a response rate of 84% of the total sample and only 6% did not respond. This was caused by some respondents not returning the questionnaires or even not filling anything in the questionnaire. The study showed that majority (36%) of the respondents were within the age bracket of 25-34 years, 32% of the respondents were within the age bracket of 35-44 years, 18% were within the age bracket of 45-54 years, 11% were within the age bracket of 18-24 years and 3% were in the age bracket of 51 years and above. Majority (73%) of the respondents were males, whereas 27% were females.

The study also revealed that majority (40%) of the respondents had a working experience of above 9 years, 27% had a working experience of 6 - 9 years, 13% of the respondent had a working experience of less than 2 years and finally 20% of the respondents had a working experience of 3-5 years. This implied that majority of the respondents had been working for a long period of time and thus stood higher chances of providing the study with reliable and accurate information.
The study sought out to determine the effect of supply chain risk identification process in Accelar Global Logistics. The results showed that 87% of the respondents agreed that there was a need for the organization to have a formal risk identification process which was in line with Christopher et al (2004) who introduces a common classification where supply chain risks are categorized into five sources. 94% strongly agreed the importance to identify supply risks by the way of frequency of occurrence and impact on business. 90% of the respondents strongly agreed the need for an organization to create awareness on risk identification and tools used in risk identification. 80% of the respondents agreed that a risk register is the main tool used by many organizations to record identified risks.

The study sought to find out the main supply chain risk sources and their effect on organizations performance in Accelar Global Logistics Ltd. The results showed that 90% of the respondents agreed that Supply chain risks emanate from both internal and external sources. In addition majority of the respondents 85% agreed to the statement that Environmental risk sources comprise any external uncertainties arising from the supply chain this was in accordance to Mason-Jones and Towill (1998) who categorized supply chain risk sources.

The results also indicated that 80% of the respondent agreed that internal risks are within a business control since they emanate from the organizations on operations.

5.3 Discussion

5.3.1 How supply chain risk management process affects organization performance.

Findings from the study revealed how respondents rated the extent to which identification of supply chain involve of which majority agreed that there was a need for the organization to have a formal risk identification process. Findings further revealed that majority agreed the importance to identify supply risks by the way of frequency of occurrence and impact on business.

Similarly, the study revealed that majority of the respondents strongly agreed the need for an organization to create awareness on risk identification and tools used in risk identification and that a risk register is the main tool used by many organizations to record identified risks.

In addition, the study revealed that majority the respondents agreed that Organization performance was an overriding element in all organizations and that disruptions of an organization supply chain can adversely affect its performance. This agrees with Hendricks and Singhal (2003) who used the
event study methodology to estimate the economic impact of supply chain disruptions on shareholder wealth.

Further findings revealed that majority of the respondents agreed that Supply chain inefficiency and ineffectiveness affect the bottom line profits of the organizations as well as Identifying, measuring and putting mitigation and contingency plans for all supply chain risks is a key to organization gaining a competitive advantage. The study also revealed that Effective and efficient supply chains contribute largely to organization profitability as indicated

The study also agrees with Kothari (2004), a concept which can take on different qualities of qualitative values is called a variable. If one variable depends on or is a consequence of another variable, it is dependent variable. The variable that is antecedent to the dependent or that makes it to change is called an independent variable. A conceptual framework consists of independent variables which cause changes in the dependent variable.

The independent variables in this case are: Identifying supply chain risks, Assessing risk sources for supply chain and mitigation of supply chain risk. The dependent Variable is organization performance.

5.3.2 How supply chain risk sources and their consequences affect organization performance.

According to the second research question, the study reveals that respondents rated the extent to which Supply chain risks emanate from both internal and external sources. The study further reveals that majority of the respondent strongly agreed that environmental risk sources comprise any external uncertainties arising from the supply chain such as political disruptions (e.g. fuel crisis), natural (e.g. foot and mouth outbreak, fire, earthquake) or social (e.g. terrorist attacks) uncertainties. In addition the study shows that majority of the respondent agreed that internal risks are within a business control since they emanate from the organizations operations. However, this taxonomy mainly concentrates on company’s internal risks. Christopher et al (2004) introduces a common classification where supply chain risks are categorized into five sources. These five sources can be summarized in three groups: company internal risks, supply chain internal risks, and environmental risks Christopher et al (2004)
The study further establishes that the two risk sources: process and control risks, are located within the company. These sources cover all risks emerging out of production and logistics processes as well as managerial risks, which fulfill the definition of supply chain risks. The second group consists of two other risk sources, supply and demand risks. These sources contain all risks emitted by supply chain partners, thus all indirect supply chain risks. The last group is formed by the environmental risks. The study also establishes that risks represent all potential damage caused by socio-political, macroeconomic or natural disasters Christopher (2005).

Similarly the study agrees with Kothari (2004), that a concept which can take on different qualities of qualitative values is called a variable. If one variable depends on or is a consequence of another variable, it is dependent variable. The variable that is antecedent to the dependent or that makes it to change is called an independent variable. A conceptual framework consists of independent variables which cause changes in the dependent variable.

The independent variables in this case are: Identifying supply chain risks, Assessing risk sources for supply chain and mitigation of supply chain risk. The dependent Variable is organization performance.

5.3.3 How supply chain risk mitigation strategies affect organization performance.

Findings based on the third research question revealed that the respondents strongly agreed that business impact analysis needed to be conducted in assessing the need for mitigation and that business continuity plan was the key to any organization in planning for disruptions which agrees with Chopra et al (2004) who developed a matrix to compare relative advantages or disadvantages of each strategy with respect to types of risks.

The study also established that the mitigation strategies in place to contain the supply chain risk identified in Accelar Global Logistics Ltd were essential in conducting of cost benefit analysis. Similarly the research findings established that the respondents agreed the need for an organization to clearly define its risk appetite for the various risks its supply chain poses this is according to Sheffie (2002) who said that there is need for trade of decisions of the supply chain strategies. Risk management mitigation strategies used in the organization include avoidance which is the main type of strategy used. The organization also uses risk control, cooperation and flexibility methods avoid risk, that is, do not undertake the activity, if the activity is essential the risk must be accepted.
and managed. The next strategy is to minimize risk through reducing either the impact or the probability (or both) for example, where appropriate requiring parent company guarantees and link financial distress provisions to the parent company’s financial performance.

Control means taking proactive steps to reduce the risk. Buffer inventories could be on such approach. Building penalty clauses into supplier contracts, linking pay to performance, and managing capacity can all help better control the situation. The extreme case is vertical integration, where the firm takes ownership of the supply source. Another way is to spread the risk, that is, develop ‘insurance’. For example, source from more than one supplier, although lowest price point may not be achieved. To be effective multiple sourcing requires knowledge of any supplier interdependencies like second or third tier supply base. The last strategy is to accept risks, this is the best overall strategy, particularly if low impact or probability risks and alternative strategies are not deemed effective or efficient. It is recommended that risk reduction or impact mitigation measures and monitoring be employed in these circumstances.

This study compliments Chopra (2004) matrix that compares relative advantages or disadvantages of each strategy with respect to types of risks. Adding capacity would be expected to reduce risk of needing more capacity of course, and also decrease risk of procurement and inventory problems, but increases the risk of delay. Adding inventory is very beneficial in reducing risk of delays, and reduces risk of disruption, procurement, and capacity, but incurs much greater risk of inventory-related risks such as out-dating, spoilage, carrying costs, etc. Having redundant suppliers is expected to be very effective at dealing with disruptions, and also can reduce procurement and inventory risk, but can increase the risk of excess capacity. Other strategies had no negative expected risk impacts (increasing responsiveness, increasing flexibility, aggregating demand, increasing capability, or increasing customer accounts), but could have negative cost implications.

The last strategy is to accept risks, this is the best overall strategy, particularly if low impact or probability risks and alternative strategies are not deemed effective or efficient. It is recommended that risk reduction or impact mitigation measures and monitoring be employed in these circumstances.
5.4 Conclusions

5.4.1 How supply chain risk management process affects organization performance.

The study found that risk identification is the most crucial in the whole risk management process. We have to be aware that risks that are not identified and defined in the first stages of risk management are not later treated and therefore go unseen and unmanaged. A risk register is mainly used for risk identification since it serves as a central repository for the organization's risk information and allows for the information that results from the risk management process to be suitably sorted, standardized, and merged for relevance to the appropriate level of management. This is in line with a study done by Waters (2007), which states that identifying the risks is a key activity on which all other aspects of the process are based. However, in reality it is virtually impossible to list every conceivable risk, and identification will only cover the most significant in terms of their effect on the supply chain.

5.4.2 How supply chain risk sources and their consequences affect organization performance.

The main sources of risks as identified during the study were technological risks, political risks, market risks, environmental risks and financial risks. Other potential sources of risks in the supply chain include: sources of risks from buyers; Clarity of definition of requirements, Presentation and approach to market, internal relationships and barriers to use particular suppliers. Other Sources of risks are from Suppliers, Production process capacity & supply chains, Competing demands from different buyers, Commercial and financial capability. Risks from existing buyer supplier Relationships; includes Contractual allocation of risks, Cultural fit and associated skill sets on both sides to manage the relationship Performance management arrangements. According to the findings of Miller (2008) and Keizer, Halman and Song (2002), there are five different sources of supply chain risks. These are based on, technological risks, political risks, market risks, turbulence risks, financial risks and organizational and societal risks. These risks affect the performance of the supply to varied levels depending with the existing circumstances.

5.4.3 How supply chain risk mitigation strategies affect organization performance.

The study concluded that risk identification strategies affected organization performance at Accelar logistics. This was there was a need for the organization to have a formal risk identification process. In addition, risk mitigation strategies affected the performance of organization and the Study concluded that business impact analysis was needed to be conducted in assessing the need
for mitigation and that business continuity plan was the key to any organization in planning for disruptions.

5.5 Recommendations

5.5.1 Recommendations and Improvement.

5.5.1.1 How supply chain risk management process affects organization performance.
It’s important for the Accelar logistics to Identify and deal with risks proactively: As early as possible in the decision making process, the various types of risks have to be identified. It’s important to assess along the distribution chain cycle and procurement cycle, understand the key mitigation steps. This can be achieved through drawing functional requirements and moderate procurements requirement to standardize the procurement specifications and ensure that there exists a feedback mechanism through consistent supply chain audits and joint planning meetings.

5.5.1.2 How supply chain risk sources and their consequences affect organization performance.
Organizations should develop a proactive risk management culture towards managing supply chain risk to ensure that contingent plans are put in place in case of adverse supply chain performance.

5.5.1.3 How supply chain risk mitigation strategies affect organization performance.
In view of the key risk that affect organizations supply chain, organizations should come with robust risk management strategies to mitigate this risks affecting the effectiveness and efficacy of the organization supply chain.

5.5.2 Recommendations for further research.
The study concentrated only on supply chain risk identification, risk sources and risk mitigation strategies and how they impact the organization performance. A broader research should be done on the specific impact of these factors to financial, operational performance of firms in Kenya.
REFERENCES


McIlquham-Schmidt, A. (2010). *Appraising the empirical evidence of the relationship between strategic planning and corporate performance.* Aarhus School of Business at Aarhus University Department of Management.


Dear Sir/Madam,

**RE: RESEARCH QUESTIONNAIRE**
I am a graduate student at the United States International University –Africa pursuing a Master’s Degree in Business Administration (MBA). To complete my degree, I am required to carry out a research on, “Effects of supply chain risk management on organization performance” and Accelar Global Logistics company i is my case study.
Kindly take your time and answer the questions attached on the questionnaire. Since this research is for academic purposes, the information gathered will be treated with uttermost confidentiality and your anonymity will be assured. The results will exclusively be used for academic purposes only.

Yours Sincerely,

Paul Musyoka Ngii.
APPENDIX II: QUESTIONNAIRE

A) Demographics

1. Gender
   Male [ ]  Female [ ]

2. Age
   18-24 years [ ]  25-34 years [ ]
   35-44 years [ ]  45-54 years [ ]
   Over 55 years [ ]

3. Years worked with the organization
   0- 2 Years [ ]  3- 5 Years [ ]
   6-9 Years [ ]  above 9 Years [ ]

4. Kindly select the level/Category of management you fall into
   General level Management [ ]  Senior Level Management [ ]
   Mid-level manager [ ]  Officer [ ]
   Clerk [ ]

5. Kindly select the department that you have been designated.
   Logistics. [ ]  Finance [ ]
   Purchasing [ ]  Store [ ]

B) Extent to which identification of supply chain risk involves.

Please indicate the extent to which you agree with the above statement Using the Key: SD Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree and SA-Strongly Agree;

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
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</thead>
<tbody>
<tr>
<td>Formal process</td>
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<tr>
<td>Frequency of Occurrence</td>
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<td>Awareness</td>
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<tr>
<td>Risk Matrix</td>
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</tbody>
</table>
C) Extent to which sources of supply chain risk affect performance in an organization.
Please indicate the extent to which you agree or disagree with the above statement Using the Key: SD Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree and SA-Strongly Agree;

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
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</thead>
<tbody>
<tr>
<td>Both Internal and External</td>
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<tr>
<td>External risk resources</td>
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<tr>
<td>Internal risks</td>
<td></td>
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</tbody>
</table>

C) Extent to which identification of supply chain risk affects organization performance.
Please indicate the extent to which you agree with the following statements describing the above statement Using the Key: SD Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree and SA-Strongly Agree;

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
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<th>SA</th>
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<tbody>
<tr>
<td>The organization has formal risk identification process</td>
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<tr>
<td>Supply chain risks are identified by frequency of occurrence.</td>
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<tr>
<td>The organization ensures there is transparency on potential supply chain among parties</td>
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<tr>
<td>Risk Matrix</td>
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</table>

Please add any additional factors besides the ones mentioned that you think would best describe to which extent supply chain risk affect organization performance.

D) Factors on Sources of Supply chain Risks.
Please indicate the extent to which you agree with the above statement Using the Key: SD Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree and SA-Strongly Agree;

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
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</thead>
<tbody>
<tr>
<td>Supply chain risks emanate from both internal and external environs.</td>
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<tr>
<td>Timely Data for Consumption, inventory levels in supply chain and stock outs can affect performance</td>
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<tr>
<td>Internal risks are within a business control since they emanate from the organisations operations.</td>
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</table>

What other factors besides the ones mentioned can you add on the sources of supply chain risks?

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

E) Extent to which risk mitigation strategies affect organization performance.

Please indicate the extent to which you agree with the above statement Using the Key: SD Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree and SA-Strongly Agree;

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
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<tbody>
<tr>
<td>Business impact analysis</td>
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<td>Business continuity plan</td>
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<td>Cost Benefit analysis</td>
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<td>Risk appetite</td>
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F) Organization performance

Please indicate the extent to which you agree with the below statements on organizational performance Using the Key: SD Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree and SA-Strongly Agree;
<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
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<th>SA</th>
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</thead>
<tbody>
<tr>
<td>Overriding element</td>
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<tr>
<td>Disruptions</td>
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<tr>
<td>Bottom line profits</td>
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<tr>
<td>Mitigation and contingency plans</td>
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<tr>
<td>Effective supply chain</td>
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</tr>
</tbody>
</table>

G) **Ratings of supply chain risk management Implementation on organizational performance**

Please indicate the extent to which you agree with the above statement Using the Key: SD Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree and SA-Strongly Agree;

<table>
<thead>
<tr>
<th>Supply chain risk management Implementation.</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>The lines of authority in my organization affect the successful Implementation supply chain risk management.</td>
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<tr>
<td>The coordination of efforts in my organization affects the Successful supply chain risk management.</td>
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<td>Employee knowledge of their roles and responsibilities affects the successful implementation supply chain risk management.</td>
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<tr>
<td>Coordination of departments affects successful implementation of supply chain risk management in my organization</td>
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<tr>
<td>Clear working standards affects supply chain risk management implementation</td>
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</tbody>
</table>
Work specialization affects performance management systems implementation in my organization.

Having rules and regulations to ensure reasonable predictability in my organization enhances performance management systems implementation.

F) **Organization Structure and Implementation of supply chain risk management.**
Please indicate the extent to which you agree with the above statement Using the Key: SD Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree and SA-Strongly Agree;

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>N</th>
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<th>SA</th>
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</thead>
<tbody>
<tr>
<td>The lines of authority in my organization affect the successful implementation of supply chain risk management in my organization</td>
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<tr>
<td>The coordination of efforts in my organization affects the successful implementation of supply chain risk management in my organization</td>
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<tr>
<td>Employee knowledge of their roles and responsibilities affects the successful implementation of supply chain risk management in my organization</td>
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<tr>
<td>Coordination of departments affects successful implementation of supply chain risk management in my organization</td>
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</tbody>
</table>
Please add any additional factors besides the ones mentioned that you think would best describe to which extent supply chain risk affect organization performance.

End of Questionnaire.

Thank you for your participation.