SUPPLY CHAIN RISK MANAGEMENT STRATEGIES ON OPERATIONAL EFFICIENCY OF NON-GOVERNMENTAL ORGANIZATIONS IN NAIROBI COUNTY

MILLICENT AUMA NG'AYO

MASTER OF BUSINESS ADMINISTRATION

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF BUSINESS ADMINISTRATION IN PROCUREMENT AND SUPPLIES MANAGEMENT IN THE SCHOOL OF BUSINESS AT KCA UNIVERSITY

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DECLARATION

I declare that this dissertation is my original work and it has not been previously published or submitted elsewhere for award of a degree. I also declare that this contains no material written or published by other people except where due reference is made and author duly acknowledged.

Student Name: Millicent Auma Ng'ayo Reg No: 23/07009

Signature  **Date: 11Th January,2026.**

I do hereby confirm that I have examined the master's dissertation of

Millicent Auma Ng'ayo.

And have certified that all revisions that the dissertation panel and examiners recommended have been adequately addressed.

Sign…… **Date: 11Th January,2026.**

Dr. Eunice Njagi

Dissertation Supervisor

ABSTRACT

Despite the significant contributions of NGOs towards social, economic, and environmental improvements, many have struggled with inefficiencies therefore the study seeks to assess the effect of supply chain risk management strategies on operational efficiency in NGOs in Nairobi County. Specifically, the study sought to determine the effect of supply chain risk identification strategy, supply chain risk assessment strategy, supply chain risk monitoring and supply chain risk mitigation strategy on operational efficiency among NGOs in Nairobi County. The study was anchored on the agency theory, contingency theory, system theory and resource-based view theory. The study adopted a descriptive research design. The unit of analysis were NGOs within Nairobi. The unit of observation were supply chain manager, procurement officer and store manager in each of the 40 targeted NGOs therefore, the total target population was 120 respondents. Since the study population is manageable the study adopted census to include all the 120 targeted respondents. The study used primary data collected through closed-ended questionnaire. Before the main study the study conducted a pilot study in the neighboring Kiambu County where 12 questionnaires were distributed to supply chain manager, procurement officer and store manager in 4 NGOs. The collected data was quantitative in nature and was analyzed through the aid of SPSS Version 25. Data was analyzed using both descriptive and inferential statistics. After analysis the findings was presented in form of tables. From the findings the study concluded that there is no significant relationship between supply chain risk identification strategy and operational efficiency among NGOs in Nairobi. In addition, the study concluded that supply chain risk assessment strategy had a positive and statistically significant influence on operational efficiency among NGOs in Nairobi, Furthermore the study concluded that supply chain risk monitoring strategy had a positive and statistically significant effect on operational efficiency among NGOs in Nairobi, Finally the study concluded that supply chain risk mitigation strategy had a positive and statistically significant effect on operational efficiency among NGOs in Nairobi. From the conclusion the study recommended that NGOs should develop comprehensive risk response frameworks that are activated immediately after risks are identified. Furthermore, the study recommended that NGOs should invest in advanced monitoring systems that provide timely data on potential disruptions. The researcher recommended that a comparative study should be conducted on the effectiveness of supply chain risk management strategies between NGOs and Public Sector Institutions in Kenya.

Keywords: ***Risk Management Strategies, Operational Efficiency***

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DEDICATION

I dedicate this project to my parents who have constantly pushed me in pursuing my education throughout the years. Also, I dedicate it to my family, whose unfailing tolerance and compassion, particularly during difficult times, have been genuinely wonderful.

ACKNOWLEDGEMENT

I would like to sincerely thank God for the good health and provision during my study time. I am incredibly thankful to my supervisor for his commitment and constructive criticism. I am also grateful to all my colleagues and family members for their endless support and encouragement. May God bless you all!

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LIST OF ABBREVIATIONS AND ACRONYMS

MSF	Médecins Sans Frontières
NGOs	Non-Governmental Organizations
SCRM	Supply Chain Risk Management
SMEs	Small Medium Enterprises
VIF	Variance Inflation Factor

OPERATIONAL DEFINITIONS OF TERMS

Non-Governmental Organizations (NGOs)	Non-Governmental Organizations are not-for-profit entities that operate independently of government influence and are primarily engaged in humanitarian, developmental, and advocacy work (Mwangi & Otieno, 2021).
Operational Efficiency	NGO's ability to deliver services using the least amount of resources while maximizing output and value (Kamau & Wanjiru, 2023).
Risk	Risk in supply chain contexts refers to the potential for events or conditions to disrupt the normal flow of goods, services, or information, thereby affecting organizational objectives (Njuguna & Nderitu, 2022).
Supply Chain	These are all activities, organizations, resources, and technologies involved in the procurement, production, and distribution of goods or services (Odhiambo & Kariuki, 2023).
Supply Chain Risk Assessment Strategy	This is systematically analyzing potential risks that could disrupt the supply chain and evaluating their likelihood and impact (Kiplagat & Onyango, 2021).
Supply Chain Risk Identification Strategy	This strategy entails the proactive recognition and documentation of risks within the supply chain, such as supplier failures, regulatory changes, or logistical bottlenecks (Wambua & Oduor, 2020).

Supply Chain Risk Management Strategies	These are coordinated approaches designed to identify, assess, mitigate, and monitor risks that threaten the stability and performance of supply chains(Cherono & Mutuku, 2022).
Supply Chain Risk Mitigation Strategy	This refers to the set of actions implemented to reduce the likelihood or impact of supply chain disruptions, such as diversifying suppliers, improving storage, or adopting buffer stock policies (Ochieng & Wanjohi, 2023).
Supply Chain Risk Monitoring	Refers to continuous observation and evaluation of identified risks to detect changes in exposure and respond proactively. (Kariuki & Mugo, 2022)

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Supply chain risk management (SCRM) plays a crucial role in enhancing operational efficiency by identifying, assessing, and mitigating potential risks that could disrupt supply chain activities. Risks such as supply chain interruptions, demand variability, and supplier failure can significantly impact an organization's performance, (Ponomarov & Holcomb, 2020). With the increasing globalization and complexity of supply chains, companies must adopt effective strategies to manage risks, such as risk identification strategy, risk assessment strategy, risk monitoring strategy, risk mitigation strategy, diversifying suppliers, implementing advanced forecasting methods, and investing in technology for real-time monitoring (Choi & Liker, 2022). The integration of risk management practices ensures that organizations can respond swiftly to challenges, minimize losses, and maintain a steady flow of operations, contributing to overall operational efficiency.

The impact of supply chain risk management strategies extends to improving the agility and resilience of companies in competitive markets, (Sodhi & Tang, 2021). Firms that implement robust risk management frameworks experience better operational performance, including reduced lead times, lower inventory costs, and improved customer satisfaction (Wu et al., 2021). Effective risk management allows businesses to make informed decisions, streamline operations, and maintain continuity, even in the face of unexpected disruptions. As a result, organizations can enhance their operational efficiency and achieve a competitive advantage by effectively managing risks in the supply chain (Peck, & Tang, 2022).

Moreover, SCRM is instrumental in enhancing organizational competitiveness and financial performance. By incorporating risk management strategies like supplier diversification, robust inventory management, and the use of advanced technologies, organizations can optimize operational efficiency and reduce costs associated with delays or shortages (Kariega, 2020). Additionally, a well-managed supply chain fosters stronger relationships with suppliers and customers, which can lead to improved collaboration and long-term partnerships. In an era where customer expectations for reliability and transparency are high, investing in SCRM is no longer optional but essential for organizations aiming to thrive in volatile markets (Kabera & Kinyua, 2023).

1.1.1 Supply Chain Risk Management Strategies

Supply chain management (SCM) strategies encompass a variety of approaches designed to mitigate risks and enhance operational efficiency. Key strategies include risk identification, assessment, monitoring, and mitigation, all of which contribute to the robustness and resilience of supply chains, (Wieland & Wallenburg, 2022). Effective risk management helps organizations identify potential disruptions, assess their impact, continuously monitor risks, and implement strategies to reduce their effects. These strategies collectively enable organizations to maintain a competitive edge and ensure smooth operations even in the face of unexpected challenges (Jüttner 2021; Aven, 2023).

The supply chain risk identification strategy involves systematically detecting risks that could disrupt the supply chain's operations. This includes identifying both external risks, such as market volatility and geopolitical factors, and internal risks, such as supply failures or operational inefficiencies (Zsidisin & Ritchie, 2019). An effective identification strategy requires gathering data from across the supply chain to anticipate risks and understand their

potential causes. Once these risks are recognized, companies can take steps to mitigate their effects, ensuring that the supply chain remains flexible and resilient, (Blackhurst, 2020).

Risk assessment strategies are essential for evaluating the severity and probability of identified risks. This process helps organizations prioritize their responses to risks based on potential impact and likelihood (Tang, 2019; Christopher & Peck, 2021). By assessing both the short-term and long-term consequences of risks, firms can allocate resources more efficiently, focusing on risks that pose the greatest threat to their operations, (Khan & Burnes, 2020). Risk assessment tools such as risk matrices and simulation models allow companies to quantify and understand the magnitude of risks, facilitating better decision-making and preparation.

Monitoring strategies are critical for tracking risk indicators and assessing the effectiveness of risk management actions over time. Continuous monitoring enables companies to detect emerging risks and adjust their strategies accordingly (Harland, Chopra & Meindl, 2021). Evaluating the outcomes of mitigation efforts ensures that risk management processes remain relevant and effective. By implementing feedback loops and updating risk management strategies, organizations can adapt to evolving supply chain dynamics, enhancing their ability to respond to disruptions in real-time, (Manuj & Mentzer, 2021).

Supply chain risk mitigation strategies focus on reducing the impact of risks through preventive actions and contingency planning. These strategies include diversifying suppliers, building inventory buffers, and developing flexible logistics capabilities (Zsidisin & Ellram, 2021; Blackhurst, 2022). Effective mitigation involves not only reducing the likelihood of risks occurring but also having contingency plans in place to address risks if they do arise. This proactive approach ensures that organizations are better equipped to recover from disruptions, maintaining supply chain stability and minimizing operational disruptions, (Simchi-Levi et al., 2021).

1.1.2 Operational Efficiency of NGOs

Operational efficiency involves optimizing processes, resources, and systems to maximize productivity and minimize waste, delays, or errors. Operational efficiency is a key factor in achieving organizational goals, sustaining competitive advantage, and improving customer satisfaction. Operational efficiency in the context of NGOs, refers to the effectiveness and efficiency with which an NGO meets its mission, objectives, and goals, especially in serving the community or target population (Kanter & Brinkerhoff, 2021). NGO operational efficiency is typically assessed by evaluating how well it implements its programs, utilizes resources, and delivers tangible and sustainable outcomes that align with its core values and mission. The operational efficiency of NGOs is measured using various metrics including input, output, efficiency, sustainability, accountability and transparency and innovation metrics (Shahzad et al., 2022). Input metrics measure the resources that NGOs allocate toward their activities. These metrics help assess whether the organization has the necessary financial, human, and physical resources to carry out its mission effectively. Output metrics measure the immediate products or services delivered by an NGO. Efficiency metrics measure how well an NGO uses its resources to achieve desired outputs and outcomes. They assess the cost-effectiveness and operational efficiency of the organization.

Sustainability metrics assess the long-term viability of an NGO's programs and its ability to continue its work even after external funding or support may diminish (Almatrooshi, Singh, & Farouk, 2021). These metrics may include factors such as the ability to secure consistent funding, the involvement of local communities in maintaining programs, or the creation of income-generating activities. Accountability and Transparency Metrics measure how transparent and accountable an NGO is to its stakeholders, including donors, beneficiaries, and the public (McGivern & Tvorik, 2023). Accountability is a crucial aspect of NGO operational efficiency, as it builds trust with stakeholders and demonstrates good governance.

Innovation metrics evaluate how well an NGO adapts to new challenges and introduces innovative solutions to improve service delivery.

Effective supply chain risk management is directly linked to the operational efficiency of an organization. By reducing risks, improving efficiency, ensuring financial stability, enhancing service delivery, and building resilience, NGOs can enhance their operational and strategic efficiency. In a world of unpredictable challenges, integrating SCRM into their operations helps NGOs deliver impactful and sustainable results to their beneficiaries. Therefore, supply chain risk management not only safeguards NGO operations but also strengthens their ability to achieve their mission and demonstrate long-term value to stakeholders. It is on this background that this study seeks to establish the effects of supply chain risk management strategies on the operational efficiency of NGOs in Nairobi County.

1.1.3 NGOs in Nairobi County

Non-Governmental Organizations (NGOs) are independent entities that operate on a not-for-profit basis, focusing on various social, environmental, and developmental issues. They are typically established to address societal challenges including poverty lessening, schooling, healthcare, human rights, and environmental preservation. In Kenya, NGOs are vital because they support underserved areas and offer vital services, which the government does not. Their flexibility, innovation and County to mobilize resources make them integral to the development agenda (Miriti & Karithi, 2020).

In Kenya, NGOs are registered and regulated by the NGO Coordination Board, a statutory body established under the Non-Governmental Organizations Coordination Act of 1990. The registration process involves applying detailing the organization's purpose, operational framework, and governance structure. NGOs are required to adhere to regulations

such as annual reporting and financial accountability to ensure transparency and proper use of resources (Kelly, 2019). This regulatory framework aims to enhance public trust and ensure that NGOs operate in alignment with their stated objectives.

Nairobi County hosts a significant proportion of Kenya's NGOs due to its status as the country's capital and hub for international organizations. Approximately 2,500 NGOs operate in Nairobi, ranging from grassroots organizations to international entities like the Red Cross, World Vision, and ActionAid. These organizations fall into various categories, including health-focused NGOs, education-based organizations, environmental conservation groups, and advocacy-driven entities. Their diversity and focus on specific needs enable them to address a wide range of issues, contributing significantly to Nairobi's and Kenya's socio-economic development (Rumenya & Kisimbi, 2020).

Operational efficiency is vital for NGOs in Nairobi, particularly in light of their resource constraints and growing demands for services. SCRM plays a critical role in ensuring this efficiency, as it involves identifying, assessing, and mitigating risks that could disrupt service delivery (Odhiambo & Njuguna, 2021). Effective SCRM enables NGOs to minimize delays, optimize resource utilization, and maintain consistent service delivery. By adopting robust risk management strategies, NGOs can enhance their resilience, uphold donor confidence, and maximize their impact on the communities they serve.

1.2 Statement of the Problem

Operational efficiency is essential for Non-Governmental Organizations (NGOs) in Nairobi County, as it ensures the optimal use of limited resources such as funding, personnel, and logistics to deliver timely and effective services to target communities. High operational efficiency enhances program impact, improves accountability to donors and beneficiaries, and

promotes the sustainability of organizational interventions in critical areas such as health, education, and humanitarian relief (Muia, 2023). Despite its importance, many NGOs in Nairobi continue to face persistent operational challenges that hinder their ability to deliver services efficiently. For instance, only 23.8% of the over 11,800 registered NGOs submitted financial returns for the 2019/2020 financial year, pointing to systemic weaknesses in organizational compliance, reporting, and internal coordination (Ben Hur, 2021). Similarly, of the 11,262 NGOs registered by mid-2019, only 3,028 received major donor disbursements, reflecting operational bottlenecks, donor mistrust, and capacity gaps in grant utilization and project execution (PwC Kenya, 2020).

These operational inefficiencies are further evidenced by real-world setbacks experienced by leading NGOs. For example, NGOs such as OXFAM and ActionAid have reported logistical setbacks in disaster response initiatives, resulting in delays in aid distribution to vulnerable populations. Similarly, Médecins Sans Frontières (MSF) has encountered disruptions in medical supply chains, impairing their ability to provide timely healthcare services during emergencies (ReliefWeb, 2022). These challenges are often linked to ineffective supply chain risk management practices, including weak risk identification, inadequate risk monitoring, and poor mitigation frameworks.

A number of studies have been conducted on the relationship between supply chain risk management and organizational performance; however, they have left key contextual, conceptual, and methodological gaps unaddressed. For instance, Bhatti and Bhatti (2019) examined the impact of supply chain risk management on organizational performance among public sector organizations in Pakistan. While insightful, the study's findings may not be applicable to the operational dynamics of non-governmental organizations (NGOs), particularly in the Kenyan context. Ndeto (2023) investigated the relationship between supply

chain risk management and organizational performance of logistics firms in Kenya. However, this study was limited to profit-oriented firms, thereby excluding the unique operational models of NGOs. Owuor (2019) focused on the effect of supply chain risk management practices on supply chain performance in public universities in Kenya, which primarily addressed supply chain performance metrics rather than broader indicators of operational efficiency. Similarly, Nyaga and Moronge (2018) explored the role of supply chain risk management techniques on the performance of manufacturing firms in Kenya but did not disaggregate the effects of specific risk strategies, resulting in a methodological gap. These gaps underscore the need for a focused study on how specific supply chain risk management strategies influence operational efficiency within NGOs, especially in Nairobi County.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the study was to assess the effect of supply chain risk management strategies on operational efficiency of NGOs in Nairobi County.

1.3.2 Specific Objectives

i. To determine the effect of supply chain risk identification strategy on operational efficiency among NGOs in Nairobi County

ii. To examine the effect of supply chain risk assessment strategy on operational efficiency among NGOs in Nairobi County

iii. To assess the effect of supply chain risk monitoring strategy on operational efficiency among NGOs in Nairobi County

iv. To determine the effect of supply chain risk mitigation strategy on operational efficiency among NGOs in Nairobi County

1.4 Research Questions

i. What is the effect of supply chain risk identification on operational efficiency among NGOs in Nairobi County?
ii. What is the effect of supply chain risk assessment on operational efficiency among NGOs in Nairobi County?
iii. What is the effect of supply chain risk monitoring strategy on operational efficiency among NGOs in Nairobi County?
iv. What is the effect of supply chain risk mitigation strategy on operational efficiency among NGOs in Nairobi County?

1.5 Significance of the Study

The study's conclusions are significant to multiple parties. The findings offer significant insights into successful risk management measures, allowing NGOs to improve their operational efficiency. By comprehending the functions of risk mitigation, monitoring, avoidance, and transfer methods, NGOs can implement optimal practices to minimize interruptions and enhance resource efficiency in their supply chain operations. Government authorities and regulatory organizations monitoring NGO activities might derive evidence-based recommendations from the study to formulate policies and guidelines aimed at enhancing supply chain management within the NGO sector.

Moreover, funders and funding organizations may gain insights from the study, as it elucidates ways for the efficient allocation of resources. The insights offered can enhance accountability and transparency, guaranteeing that resources are utilized effectively to meet project goals. Supply chain management professionals can utilize the study's findings to enhance their strategy and implement creative techniques that mitigate risks and optimize operational efficiency.

The study's findings enhance the existing knowledge on supply chain risk management within the NGO sector, specifically in Nairobi County. Researchers and scholars may utilize the data to enhance subsequent investigations and build theoretical frameworks for applicability in analogous circumstances. The study will indirectly benefit the communities served by NGOs by guaranteeing the timely and uninterrupted provision of key services and resources through effective supply chain operations.

1.6 Scope of the Study

The study sought to establish the effect of supply chain risk management on operational efficiency of NGOs in Nairobi County. The independent variables of the study are: supply chain risk identification, supply chain risk assessment, supply chain risk monitoring and strategies supply chain risk mitigation. The dependent variable of the study is operational efficiency of NGOs in Nairobi. The unit of analysis is NGOs within Nairobi. According to NGO Coordination Board there are over 2500 registered NGOs within Nairobi however majority of them have no defined supply chain management structure therefore the study will target 40 international NGOs since they have a well-structured supply chain management system. The unit of observation was supply chain manager, procurement officer and store manager in each of the 40 targeted NGOs. Therefore, the entire targeted population is 120 respondents. The study was carried out from November 2024 to April 2025.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter focus on the theoretical review, empirical review explaining the relationships between the study variables. The chapter also provides the conceptual framework showing the relationship between variables and the literature review of the study variables.

2.2 Theoretical Review

The study was anchored on the agency theory, contingency theory, system theory and resource-based view theory.

2.2.1 System Theory

Systems Theory was developed by Ludwig von Bertalanffy in the 1940s, it serves as a conceptual framework for understanding complex interrelationships among components within a system. Von Bertalanffy introduced this theory to transcend disciplinary boundaries and address the inadequacies of reductionist approaches in explaining the dynamics of systems, particularly in biology and social sciences (Becvar, Becvar & Reif, 2023). The theory posits that systems, whether biological, social, or organizational, are composed of interdependent parts that interact dynamically. Knowing interactions, loops of feedback, and the system's environment of operation is crucial, as is the idea that the system as a whole is more than the sum of its parts. This idea promotes a more comprehensive view of problems and decisions by arguing that altering one component of a system will have an effect on the whole.

Despite its widespread application, Systems theory has faced criticism. Some scholars argue that it is overly abstract and lacks empirical rigor, making it difficult to apply in specific

contexts (Guy-Evans, 2020). Critics also note that the theory's holistic nature may lead to challenges in isolating variables for study, complicating the process of identifying causality. Additionally, Systems theory has been critiqued for being too general, as its broad principles can sometimes fail to provide precise guidance for addressing specific issues. This generality may lead to ambiguity in practical implementation, particularly in fields requiring focused, actionable insights (Benz., Hartmann, & Matzner, 2022).

Systems Theory is highly relevant in explaining the effect of supply chain risk management strategies on operational efficiency among NGOs in Nairobi City. NGOs operate within dynamic environments characterized by multiple interacting components, including suppliers, donors, and beneficiaries. The theory provides a framework for understanding how supply chain risk identification, assessment, monitoring, and mitigation strategies interconnect to influence overall operational efficiency. For instance, identifying risks proactively (risk identification) influences how risks are assessed and prioritized (risk assessment), which in turn determines the effectiveness of monitoring systems and mitigation efforts. Systems Theory emphasizes that managing one aspect of the supply chain without considering its impact on the entire system may lead to inefficiencies or unintended consequences. By adopting a systems perspective, NGOs can create comprehensive, interconnected strategies that improve responsiveness, reduce disruptions, and enhance operational outcomes, ultimately ensuring better service delivery.

2.2.2 Agency Theory

Agency theory was established by Jensen and Meckling in 1976. The theory assumes that there is a principal-agent relationship where conflicts of interest may arise because the agent (e.g., a manager or employee) is expected to act in the best interest of the principal (e.g., shareholders or owners), but may prioritize their own goals. The theory assumes that agents are likely to act

in own self-interest, potentially at the expense of the principal, especially when their interests and incentives are not aligned, (Murphy, 2014). To mitigate this, Agency Theory assumes that principals must establish mechanisms such as contracts, performance-based incentives, and monitoring systems to ensure that agents act in accordance with the principal's objectives. It also assumes that information asymmetry exists, where agents often have more information about the day-to-day operations than principals, potentially leading to opportunistic behavior if not properly controlled.

Agency theory offers a comprehensive framework for analyzing the principal-agent relationship within organizations. It recognizes the inherent conflicts of interest between owners and managers, providing a structured understanding of these dynamics. This depth allows organizations to identify potential issues and design appropriate mechanisms to address them, (Eisenhardt, 1989). Agency Theory offers a comprehensive framework for analyzing the principal-agent relationship within organizations. It recognizes the inherent conflicts of interest between owners and managers, providing a structured understanding of these dynamics. This depth allows organizations to identify potential issues and design appropriate mechanisms to address them (Murphy, 2014).

However, criticisms of Agency theory exist. Demsetz and Lehn, (2016) claim that this theory generalizes human behavior by presumptuous individuals are exclusively inspired by self-interest, neglecting social and ethical considerations. Furthermore, the exclusive reliance on formal contracts and incentives has been criticized for overlooking the role of informal social norms and trust (Demsetz & Lehn, 2016). These critiques highlight the challenges of applying Agency theory in contexts where human relationships and ethical considerations play a significant role.

Agency theory is highly relevant to the study on supply chain risk assessment and monitoring and evaluation strategies and their effect on operational efficiency among NGOs in Nairobi County. The theory addresses the relationship between principals (donors or board members) and agents (NGO management and staff) who are entrusted with implementing supply chain processes. In this context, supply chain risks such as disruptions, inefficiencies or resource mismanagement can arise due to information asymmetry, misaligned goals, or lack of monitoring between the two parties. By employing strategies like risk assessment and risk monitoring and evaluation strategies NGOs can align the interests of stakeholders, minimize agency problems, and enhance operational efficiency.

2.2.3 Contingency Theory

Contingency theory was primarily developed in the 1960s by Fred Fiedler, who introduced it as a leadership theory that emphasizes the situational nature of organizational effectiveness. There is no optimal method of management or leadership, according to Fiedler; instead, the effectiveness of leadership styles or organizational strategies depends on the fit between the leader's style, the task structure, and the situational favorableness (Otley, 2018). Later, other scholars like Lawrence and Lorsch expanded on the theory, applying it to organizational design and structure, arguing that organizations must adapt their internal processes to fit the external environment. The theory fundamentally asserts that organizations achieve optimal outcomes when their strategies, leadership approaches, and structures are aligned with specific situational factors such as technology, environmental uncertainty, and organizational goals (Donaldson, 2016).

Despite its strengths, contingency theory has faced criticism. One critique is its over-reliance on situational factors, which can oversimplify complex organizational dynamics. Critics argue that it lacks a standardized framework, making it difficult to apply universally

across different organizations and industries (Islam & Hu, 2019). Furthermore, the theory does not adequately address how organizations can transition between contingency states or deal with competing contingencies. Critics also highlight its reactive nature, emphasizing adaptation rather than proactive innovation or strategic foresight. This focus may limit its applicability in dynamic or highly innovative industries where quick responses and strategic alignment are paramount (Betts, 2021).

Contingency theory is relevant to the study because it helps to anchor supply chain risk mitigation strategy and their effect on operational efficiency among NGOs in Nairobi County. NGOs operate in highly dynamic environments characterized by resource constraints, donor expectations, and varying levels of risk exposure. The theory underscores the need for NGOs to adapt their supply chain strategies such as risk mitigation to align with situational factors like environmental uncertainty, donor requirements, and operational complexities. By applying contingency theory, NGOs can design flexible supply chain processes that respond effectively to specific risks, thereby enhancing operational efficiency and ensuring sustainable service delivery. This adaptability is crucial for aligning their operational goals with the unpredictable nature of their external environment.

2.2.4 Resource-Based View Theory

The Resource-Based View (RBV) theory was developed by Jay Barney in 1991, building upon earlier work by Birger Wernerfelt in 1984. This theory emphasizes that the foundation of an organization's competitive advantage lies in its ability to acquire and manage valuable, rare, inimitable, and non-substitutable (VRIN) resources. According to Barney (1991), an organization can achieve sustained superior performance when it effectively leverages its internal resources and capabilities rather than relying solely on external market conditions. These resources may be tangible, such as technology or infrastructure, or intangible, such as

reputation, organizational culture, or human skills. The RBV posits that strategic management should focus on identifying, developing, and deploying these internal assets to achieve long-term efficiency and effectiveness.

Despite its widespread use, the RBV theory has faced several critiques. One key criticism is that it tends to be vague and tautological claiming that resources lead to competitive advantage without offering a clear mechanism for identifying such resources beforehand. Critics also argue that the RBV assumes a static environment, ignoring the dynamic nature of modern organizations and external shocks such as economic changes or crises. Additionally, it largely overlooks the role of external factors like market competition, institutional frameworks, and supply chain complexities, which can significantly impact organizational performance regardless of internal capabilities. Furthermore, the theory often lacks practical guidelines for resource development or acquisition, making its application sometimes abstract or overly theoretical (Kraaijenbrink et al., 2010).

Despite its limitations, the RBV remains highly relevant in explaining operational efficiency among non-governmental organizations (NGOs). NGOs often operate under conditions of resource constraints, relying on donations, partnerships, and limited infrastructure to deliver public goods and services. The RBV helps highlight how NGOs can enhance their operational efficiency by developing and utilizing their core capabilities, such as skilled personnel, efficient logistics systems, strong donor networks, and robust information systems. For instance, the ability of an NGO to manage supply chain risks, coordinate emergency responses, or sustain community trust can be seen as a reflection of internal strengths

2.3 Empirical Review

2.3.1 Effect of Supply Chain Risk Identification Strategy on Operational Efficiency

Supply chain risk identification is the process of pinpointing potential vulnerabilities in the supply chain (Ho et al., 2021). This step forms the foundation of risk management by outlining all possible threats. Recognizing risks in advance enables NGOs to prepare contingency plans, ensuring uninterrupted service delivery. Identifying risks early prevents reactive measures that could disrupt operations. Early identification avoids expensive last-minute solutions, preserving funds for core operations. Supply chain risk identification is a foundational aspect of risk management that significantly impacts operational efficiency (Ochieng, 2021). By systematically recognizing potential risks that could disrupt supply chain activities, organizations can proactively address vulnerabilities and optimize their resources and processes. Operational efficiency, which refers to the ability to deliver goods or services effectively with minimal waste, is enhanced when risks are identified early and managed strategically.

One of the most important effects of supply chain risk identification on operational efficiency is the ability to anticipate and prevent disruptions (Ouma, 2019). By identifying risks such as supplier inconsistencies, transportation bottlenecks, or geopolitical challenges, organizations can develop contingency plans to mitigate these issues before they occur. This proactive approach minimizes downtime and ensures the continuity of operations, leading to higher productivity and reliability. Another significant impact is improved resource allocation. Risk identification enables organizations to prioritize areas that require immediate attention or additional resources. Additionally, identifying supply chain risks supports better decision-making, which is a cornerstone of operational efficiency. By understanding potential threats and their implications, decision-makers can craft strategies that align with organizational goals.

Supply chain risk identification also enhances collaboration and transparency among stakeholders. When potential risks are clearly defined and communicated, all parties involved in the supply chain can work together to address them (Owuor, Oginda & Obura, 2022). This collective effort not only reduces the likelihood of disruptions but also fosters stronger relationships and smoother operations. For NGOs, supply chain risk identification is particularly critical, as their ability to deliver aid or services often depends on navigating complex and dynamic environments. By understanding these risks, the organization can develop strategies to overcome barriers, optimize resource utilization, and maintain credibility.

Kiprop and Tenai (2019) did a study on the effect of supply chain risk identification on performance of financial institutions in Eldoret Kenya. Descriptive statistics was presented, while inferential statistics was done using Pearson product moment correlation. From the model results, the risk identification (β=0.026) was not significantly related to financial performance. The study concluded that supply chain risk identification was not a significant determinant of financial performance among financial institutions in Eldoret, Kenya. Despite being an integral component of risk management practices, its minimal influence suggests that other factors, such as risk mitigation and assessment strategies, may have played a more prominent role in shaping financial performance. However, the focus on financial performance might limit the broader implications for other sectors like NGOs, especially in Nairobi County. The current study will focus on NGOs, a different sector with distinct operational challenges. It will explore how supply chain risk identification strategies specifically affect operational efficiency rather than financial performance, offering more practical insights for NGOs in Nairobi County.

Egiyi and Eze (2022) did a study on the influence of risk management on organizational efficiency of commercial Banks in Nigeria. The study adopted the organizational culture theory. The result of the study showed that risk identification has a statistically significant positive effect on organizational efficiency at a 5% level of significance. The study concluded that banks in Nigeria should monitor their loans and advances and avoid a mismatch between their assets and liabilities to safeguard their banks from failures. However, the study emphasizes was on financial institutions, which might not directly apply to the non-profit sector like NGOs, where operational efficiency is equally important but might manifest differently. The current study will extend the concept of risk identification to the NGO sector, offering insights into how these strategies influence operational efficiency in non-profit organizations.

Virglerova, Panic, Voza and Velickovic (2022) assessed the model of business risk identification strategy and their impact on operational performance of SMEs in Vietnam. The study concluded that the model presented provided a tool for identifying the interrelationships among sources of business risks, operational performance and the market position. The study found that the model help managers of SMEs focus on specific areas of their business that should not be ignored in decision-making processes. The study concluded that the proposed model for business risk identification strategy served as an effective tool for understanding the interrelationships between sources of business risks, operational performance, and market positioning. However, the context of SMEs in Vietnam differs significantly from NGOs in Nairobi County. The current study will investigate how risk identification affects NGOs' operational efficiency, accounting for the unique challenges and operational characteristics of non-profit organizations.

Mburu, Ngugi and Ogollah (2021) did an assessment of effect of supply chain risk identification management strategy on supply chain performance in manufacturing companies in Kenya. The study found out that companies can only ensure there is adequate cost reduction along supply chain function through use of activities-based contracts with clean cost management targets, setting annual savings target and reporting achieved saving monthly and competitive bidding, purchasing from suppliers and delivering to customers economic quantities and majority of the companies build alliances through supply chain systems. The study concluded that in order to enhance a smooth performing of supply chain in a company given the changing nature of markets due to increased diversity adequate risk identification and management is inevitable. However, their study focused on manufacturing companies in Kenya, which are more profit-driven and operate in a different context compared to NGOs. The current study will apply similar principles of risk identification to NGOs, considering the unique nature of these organizations and their reliance on efficient operations to deliver social outcomes rather than profit maximization.

2.3.2 Effect of Supply Chain Risk Assessment Strategy on Operational Efficiency

Tran, Dobrovnik and Kummer (2020) did a study on supply chain risk assessment on performance of financial institutions through a content analysis-based literature review in India. The study revealed that risk assessment positively influences the performance of financial institutions. By evaluating risks, institutions were able to identify vulnerabilities, prioritize mitigation strategies, and enhance operational efficiency. The study concluded that supply chain risk assessment significantly contributes to the performance of financial institutions. By systematically evaluating risks, these institutions were able to identify operational vulnerabilities, prioritize effective mitigation strategies, and enhance their overall efficiency. However, the study assessed the role of risk assessment in financial institutions in

India, the financial sector context may not capture the operational efficiency concerns of NGOs. The current study will specifically focus on NGOs in Nairobi County, providing a more context-specific understanding of how risk assessment strategies influence operational efficiency in the non-profit sector.

Lyambiko (2023) did a study on the effect of operational risk evaluation practices on financial performance in commercial banks in South Africa. The study found that operational efficiency was positively correlated with financial performance. Risk assessment strategies, such as evaluating credit and insolvency risks, helped improve the stability and performance of commercial banks. The study concluded that operational risk evaluation practices positively influenced financial performance in commercial banks in South Africa. Evaluating risks, such as credit and insolvency risks, improved bank stability and operational efficiency, leading to enhanced financial performance outcomes. However, the focus on banks overlooks the unique operational concerns of NGOs, which may not directly translate to the financial sector. The current study will focus on NGOs, providing insights into how risk assessment can influence their operational efficiency, independent of financial performance concerns.

Setyarini, Hamdi, & Syahrin (2023) carried out a study on the effect of risk evaluation strategy in profit optimization in the banking sector in Indonesia. The study highlighted that implementing reliable risk assessment strategies significantly contributed to operational efficiency by enabling informed decision-making, reducing uncertainty, and enhancing transparency through technology-based systems. The study concluded that reliable risk evaluation strategies played a pivotal role in profit optimization within the banking sector. These strategies enhanced operational efficiency by enabling informed decision-making, reducing uncertainties, and leveraging technology-based systems to ensure transparency and consistency. However, the banking sector's operational concerns differ significantly from those

faced by NGOs. The current study will focus on NGOs in Nairobi County, where operational efficiency may be more tied to resource allocation and service delivery rather than financial outcomes.

Havenga, Meyer and Luke (2019) conducted research on risk assessment and its impact on supply chain stability in food processing firms in Zambia. The study concluded that supply chain risk assessment improves operational efficiency by prioritizing high-risk areas, such as supplier delays, and implementing targeted mitigation strategies, like securing alternative suppliers or buffer stocks. The study concluded that supply chain risk assessment significantly improved supply chain stability by addressing high-risk areas, such as supplier delays. By implementing targeted mitigation strategies, including securing alternative suppliers or using buffer stocks, operational efficiency was enhanced. However, the study was conducted in food processing firms in Zambia as opposed to the current study which will apply risk assessment strategies to NGOs in Nairobi County.

Kabera & Kinyua (2023) examined the supply chain risk assessment practices and their role in enhancing performance efficiency in Kenyan Manufacturing Firms. The study demonstrated that assessing supply chain risks helped firms to allocate resources effectively and reduce waste. Real-time assessment techniques led to better resource utilization and operational stability. The study concluded that supply chain risk assessment practices were essential for enhancing performance efficiency in Kenyan manufacturing firms. Real-time risk assessments facilitated effective resource allocation, reduced waste, and improved operational stability, thereby strengthening the firms' overall performance. However, the research focused on Kenyan manufacturing firms, which operate under different conditions compared to NGOs. The current study will explore how supply chain risk assessment strategies influence NGOs'

operational efficiency, accounting for the specific dynamics of resource allocation in non-profit organizations.

2.3.3 Effect of Supply Chain Risk Monitoring and Evaluation Strategy on Operational Efficiency

Supply chain risk monitoring and evaluation are critical strategies that collectively enhance operational efficiency by identifying, assessing, and managing risks within supply chain processes. These strategies ensure that organizations can proactively address potential threats and maintain uninterrupted operations, especially in dynamic environments. Supply chain risk evaluation involves analyzing the likelihood and impact of identified risks, enabling organizations to prioritize mitigation efforts effectively (Yan & Hua, 2023). By focusing resources on high-priority threats, such as supplier delays or transportation disruptions, organizations avoid overinvesting in low-impact risks while safeguarding critical supply chain components. Similarly, continuous risk monitoring provides real-time insights into emerging threats, ensuring that organizations can respond promptly to prevent disruptions (Finch, 2020). For instance, early detection of delayed shipments through monitoring systems can help avoid production downtimes.

Monitoring and evaluation strategies significantly improves operational efficiency, defined as achieving optimal outputs with minimal waste or disruptions. Risk evaluation identifies vulnerabilities, such as high exposure to currency fluctuations or unreliable suppliers, allowing organizations to implement targeted mitigation measures like hedging strategies or securing alternative suppliers (Havenga, Meyer & Luke, 2019). Simultaneously, monitoring systems track supply chain components in real time, enabling quick identification and resolution of inefficiencies (Kabera & Kinyua, 2023). Effective risk evaluation quantifies financial implications, helping organizations balance mitigation costs with potential benefits

(Kanter & Brinkerhoff, 2021). For example, investing in buffer inventories for critical supplies ensures protection against high-impact risks without overburdening budgets. Risk monitoring complements this by identifying cost escalations caused by inefficiencies or vulnerabilities, such as stockouts or delays, and addressing them proactively (Mcgivern & Tvorik, 2023).

Data-driven insights from monitoring and evaluation foster better decision-making. Evaluation highlights areas requiring intervention, while monitoring tools like IoT devices provide real-time data to predict and manage risks effectively (Madhani, 2020). This integration ensures timely interventions, resource optimization, and strategic alignment with operational goals. Both strategies promote supply chain resilience by preparing organizations for potential disruptions. Evaluation supports contingency planning, while monitoring ensures swift adaptation during crises, safeguarding operational stability (Mwaura, 2022). For NGOs, this resilience directly influences their ability to deliver services to beneficiaries under challenging conditions.

Setyarini, Hamdi and Syahrin (2023) did a study on the effect of risk evaluation strategy in profit optimization in the banking sector, in Malaysia. The findings revealed that the implementation of a reliable risk identification strategy is able to contribute significantly to increasing profitability and financial stability of banks. The study concluded that by incorporating risk considerations in day-to-day activities, banks are able to make more informed and timely decisions, which in turn helps reduce uncertainty and improve operational efficiency. The study also concluded that the implementation of technology-based risk identification systems enhances transparency and accountability, increases stakeholder confidence in bank management. However, the focus on the banking sector in Malaysia may not offer direct insights for NGOs, which face distinct risk monitoring and evaluation needs. The current study will investigate the impact of risk monitoring and evaluation strategies in

NGOs in Nairobi County, examining how these strategies can enhance operational efficiency in non-profit settings.

Habasha (2023) did a study on the effect of operational risk evaluation practices on the financial performance in commercial banks in Tanzania. The findings from the study confirmed that credit risk, insolvency risk and operation efficiency had varying degrees of relationship with the financial performance of the commercial banks in Tanzania. The study also revealed that operations risk management positively influenced returns of the commercial banks in Tanzania. The study concluded that operational risk evaluation practices significantly impacted the financial performance of commercial banks in Tanzania. Credit risk, insolvency risk, and operational efficiency were found to have varying degrees of influence on financial outcomes. However, the study focused on the Tanzanian banking sector and its operational risk evaluation practices. The current study will assess the role of monitoring and evaluation in NGOs, focusing on how these practices improve operational efficiency, particularly in resource-constrained environments.

Maina and Yegon (2022) did a study on the effect of risk monitoring on performance of financial institutions in Nakuru, Kenya. The findings showed that risk monitoring had a positive relationship performance of financial institutions. The study concluded that risk monitoring had a positive relationship with the performance of financial institutions in Nakuru, Kenya. By employing continuous and systematic monitoring processes, these institutions could detect potential risks early, mitigate them effectively, and ensure sustained operational efficiency. However, the findings in banking sector may differ from those in NGOs. The current study will look at NGOs in Nairobi County, emphasizing operational efficiency rather than financial outcomes.

Rono (2021) did a study on the effect of risk evaluation on performance of financial institutions in Kericho, County Kenya. The study used explanatory research design. The study found that there was a positive influence of risk evaluation on the performance of financial institutions was obtained. The risk evaluation positively influenced the performance of financial institutions. The risk evaluation had positive relationship with performance of financial institutions. The study established that risk evaluation processes significantly contributed to improved performance metrics by identifying potential vulnerabilities, enabling proactive decision-making, and fostering organizational resilience. However, the study focused on financial performance of commercial banks as opposed to the current study which will specifically focus on operational efficiency, which is crucial for NGOs.

Kaniaru (2022) did a study on the effect of risk management strategy on performance of insurance companies in Kenya. The study results revealed that risk monitoring practices had a positive impact in the organizational performance of insurance companies. The study concluded that there was a positive linear relationship between risk monitoring and organizational performance. The study concluded that risk monitoring had a positive relationship with the performance of financial institutions in Nakuru, Kenya. By employing continuous and systematic monitoring processes, these institutions could detect potential risks early, mitigate them effectively, and ensure sustained operational efficiency. However, the study focused on the insurance sector, which has distinct operational characteristics from NGOs. The current study will focus on NGOs in Nairobi County, analyzing how risk monitoring and evaluation practices influence operational efficiency in the non-profit sector.

Kaliti (2021) did a study on the effect of risk management practices on performance of firms in the hospitality industry in Nairobi County, Kenya. The study found that risk monitoring, risk response, innovation and quality had positive significant effects while internal

environment and control activities had positive significant effects on the financial performance of firms in the hospitality industry in Nairobi County. The study concluded that risk monitoring accounted for almost all of the variance in financial performance of the firms. The study also concluded that the risk management practices influence the financial performance of firms in the hospitality industry to a very large extent. However, the study focused on the performance of firms in the hospitality industry in Nairobi County, Kenya as opposed to the current study which will focus on operational efficiency of NGOs within Nairobi.

2.3.4 Effect of Supply Chain Risk Mitigation Strategy on Operational Efficiency

Supply chain risk mitigation involves implementing proactive strategies to reduce the likelihood or impact of potential disruptions. This includes diversifying suppliers, maintaining safety stock, and adopting flexible logistics systems (Rajagopal, Venkatesan & Goh, 2019). Supply chain risk mitigation plays a crucial role in enhancing operational efficiency by ensuring stability and continuity in the face of potential disruptions. Operational efficiency, defined as the ability to maximize outputs while minimizing resource waste, heavily depends on the effectiveness of risk management strategies within the supply chain. By addressing potential risks proactively, organizations can maintain seamless operations, reduce costs, and meet stakeholder expectations (Adera, 2023).

One significant effect of supply chain risk mitigation on operational efficiency is the minimization of disruptions. Risks such as supplier delays, natural disasters, or geopolitical challenges can hinder the smooth flow of goods and services (Connor, 2022). However, strategies like supplier diversification, inventory buffering, and real-time monitoring allow organizations to anticipate and prepare for these risks. Cost efficiency is another critical benefit. Risk mitigation strategies, though requiring upfront investments, help prevent the higher costs associated with last-minute adjustments, stockouts, or production halts. Moreover, supply chain

risk mitigation fosters better decision-making, which directly impacts operational efficiency. Tools such as predictive analytics and ERP systems provide organizations with real-time data, enabling them to make informed decisions quickly. This capability enhances forecasting accuracy, streamlines resource allocation, and reduces waste, all of which contribute to efficient operations (Kabera & Kinyua, 2023).

Flexibility and resilience in the supply chain also improve operational efficiency. Organizations that implement contingency plans, such as alternative transportation routes or emergency supplier arrangements, can adapt quickly to unforeseen events (Havenga, Meyer & Luke, 2019). This adaptability ensures consistent quality and timely delivery, reducing the risk of customer dissatisfaction and maintaining the organization's reputation. For non-profit organizations like NGOs, supply chain risk mitigation is particularly critical as it affects their ability to deliver services effectively. For example, an NGO engaged in disaster relief can ensure operational efficiency by diversifying its suppliers and pre-positioning relief supplies in various locations. These measures reduce response times and enable the NGO to meet urgent needs without interruptions (Kanter & Brinkerhoff, 2021).

Njeri (2023) studied the effects of risk mitigation strategies on the financial performance of manufacturing firms in Kenya. The research deployed both qualitative and quantitative methods. The study concluded that most frequent occurring risk is production (failures in internal systems, processes and people, or from external factors). This underscores the necessity for robust risk management frameworks in environments characterized by vulnerabilities, similar to the scope of the current study. However, the study was conducted among manufacturing firms in Kenya while current study will be conducted among NGOs in Nairobi County.

Wadesango, Mhaka, Shava and Ongayi, (2022) did a literature review on the effectiveness of supply chain risk mitigation strategy on financial performance in a public setting in Ghana. Research finding was that fraud risk reduction significantly and positively affects organizational performance due to minimized losses. The study found that risks were not effectively communicated to departments. Risk team lacks communication skills, have inadequate assessment. The study concluded that fraud risk reduction significantly and positively affects organizational performance in public settings in Ghana by minimizing losses. However, the study adopted literature review study. The current study will bridge this gap by adopting descriptive research design and use a case study of NGOs in Nairobi County.

Singh and Hong (2021) sought to examine the impact of strategic and operational risk mitigation practices on firm performance in Pakistan. The results showed that under conditions of uncertainty, management decision-making is more likely to be cautious until visible forms of risks emerge, and prudent response mechanisms are put in place. The study identified the crucial role of supply chain exploration and exploitation practices, and their influence in development of network risk management practices, leading to competitive financial outcomes. The study concluded that strategic and operational risk mitigation practices under conditions of uncertainty significantly contribute to firm performance in Pakistan. The study focused on firm performance, with operational risk mitigation practices, but did not address non-profit organizations, where financial outcomes are less central. The current study will focus on NGOs in Nairobi County, where operational efficiency is prioritized over profit, thus offering unique insights into the role of risk mitigation strategies in non-profit organizations.

Kerongo and Mwaura (2023) did a study on the effect of operational risk management practices on the financial performance in commercial banks in Tanzania. The study found that credit risk, insolvency risk and operational efficiency influenced the financial performance for

the period under study. However, this study was conducted in commercial banks in Tanzania. Therefore, the findings might not be applicable in the case of NGOs in Nairobi County. The study concluded that operational risk management practices, including credit risk and insolvency risk management, positively influenced the financial performance of banks in Tanzania. However, the study was conducted in Tanzanian commercial banks and centered on operational risks that are not as relevant to NGOs, which operate in a different risk landscape. The current study will explore the risk mitigation strategies of NGOs, looking at how these strategies can specifically improve their operational efficiency.

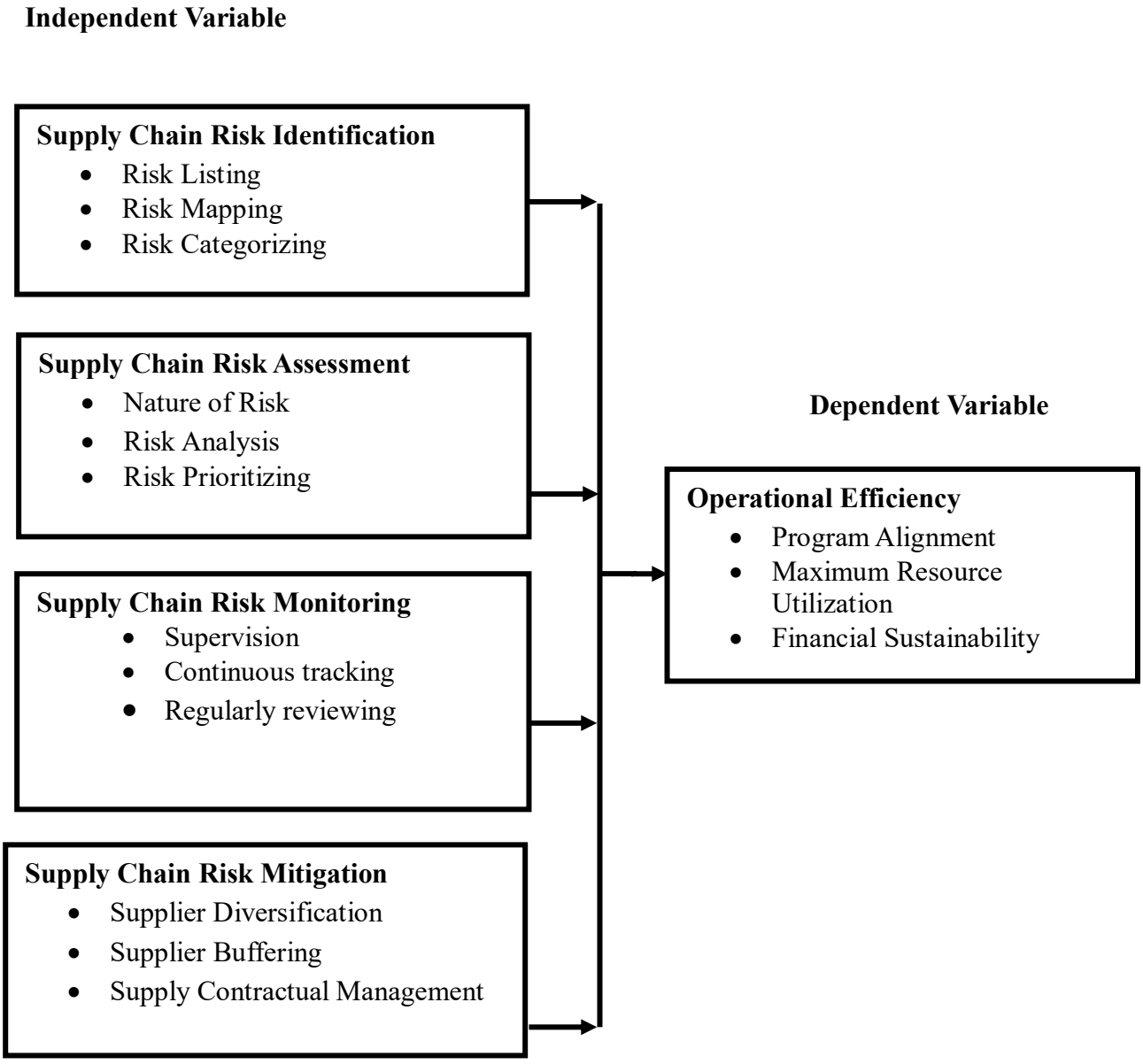
Nabukaki and Omwenga (2022) investigated the effect of risk mitigation strategy on financial performance of Jomo Kenyatta International Airport. The study established that risk mitigation strategy significantly and positively influences financial performance of Jomo Kenyatta International Airport. The study concluded that risk mitigation strategies significantly and positively influenced financial performance at Jomo Kenyatta International Airport. However, the study focused on the Jomo Kenyatta International Airport, which operates under different risk dynamics than NGOs. The current study will focus on NGOs, filling the gap by examining how risk mitigation strategies improve operational efficiency in a non-profit context, such as that of NGOs in Nairobi County.

2.4 Conceptual Framework

A conceptual framework organises research study concepts, variables, and linkages. This guide helps researchers systematically examine variable correlations and explain their findings (Miles et al., 2013). The conceptual framework shows how distinct factors (supply chain risk identification, assessment plan, monitoring, and mitigation) relate and dependent variable (operational efficiency of NGOs in Nairobi County).

FIGURE 1

Conceptual Framework



Source: Researcher (2025)

2.5 Operationalization of Variables

TABLE 1

Operationalization of Variables

Study Variable	Variable	Indicators	Measurement
Supply Chain Risk Identification	Independent	• Risk Listing • Risk Mapping • Risk Categorizing	Likert Scale 1-5 (Section B)
Supply Chain Risk Assessment	Independent	• Nature of Risk • Risk Analysis • Risk Prioritizing	Likert Scale 1-5 (Section C)
Supply Chain Risk Monitoring	Independent	• Continuous tracking • Program alignment • Regularly reviewing	Likert Scale 1-5 (Section D)
Supply Chain Risk Mitigation	Independent	• Supplier Diversification • Supplier Buffering • Supply Contractual Management	Likert Scale 1-5 (Section E)
Operational Efficiency	Dependent	• Program Effectiveness • Effective Resource Utilization • Financial Sustainability	Likert Scale 1-5 (Section F)

Source: Researcher (2025)

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes data collection and analysis. Research design, target population, sampling procedures, and tools are covered. It also covers instrument validity, reliability, data collection, processing, and analysis.

3.2 Research Design

A descriptive research method was used for the study. It is best to use a descriptive research design for this study because it tries to describe and analyze the variables' traits, connections, and patterns in a planned way. This design lets the researcher get accurate and thorough information about how supply chain risk management is currently done (mitigation, monitoring, identification, and evaluation) and how it affects the efficiency of operations in NGOs. It also lets you gather both qualitative and quantitative data, which lets the researcher directly measure operational efficiency and learn about the outside factors that affect supply chain practices. With this approach, the study can give a clear picture of the strategies being used and how they worked, which is a good starting point for making suggestions that are specific to the needs of NGOs in Nairobi County.

3.3 Target Population

The targeted population is a group of individuals, objects, or items from which samples are taken for measurement (Mugenda & Mugenda, 2013). The unit of analysis was NGOs within Nairobi. According to NGO Coordination Board there are over 2500 registered NGOs within Nairobi however majority of them have no defined supply chain management structure therefore the study targeted 40 international NGOs since they have a well-structured supply

chain management system. The unit of observation were supply chain manager, procurement officer and store manager in each of the 40 targeted NGOs. Therefore, the total target population was 120 respondents. The distribution of the targeted International NGOs is in Appendix 1. The target population of the study is as indicated in table 2

TABLE 2

Target Population

Manager	Target Population
Supply Chain Manager	40
Procurement Manager	40
Store Manager	40
Total	**120**

3.4 Sample Size

Since the study population is manageable the study used census technique to include all the 120 targeted supply chain managers, procurement officers and store managers among NGOs within Nairobi County. The primary advantage of the census technique is that it provides a complete and accurate representation of the entire population. Since data is collected from every individual or unit within the population, there is no risk of sampling error or bias.

3.5 Research Instruments

A closed-ended questionnaire was used to get raw data for the study. Closed-ended questions make it easier to collect quantitative data, which makes it easy to look at how answers to questions about supply chain risk management methods affect the efficiency of NGOs' operations. Closed-ended questions let people answer quickly and easily because they give

them a list of possible answers. This raises the response rate and makes sure that the data collection is organized and uniform across all participants.

3.6 Pilot Test

Before the main study, a pilot study was done in Kiambu County, which is nearby. In this study, 12 surveys were sent to the supply chain manager, procurement officer, and store manager of 4 NGOs. Baker (2011) says that for a pilot study, a sample size of 10% of the study group is good.

3.6.1 Validity of the Instrument

Validity refers to how well study results match the real world (Mugenda, 2013). Validity is a way to show that the measuring tool solves the study problem. The study used both content and face validity to determine whether the research instruments were producing valid data. Content validity was assessed by reviewing the research instruments to ensure they adequately covered the relevant aspects of the research topic. This was tested by feedback and comments from the supervisors.

3.6.2 Reliability of the Instrument

Reliability is the consistency, stability, and dependability of data collection methods or measurement instruments in making consistent outcomes by time and across different conditions. Reliability was tested using Cronbach's alpha values. Items with reliability coefficients of 0.70 or higher were considered reliable for the research. According to Kothari (2014), a reliability score of 0.70 or higher from a large group is usually thought to be good enough.

3.7 Data Collection Procedure

Getting an official permission letter from the University for the Field Study was the first step in gathering data. This letter and the consent statement were sent to each of the 40 NGOs that were chosen to ask for permission to get information from the participants. Respondents were told that their information would be kept private before it was collected, which increased the answer rate. The drop-pick method and Google forms were both used by the researcher to gather information.

To avoid selection bias and make sure that all 40 NGOs' supply chain managers, procurement officers, and store managers were included, the study made sure that there were no biases in the data. The study also looked at response bias by keeping people's identities secret and stressing how important honest answers were, while avoiding telling questions to stop confirmation bias. To cut down on non-response bias, the study used follow-up notes to get everyone to fully participate. The study also made sure that the list of people who answered was complete and correct to avoid sampling frame bias. This made sure that the results were valid and trustworthy.

3.8 Diagnostic Tests

3.8.1 Multicollinearity Test

In regression analysis, the multicollinearity test is very important because it checks to see if two or more independent factors are strongly linked to one another. One or more independent variables can be forecasted linearly and very accurately by other independent variables in the model. This is called multicollinearity (Sekaran & Bougie, 2010). The study found the VIF and tolerance values to see how much multicollinearity there was. A VIF value below 10 and a tolerance value above 0.1 meant that there was no multicollinearity.

3.8.2 Normality Test

A normality test is needed because parametric tests like regression analysis need sample data to have a normal distribution. The P-P plot was used to see if the data was normally distributed in this study.

3.8.3 Heteroscedasticity Test

The heteroscedasticity test is used to validate the assumption of constant variance of residuals in regression analysis. Unequal variances, if present, can lead to inefficient estimates and unreliable hypothesis testing. To check for heteroscedasticity the study adopted scatter plot diagram was adopted.

3.9 Data Processing and Analysis

The study collected quantitative data which was analyzed through the aid of SPSS 24. The study used both descriptive and inferential statistics. For descriptive statistic the study adopted percentages, frequencies, means, and standard deviations while for the inferential statistics the study used correlation and regression analysis. After analysis the findings was presented using tables. The following multivariate regressions model was used:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$

Where:

Y = Operational efficiency among NGOs

β_0 = Constant Term;

$\beta_1, \beta_2, \beta_3,$ and β_3 = Beta coefficients

X_1= Supply chain risk identification strategy

X_2= Supply chain risk assessment strategy

X_3= Supply chain risk monitoring strategy

X_3= Supply chain risk mitigation strategy

ε = Error Term

3.10 Ethical Consideration

First, the researcher got permission from the university's ethical group to do the field study. This helped them get a formal letter from the university approving the study. The researcher then went to the National Commission for Science, Technology, and Innovation (NACOSTI) and asked for a study permit. The researcher then showed the study permit to the NGOs' management as a way to ask for permission to collect data after successfully applying. Strict data protection measures, like keeping data files in a safe place and limiting who can see private information, were used to keep things secret. To keep personal and financial data safe from people who shouldn't have had access to it, the researcher used secure data keeping methods like encrypting files (Resnik, 2015). The people who took part were told about the steps that were taken to keep their information safe and how it would only be used for study. Also, all the data that was gathered was analyzed as a whole so that individual answers would not be made public. This kept sensitive information private.

To protect the subjects' privacy, the researcher made sure that no one's identity would be revealed during the data collection process. This was done by giving each participant a unique identification number instead of using their names or other information that could be used to find them on the surveys. Also, all the information gathered was put together and shared in a way that makes it impossible to identify specific respondents (Resnik, 2015). By keeping this level of anonymity, the researcher made sure that the participants' names would stay hidden and safe during the study. This would protect their privacy and encourage them to give honest answers.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter analyzes, interprets and presents data collected from the respondents; the purpose of the study was to assess the effect of supply chain risk management strategies on operational efficiency of NGOs in Nairobi County. The researcher used tables, to present the findings of the study.

4.2 Pilot Test Results

Before the main study, a pilot study was done in Kiambu County, which is nearby. In this study, 12 surveys were sent to the supply chain manager, procurement officer, and store manager of 4 NGOs. This was determined through cronbach's alpha value

TABLE 3

Reliability Test Results

Variable	No. of Items	Cronbach's Alpha Value
Operational efficiency among NGOs	5	.774
Supply chain risk identification strategy	6	.879
Supply chain risk assessment strategy	5	.754
Supply chain risk monitoring strategy	6	.739
Supply chain risk mitigation strategy	6	.861

Source: Research Data (2025)

From the findings, the reliability analysis revealed that all variables achieved acceptable Cronbach's Alpha values. Operational efficiency among NGOs recorded a value of 0.774, supply chain risk identification strategy had the highest at 0.879, supply chain risk assessment

strategy scored 0.754, supply chain risk monitoring strategy had 0.739, and supply chain risk mitigation strategy posted 0.861. This implies that all constructs had strong internal consistency, with alpha values above the 0.7 threshold, confirming that the items used were reliable for measuring each variable. Consequently, the research instrument was deemed valid and suitable for the main study without the need for major revisions.

4.3 Response Rate

The researcher issued out 120 questionnaires to the respondents. Out of 120 questionnaires issued, 100 were successfully filled and returned for analysis thus giving the study 83% response rate as provided in Table 4

TABLE 4

Response Rate

Response	Frequency	Percentage (%)
Expected response	120	100
Received response	100	83
Un-received response	20	17

4.4 Demographic Data

Demographic data analysis was based on education qualification, length of service in the organization and position of the respondents.

4.4.1 Highest Education Qualification Attained

The researcher sought to assess the education qualification of the respondents. The findings were as indicated in table 5

TABLE 5

Highest Education Qualification Attained

	Frequency	Percentage
Certificate	9	9
Diploma	17	17
Undergraduate Degree	38	38
Master Degree	29	29
PHD	7	7
Total	**100**	**100**

From the findings, 9% of the respondents stated that they had certificate education, 17% stated that they had diploma education level,38% stated that they had undergraduate degree education level, 29% stated that they had master's education level while 7% stated that they had PhD education level. This implies that majority of the employees in international NGOs had undergraduate education level followed by master's education level. These results imply that a majority of personnel working in the supply chain departments of NGOs are highly educated. This is significant because higher education is often linked to greater analytical and strategic thinking skills, which are essential for identifying, assessing, and managing supply chain risks. Therefore, the educational background of respondents may positively influence the adoption of effective risk management strategies that enhance operational efficiency.

4.4.2 Length of Service in the NGO

The researcher further sought to assess the length of service the respondents has been working in the NGOs. The findings were as indicated in table 6

TABLE 6

Length of Service in the NGO

Years	Frequency	Percentage
Less than 3 years	12	12
3-9 years	23	23
10-15 years	49	49
More than 15 years	16	16
Total	**100**	**100**

The data on length of service, indicates that12% of the respondents have been serving in the NGO for less than 3 years, 23% have been serving in the NGO for 3-9 years, 49% have been serving in the NGO for 10-15 years while 16% have been serving in NGO for more than 15 years. This implies that majority of the respondents have been serving in international NGOs for 10 -15 years. These findings suggest that most respondents have extensive experience working in the NGO sector. Lengthy service can lead to a deeper understanding of organizational vulnerabilities and practical knowledge of past supply chain disruptions. This institutional experience likely enhances their capacity to implement long-term and sustainable risk management strategies, thereby improving operational efficiency.

4.4.3 Position held in the Organization

The researcher sought to assess the position the respondents hold in the organization. The findings were as indicated in table 7

TABLE 7

Position Held in the Organization

	Frequency	Percentage
Supply chain manager	33	33
Procurement Officer	37	37
Store Manager	30	30
Total	**100**	**100**

The table indicates that 33% of the respondents were supply chain managers, 37% were procurement officers, 30% were store managers. This implies that majority of the employees in the international NGOs were supply chain managers followed by procurement officers. This distribution shows that respondents hold core positions directly linked to supply chain decision-making, sourcing, inventory control, and risk management. Their roles are instrumental in formulating and executing strategies to manage supply chain risks. The presence of such key personnel enhances the credibility of the study, as their insights reflect operational realities that influence NGO efficiency.

4.5 Analysis of the Study Variables

The study had four independent variables which included supply chain risk identification strategy, supply chain risk assessment strategy, supply chain risk monitoring strategy and supply chain risk mitigation strategy. The dependent variable of the study was operational efficiency in NGOS in Nairobi County.

4.5.1 Supply Chain Risk Identification Strategy on Operational Efficiency

The researcher sought to assess the effect of supply chain risk identification strategy on operational efficiency among NGOs in Nairobi County. The response were rated from 1-5 where indicated the lowest meanwhile 5 indicated the highest mean. Key SA=Strongly Agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly Disagree. The. The findings were as indicated in 8

TABLE 8

Supply Chain Risk Identification Strategy on Operational Efficiency

Statement	SA (%)	A (%)	U (%)	D (%)	SD (%)	Mean	Std
Our organization has a well-defined process for listing potential risks in the supply chain.	18	64	6	12	0	3.8800	.8442
The risk listing process helps us to address potential disruptions in our supply chain.	22	32	22	24	0	3.5200	1.0869
We have a risk mapping strategy that visually represents potential supply chain risks.	30	40	18	12	0	3.8800	.9773
Risk mapping in our organization helps in better decision-making for supply chain management.	42	30	16	12	0	4.0200	1.0346
Our organization effectively categorizes risks based on their severity and likelihood of occurrence.	36	34	18	12	0	3.9400	1.0132
We use categorized risks to prioritize interventions in the supply chain.	44	28	16	12	0	4.0400	1.0437

Source: Research Data (2025)

The findings indicated that 18% of the respondents strongly agreed that their organization has a well-defined process for listing potential risks in the supply chain, 64% agreed, 6% were undecided, while 12% disagreed. The statement recorded a mean of 3.8800 and a standard deviation of 0.8442, suggesting a generally high level of agreement among respondents. This implies that a majority of NGOs in Nairobi County recognize the importance of having structured processes in place for identifying supply chain risks. The relatively low standard deviation further indicates consistency in responses, pointing to a shared understanding or implementation of risk identification practices across the organizations.

Furthermore, 22% of the respondents strongly agreed that that the risk listing process helps address potential disruptions in the supply chain, 32% agreed while 22% were undecided and 24% disagreed. This statement had a mean of 3.5200 and a standard deviation of 1.0869. These results suggest moderate agreement but with more variability in perception. The

relatively higher standard deviation indicates differences in the effectiveness of risk listing in actually mitigating disruptions. This variation may be attributed to the degree to which different organizations operationalize the identified risks into preventive or responsive actions. These results are supported by the study conducted Kiprop and Tenai (2019) who emphasized that organizations with a systematic approach to risk identification are better prepared to anticipate and mitigate disruptions. Similar conclusions were drawn by Egiyi and Eze (2022) who argued that structured risk assessments improve agility and responsiveness within the supply chain network.

In addition, 30% of the respondents strongly agreed that organization has a risk mapping strategy that visually represents potential supply chain risks 40% agreed, 18% were undecided, and 12% disagreed. The mean score of 3.8800 and standard deviation of 0.9773 indicate that many NGOs appreciate the utility of risk mapping in their supply chain operations. Risk maps provide a visual framework for understanding complex risk environments, which likely enhances proactive planning and strategic decision-making.

Moreover, 42% of respondents strongly agreed that risk mapping helps in better decision-making for supply chain management, 30% agreed, while 16% were undecided and 12% disagreed. This item posted a mean of 4.0200, the highest among the variables, and a standard deviation of 1.0346, indicating that the majority view risk mapping as a valuable tool in guiding supply chain decisions. The high mean reflects strong endorsement of the strategy's effectiveness, while the slight variation in responses may reflect differences in how the mapping process is utilized or integrated into decision-making frameworks across NGOs. The findings align with those of Virglerova, Panic, Voza and Velickovic (2022) who advocated for visual risk mapping tools as a means of improving strategic decision-making, particularly in complex and uncertain environments. These tools may also support resource allocation and

contingency planning, which are vital in humanitarian logistics. The favorable perceptions also reflect growing adoption of digital risk dashboards, a trend documented by Sheffi (2015) in his work on resilience and risk visibility in supply networks.

Additionally, 36% of respondents strongly agreed that their organization effectively categorizes risks based on severity and likelihood, 34% agreed. 18% were undecided and 12% disagreed. With a mean of 3.9400 and standard deviation of 1.0132, this indicates general agreement that NGOs are using risk categorization to enhance supply chain management. Categorizing risks allows organizations to focus efforts and resources on the most critical threats, thus supporting operational efficiency. However, the presence of undecided and disagreeing responses may suggest varying levels of maturity in the implementation of this strategy.

Finally, 44% of the respondents strongly agreed that that their organization uses categorized risks to prioritize supply chain interventions 28% agreed. 16% were undecided and 12% disagreed. This item recorded the highest mean of 4.0400 and a standard deviation of 1.0437, highlighting a strong consensus that risk prioritization is actively informing operational decisions. This reflects a mature level of risk management practice where analysis directly influences actions, thereby improving the organization's agility and efficiency in responding to supply chain threats. The finding is consistent with the work of Mburu, Ngugi and Ogollah (2021), who emphasized that categorizing risks allows for targeted interventions, thereby enhancing operational efficiency. This suggests a gap between risk identification and practical implementation, a challenge previously identified by Owuor, Oginda & Obura, 2022), who noted that while organizations may be good at identifying and classifying risks, there is often a lack of strategic follow-through in applying that knowledge to operational decisions. Bridging

this gap is crucial for ensuring that risk management practices translate into tangible improvements in NGO efficiency and service delivery.

4.5.2 Supply Chain Risk Assessment Strategy on Operational Efficiency

The researcher further sought to assess the level of agreement with the statements on the effect of supply chain risk assessment strategy on operational efficiency among NGOs in Nairobi County. The response were rated from 1-5 where indicated the lowest meanwhile 5 indicated the highest mean. Key SA=Strongly Agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly Disagree. The study findings were as indicated in table 9

TABLE 9

Supply Chain Risk Assessment Strategy on Operational Efficiency

	SA (%)	A (%)	U (%)	D (%)	SD (%)	Mean	Std
Our organization has a clear understanding of the nature of risks in the supply chain.	36	34	18	12	0	3.9400	1.0133
The risk nature assessment allows us to take proactive steps to manage supply chain risks.	44	28	16	12	0	4.0400	1.0437
We have a systematic approach to analyzing the risks identified in our supply chain.	44	30	12	10	4	4.0000	1.1547
The analysis of risks is done regularly to adapt to changing supply chain conditions.	22	54	12	12	0	3.8600	.8992
We prioritize supply chain risks based on their potential impact on operational efficiency.	30	30	12	24	4	3.5800	1.2568
Risk prioritization helps in allocating resources efficiently within our organization.	18	54	16	12	0	3.7800	.8828

Source: Research Data (2025)

The findings indicated that 36% of the respondents strongly agreed that their organization has a clear understanding of the nature of risks in the supply chain, 34% agreed, 18% were undecided, while 12% disagreed. This statement recorded a mean of 3.9400 and a standard deviation of 1.0133, suggesting that most respondents agreed with the statement. The relatively low standard deviation implies consistency in responses and indicates that many

NGOs in Nairobi County are aware of the various risks that can impact their supply chains. This understanding forms a critical foundation for effective risk assessment and management.

Furthermore, 44% of the respondents strongly agreed that risk nature assessment allows their organizations to take proactive steps to manage supply chain risks, 28% agreed, 16% were undecided, while 12% disagreed. This item posted the highest mean of 4.0400 and a standard deviation of 1.0437, signifying a high level of agreement and suggesting that risk assessments are not only being conducted but are also being used to guide proactive risk mitigation strategies. The slightly higher standard deviation reflects some variation in how consistently this practice is implemented across organizations. These results resonate with the findings of Tran, Dobrovnik and Kummer (2020), who emphasized that a deep understanding of supply chain risks enhances organizational agility and responsiveness. Similarly, Lyambiko (2023) argued that a strong grasp of risk nature is foundational for building supply chain resilience, as it equips organizations with the foresight needed to anticipate and neutralize disruptions.

In addition, 44% of the respondents strongly agreed that their organization has a systematic approach to analyzing the risks identified in the supply chain, while 30% agreed, 12% were undecided, 10% disagreed, and 4% strongly disagreed. The mean score was 4.0000, and the standard deviation was 1.1547. This result implies strong agreement, though the higher standard deviation suggests variability in how structured or systematic these approaches are across different NGOs. A systematic analysis of risks ensures that all potential threats are evaluated consistently, allowing for informed decision-making.

Moreover, 22% of the respondents strongly agreed that the analysis of risks is done regularly to adapt to changing supply chain conditions, 54% agreed, 12% were undecided, and 12% disagreed. The statement recorded a mean of 3.8600 and a standard deviation of 0.8992, indicating a moderate to high level of agreement with relatively low variability in responses.

This suggests that most organizations recognize the dynamic nature of supply chain environments and undertake regular risk reviews to stay responsive to emerging threats. Setyarini, Hamdi, & Syahrin (2023) emphasized the importance of continuous risk analysis as a proactive strategy to reduce vulnerabilities and avoid reactive responses. Likewise, Tummala and Schoenherr (2011) found that systematic risk analysis in the supply chain correlates with improved preparedness and operational continuity, particularly in environments with high variability such as those experienced by humanitarian NGOs.

Additionally, 30% of the respondents strongly agreed their organization prioritizes supply chain risks based on their potential impact on operational efficiency, 30% agreed that their organization prioritizes supply chain risks based on their potential impact on operational efficiency. 12% were undecided, 24% disagreed, and 4% strongly disagreed. This item posted a mean of 3.5800 and a standard deviation of 1.2568, reflecting a moderate level of agreement but with significant variability. The higher standard deviation may indicate that while some NGOs actively prioritize risks, others may lack formal criteria or processes for doing so.

Finally, 18% of respondents strongly agreed and 54% agreed that risk prioritization helps in allocating resources efficiently within their organizations. 16% were undecided and 12% disagreed. The statement had a mean of 3.7800 and a standard deviation of 0.8828, showing general agreement and relatively consistent responses. This suggests that many NGOs view risk prioritization as an effective tool for enhancing resource allocation, ultimately supporting better preparedness and operational efficiency. This supports the argument made by Havenga, Meyer and Luke (2019) that organizations must not only identify risks but also rank them to ensure effective allocation of mitigation efforts and limited resources. Additionally, Kabera & Kinyua (2023) emphasized that prioritizing supply chain risks based on their severity and likelihood leads to better alignment of risk mitigation strategies with organizational goals.

For NGOs in Nairobi, this practice supports cost-effective operations while maintaining service delivery in uncertain environments

4.5.3 Supply Chain Risk Monitoring Strategy on Operational Efficiency

The researcher further sought to assess the level of agreement with the statements on the effect of supply chain risk monitoring strategy on operational efficiency among NGOs in Nairobi County. The response were rated from 1-5 where indicated the lowest meanwhile 5 indicated the highest mean. Key SA=Strongly Agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly Disagree. The study findings were as indicated in table 10

TABLE 10

Supply Chain Risk Monitoring Strategy on Operational Efficiency

Statement	SA (%)	A (%)	U (%)	D (%)	SD (%)	Mean	Std.
We continuously track potential supply chain risks in our organization.	48	28	14	10	0	4.1400	1.0052
Continuous tracking allows us to monitor changes in the supply chain environment.	38	36	16	10	0	4.0200	.9742
Program alignment ensures that supply chain operations are aligned with organizational goals, reducing discrepancies.	42	36	12	10	0	4.1000	.9692
Program alignment has helped our organization to align resource allocation with priority programs, minimizing waste	54	24	14	6	2	4.2200	1.0306
We regularly review our supply chain risks to ensure that our strategies are up to date.	44	34	12	10	0	4.1200	.9773
Regular reviews help ensure that our supply chain risk strategies remain relevant and effective.	46	38	8	6	2	4.2000	.9640

Source: Research Data (2025)

The findings revealed that 48% of the respondents strongly agreed that their organization continuously tracks potential supply chain risks, 28% agreed, 14% were undecided, and 10% disagreed. This item recorded a mean of 4.1400 and a standard deviation

of 1.0052, indicating a strong level of agreement among respondents. The relatively low standard deviation suggests that most organizations consistently engage in risk tracking as part of their supply chain monitoring efforts. This proactive approach enables early detection of vulnerabilities and facilitates timely responses to emerging threats.

Furthermore, 38% of the respondents strongly agreed that continuous tracking allows them to monitor changes in the supply chain environment, 36% agreed, 16% were undecided, while 10% disagreed. The statement posted a mean of 4.0200 and a standard deviation of 0.9742, demonstrating general agreement with limited variability in responses. This suggests that NGOs recognize the dynamic nature of the supply chain and see value in maintaining vigilance to adapt to changes as they arise. Such awareness is critical for sustaining resilience and reducing risk exposure. These findings align with the work of Yan and Hua, (2023). who emphasized that continuous risk tracking allows firms to develop early warning systems, helping them anticipate and respond to disruptions more efficiently. Similarly, Havenga, Meyer and Luke, (2019) stressed that real-time monitoring of risks is central to enhancing supply chain resilience, particularly for organizations operating in dynamic environments such as NGOs. Their studies indicate that uninterrupted risk surveillance is essential for identifying emerging threats and adjusting strategies before they escalate.

In addition, 42% of respondents strongly agreed that program alignment ensures supply chain operations are aligned with organizational goals, thus reducing discrepancies. 36% agreed, 12% were undecided, and 10% disagreed. The item had a mean of 4.1000 and a standard deviation of 0.9692, reflecting consistent agreement. This suggests that many NGOs in Nairobi County integrate supply chain activities with their strategic objectives, which likely enhances coordination and reduces inefficiencies.

Moreover, 54% of respondents strongly agreed that program alignment has helped their organization align resource allocation with priority programs, thereby minimizing waste, 24% agreed, 14% were undecided, 6% disagreed, and 2% strongly disagreed. This item recorded the highest mean of 4.2200 and a standard deviation of 1.0306, indicating a very strong level of agreement. These findings imply that organizations are leveraging program alignment not just for strategic consistency but also to enhance resource utilization and operational efficiency. The slightly higher standard deviation reflects some variation in implementation across organizations but still points to a positive overall perception. These observations are supported by Setyarini, Hamdi and Syahrin (2023) who noted that strategic alignment between supply chain operations and organizational objectives is a key driver of performance and resource optimization. Habasha (2023) also found that misalignment between program objectives and supply chain activities often leads to inefficiencies and misallocated resources, while alignment improves responsiveness and minimizes operational waste.

Additionally, 44% of the respondents strongly agreed that they regularly review their supply chain risks to ensure their strategies are up to date, 34% agreed. 12% were undecided, while 10% disagreed. This statement had a mean of 4.1200 and a standard deviation of 0.9773, suggesting that most organizations appreciate the importance of continuous evaluation. Regular reviews allow organizations to remain responsive to new risks and maintain the relevance of their mitigation strategies.

Finally, 46% of respondents strongly agreed that regular reviews help ensure that their supply chain risk strategies remain relevant and effective, 38% agreed, 8% were undecided, 6% disagreed, and 2% strongly disagreed. The item recorded a mean of 4.2000 and a standard deviation of 0.9640, showing strong consensus with minimal variation. These results indicate that many NGOs in Nairobi County rely on periodic assessments to fine-tune their risk

strategies and ensure that they continue to meet organizational needs and respond effectively to the changing environment. These results mirror the research by Maina and Yegon (2022) who emphasized that regular review of risk strategies is essential in adapting to shifting internal and external environments, especially in non-profit organizations. Additionally, Rono (2021) found that organizations that periodically reassess their supply chain risks are more capable of maintaining robust risk mitigation frameworks.

4.5.4 Supply Chain Risk Mitigation Strategy on Operational Efficiency

The researcher further sought to assess the level of agreement with the statements on the effect of supply chain risk mitigation strategy on operational efficiency among NGOs in Nairobi County. The response were rated from 1-5 where indicated the lowest meanwhile 5 indicated the highest mean. Key SA=Strongly Agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly Disagree. The study findings were as indicated in table 11

TABLE 11

Supply Chain Risk Mitigation Strategy on Operational Efficiency

Statement	SA (%)	A (%)	U (%)	D (%)	SD (%)	Mean	Std
Our organization diversifies its suppliers to minimize supply chain risks.	36	30	20	10	4	3.8400	1.1435
Supplier diversification helps reduce dependence on a single source, improving efficiency.	36	36	14	12	2	3.9200	1.0795
We maintain buffer stock from our suppliers to mitigate supply chain disruptions.	26	34	24	14	2	3.6800	1.0720
Supplier buffering strategies have enhanced our organization's ability to operate smoothly during disruptions.	44	32	10	12	2	4.0400	1.1002
Supply contractual agreements are designed to protect our organization from potential risks.	32	50	8	8	2	4.0200	.9533
Strong contractual management has improved our relationships with suppliers and mitigated risks.	46	34	10	2	8	4.0800	1.1693

Source: Research Data (2025)

The findings indicated that 36% of the respondents strongly agreed that their organization diversifies its suppliers to minimize supply chain risks, 30% agreed, 20% were undecided, and 10% disagreed, with 4% strongly disagreeing. This statement recorded a mean of 3.8400 and a standard deviation of 1.1435. This suggests that while a majority of NGOs recognize supplier diversification as a valuable strategy, there is some variability in perceptions regarding its implementation and effectiveness.

Furthermore, 36% of respondents strongly agreed that supplier diversification helps reduce dependence on a single source, thereby improving efficiency, and 36% agreed with this assertion, while 14% were undecided and 12% disagreed, with 2% strongly disagreeing. The statement had a mean of 3.9200 and a standard deviation of 1.0795, indicating a fairly positive consensus on the benefits of diversification in enhancing supply chain efficiency, albeit with some differences in opinion on its overall impact. These results are well-supported by Adera, (2023) who highlighted supplier diversification as a risk mitigation strategy that enhances supply chain resilience by reducing dependency on single sources. Similarly, Havenga, Meyer and Luke, (2019) emphasized that having multiple suppliers not only minimizes risks related to supplier failure or delays but also increases competitive advantage and procurement flexibility.

In addition, 26% of respondents strongly agreed that they maintain buffer stock from their suppliers to mitigate supply chain disruptions, 34% agreed, 24% were undecided, and 14% disagreed, with 2% strongly disagreeing. The mean for this statement was 3.6800, with a standard deviation of 1.0720, which suggests that although buffer stock management is recognized as a useful strategy, there is moderate variability in how this practice is viewed or implemented across organizations.

Moreover, 44% of the respondents strongly agreed that supplier buffering strategies have enhanced their organization's ability to operate smoothly during disruptions, while 32% agreed, 10% were undecided, and 12% disagreed, with 2% strongly disagreeing. This item posted a mean of 4.0400 and a standard deviation of 1.1002, underscoring a strong level of agreement that buffering strategies contribute significantly to maintaining operational stability in the face of disruptions.

Additionally, 32% of respondents strongly agreed that supply contractual agreements are designed to protect their organization from potential risks, with 50% agreeing, 8% undecided, and 8% disagreeing, along with 2% strongly disagreeing. This statement recorded a mean of 4.0200 and a standard deviation of 0.9533, reflecting a robust confidence in the effectiveness of contractual agreements as a risk mitigation tool within the supply chain. These findings are consistent with Njeri (2023) who found that buffering in the form of inventory or strategic supplier arrangements enhances continuity during disruptions. Furthermore, Wadesango, Mhaka, Shava and Ongayi, (2022) argued that holding safety stock or creating supplier redundancies are proactive ways to deal with supply chain volatility, especially in environments prone to uncertainty such as those faced by NGOs.

Finally, 46% of respondents strongly agreed that strong contractual management has improved relationships with suppliers and mitigated risks, while 34% agreed, 10% were undecided, and only 2% disagreed, with a notable 8% strongly disagreeing. With a mean of 4.0800 and a standard deviation of 1.1693, this finding demonstrates an overall strong positive perception of the role of contractual management, although the higher standard deviation indicates that there are some differences in how respondents perceive its effectiveness in practice. This aligns with findings by Singh and Hong (2021) who reported that well-structured contracts serve not only as legal safeguards but also improve clarity, reduce uncertainty, and

enhance collaboration. Kerongo and Mwaura (2023) reinforced this by noting that in volatile supply markets, contract-based relationships can be a key tool for managing risk and ensuring continuity.

4.5.5 Operational Efficiency among NGOs

The researcher further sought to assess the level of agreement with the statements on operational efficiency among NGOs in Nairobi County. The response were rated from 1-5 where indicated the lowest meanwhile 5 indicated the highest mean. Key SA=Strongly Agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly Disagree. The study findings were as indicated in table 4.10

TABLE 12

Operational Efficiency among NGOs

	SA (%)	**A (%)**	**U (%)**	**D (%)**	**SD (%)**	Mean	Std
Our organization's programs have successfully met their intended goals and deliver the expected outcomes.	44	28	14	12	2	4.0000	1.1192
The success rate of our organization's programs has consistently improved over time.	52	24	12	10	2	4.1400	1.1012
Resources in our organization are used efficiently, with minimal waste.	30	52	8	10	0	4.0200	.8874
Our organization ensures that resources are allocated to areas where they will have the most impact.	32	34	10	20	4	3.7000	1.2268
Our organization maintains a stable and sustainable financial model that ensures long-term operational efficiency.	40	38	12	10	0	4.0800	.9606
Our organization consistently monitors its financial health to ensure that resources are available for ongoing and future operations	22	50	12	14	2	3.7600	1.0162

Source: Research Data (2025)

The findings revealed that 44% of the respondents strongly agreed that their organization's programs have successfully met their intended goals and delivered the expected outcomes, 28% agreed, 14% were undecided, 12% disagreed, and 2% strongly disagreed. This item had a mean of 4.0000 and a standard deviation of 1.1192, indicating that while most respondents affirmed program success, there was some variation in views across the organizations.

Additionally, 52% of the respondents strongly agreed that the success rate of their organization's programs has consistently improved over time, with 24% agreeing, 12% undecided, 10% disagreeing, and 2% strongly disagreeing. This statement had a mean score of 4.1400 and a standard deviation of 1.1012, suggesting strong agreement on the continuous improvement of program performance, although a minority expressed reservations. According to Van Dooren, Bouckaert, and Halligan (2015), successful program implementation in NGOs is closely linked to clearly defined goals and regular monitoring of expected outcomes. Similarly, according to Carman (2017), the use of performance measurement systems enables NGOs to track program success and refine their strategies, which explains the reported consistent improvement in program success over time.

Regarding resource efficiency, 30% strongly agreed that resources in their organization are used efficiently with minimal waste, 52% agreed, 8% were undecided, and 10% disagreed. This statement had a mean of 4.0200 and a standard deviation of 0.8874, reflecting relatively strong consensus on the efficient use of resources, with limited variation in responses.

In terms of resource allocation, 32% strongly agreed that their organization ensures resources are directed where they will have the most impact, 34% agreed, 10% were undecided, 20% disagreed, and 4% strongly disagreed. This item registered a mean of 3.7000 and a standard deviation of 1.2268, pointing to a moderately positive perception with higher

variability, indicating that some organizations may face challenges in optimal resource allocation. According to Lecy and Searing (2015), many NGOs face challenges in ensuring resource efficiency due to their often-ambiguous objectives and donor-driven priorities, which can lead to inefficient allocation. Additionally, according to Ebrahim and Rangan (2014), aligning resources with areas of maximum impact requires strategic clarity and internal capacity.

The findings also show that 40% strongly agreed that their organization maintains a stable and sustainable financial model that ensures long-term operational efficiency, 38% agreed, 12% were undecided, and 10% disagreed. The mean score was 4.0800, with a standard deviation of 0.9606, suggesting a general consensus that financial sustainability is prioritized, though not uniformly experienced across the organizations.

Lastly, 22% of respondents strongly agreed that their organization consistently monitors its financial health to ensure resource availability for ongoing and future operations, 50% agreed, 12% were undecided, 14% disagreed, and 2% strongly disagreed. This statement recorded a mean of 3.7600 and a standard deviation of 1.0162, indicating a generally positive outlook, but with some variation in the extent and consistency of financial monitoring practices. According to Bowman (2017), financial sustainability in nonprofits is determined by the organization's ability to generate reliable revenue streams and maintain financial flexibility. Moreover, according to McDonald (2018), consistent financial monitoring allows NGOs to adapt to changing operational needs and ensure long-term stability.

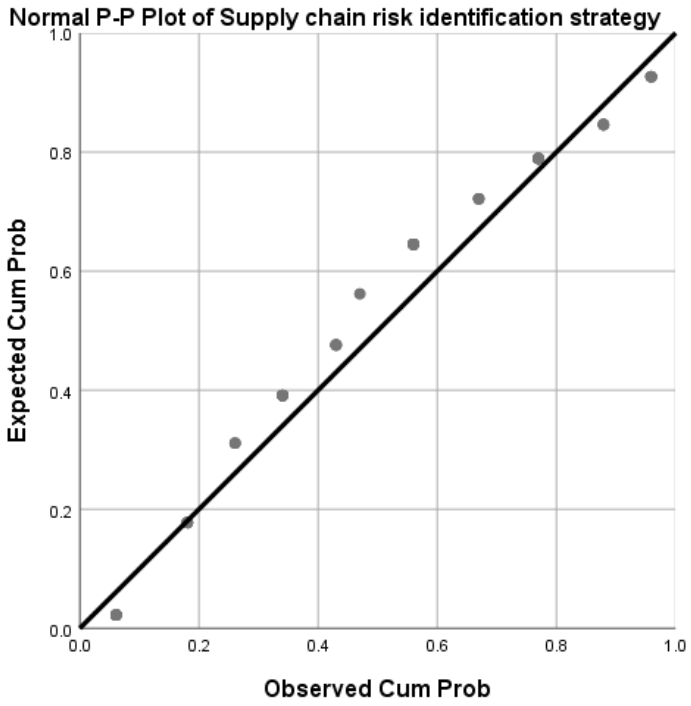
4.6 Diagnostic Test

To justify the use of the regression model, pre-estimation tests were conducted. These tests included normality, multicollinearity, and autocorrelation tests to ensure the reliability of the regression analysis for evaluating the effect of information integration, internal integration,

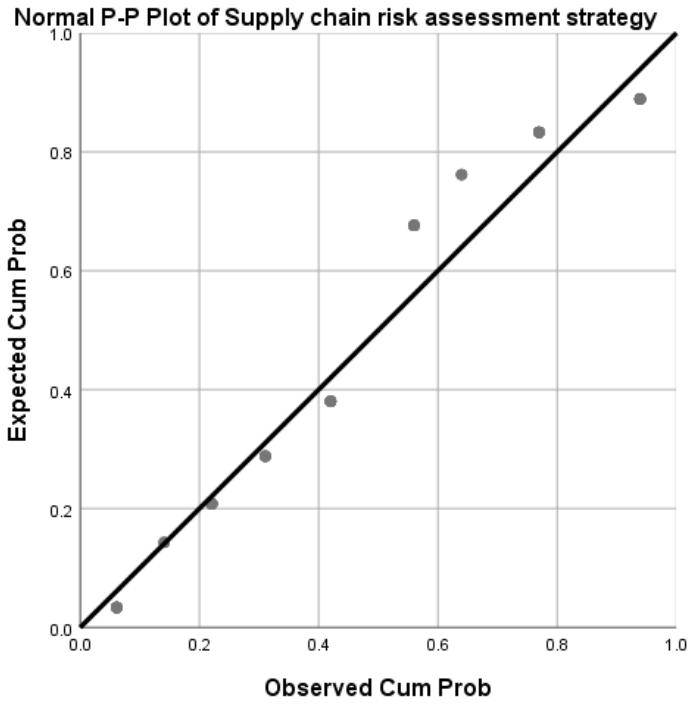
supplier integration, and customer integration on the performance of commercial state corporations in Kenya.

4.6.1 Normality Assumptions Test

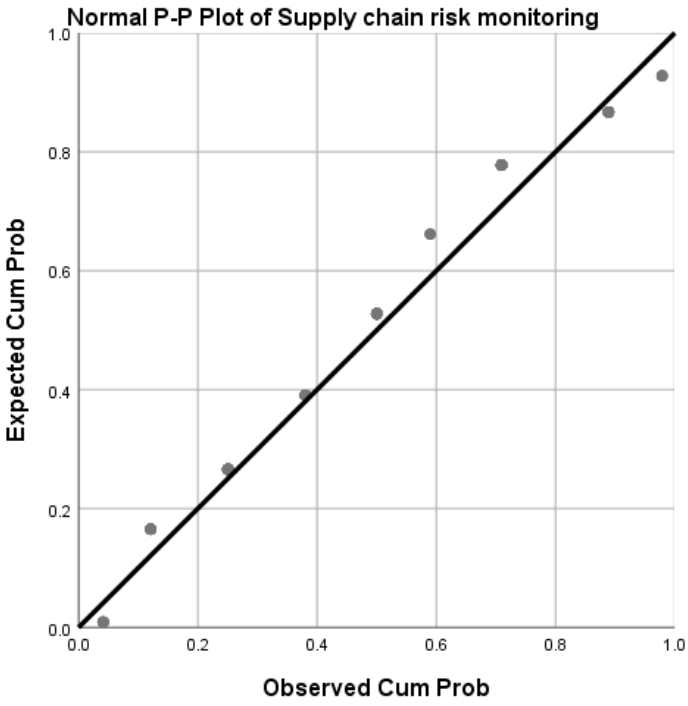
The normality assumption test was conducted to determine whether the data followed a normal distribution. This assumption is necessary to ensure that statistical inferences derived from regression analysis are valid. The study plot a P-P plot. The findings are presented below



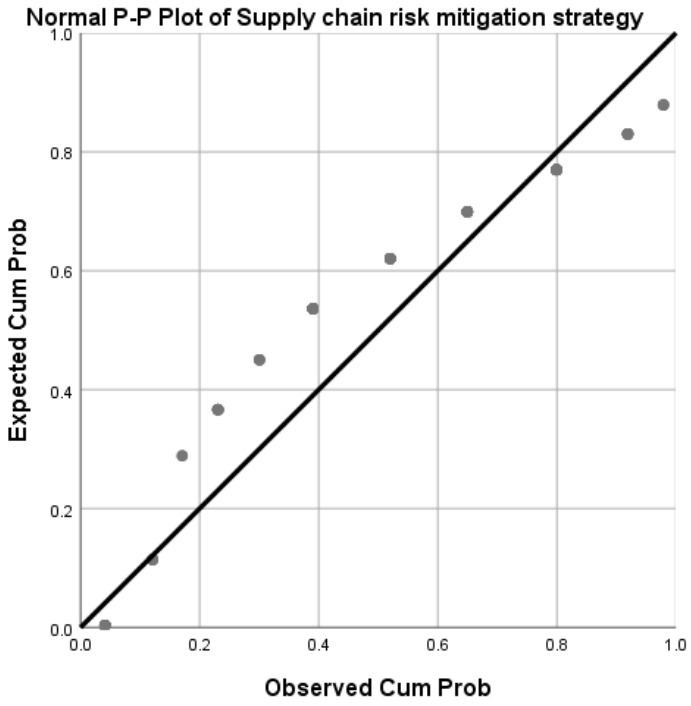
The study sought to determine the normality of data on supply chain risk identification strategy by plotting a P-P plot. From the findings, the points closely aligned with the 45-degree diagonal line, indicating that the data on this variable is normally distributed. This suggests that the responses related to how NGOs identify supply chain risks are symmetrically distributed, thus satisfying the assumption of normality for this variable.



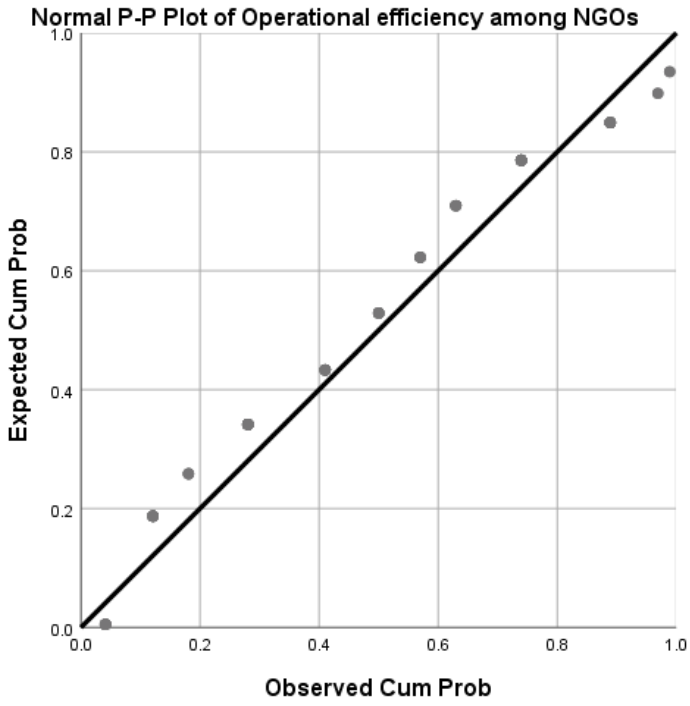
The normality of data on supply chain risk assessment strategy was examined using a P-P plot. The plot showed that the data points were closely clustered around the 45-degree diagonal line, indicating that the variable is normally distributed. This confirms that the responses regarding risk assessment practices among NGOs follow a symmetrical pattern, thereby meeting the normality assumption required for regression analysis.



To assess the normality of supply chain risk monitoring strategy, a P-P plot was generated. The scatter plot revealed that most of the points were aligned with the 45-degree diagonal line, suggesting that the data for this variable is approximately normally distributed. This implies that the participants' views on monitoring supply chain risks are evenly and symmetrically spread, fulfilling the normality requirement.



The P-P plot for supply chain risk mitigation strategy showed that the data points were closely aligned with the 45-degree reference line, demonstrating a normal distribution. This indicates that the responses on mitigation efforts employed by NGOs exhibit a balanced distribution, and the data is appropriate for inclusion in parametric statistical analysis.



The study also sought to determine the normality of data on the operational efficiency of NGOs by plotting a P-P plot. From the findings, the data points were observed to closely align with the 45-degree diagonal line, indicating that the variable is normally distributed. This finding suggests that the responses concerning operational efficiency such as service delivery timeliness, resource utilization, and cost-effectiveness are symmetrically distributed among the sampled NGOs. Therefore, the normality assumption for the dependent variable is satisfied, confirming its suitability for inclusion in the regression model.

4.6.2 Multicollinearity Test

Multicollinearity occurs when independent variables are highly correlated, affecting the precision of regression estimates. To test for multicollinearity, the Variance Inflation Factor (VIF) and Tolerance values were computed, as shown in Table 13

TABLE 13

Multicollinearity Assumption Test Results

Variables	Tolerance	VIF
Supply chain risk identification strategy	.472	2.118
Supply chain risk assessment strategy	.455	2.198
Supply chain risk monitoring strategy	.294	3.397
Supply chain risk mitigation strategy	.344	2.904

The findings indicated that the tolerance value for supply chain risk identification strategy was 0.472, while the corresponding Variance Inflation Factor (VIF) was 2.118. These values clearly fall within the acceptable range, with the tolerance well above the critical threshold of 0.1 and the VIF significantly below 10. This indicates that supply chain risk identification strategy does not exhibit multicollinearity with the other independent variables. The variable is sufficiently independent and appropriate for inclusion in the regression model without concerns of coefficient instability or inflated standard errors.

For the supply chain risk assessment strategy, the tolerance value was 0.455 and the VIF was 2.198. These results also meet the accepted thresholds for multicollinearity diagnostics. The tolerance value is substantially higher than 0.1, and the VIF remains well below 10, suggesting no multicollinearity concerns. Therefore, supply chain risk assessment strategy can be confidently included in the regression analysis as a reliable and stable predictor.

The results for supply chain risk monitoring strategy showed a tolerance value of 0.294 and a VIF of 3.397. Although the tolerance is lower and the VIF is higher compared to the previous variables, both values are still within acceptable bounds. The tolerance is above 0.1, and the VIF is far below the critical cut-off of 10. This indicates moderate correlation with other predictors but not at a level that threatens the integrity of the regression model. Hence,

the variable is appropriate for inclusion, though careful interpretation of its coefficient is advised.

Regarding supply chain risk mitigation strategy, the tolerance value was 0.344, and the VIF was 2.904. While this variable had the second-lowest tolerance and second-highest VIF among the four, both values remained comfortably within the non-problematic range. The tolerance was above 0.1 and the VIF well below 10, suggesting no significant multicollinearity.

4.6.3 Heteroscedacity Test

The study conducted a heteroscedasticity test using scatter plot diagram the findings are as indicates in Figure 4.12

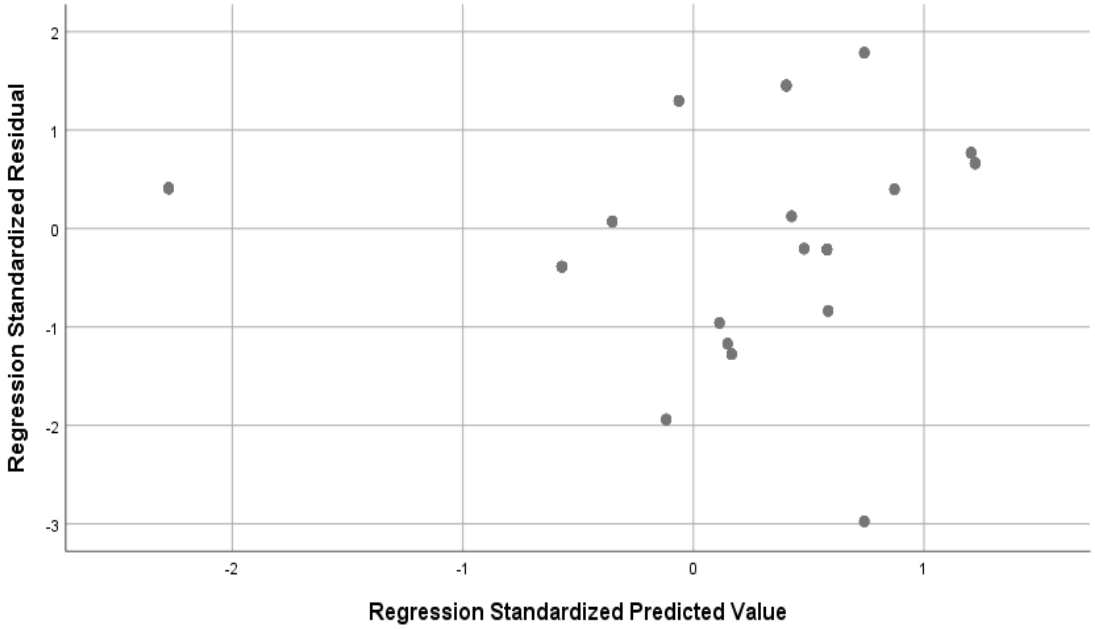


Figure 1: Heteroscedasticity Test

The findings indicated that the residual points were unevenly scattered around the horizontal axis, centered at the zero mark, with no consistent or discernible pattern. This pattern suggested that the variance of the residuals was not constant across the levels of the predicted values, implying that there was no heteroscedasticity

4.7 Inferential Statistics

4.7.1 Correlation Analysis

The researcher performed a correlation analysis to measures the strength and direction of the linear relationship between variables. The correlation is used to determine how closely supply chain risk identification strategy, supply chain risk assessment strategy, supply chain risk monitoring strategy and supply chain risk mitigation strategy on operational efficiency among NGOs in Nairobi County. The findings were as indicated in table 3

FIGURE 2: Correlation Analysis

		Supply chain risk identification strategy	Supply chain risk assessment strategy	Supply chain risk monitoring strategy	Supply chain risk mitigation strategy
Supply chain risk identification strategy	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	100			
Supply chain risk assessment strategy	Pearson Correlation	.694	1		
	Sig. (2-tailed)	.060			
	N	100	100		
Supply chain risk monitoring strategy	Pearson Correlation	.523	.548	1	
	Sig. (2-tailed)	.060	.060		
	N	100	100	100	
Supply chain risk mitigation strategy	Pearson Correlation	.468	.389	.800	1
	Sig. (2-tailed)	.060	.090	.070	
	N	100	100	100	100
Operational Efficiency	Pearson Correlation	.573**	.670**	.828**	.739**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	100	100	100	100

Source: Research Data (2025)

The findings revealed that supply chain risk identification strategy shows a strong positive correlation with operational efficiency, as indicated by a Pearson correlation coefficient of r=0.573; p= 0.000 <0.05. This suggests that better supply chain risk identification strategy influences operational efficiency among NGOs in Nairobi County. The study findings are in tandem with those of Egiyi and Eze (2022) who noted that effective risk identification is essential in supply chain management as it helps organizations proactively address vulnerabilities before they escalate into operational inefficiencies. Similarly, Virglerova, Panic, Voza and Velickovic (2022) argue that risk identification is a foundational step that enhances the resilience of supply chains, particularly in the nonprofit sector where resources are limited.

In addition, the findings indicated that supply chain risk assessment strategy shows a strong positive correlation with operational efficiency, as indicated by a Pearson correlation coefficient of r=0.670; p= 0.000 <0.05. This suggests that better supply chain risk assessment strategy influences operational efficiency among NGOs in Nairobi County. The study findings agree with those of Tran, Dobrovnik and Kummer (2020) who noted that comprehensive risk assessment helps organizations prioritize supply chain threats based on their likelihood and impact, thereby improving decision-making and operational efficiency. Additionally, Lyambiko (2023), structured risk assessment frameworks allow for better resource allocation and contingency planning, which enhances operational performance in humanitarian and development-focused supply chains.

Furthermore, the findings indicated that supply chain risk monitoring strategy shows a strong positive correlation with operational efficiency, as indicated by a Pearson correlation coefficient of r=0.596; p= 0.000 <0.05. This suggests that better supply chain risk monitoring strategy influences operational efficiency among NGOs in Nairobi County. The study findings

agree with those of Havenga, Meyer and Luke, (2019) who noted that continuous risk monitoring allows for early detection of disruptions, helping organizations adjust strategies in real-time to maintain operational flow. Furthermore, according to Madhani, (2020), dynamic monitoring systems increase supply chain visibility and responsiveness, which are critical for operational efficiency in uncertain environments such as those faced by NGOs.

Finally, the findings indicated that supply chain risk mitigation strategy shows a strong positive correlation with operational efficiency, as indicated by a Pearson correlation coefficient of r=0.647; p= 0.000 <0.05. This suggests that better supply chain risk mitigation strategy influences operational efficiency among NGOs in Nairobi County. The study concurs with those of who noted that Setyarini, Hamdi and Syahrin (2023) who noted that risk mitigation strategies such as diversifying suppliers or maintaining buffer stock enhance supply chain agility and operational continuity. Moreover, Habasha (2023), organizations that implement robust mitigation strategies are better positioned to minimize the impact of supply chain disruptions and maintain

4.7.2 Regression analysis

TABLE 14

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.881[a]	.776	.766	.33564

a. Predictors: (Constant), Supply chain risk identification strategy, supply chain risk assessment strategy, supply chain risk monitoring strategy and supply chain risk mitigation strategy

The model summary indicates a moderate positive relationship between supply chain risk identification strategy, supply chain risk assessment strategy, supply chain risk monitoring strategy and supply chain risk mitigation strategy on operational efficiency among NGOs with R Square of 0.776. This suggests that 77.6% of operational efficiency among NGOs is influenced by the factors covered under study while 46.4 is influenced by other factors not covered in the study.

TABLE 15

ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.992	4	9.248	82.093	.000[b]
	Residual	10.702	95	.113		
	Total	47.694	99			

a. Dependent Variable: Operational Efficiency Among NGOs.

b. Predictors: (Constant), Supply chain risk identification strategy, supply chain risk assessment strategy, supply chain risk monitoring strategy and supply chain risk mitigation strategy

The ANOVA results reveal an F-value of 82.093 with a significance level of 0.000. This significance level is below the standard threshold of 0.05, indicating that the model is statistically significant. Therefore, the model effectively predicts the relationship between supply chain risk management strategies and operational efficiency of NGOs in Nairobi County. The overall model demonstrates a strong fit for explaining the financial performance outcomes.

TABLE 16

Coefficients

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1(Constant)	-.942	.312		-3.018	.003
Supply chain risk identification strategy	1.040	.042	1.046	25.038	.000
Supply chain risk assessment strategy	.355	.076	.335	4.649	.000
Supply chain risk monitoring strategy	.640	.130	.442	4.937	.000
Supply chain risk mitigation strategy	.235	.074	.261	3.154	.002

a. Dependent Variable: Operational Efficiency of NGOs in Nairobi County.

From the findings, the study revealed that supply chain risk identification strategy had a negative and statistically insignificant effect on operational efficiency among NGOs. Specifically, the unstandardized coefficient (B) was 1.040 with a significance value of 0.00, indicating that a unit increase in risk identification strategy would lead to an increase 1.040 unit increase in operational efficiency among NGOs, although this relationship is not statistically significant.

The study also found that supply chain risk assessment strategy had a positive and statistically significant influence on operational efficiency among NGOs. The unstandardized coefficient (B) was 0.355 with a significance value of 0.000, suggesting that a unit increase in risk assessment efforts leads to a 0.355-unit improvement in operational efficiency among NGOs. These findings support the argument by Tang and Nurmaya (2021), who contend that

firms that rigorously evaluate supply chain risks are better positioned to anticipate disruptions and implement effective countermeasures, thereby enhancing overall performance.

In addition, the results indicated that supply chain risk monitoring strategy significantly influenced operational efficiency among NGOs. The coefficient for this variable was 0.640, with a p-value of 0.000, implying that an increase in risk monitoring practices leads to a 0.640 unit rise in operational efficiency among NGOs, the strongest effect among the four predictors. This finding aligns with those of Kimani and Wanjohi (2019), who observed that continuous monitoring of supply chain vulnerabilities enables timely responses and operational resilience, which in turn boosts performance metrics such as profitability and efficiency.

Finally, the study established that supply chain risk mitigation strategy had a positive and statistically significant effect on operational efficiency among NGOs. The unstandardized coefficient (B) was 0.235 with a significance value of 0.002, indicating that a unit increase in mitigation strategies led to a 0.235 unit increase in operational efficiency among NGOs. These findings are consistent with the work of Chopra and Sodhi (2019), who emphasize that proactive risk mitigation strategies such as supplier diversification and contractual protections strengthen supply chain reliability and improve financial outcomes.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a detailed summary of the major findings of the actual study; it then draws conclusions and discusses implications emanating from these findings. Finally, it makes some recommendations and suggestions on areas of further study. The main aim of this study was to assess the effect of supply chain risk management strategies on operational efficiency of NGOs in Nairobi County. The specific objectives of the study were to assess the effect of supply chain risk identification strategy on operational efficiency among NGOs in Nairobi County, effect of supply chain risk assessment strategy on operational efficiency among NGOs in Nairobi County, effect of supply chain risk monitoring strategy on operational efficiency among NGOs in Nairobi County and effect of supply chain risk mitigation strategy on operational efficiency among NGOs in Nairobi County.

5.2 Summary of the Findings

The summary of the findings were done based on study objectives:

5.2.1 Supply Chain Risk Identification Strategy on Operational Efficiency

From the findings the study revealed that organizations had clearly established mechanisms for identifying potential risks within their supply chains. In addition, it emerged that risk mapping strategies were in place across most organizations, offering a visual representation of potential risks that aided in more informed and effective decision-making.

Furthermore, the results indicated that organizations actively categorized risks based on their severity and likelihood of occurrence. This categorization was shown to assist in

prioritizing interventions within the supply chain. However, while the categorization practices were acknowledged, the findings suggested a gap between risk identification and the implementation of appropriate mitigation strategies. This implies that despite recognizing risks and classifying them effectively, some organizations may not have been leveraging that knowledge to its fullest extent in improving operational efficiency.

5.2.2 Supply Chain Risk Assessment Strategy on Operational Efficiency

From the findings the study revealed that most organizations had a sound understanding of the nature of risks inherent in their supply chains. Moreover, the findings revealed that the assessment practices were systematic and appeared to be undertaken on a regular basis, which helped the organizations adapt to the dynamic nature of supply environments. In addition, risk prioritization was observed as a key component in their strategy, helping them determine which risks would have the most significant impact on operational efficiency. Finally, it was evident that prioritizing risks facilitated more efficient resource allocation. These findings support the argument by Tang and Nurmaya (2021), who contend that firms that rigorously evaluate supply chain risks are better positioned to anticipate disruptions and implement effective countermeasures, thereby enhancing overall performance.

5.2.3 Supply Chain Risk Monitoring Strategy on Operational Efficiency

From the findings, it was revealed that organizations were actively tracking potential supply chain risks on a continuous basis. Additionally, it was established that program alignment had been integrated into supply chain practices. This alignment helped ensure that the organizations' supply chain activities were consistent with broader organizational goals, reducing inefficiencies and ensuring resources were directed toward priority areas. Through this alignment, the organizations were able to minimize waste and enhance service delivery.

Lastly, the study revealed that organizations regularly reviewed their supply chain risk strategies to maintain their relevance and effectiveness. These reviews contributed to continuous improvement and ensured that the strategies remained adaptive to evolving conditions, ultimately strengthening operational efficiency. This finding aligns with those of Kimani and Wanjohi (2019), who observed that continuous monitoring of supply chain vulnerabilities enables timely responses and operational resilience, which in turn boosts performance metrics such as profitability and efficiency.

5.2.4 Supply Chain Risk Mitigation Strategy on Operational Efficiency

From the findings, it was revealed that most respondents believed their organizations had implemented proactive mitigation strategies aimed at reducing the impact of supply chain risks. This suggests that NGOs in Nairobi County recognize the importance of taking preventive actions before disruptions escalate, which contributes to maintaining consistent operations. Furthermore, the responses demonstrated that risk mitigation strategies were viewed as essential in minimizing delays, cost overruns, and service interruptions.

It also emerged from the findings that NGOs were actively engaging in partnerships and collaborations to share resources and knowledge, enhancing their ability to manage risks more effectively. This kind of cooperative approach was seen as instrumental in boosting flexibility and adaptability, especially in times of crisis. Respondents generally affirmed that these collaborations allowed for the pooling of capabilities that individual organizations might lack, thus improving operational continuity.

Moreover, the study revealed that the organizations regularly updated their mitigation plans based on new risk insights and emerging trends in the operational environment. This dynamic approach to risk mitigation was perceived to support long-term efficiency, as it ensured the strategies remained relevant and aligned with organizational goals. Overall, the

findings suggest that NGOs in Nairobi County are not only aware of the importance of risk mitigation but are also implementing it in a structured and evolving manner to improve operational efficiency. These findings are consistent with the work of Chopra and Sodhi (2019), who emphasize that proactive risk mitigation strategies such as supplier diversification and contractual protections strengthen supply chain reliability and improve financial outcomes

5.3 Conclusion

Conclusion of the study was done in regard to study objectives;

5.3.1 Supply Chain Risk Identification Strategy on Operational Efficiency

The study concluded that supply chain risk identification strategy has a strong positive correlation with operational efficiency. This finding implies that organizations that actively and effectively identify potential risks in their supply chains are better positioned to enhance their operational performance. By systematically recognizing risks such as supplier disruptions, logistical delays, quality issues, and market fluctuations at an early stage, firms can develop proactive mitigation measures that minimize disruptions. Early risk identification allows for better planning, resource allocation, and decision-making, which in turn contributes to smoother operations, reduced downtime, and increased responsiveness to changes in the supply chain environment. The study findings are in tandem with those of Egiyi and Eze (2022) who noted that effective risk identification is essential in supply chain management as it helps organizations proactively address vulnerabilities before they escalate into operational inefficiencies.

5.3.2 Supply Chain Risk Assessment Strategy on Operational Efficiency

The study further concluded that supply chain risk assessment strategy has a strong positive correlation with operational efficiency among NGOs in Nairobi. This finding indicates that

NGOs that systematically evaluate potential risks and their impact are better positioned to make informed decisions, allocate resources effectively, and implement preventive measures. As a result, thorough risk assessment enhances agility and responsiveness within the supply chain, ultimately contributing to improved operational outcomes. The study findings agree with those of Tran, Dobrovnik and Kummer (2020) who noted that comprehensive risk assessment helps organizations prioritize supply chain threats based on their likelihood and impact, thereby improving decision-making and operational efficiency

5.3.3 Supply Chain Risk Monitoring Strategy on Operational Efficiency

Furthermore, the study concluded that supply chain risk monitoring has a strong positive correlation with operational efficiency among NGOs. Continuous tracking and evaluation of supply chain risks allow organizations to detect and respond to emerging threats promptly. This proactive approach not only ensures that supply chain activities remain aligned with organizational objectives but also promotes consistency, adaptability, and efficiency in operations. The study findings agree with those of Havenga, Meyer and Luke, (2019) who noted that continuous risk monitoring allows for early detection of disruptions, helping organizations adjust strategies in real-time to maintain operational flow.

5.3.4 Supply Chain Risk Mitigation Strategy on Operational Efficiency

Finally, the study concluded that supply chain risk mitigation strategy shows a strong positive correlation with operational efficiency among NGOs in Nairobi. The implementation of risk-reducing measures such as supplier diversification, buffer stock management, and strong contractual agreements was found to strengthen supply chain resilience. This minimizes the likelihood and impact of disruptions, thereby enabling NGOs to maintain smooth operations and achieve their programmatic goals more efficiently. The study concurs with those of who noted that Setyarini, Hamdi and Syahrin (2023) who noted that risk mitigation strategies such

as diversifying suppliers or maintaining buffer stock enhance supply chain agility and operational continuity.

5.4 Recommendations

From the findings and conclusion, the researcher made the following recommendations. NGOs should review and strengthen their risk identification processes. This could involve using structured tools such as risk registers, stakeholder consultations, or supply chain mapping to ensure that identified risks are relevant, comprehensive, and actionable. In addition, the study recommended that NGOs should invest in training their supply chain teams on systematic risk evaluation techniques, such as likelihood-impact matrices or risk scoring models. This will enable them to prioritize risks effectively and make informed operational decisions.

Furthermore, the study recommended that NGOs should develop clear frameworks for continuous monitoring and feedback. This includes setting up early warning systems, conducting regular supply chain audits, and using key risk indicators (KRIs) to track changes in the risk environment. Finally, the study recommended that NGOs should implement proactive mitigation plans, including supplier diversification, buffer stock policies, flexible contracts, and crisis response protocols. Allocating resources for preventive measures will help enhance resilience and maintain operational efficiency.

5.5 Suggestion for Further Studies

The researcher recommended that a comparative study should be conducted on the effectiveness of supply chain risk management strategies between NGOs and Public Sector Institutions in Kenya. In addition, the study recommended that further study should be conducted to assess the mediating role of technology adoption in the relationship between supply chain risk management and operational efficiency

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APPENDICES

Appendix I: Letter of Introduction

Millicent Auma Ng'ayo,
P.O. Box 56147-00200
Nairobi, Kenya

RE: CONSENT TO COLLECT DATA

I am a final-year Master's student in Business Administration at the School of Business and Public Management, KCA University. I am conducting a research study titled "Effect of Supply Chain Risk Management Strategies on Operational Efficiency of NGOs in Nairobi County." The purpose of this study is to assess how supply chain risk identification, assessment, monitoring, and mitigation strategies influence operational efficiency among NGOs. The study targets supply chain managers, procurement officers, and store managers. I kindly request your honest and informed responses to the questionnaire provided, as your input is vital to the success of this academic research. Please be assured that all information collected will be treated with strict confidentiality and will be used solely for academic purposes. Participation in this study is voluntary, and you may withdraw at any stage without any consequences. If desired, you may request a copy of the final research report upon completion of the study. Your cooperation and support in this research are highly valued and sincerely appreciated.

Sincerely,

Millicent Auma Ng'ayo

Appendix II: Study Questionnaire

Dear respondent,

I am a student at KCA University. Am required to submit a research project as a requirement for partial fulfillment of Master's Degree. As part of the course, I am conducting a study on "supply chain risk management strategies on operational efficiency in NGOS in Nairobi County". Please help me fill out the questions. I also guarantee that the data you provide will be kept confidential and used only for this research.

Section A. RESPONDENTS DETAILS

1. Highest education qualification attained

Certificate	[ ]
Diploma	[ ]
Undergraduate Degree	[ ]
Master Degree	[ ]
PhD	[ ]

2. How long have you been working in this organization?

Less than 3 years	[ ]
3-9 years	[ ]
10-15 years	[ ]
More than 15years	[ ]

3. Which position do you hold in this organization?

Supply chain manager	[ ]
Procurement Officer	[ ]
Store Manager	[ ]

In a scale of 1-5, where; 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=strongly indicate your level of agreement on the following statements

Section B: Supply Chain Risk Identification Strategy on Operational Efficiency

Supply Chain Risk Identification Strategy	5	4	3	2	1
Our organization has a well-defined process for listing potential risks in the supply chain.					
The risk listing process helps us to address potential disruptions in our supply chain.					
We have a risk mapping strategy that visually represents potential supply chain risks.					
Risk mapping in our organization helps in better decision-making for supply chain management.					
Our organization effectively categorizes risks based on their severity and likelihood of occurrence.					
We use categorized risks to prioritize interventions in the supply chain.					

Section C: Supply Chain Risk Assessment Strategy on Operational Efficiency

Supply Chain Risk Assessment Strategy	5	4	3	2	1
Our organization has a clear understanding of the nature of risks in the supply chain.					
The risk nature assessment allows us to take proactive steps to manage supply chain risks.					
We have a systematic approach to analyzing the risks identified in our supply chain.					
The analysis of risks is done regularly to adapt to changing supply chain conditions.					
We prioritize supply chain risks based on their potential impact on operational efficiency.					
Risk prioritization helps in allocating resources efficiently within our organization.					

Section D: Supply chain risk monitoring strategy on Operational Efficiency

Supply chain risk monitoring strategy	5	4	3	2	1
We continuously track potential supply chain risks in our organization.					
Continuous tracking allows us to monitor changes in the supply chain environment.					
Program alignment ensures that supply chain operations are aligned with organizational goals, reducing discrepancies.					
Program alignment has helped our organization to align resource allocation with priority programs, minimizing waste					
We regularly review our supply chain risks to ensure that our strategies are up to date.					
Regular reviews help ensure that our supply chain risk strategies remain relevant and effective.					

Section E: Supply Chain Risk Mitigation Strategy on Operational Efficiency

Supply Chain Risk Mitigation Strategy	5	4	3	2	1
Our organization diversifies its suppliers to minimize supply chain risks.					
Supplier diversification helps reduce dependence on a single source, improving efficiency.					
We maintain buffer stock from our suppliers to mitigate supply chain disruptions.					
Supplier buffering strategies have enhanced our organization's ability to operate smoothly during disruptions.					
Supply contractual agreements are designed to protect our organization from potential risks.					
Strong contractual management has improved our relationships with suppliers and mitigated risks.					

Section F: Operational Efficiency

Operational Efficiency	5	4	3	2	1
Our organization's programs have successfully met their intended goals and deliver the expected outcomes.					
The success rate of our organization's programs has consistently improved over time.					
Resources in our organization are used efficiently, with minimal waste.					
Our organization ensures that resources are allocated to areas where they will have the most impact.					
Our organization maintains a stable and sustainable financial model that ensures long-term operational efficiency.					
Our organization consistently monitors its financial health to ensure that resources are available for ongoing and future operations					

Thank you for your Participation

Appendix III: Ethical Clearence Letter

Thika Road, Ruaraka
P.O. Box 56808-00200 Nairobi Kenya
Pilot Line: +254 20 8070408/9

Tel: +254 20 3537842
Fax: +254 20 8561077
Mobile: +254 734 888022, 710 888022
Email: kca@kca.ac.ke
Website: www.kca.ac.ke

KCA UNIVERSITY SCIENTIFIC AND ETHICS REVIEW COMMITTEE

REF: **KCAU/SERC/016** **Date: 20th February 2025**
TO: **MILLICENT AUMA NG'AYO (23/07009)**

Dear Sir/madam

RE: SUPPLY CHAIN RISK MANAGEMENT STRATEGIES ON OPERATIONAL EFFICIENCY OF NGOS IN NAIROBI COUNTY

This is to inform you that KCA University Scientific Ethics Review Committee (KCAUSERC) has reviewed and approved your above research proposal. Your application approval number is ***KCAUSERC*** **SOB016**. The approval period is ***20th February 2025 – 20th February, 2026.***
This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***KCAUSERC***.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KCAU***SERC*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***KCAUSERC*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***KCAUSERC***.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

Dr. Caroline Ntara
Chairperson, KCA University Scientific And Ethics Review Committee

Appendix IV: NACOST Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **467623**

Date of Issue: **08/April/2025**

RESEARCH LICENSE

This is to Certify that Ms.. Millicent Auma Ng'ayo of KCA University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kiambu on the topic: SUPPLY CHAIN RISK MANAGEMENT STRATEGIES ON OPERATIONAL EFFICIENCY OF NON-GOVERNMENTAL ORGANIZATIONS IN NAIROBI COUNTY for the period ending : 08/April/2026.

License No: **NACOSTI/P/25/418039**

467623

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix V: List of International Ngo

1. Action Against Hunger (ACF)
2. ActionAid International Kenya
3. African Wildlife Foundation (AWF)
4. Aga Khan Development Network
5. Aga Khan Foundation (AKF)
6. Amnesty International Kenya
7. Amref Health Africa
8. CARE International
9. Care International in Kenya
10. Catholic Relief Services (CRS)
11. Christian Aid Kenya
12. Habitat for Humanity Kenya
13. Handicap International
14. Heifer International
15. Heifer International Kenya
16. Hellen Keller International
17. HIAS Refugee Trust of Kenya
18. International Organization for Migration (IOM)
19. International Rescue Committee (IRC)
20. Médecins Sans Frontières (Doctors Without Borders)
21. Mercy Corps Kenya
22. Netherlands Development Organization (SNV)
23. OXFAM Kenya
24. Plan International Kenya
25. Practical Action East Africa
26. Red Cross Kenya (part of IFRC)
27. Save the Children Kenya
28. SOS Children's Villages Kenya
29. The Carter Center
30. The Fred Hollows Foundation
31. The Nature Conservancy
32. The Red Cross International

33. The United Nations High Commissioner for Refugees (UNHCR)
34. Transparency International Kenya
35. UNICEF Kenya
36. WaterAid
37. Wildlife Conservation Society (WCS)
38. World Food Programme (WFP)
39. World Vision Kenya
40. World Wildlife Fund (WWF)