SUSTAINABLE LOGISTICS PRACTICES AND OPERATIONAL PERFORMANCE OF MULTINATIONAL MANUFACTURING CORPORATIONS IN KENYA

BY

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN SUPPLY CHAIN MANAGEMENT, FACULTY OF BUSINESS & MANAGEMENT SCIENCES, UNIVERSITY OF NAIROBI.
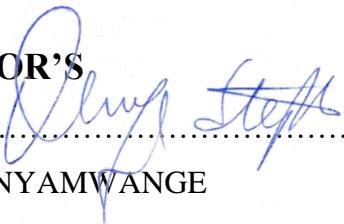
2021

DECLARATION

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DEDICATION

I would like to dedicate this research project to my late Brother Ibrahim for always believing in me and pushing me to my limits.

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My sincere gratitude goes to Mr. Nyamwange Onserio, my supervisor, for sharing his pearls of wisdom with me during this entire research, and Dr. Zipporah for the positive criticism and insights.

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ABBREVIATIONS AND ACCRONYMS

FMCG	Fast Moving Consumer Goods
GDP	Gross Domestic Product
GLP	Green Logistics Practices
GSCM	Green Supply Chain Management
GSCMP	Green Supply Chain Management Practices
KAM	Kenya Association of Manufacturers
LMP	Logistics Management Practices
MNCs	Multinational Corporations
SCT	Strategic Choice Theory
SLP	Sustainable Logistics Practices
SRB	Socially Responsible Buying
TBL	Triple Bottom Line
UN	United Nations (UN)
WCED	World Commission on Environment and Development

ABSTRACT

The purpose of the study was determine the influence of sustainable logistics on operational performance of multinational manufacturing corporations in Kenya. The objectives of the study were to determine the adoption extent of sustainable logistics by the multinational manufacturing corporations in Kenya and to determine the correlation between sustainable logistics and operational performance of multinational manufacturing corporations in Kenya. Descriptive design was adopted, and the population consisted of all the 45 multinational manufacturing corporations in Kenya. Primary data was adopted and was gathered by use of questionnaires which were sent to the respondent's emails. On objective one, the study found that environmental sustainable logistics and economic sustainable logistics were adopted to a large extent whereas social sustainable logistics was adopted to a moderate extent by the MNCs in Kenya. Objective two found that sustainable logistics (ecological, social, and economic) influences operational performance (cost, speed, and quality) of MNCs in Kenya. The findings indicate that ecological sustainable logistics, social sustainable logistics and economic sustainable logistics all had a positive and substantial relationship with operational performance of multinational manufacturing corporations in Kenya as noted by the p values of less than 0.05 and thus sustainable logistics positively influences Multinational Manufacturing Corporation's operational performance in Kenya. The study recommends that managers of multinational manufacturing corporations in Kenya must adopt sustainable logistics practices if they are to boost their operational performance as it has been noted by the findings that sustainable logistics enhances operational performance. The managers, stakeholders, and decision makers of multinational manufacturing corporations in Kenya can use the findings of the study to establish sustainable logistics practices that influences firm's performance and maximize on them to be able to enhance the performance even further. Future research should concentrate on the impact of sustainable logistics on firm's performance of small, medium, and large manufacturing firms in Nairobi, and not limit to just multinational manufacturing corporations to see if the outcome will corroborate or contradicts the one of the current studies.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Sustainable logistics defines all efforts to quantify and reduce environmental effects of logistics activities while maximizing the Socio-Economic aspect according to Trivellas, Malindretos and Reklitis (2020). This considers the flow of services, goods and information flow from inception point to the end users and back (Richnák & Gubová, 2021). Rashidi and Cullinane (2019) posit that sustainability aims at creating a maintainable value of the firm by balancing Ecological, Social and Economic efficiency. There have been several changes in different areas of supply like in transportation, production, distribution and procurement and these changes have influenced ways through which innovative goods are designed, manufactured and dispersed to clients and also the way entities manage their relationship with their clients and suppliers as noted by Karaman, Kilic and Uyar (2020). Sustainable logistics is emerging to be among the key areas of boosting organizational performance through meeting the firm's bottom line and the ever-changing higher customer expectation (Larson, 2021). Firms are obligated to consider innovative ways of achieving Organizational performance occasioned by rising demand by customers for Social and Ecological sustainable goods (Srisawat & Srisawat (2020).

The research was anchored by Institution Theory, Stakeholder Theory and Triple Bottom Line (TBL) Theory. According to Berthog (2016), Institution Theory puts organizations at the forefront for analysis of its conduct and design. The institution theory majorly bases on the roles of social, political, and economic systems that an organization operates to gain their legitimacy. Based on Freeman et al. (2004), stakeholders are groups who are dynamic towards achievements and survival of the entity. Triple Bottom Line theory views economic, ecological, and social worth of asset that will accrue besides an entity's economic bottom line as noted by Elkington (2004).

Multinational corporations (MNCs) have occupied a crucial part in global business and are significant participants in the international economy through their dealings in nations that they operate in (Nthigah, Iravo & Kihoro. 2014). Numerous MNCs operate in the Manufacturing Sector in the Country. The biggest milestones that MNCs is stiff market competitors and the ever-altering priorities in the country that host them (Conteduca & Kazakova, 2017). Therefore, it is essential for these Corporations to scrutinize and evaluate their Logistics and Supply Chain processes and

the resultant outcome on other players in the chain (Micheli. Cagno, Mustillo & Trianni, 2020). By implementing Sustainable logistics management practices, Multinational Manufacturing Corporations have the ability of improving their value and gain competitive edge in the market as well as achieve Organizational Performance.

1.1.1 Sustainable Logistics Practices

Logistics entail the administrative position involved in acquiring, maintaining, and transporting materials, individuals and services conforming to planning, executing and controlling processes of merchandises, information and services flow from the source to the destination, so as to meet the demand of the client as explained by Khan. Zhang and Nathaniel, (2020). According to Jermsittiparsert, Namdej and Somjai (2019), Logistics system is made up of numerous components that can be separated into crucial activities (managing clients services, transportation, managing the flow of information and goods and processing of orders) and provision activities (storing, resource handling, sourcing, design and packaging and safeguarding information). Logistical activities are tactical for entities and are crucial for their success. Karaman et al. (2020) further explain that logistics management is a way in which customer needs are met through integrating and coordinating of the supply chain activities. Hence, logistics basically translates to moving products from a point to the other in a seamless way while reducing or getting rid of bottlenecks or inefficiencies.

Following the subsequent publishing of the seventeen sustainable development goals which was fronted the United Nations (UN) (Tan, Wang, Liu, Kang & Costa, 2020), sustainability has remained an integral part of managing businesses. The meaning of sustainability as suggested by the WCED (1987) is the widely embraced definition in business as well as Academics. Based on the WCED report, "Sustainable development is the development that encounters present needs without necessarily jeopardizing the ability of the subsequent generations to meet their own" (WCED, 1987). Richnák and Gubová (2021) and Tan et al. (2020) maintain that the novel context of managing business necessitates firms to critically assess their activities while considering Ecological, Economic and Social aspects. Society calls for firms to come up with sustainable practices through their acquisition, production and distribution activities (Zaid, Sleimi &Alaqra, 2021).

Sustainable Logistics entails the management process that integrates services and goods movement, capital and information flow straight from obtaining of material to the end user with special consideration to the Socio-Economic aspects of the business (Trivellas et al., 2020). The goal of Sustainable Logistics is to be able to avail the right quality of right product at the exact place and time and to the right client paying the correct price (Tan, Wang, Liu, Kang & Costa, 2020). Richnák and Gubová (2021) posit that Sustainable logistics Practices (SLP) are Practices that entails the making of services and products and distributing them while considering their impact on these processes to the Economic, ecology and the society as well, assessing the Socio-Economic and ecological effect of diverse distribution techniques.

Firms needs to commit themselves and find a way of striking a balance between profitability and humanity in the logistics activities to truly achieve sustainable logistics. To understand the meaning in a broader sense, Micheli et al. (2020) defined sustainable logistics as "managing the backward and forward flow of information, services and goods along the chain while considering the three dimensions of sustainable development of Economic, social and Ecology in meeting client's needs". The most used and adopted Criteria for Sustainable Logistics are the Social Sustainable Logistics. Economic Sustainable Logistics and Environmentally Sustainable Logistics (Trivellas et al., 2020, Richnák & Gubová, 2021, Tan et al., 2020, Micheli et al., 2020 and Zaid et al. (2020). This criterion was thus adopted by the current study.

1.1.2 Operational Performance

Rompho (2018) defines operational performance as the quantifiable metrics of an entity's processes like being reliable, stock turns, lead time and production cycle time. Based on Knod and Kaydos (2020), operational performance is a firm's ability to convert inputs into outputs. Operational Performance assesses a company's performance compared to predefined standards, such as productivity, waste minimization, cycle and lead time, ecological responsibility and regulatory compliance as explained by Inman and Green (2018). According to Yadav, Jain, Mittal, Panwar and Lyons (2019, operational performance concentrates on an entity's internal operating capacity in terms of cost minimization and waste reduction, enhancing and developing the quality of new product, enhanced capacity of delivery and improved productivity. The firm's operational performance determines how efficiently and effectively it produces products and services, as well

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as how well the product and service meet customers' expectations and requirements (Lu, Ding, Asian & Paul, 2018).

1.1.3 Multinational Manufacturing Corporations

London and Hart. (2004) define Multinational corporations (MNCs) are companies with massive investments in overseas nations and are engaged in managing their foreign investments. MNCs can be seen as established firms with the same units of their local operations in diverse countries. MNCs entails fast food outlets and franchises, producers of FMCG, entities assembling motor vehicle, energy entities and consumer electronics outlets. Majority of the biggest corporations operate in numerous overseas markets. MNCs contribute massively to the international economy through globalized operations.

Manufacturing entities are organizations that takes inputs (materials) and subjecting them to undergo transformation to achieve a value-added end product to be sold. Information from Kenya Association of Manufacturers (KAM, 2020), indicate that the industry has a substantial part in economic performance of Kenya adding to the country's GDP and revenue by paying tax. Their small number notwithstanding, MNCs contribution in the manufacturing sector is paramount, offering employment to 88% of overall workers in the sector, with value addition and output of 74% and 88% correspondingly in 2019 (KNBS, 2020). This thus translate to its relevance in the country in that it provides employment opportunity to the locals as well as boosting the economy.

To maintain a competitive edge, majority of the Multinational Corporations plying their trade in the country have embraced an expansionary tactics by engaging in green and sustainable practices (Owour, 2011). The strategies have been occasioned by competitive ability as well as different factors including the Country being a favored terminus by other sectors' players and analysts and also being a significant member of the East Africa Community Common Market. Due to the upsurge in demand of Multinational Products, a number of MNCs have plans underway to expand in the country and the Eastern African market.

1.2 Research Problem

Striking a balance between Economic, Social and Ecological performance has emerged to be progressively vital for firms faced with competition, regulations and communal pressures (Richnák & Gubová, 2021). Ecological issues like global warming, poisonous gas emissions and depletion resources that are hard to replenish has caught up and raised awareness in the community (Phawitpiriyakliti, Keawkunti, Saisama & Sangma, 2020). Achieving operational performance by manufacturing corporations has become a challenge due to socioeconomics and ecological issues brought about by negligence or non-ethical activities in the need of obtaining raw material, production, transportation, and product's disposal after its useful life (Karaman et al., 2020). Societal pressure and ecological restrictions are compelling manufacturing firms to implement sustainable logistics practices as pollution on ecosystem is a rising concern. Increased competition and the Covid-19 Pandemic have also forced entities to be more creative and come up with better strategies of reducing cost and ensuring that customers are satisfied.

Numerous research has been explored in this field globally and locally. Globally, Fernando (2019) focused on logistics management practices in road freight transport companies with the aim of identifying the cost management practices of green logistics by trucking companies. The findings indicate that green logistics aids in waste reduction and reduction in toxic gas emission and subsequently cuts down on the general transportation cost. Isaksson, Hulthén and Forslun (2019) focused on environmentally sustainable logistics performance management. The findings indicate that environmental sustainability influences logistics performance. Makau (2018) on green logistics and customer value of food processing organizations in Mombasa established a substantial relationship between customer value and green logistics. Githara (2018) studied how supply chain performance is affected by green SCM of organization that Manufacture food and beverage in Nairobi. The GSCM practices that were widely adopted include; reverse logistics, eco-packaging and design and green procurement all of which were found to positively influence supply chain performance.

The study was founded on the assumption that in as much as the studies have been carried out on these concepts (sustainable logistics practices and performance), no known study has majored on carrying out sustainable logistics and operational performance in multinational manufacturing corporations in Kenya and thus a gap that the current study aims at filling. Purpose of the research

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was to ascertain the correlation between sustainable logistics practices and operational performance of the multinational manufacturing corporations in Kenya. Subsequent questions were addressed: What is the extent of adoption of sustainable logistics practices in multinational manufacturing corporations in Kenya? and what is the correlation between sustainable logistics practices and operational performance of the multinational manufacturing corporations in Kenya?

1.3 Research Objectives

The main objective was to determine influence of sustainable logistics practices on operational performance of multinational manufacturing corporations in Kenya
Specific objectives were:

i. To determine the extent of adoption of sustainable logistics by the multinational manufacturing corporations in Kenya.
ii. To establish the correlation between sustainable logistics practices and operational performance of multinational manufacturing corporations in Kenya.

1.4 Value of the study

Different people and sectors are bound to gain from the study. The government agencies in charge of environmental conservation will have an understanding of diverse practices that MNCs in Kenya have embraced through managing sustainable logistics to minimize harm to the ecosystem and the Society.

Managements of multinational manufacturing firms and local manufacturing firms will gain knowledge on the superlative sustainable logistics practices which have been tried and tested and have proved to work by multinational manufacturing corporations in Kenya. They will use it to benchmark and implement best strategies in the sector so as to improve their operational performance and overall performance.

Academicians and scholars who are interested with the constructs and context of the study will also benefit from the study. It offers a rich pool of literature as well as suggestions for areas which can be exploited in the related field of sustainable logistics. Other firms concerned in knowing sustainable logistics and its impact on operational performance will gain from the findings.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This segment concentrated on related past literature pertaining sustainable logistics and operational performance. It covered the relevant theories pertaining to sustainable logistics and performance. The chapter also explored the sustainable logistics management practices, conceptual framework, and empirical reviews.

2.2 Theoretical Literature Review

Institutional Theory, Stakeholder Theory and Triple Bottom Line Theory anchored the study. The study adopted TBLTheory.as the overarching theory. This is due to the fact that the topic under study is the impact of sustainable logistics practices on performance and the theory mainly stresses on the sustainable strategies that firms put in place to be able to boost their performance and gain competitive edge. The theories are subsequently expounded.

2.2.1 Institutional Theory

This theory was articulated by Hirsch (1975) to explain how external pressure influences the operations of the firm. There are three external pressures (DiMaggio & Powell, 1983) that may have an influence on operations of the firm. According to this theory, these pressures include normative, mimetic and coercive. These pressures emanate because firms operate in social networks of institutions. Coercive pressure emanates from those people in authorities and power for example the government. With mimetic pressure, an organization strives to copy or mimic the actions and activities undertaken by successful firms in an industry. This is among the main drivers for firms to implement Sustainable Logistics practices (Taylor & Christmann, 2001). Normative pressure, on the other hand, emanate from external parties with a stake in the company like shareholders (Sarkis & Zhu, 2007).

The theory offers a basis on which scholars can recognize and observe factors that impacts an entity's survival and legality, like culture, social environment and regulations, while taking into account that resources are equally important (Baumol, Di Maggio & Powell, 1983). Firms that yield to these identified pressures are ones conceived to be legitimate in the society. The theory is therefore applicable to the Research as it explains how the society and pressure from different

fronts can impact the acceptance and enactment of Sustainable Logistics Management. It is the coercive, normative, and mimetic pressure that aids in the embracing and execution of Sustainable Logistics which helps in environmental conservation and enhances Organizational performance.

2.2.2 Stakeholder Theory

Based on Freeman, Wicks and Parmar (2004), stakeholders include groups who are fundamental for an entity's survival and success. They consist of the customers, staff, the society, Vendors and Stakeholders. The public is amassing consciousness of environmental impact of anthropogenic activities and the majority a have resolved to alter their behaviors to conserve the ecosystem. Clients and firms have noticed that by joining their efforts, they can make a difference in conserving and protecting the ecosystem (Wong, Lai, Cheng & Lun, 2012). Going green takes a collective approach by all members of the supply chain and cannot be solely done by the company. Poor ecological decisions propel poor correlation between the organization and its shareholders. The accomplishment of the entities planning on implementing and adopting green strategies highly depends on the stakeholders. Henriques and Sadorsky (2001) argue that vendors choose to get rid of those who are not ecologically conscious so as to protect their image.

Jensen (2001) opine that manager need to take into considerations all the interests of the stakeholders in decision making of an entity. This theory is appropriate to the Research since the public, customers, staff, society, vendors, and shareholders are all stakeholders who need to live in a clean and sustainable environment and thus push the multinational manufacturing firms in engaging in Sustainable Logistics practices which does not pollute the environment and in the end leading to enhanced Organizational performance.

2.2.3 Triple Bottom Line Theory

Business consultant John Elkington devised the notion "triple bottom line" in the 1990s to refer to the economic, ecological, and social value of investment that may accumulate outside of a company's financial profit (Elkington, 2004). The TBL school of thought seeks to evaluate the assets and moderate resources more accurately in order to use capital in an efficient and effective way. The notion can be viewed in terms of the three Ps (people, planet, and profit), as explained by Roberts & Cohen (2002),

The concept of triple bottom line aspect is guided by and related to the sustainable development ideology—that development ought to take place in such a manner that the needs of present generations are realized while also preserving the circumstances and prospects for upcoming generations to do likewise (WCED, 1987). To achieve sustainability, a company should look beyond the single bottom line of profits, according to the triple bottom line theory. Sustainable management is achieved when businesses commit to their communities and the environment, as well as their profits, in a balanced relationship (Braccini & Margherita, 2019).

This theory therefore helps managers and decision makers in determining the way they operate in unpredictable events and situations. Thus, the theory is applicable as it helps decision makers of multinational manufacturing firms to make strategic decisions that incorporates the 3PS in their operations and come up with better sustainable logistics management practices that influence performance. The theory is also relevant due to the fact that the topic under study is Sustainable Logistics, and the theory mainly stresses on sustainable strategies that firms put in place to be able to boost their performance and gain competitive edge.

2.3 Sustainable Logistics Practices

The aim of Sustainable Logistics is to be able to avail the right quantity of product at the right place and time to the right consumer offering the right price (Tan, Wang, Liu, Kang & Costa, 2020). The most used and adopted Criteria for Sustainable Logistics are the Environmentally Sustainable Logistics. Social Sustainable Logistics and Economic Sustainable Logistics (Trivellas et al., 2020; Tan et al., 2020; Micheli et al., 2020; Zaid et al., 2020; Richnák & Gubová, 2021). This criterion was thus be adopted by the current study.

2.3.1 Environmentally Sustainable Logistics

Trivellas et al. (2020) opine that environmental sustainability involves integrating ecological thinking into the whole SC right from the designing of goods, procuring of raw materials, the process of production, delivering the end product to clients and managing the end life of goods after its usefulness. Environmentally sustainable Logistics arrays from ECO-Sourcing, Eco-Production, Green Transportation, Eco-Packaging, having a Sustainable Warehouse to Reverse Logistics as observed by Isaksson et al. (2019). Only through the implementation of "greener" tactics in the day-to-day operations and Logistics is when firms can deal with external pressures

emanating from clients, surrounding community, state regulations, NGOs and media who all share a collective concern for ecology (Micheli et al., 2020 &Tan et al., 2020).

A highly sustainable product design has the ability of realizing a positive recycling process (Richnák & Gubová, 2021). Many firms are actively seeking to minimize landfills waste and decrease the volume of packaging than they are currently using. Numerous firms today are recognized for having green policies and putting sustainable measures in place (Trivellas et al., 2020). An example of this is the zero-waste philosophy that aids in minimizing pollution by eliminating waste which is released to be incinerated and landfills. A slight enhancement can have substantial ecological effects and save cost, firms can gain clients' reverence which can all result to improved service and products as noted by Tan et al. (2020) and Micheli et al. (2020).

2.3.2 Social Sustainable Logistics

Srisawat and Srisawat (2020) note that social sustainability mainly takes considerations of social relations that is comprised of discrimination, gender inequality, fair salary and remunerations, education and poverty that fluctuate from region to region. It is sometimes considered as an ethical code of conduct for the growth and existence of human that ought to be realized comprehensively, inclusivity and in an equitable way (Karaman et al., 2020, Khan et al., 2020 & Phawitpiriyakliti et al., 2020). Some scholars' links social sustainability to managing of social resources that encompasses individual's abilities and skills, their values socially and their relations (Bag & Pretorius, 2020). Issues that deal with underage employment or child labour, safety and health of employees, conditions that the people are living in and equitable treatment without prejudice and discrimination have been on the rise and has received a lot of attention from different stakeholders. Social sustainable Logistics is the reply to how social matters are handled in Logistics (Larson (2021). Socially responsible buying (SRB) and distribution is fundamental for ratifying social sustainability in Logistics (Bag & Pretorius, 2020). The tactics to safeguarding and maintaining this backing are numerous, but it narrows down to better and fair treatment of staff and taking good care of the community that one is operating in by giving back through Corporate Social Responsibility (CSR) activities both locally and globally as observed by Ahmed and Najmi (2018).

2.3.3 Economic Sustainable Logistics

Economic Sustainable Logistics practices are logistics strategies that sustains long-term financial growth of an entity without affecting social, ecological, and cultural aspects of the community in a negative way (Sharma & Ruud, 2003). By achieving economic aspect of sustainability, majority of enterprises tend to feel that they are in safe grounds. To achieve sustainability, an entity must be profitable in as much as the increased revenue cannot outdo the other twin pillars of people and planet. In fact, having a mentality of achieving profit at any cost is not necessarily what the economic cornerstone of sustainability is about. Activities that go with economic sustainability include complying with the authorities, properly managing risks and governing the entity, carrying out regular Audits to keep track on the state of the firm financially, being innovative so as to stay ahead of competitors, being accountable and transparent in issues related with finance and accounting (Björklund & Forslund, 2018). Huang, Shuai, Liu, Zhou and He (2018) asserts that to be able to achieve Economic Logistical Sustainability, firms need to engage in activities that saves cost, and they need to reduce business risk of their logistics activities.

2.4 Sustainable Logistics and Operational Performance

Studies have been done on sustainable logistics and operational performance and there have been contradictory findings across the sectors with some showing a positive and significant relationship while others indicating that there is no correlation between the two constructs. An organization with sustainable logistics can obtain economic rewards that entails improved speed and timeliness as well as minimized operational costs (Ren et.al. 2020), efficient return on investment and enhanced efficiency. Additionally, sustainable logistics offers novel business opportunities like customer loyalty and increased market share (Qaiser et.al. 2017). Persdotter, Hulthén and Forslund (2019) lists four reasons of engaging in sustainable logistics: 1) complying with state regulations; 2) having better relationship with the community; 3) Enhanced revenues and 4) Gratified moral obligations.

Sarwar, Zafar, Hamza and Qadir (2020) established that GSCM practices does not positively impact an entity in the short-term through profitability and sales. Cousins et al. (2019) noted that ecological sourcing surges costs associated with product and thus negatively influences economic performance. Trivellas, Malindretos and Reklitis (2020) note that green warehousing and logistics

does not positively influence performance outcome. Sarwar et al. (2020) posit that implementing green practices aids an entity in achieving economic benefits as it minimizes waste and cost as well as boosting loyalty of clients and corporate reputation. Laari et al. (2016) note that Ecosystem management minimizes an entity's production cost of well as achieving their social obligations through engaging in eco-friendly activities.

2.5 Empirical Literature Review and Study Gaps

Many scholars and academicians have focused on researching on logistics management, green logistics management and performance of different industries across the world. Fernando (2019) focused on logistics management practices in road freight transport companies with the aim of identifying the cost management practices of green logistics by trucking companies. The findings indicate that green logistics aids in waste reduction and reduction in toxic gas emission while consequently reducing overall transportation cost. Isaksson, Hulthén and Forslun (2019) focused on environmentally sustainable logistics performance management. The findings indicate that environmental sustainability influences logistics performance.

Rasugu, Chega, Ogindi, Munene, Magutu, Kaguara and Ongeri (2020) studied sustainable manufacturing strategies and production efficiency of multinational entities Kenya. Descriptive design was adopted, and it was established that production planning & control, TQM, and maintenance of plant & equipment contributed to a bigger percentage of the efficiency of MNCs. Makau (2018) on green logistics and value of customer in companies that process food in Mombasa established that there existed a substantial link between customer value and green logistics practices. Descriptive cross-sectional survey was adopted, and challenges identified were lack of advanced technology, absence of awareness and nonexistent stringent state policies. Githara (2018) studied GSCM practices and performance of organizations that manufacture food and beverage in Nairobi. The study adopted descriptive design. The GSCM practices that were widely adopted include eco-packaging and design, reverse logistics and green procurement and all were found to contain a noteworthy impact on supply chain performance. Mbaabu (2016) on green practices and SC performance of state hospitals in Nairobi discovered that there is a substantial correlation amongst GSCM and performance.

2.6 Summary of Empirical Literature Review and Gaps

Table 2.1 below gives a summarized of studies done on sustainable logistics management and related fields.

Table 2. 1 Summary of Studies on Sustainable Logistics Practices

Author(s)	Key Focus	Methodology	Research outcomes	Research Gap
Sarwar et al. (2020)	GSCM and Sustainability Performance	Descriptive research design	GSCM influences Social, Ecological and Economic performance	Focused on Green Supply Chain not Sustainable Logistics practices
Richnaik & Gubova (2021)	Green logistics and sustainable development	Descriptive, qualitative	Green Logistics improves customer supplier relationship	Focused on green logistics and not Sustainable logistics
Isaksson et al. (2019)	Ecologically sustainable logistics performance	Case study	Environmental sustainability influences logistics performance	Used case study and left a gap in descriptive research design
Khan et al. (2020)	GSC and environmental sustainability	Systematic literature review	Green Supply Chain influences Environmental Sustainability	Focused on environmental sustainability and left out social and economic
Trivellas et al. (2020)	Green logistics and supply chain performance	Descriptive research design	Information sharing, logistics networking and transportation influences performance	Focused on SC performance unlike operational performance
Mutie et al. (2020)	Green logistics and performance of logistics firms	cross-sectional survey	Green logistics positively influenced firm's performance	Focused on Logistics firms and not MMCs
Makau (2018)	Green logistics and customer value of food processing firms	Descriptive cross-sectional survey	Green logistics influences customer value	Focused on influence on customer value and not operational performance
Githara (2018)	GSCMP and supply performance of food manufacturing firms	Descriptive survey	GSCMP influences supply performance	Focused on SC performance unlike operational performance
Mbaabu (2016)	Green practices and S.C performance of government hospitals	Census survey	Green practices positively influence supply performance	Focused on government hospitals and not multinational manufacturing

Source: Research Data (2021)

2.7 Conceptual Framework

This framework shows the correlation amongst the variables. The Independent Variable is sustainable logistics management practices whose dimensions are environmentally sustainable logistics, socially sustainable logistics and economically sustainable logistics while the dependent variable is operational performance whose scopes are cost, speed and quality and the association is illustrated below.

Figure 2. 1 Conceptual Framework

Independent Variable   **Dependent Variable**

Sustainable Logistics

➢ Environmentally Sustainable Logistics
➢ Socially Sustainable Logistics
➢ Economically Sustainable Logistics

Operational Performance

- Cost
- Quality
- Speed
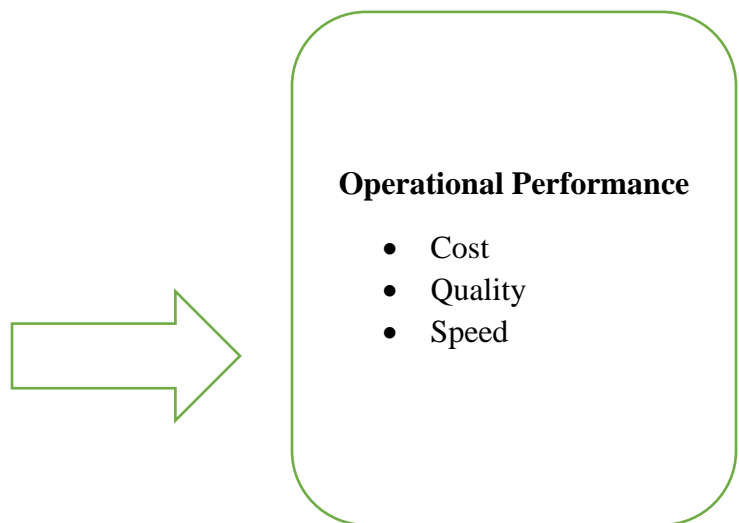
Source; Research Data (2021)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section outlined the methodology adopted to undertake this work. It discussed the design, targeted population, procedures, and tool for collecting data and concluded with data analysis.

3.2 Research Design

Descriptive research was embraced by the researcher. The design was suitable as it guarantees that the gathered information gives proper answers to the asked queries and addressed the objectives of the study (Sekaran & Bougie, 2016). Kothari (2017) views descriptive research as a present situation in which data is gathered without altering the operating environment. The design enabled the researcher to meet the study objectives efficiently and effectively.

3.3 Population

The targeted population was all the forty-five multinational manufacturing corporations in Kenya (Appendix III) listed by the Kenya Association of Manufacturers (KAM, 2020). Census was adopted as the population was manageable. Sekaran and Bougie (2016) defines Census as the study of the whole population and complete enumeration of all the participant in a given field.

3.4 Data Collection

The research adopted primary data that was gathered by structured questionnaires. The primary data was adopted due to the accuracy of the information and firsthand experience of the respondents. The questionnaire was comprised of open and close ended statements using Likert's scale. "Drop and pick later" approach and mails were adopted in administering the questionnaires to avoid close interaction as per the guidelines set by the Ministry of Health to avoid spread of Covid-19. The respondents were from supply chain, logistics/distribution, marketing, and human resource from 45 MNCs in Kenya. They were seen as suitable since they have better know-how on the study's contexts. Respondents from human resource and marketing are better conversant with social and economic sustainable logistics while those from logistics and supply chain have better knowledge of ecological sustainable logistics. Since most of the multinational manufacturing firms have their headquarters in Nairobi, the questionnaires were administered in

the head office. The Questionnaire was divided in 3 segments as per the objectives. A had Biographic information: B focused on the sustainable logistics practices; C covered the operational performance metrics of multinational manufacturing corporations.

3.5 Data Analysis

The gathered data from study's participants were entered in SPSS tool. For objective (i), which was to determine the extent adoption of sustainable logistics practices of MNCs in Kenya, descriptive analysis using standard deviation (S.D) and means was adopted. In achieving objective (ii) which sought to determine the link among sustainable logistics and operational performance, regression analysis was adopted. The overall regression formula to be adopted was in the form of;

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$

Y = Operational Performance.

a is the Y intercept when X is zero (constant)

b_1, b_2, b_3, are regression weights attached to the variable's constants

X_1….X_3 are the coefficients attached to Independent Variables

X_1 = Environmentally Sustainable Logistics

X_2 = Socially Sustainable Logistics

X_3 = Economically Sustainable Logistics

e is the error term

Table 3. 1Summary of Data Collection and Data Analysis

Objectives	Questionnaire Sections	Data collection tool	Analysis needed
General Information	A	Structured Questionnaire	Descriptive Statistics (percentages)
The extent to which sustainable logistics have been adopted by MNCs in Kenya.	B	Structured Questionnaire	Descriptive Statistics (Mean and Standard Deviation)
The connection between sustainable logistics practices and operational performance by the MNCs in Kenya.	C	Questionnaire	Regression analysis

Source; Research Data (2021)

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter focused on presenting the results from analyzing the respondent's feedback that were obtained from the filled questionnaires.

4.2 Response Rate

The study targeted 45 supply chain, logistics/distribution, marketing and human resource personnel from the multinational manufacturing corporations in Kenya. From the questionnaires administered, 37 were given back having been filled. Hence, response rate was 82.2% which is deemed sufficient for the analysis of the study as Sekaran and Bougie (2016) opine that any response above 70% is considered reasonable enough to be used for the analysis of findings.

4.3 General Information

This was segmented as per the manager's and officers' positions at the multinational manufacturing corporations, period of working in the present position and the time that the corporations have existed in the country. Table 4.1 presents the outcome

Table 4. 1 General Information

Position in the organization	Frequency	Percentage (%)
Supply chain managers	12	32.43
HR Managers	6	16.21
Marketing/Distribution	4	10.81
Logistics Manager	15	40.54
Length of service(years)		
Below 1	5	13.51
1 -5	8	21.62
6 -10	13	35.14
Over 10	11	29.73
Total	**37**	**100**

Source; Research Data (2021)

Table 4.1 illustrates that 32.43% of the study's participants were supply chain managers, 16.21% were human resource managers, 10.81 were marketing managers and 40.54% were logistics

managers. This is an indication that all the respondents were at a managerial position and were best placed in answering the questions under study due to their vast knowledge.

On how long the managers had served in the multinational manufacturing corporations, 13.51% had worked for less than 1 year, 21.62% for a time frame between 1-5 years and 35.14% for 6-10 years. The last 29.73% of the managers had served for over 10 years. As per the outcome, 86.49% of the managers had served the multinational manufacturing corporations for more above five years and hence were experienced and knowledgeable enough to participate in the study.

4.3.2 Period of Existence

The managers had to provide the period which their MNCs had operated in the country and table 4.2 provide the responses.

Table 4. 2 Period of Existence of MNCs

Period of existence (years)	Frequency	Percentage (%)
1 -5	4	10.81
5 – 10	13	35.14
Over 10	20	54.05
Total	**37**	**100**

Source: Research Data (2021)

Table 4.2 indicate that 10.81% of the multinational manufacturing corporations had operated in the country for a less than five years, 35.14 % for five to ten years and 54.05% for a period exceeding ten years. This points out that a larger percentage of the MNCs represented by 89.19% have been operational for a period exceeding 5 years which is a noteworthy period of time for them to be knowledgeable on sustainable logistics and its impact on performance.

4.4 Extent of Sustainable Logistics Practices Adoption

The research aimed at determining the level that the multinational manufacturing corporations in Kenya had adopted Sustainable Logistics practices and the outcome are subsequently discussed.

4.4.1 Environmental Sustainable Logistics

The respondents had to rate the adoption of Environmental Sustainable Logistics and table 4.3 lists the outcome.

Table 4. 3 Environmental Sustainable Logistics

Environmental Sustainable Logistics	Mean	Std. Dev
The firm practices reverse logistics	3.97	1.061
The firm plans routing for the tracks	3.87	1.34
The firm services trucks and ensure they are road worthy	3.83	1.28
The firm ecologically packages and designs her products	3.75	1.03
The firm is ISO 14001 Certified	3.89	1.33
Overall score	**3.86**	**1.18**

Source: Research Data (2021)

From table 4.3, managers and officers to a large extent (M= 3.97, SD= 1.06) affirmed that the MNCs engaged in reverse logistics while planning and routing of trucks (M= 3.87, SD= 1.34) was also adopted to a large extent. Servicing of trucks and ensuring they are road worthy (M= 3.83, SD= 1.28), ecologically packaging and designing of products (M= 3.75, SD= 1.03) and the firms being ISO 14001 certified (M= 3.89, SD= 1.33) were all adopted to a large extent as revealed by their individual mean and deviations.

Overall tally points out that environmentally sustainable logistics was adopted to a large extent by the Multinational manufacturing corporations as reflected by the mean of 3.86 and deviation of 1.18. The outcome concurs with literature of Fernando (2019) who indicated that environmental logistics aids in waste reduction and reduction in toxic gas emission and subsequently cuts down on the general transportation cost. Environmental sustainable logistics can have substantial ecological effects and save cost, firms can gain clients' reverence which can all result to improved service and products as noted by Tan et al. (2020) and Micheli et al. (2020). The outcome is however contradicted with that of Sarwar, Zafar, Hamza and Qadir (2020) who established that environmental sustainability practices does not positively impact an entity in the short-term through profitability and sales. Cousins et al. (2019) also noted that ecological sourcing surges costs associated with product and thus negatively influences economic performance. Trivellas, Malindretos and Reklitis (2020) conclude that ecological warehousing and logistics does not positively influence performance outcome.

4.4.2 Socially sustainable logistics

The mean and S.D for Socially Sustainable Logistics are displayed in table 4.4 below.

Table 4. 4 Socially sustainable logistics

Socially sustainable logistics	Mean	Std. Dev
The firm provides safety working environment for employees	3.35	1.15
The firm does not practice child labor or employ underage	3.75	1.27
The firm remunerates and pays employees well	3.40	1.66
The firm carries out corporate social responsibility	3.38	1.72
The firm does not encourage discrimination	3.26	1.72
Overall score	**3.43**	**1.55**

Source: Research Data (2021)

As per table 4.4, provision of safety working conditions for employees (Mean= 3.35, SD= 1.15) was adopted to a moderate extent while firms not practicing child labour was adopted to a large extent as evidenced by the mean 3.75 and SD of 1.27. Better employee remuneration (Mean= 3.40, SD= 1.66), engaging in corporate social responsibility (Mean= 3.38, SD= 1.72) and discouragement of discrimination (Mean= 3.26, SD= 1.72) were all moderately adopted as indicated by their individual means and deviations.

The overall score (Mean= 4.43, SD= 1.55) illustrates that socially sustainable logistics was moderately adopted by the multinational manufacturing corporations in Kenya. The findings are contradicting those of Bag and Pretorius (2020) who note that socially responsible buying and distribution is fundamental for ratifying social sustainability in logistics. Srisawat and Srisawat (2020) note that social sustainability mainly takes considerations of social relations that is comprised of discrimination, gender inequality, fair salary and remunerations, education and poverty that fluctuate from region to region. It is sometimes considered as an ethical code of conduct for the growth and survival of human that ought to be realized comprehensively, inclusivity and in an equitable way (Karaman et al., 2020, Khan et al., 2020 & Phawitpiriyakliti et al., 2020).

4.4.3 Economically Sustainable Logistics

The mean and deviation for economically sustainable logistics are portrayed in table 4.5.

Table 4. 5 Economically Sustainable Logistics

Economically Sustainable Logistics	Mean	Std. Dev
The firm produces quality products and services	4.09	0.89
The firm engages in cost saving and risk reduction activities	4.20	0.75
The firm complies with the set regulations and laws	3.92	1.17
The firm values and addresses clients feedbacks accordingly	3.64	1.39
The firm encourages innovativeness to enhance competitiveness	3.78.	1.33
Overall score	**3.93**	**1.01**

Source: Research Data (2021)

Table 4.5 designates that production of quality services and products (Mean= 4.09, SD= 0.89) and engaging in risk reduction and cost saving activities (Mean= 4.20, SD= 0.75) were adopted to a large extent. Complying with set laws and regulations (Mean= 3.92, SD= 1.17), addressing clients feedbacks accordingly (Mean= 3.64, SD= 1.39) and encouraging innovativeness to enhance competitiveness (Mean= 3.78, SD= 1.33) were all adopted to a large extent as per the respondents. Overall tally affirms that economically sustainable logistics has been adopted by MNCs to a large extent as indicated by the mean of 3.75 and deviation of 1.31. The outcome is supported by that of Ren et.al. (2020) who noted that an organization with economic sustainable logistics can obtain economic rewards that entails improved speed and timeliness as well as minimized operational costs. Liebetruth (2017) notes that an economically sustainable firm can help an entity in managing risk as well as combating stiff competition by having an enhanced financial muscle. Economic Sustainable Logistics aids firms in sustaining long-term financial growth of an entity without affecting social, ecological and cultural aspects of the community in a negative way (Sharma & Ruud, 2003).

4.5 Performance outcomes of implementing sustainable logistics

The respondents had to give feedback on how sustainable logistics impacts l performance of their individual multinational manufacturing corporations. The indicators concentrated on cost, speed and the quality of service and product and the outcomes are subsequently discussed and presented.

4.5.1 Sustainable Logistics and Cost

The managers and officers were requested to rank the level that sustainable logistics impacted cost of multinational manufacturing corporations in Kenya and the outcomes are tabulated in 4.7

Table 4. 6 Sustainable Logistics and Cost

Cost	Mean	Std. Deviation
Firm obtains value for money	3.7722	1.37060
Reduced transportation cost	3.8944	1.09073
Decreased cost of labor.	3.6444	1.41262
Minimized cost of production	3.5333	1.54322
Overall score	**3.7075**	**1.33617**

Source: Research Data (2021)

From table 4.7, firms obtaining value for money had a mean of 3.77 and SD of 1.37 while reduced transportation cost had a mean of 3.89 and SD of 1.09. Further, decreased cost of labour (M= 3.64, SD= 1.41) and minimized production cost had a mean of 3.53 and SD of 1.54. The overall score (M= 3.71, SD= 1.33) shows that sustainable logistics practices influenced cost of multinational manufacturing corporations to a large extent thus enhancing operational performance. The outcome agrees with that of Ren et.al. (2020) who opine that an organization with sustainable logistics can obtain economic rewards that like minimized operational costs. Walker and Jones (2012) had a contrasting finding in their study. They opined that some of the sustainable material might be costlier as compared to their alternatives in the market thus making the customers go for cheaper materials. They however go ahead and explain that achieving sustainability is costly in the short run but ultimately, it becomes more effective and efficient.

4.5.2 Sustainable Logistics and Speed

The performance outcome of speed occasioned by the implementation of sustainable logistics practices is tabulated in 4.8.

Table 4. 7 Sustainable logistics and Speed

Factor	Mean	Std. Dev
Minimized cycle time	3.5162	1.45424
Foreseeable time of throughput	3.3351	1.75836
Enhanced frequency of delivery	3.4541	1.60418
Increased order handling time	3.4730	1.68563
Overall score	**3.4460**	**1.62555**

Source: Research Data (2021)

Table 4.8 presents reduced cycle time with a mean of 3.52 and a SD of 1.45 and predictability in throughput time with a mean of 3.33 and SD of 1.76. Increased delivery frequency had a means of 3.45 and SD of 1.60 and increase in order handling time had a mean of 3.47 and S.D of 1.69. This is an indication that sustainable logistics moderately influenced speed of multinational manufacturing corporations as affirmed by the overall score (M=3.45, SD=1.63). The findings align with that of Githara (2018) who notes that sustainability has a noteworthy impact on performance as it enhances speed of delivery and operations of the firm. Sarwar et al. (2020 also note that sustainable practices enhance the speed of attending to clients orders and helps in fulfilling the orders on time.

4.5.3: Sustainable logistics and quality

The performance outcome of quality upon the implementation of sustainable logistics by multinational manufacturing corporations is tabulated in 4.9.

Table 4. 8 Sustainable logistics and quality

Quality	Mean	Std. Dev
Conformance to requirements	3.7211	1.26402
Minimized number of defects	3.9270	1.18992
Improved service to clients	3.4200	1.58012
Enhanced reputation and brand name	3.7027	1.10214
Overall score	**3.6927**	**1.1091**

Source: Research Data (2021)

From table 4.9, a mean of 3.72 and SD of 1.26 was attributed to conformance to specifications while the mean of 4.03 and SD of 1.19 was attributed to effective quality control processes. Improved services to clients (M=3.42, SD=1.58) and enhanced reputation and brand image had a mean of 3.70 and SD of 1.10. The overall score sows a mean of 3.69 and SD of 1.11, an indication that quality was influenced by the implementation of sustainable logistics to a large extent by MNCs in Kenya. This concurs with empirical review that improved performance is enhanced by having quality products which can be achieved through sourcing raw materials that are friendly to the environment and being ethical while sourcing which makes the goods to be more attractive to clients and entices a greater percentage of competitor's clients which will eventually result to increased profits (Walker & Jones 2012).

4.6 Sustainable logistics and operational performance.

The research aimed at examining the correlation between sustainable logistics and operational performance. The subsequent sections present the outcome of regression analysis.

4.6.1 Correlation Analysis of Sustainable logistics and operational performance

The Pearson correlation coefficients assumes numbers from positive 1 to negative with negative one indicating no correlation while one indicating as strong correlation according to Wong and Hiew (2005). The outcome indicates a strong correlation between sustainable logistics and operational performance with a positive value of 0.69 transforming to 69% as tabulated in 4.10.

Table 4. 9 Pearson correlation coefficient matrix

Pearson correlation	Operational performance	Sustainable Logistics practices
Operational performance	1.00	.693
Sustainable Logistics practices	.693	1.00

Source: Research Data (2021)

4.6.2: Regression analysis of sustainable logistics and operational performance.

Table 4.11 below displays the research's regression model summary

Table 4. 10 Regression Model Summary

Model	R	R square	Adjusted R square	Std. Error of the Estimate
I	.862	.784	.655	.194

a. Predictors: (Constant), Sustainable Logistics

b. Dependent Variable: Operational performance

Source: Study data (2021)

From table 4.11, R Square is 0.78 translating to 78% an inference that 78.4% of variation in the firm's performance (cost, speed and quality) is accredited to sustainable logistics (ecological, social and economic) and only 21.6% of the firm's performance is unexplained.

4.6.3 Analysis of Variance

ANOVA analysis is used in determining the F and P. values and table 4.12 demonstrates the outcome.

Table 4. 11 ANOVA analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.382	2	1.233	18.191	.000[b]
	Residual	0.967	34	0.064		
	Total	**8.349**	**36**			

Source: Research data (2021)

The F statistics value of 18.19 was significant as it is greater than the mean of 1.233 and its corroborated by the p value of 0.00 and a minimum of 0.05, an affirmation that the model suitably predicts performance.

The P value does not exceed 5% (0.000< 0.05) an indication that sustainable logistics (ecological, social and economic) possess a statistically noteworthy correlation with operational performance (cost, speed and quality) in the multinational manufacturing corporations in Kenya. These findings are consistent with those of Liebetruth (2017) who notes that that ecologically sustainable logistics translates to reduced waste and proper utilization of resources amounting to saved cost that

ultimately boosts performance. Dubey et al. (2017) indicate that Sustainable Logistics leads to economic performance which is observed through saving of cost, grows sales, profit margins and enhanced quality of products and services. Githara (2018) noted that environmental sustainability was found to contain a noteworthy impact on performance

4.6.4 Regression coefficients

Coefficient analysis was utilized in ascertaining the correlation of individual sustainable logistics practices on performance and the outcome are tabulated in 4.13

Table 4. 12 Coefficients Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.783	1.633		2.423	0.001
	Environmental sustainable logistics	0.519	0.154	0.234	3.219	0.001
	Socially sustainable logistics	0.321	0.075	0.543	2.946	0.043
	Economically sustainable logistics	0.352	0.073	0.329	4.453	0.002

Source: Research Data (2021)

The conventional regressed linear equation becomes:

$Y = 4.783 + 0.519X_1 + 0.321X_2 + 0.352X_3$

Where

Y = Operational performance

X1= Environmental sustainable logistics

X2= Social sustainable logistics

X3= Economic sustainable logistics

From table 4.13, sustainable logistics practices (environmentally sustainable logistics (t=3.219, P<0.05), socially sustainable logistics (t=2.946, P<0.05) and economically sustainable logistics (t=4.453, P<0.05) all contained an affirmative and substantial correlation with operational performance.

The model indicates that when social, ecological, and economic logistics are sustained at zero, operational performance value becomes 4.78. Nonetheless, maintaining other predictors constant, one unit change in environmentally sustainable logistics would amount to a 0.52 upsurge in operational performance, one unit change in socially sustainable logistics would amount to a 0.32 rise in operational performance and one unit change in economically sustainable logistics would result to a 0.35 growth in operational performance.

From the aforementioned outcome, sustainable logistics practices (ecological, social & economic) were affirmed to have statistically affirmative correlation with operational performance (cost, speed & quality). The results are concurrent with that of Ren et.al. (2020) who established that an organization with sustainable logistics can obtain economic rewards that entails enhanced operational performance. Sarwar et al. (2020) found that implementing green practices aids an entity in achieving economic benefits as it minimizes waste and cost as well as boosting loyalty of clients and corporate reputation. Liebetruth (2017) noted that that eco-designing of products translates to reduced waste and proper use of resources leading to saved cost which ultimately boosts the performance of the firm. Dubey et al. (2017) indicate that Sustainable Logistics leads to economic performance in terms of saving cost, grows sales, profit margins and market share. Githara (2018) concludes that environmental sustainability was found to contain a noteworthy impact on performance.

CHAPTER FIVE:

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presented the summary of the main results, conclusion drawn from the outcome highlighted and recommendations drawn there-to.

5.2 Summary of Findings

This part summarizes the results as per the research questions. The study aimed at determining the impact of sustainable logistics on performance of multinational manufacturing corporations in Kenya. Objective one was to determine the level of adoption of sustainable procurement by the MNCs in Kenya and the second was to ascertain the correlation between sustainable logistics and performance of MNCs in Kenya.

On the level of adoption of sustainable logistics by multinational manufacturing corporations, the study was divided into three constructs namely environmental sustainable logistics, social sustainable logistics and economic sustainable logistics. Environmentally sustainable logistics and economically sustainable logistics were adopted to a large extent with socially sustainable logistics being moderately by the MNCs in Kenya. Economically sustainable logistics was the first ranked as it was adopted to a large extent. It was noted that multinational corporations produced quality services and products as well as engaging in cost minimization and risk reduction activities. The corporations complied with the regulations to avoid litigations due to non-compliance of the set rules. Client's feedbacks were also addressed in a timely manner as well as the encouragement of innovativeness to boost competitiveness was also embraced to achieve economic sustainability.

Environmentally sustainable logistics was achieved through adoption of reverse logistics, planning and routing of trucks and servicing of trucks to ensure they are fit to operate on the roads. The multinational manufacturing corporations also ensured that they ecologically package and design their products as well as being ISO 14001 certified to ensure that they are environmentally sustainable. Socially sustainable logistics was thirdly ranked by discouraging discrimination and engaging in CSR activities. The multinational manufacturing corporations also ensure that the

workers are well remunerated, doesn't practice child labour and provision of safety conditions for the workers to attain socially sustainable logistics.

On the individual impact of sustainable logistics on performance of multinational manufacturing corporations, cost, speed and quality was utilized. Sustainable logistics was established to influence cost to a large extent through decreased labour and production cost, minimized transportation cost and obtaining value for spent funds. Sustainable logistics was established to influence speed to a moderate extent by minimized cycle time, foreseeable throughput time, enhanced frequency of delivery and increased handling time of orders. Quality was influenced by sustainable logistics to a large extent through conforming to the set specifications, reduced defects of products, better client service and improved corporations' reputation and brand image.

On the correlation between sustainable logistics and performance, regression analysis was executed and based on the regression coefficient, environmentally sustainable logistics, socially sustainable logistics and economically sustainable logistics all had an affirmative and significant correlation with performance as noted by their p value of less than five percent. The general outcome of the research affirms that sustainable logistics has a statistically significant correlation and influences operational performance of MNCs in Kenya.

5.3 Conclusion

Based on the outcome of the research, the study concludes that there exists a noteworthy and substantial correlation between sustainable logistics and performance of multinational manufacturing corporations in Kenya. Sustainable logistics influences cost, speed and quality of MNCs in Kenya.

Objective one of the research was achieved as the study concludes that environmental sustainable logistics and economic sustainable logistics were adopted to a large extent whereas social sustainable logistics was adopted to a moderate extent. This indicates that it is paramount for MNCs to adopt sustainable logistics to a large extent so as to enhance their performances.

On objective two, it is concluded that sustainable logistics influences operational performance of MNCs in Kenya. Specifically, cost, speed and quality were influenced and had a statistically

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significant correlation with sustainable logistics and thus the second objective of the study was met.

5.4 Recommendations form the study

As per the outcome of the research, the study recommends that entities should embrace the use of sustainable logistics to ensure that they are economically, environmentally and socially sustainable. Firms need to produced quality services and products as well as engage in cost minimization and risk reduction activities. It is also recommended that entities ought to comply with the regulations to avoid litigations due to non-compliance of the set rules as well as address client's feedbacks in a timely manner as well as the encourage innovativeness to boost competitiveness in order to achieve economic sustainability.

The study recommends that firms should embrace reverse logistics, planning and routing of trucks and servicing of trucks to ensure they are fit to operate on the roads. They should also ensure that they ecologically package and design their products as well as being ISO 14001 certified to ensure that they are environmentally sustainable. To achieve social sustainability, it is recommended that firms should discouraging discrimination and engage in CSR activities as well as ensure that the workers are well remunerated, non-engagement in child labour and provide safety conditions for the workers to attain.

Since sustainable logistics positively impacts performance of MNCs in Kenya, the study recommends that environmentally sustainable logistics, socially sustainable logistics and economically sustainable logistics be fully embraced and adopted by firms that wants to enhance their performance. This is because some of the practices were moderately adopted and others largely adopted thus making the firms not fully maximize their performances. Largely adopting these practices will enhance the chances of firms maximizing their performance and boost their competitiveness.

The research also recommends that the entire sector constituting the Manufacturing firms, not just multinational manufacturing corporations embrace sustainable logistics as a way to compete and boost their performance to stay ahead of other competitors.

5.5 Limitation of the Study

The research had shortcomings on its context as it just focused on multinational manufacturing corporations in Kenya. This is an indication that not all the manufacturing firms were studied and thus aiding to a contextual limitation. The full response rate of the multinational manufacturing firms was also not achieved. However, inference was made from the outcome to be a true reflection of the manufacturing firms in Kenya. This could also not hinder the quality of the study as the response rate realized was adequate for generalizability.

The research also had a conceptual limitation as it only focused on sustainable logistics practices and performance. The study did not focus on other factors which influences performance as it was noted that sustainable logistics only account for 78% of the performance and the other 22% could not be accounted for. The milestone to the implementations of sustainable logistics was not covered as well as the factors that influences its application

5.6 Suggestions for Further Research

Upcoming studies should concentrate on other factors that hindered sustainable logistics to fully impact performance. The constructs of the study can be copied by different researchers to note if the outcome of this research can yield the same outcome if it is executed in other industries. The researcher suggests that further research can compare sustainable logistics with either financial, supply chain performance or competitiveness to ascertain if the same outcome will be yielded.

Future studies may also focus of the factors that drives entities to adopt sustainable logistics as well as the milestones encountered in the implementation of sustainable logistics by either multinational manufacturing corporations or any other sector.

The study had just two variables with three sub variables under sustainable logistics being environmental, social, and economic sustainable logistics. It is suggested that other studies can add onto other variables, either moderating or intervening variables, and monitor the outcome of the study if it will be the same.

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APPENDIX I: INTRODUCTORY LETTER

UNIVERSITY OF NAIROBI

FACULTY OF BUSINESS AND MANAGEMENT SCIENCES

MASTER OF SCIENCE IN SUPPLY CHAIN MANAGEMENT

Telephone: 020 491 9007
Telegrams: "Varsity" Nairobi
Telex: 22095 Varsity

P.O. Box 30197
Nairobi, KENYA

07 October 2021

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

INTRODUCTION LETTER FOR RESEARCH
FATUMATA BANGARE FOFANA REGISTRATION NO. D67/11755/2018

This is to confirm that the above named is a bona fide student in the Master of Science in Supply Chain Management degree program in this University. She is conducting research on *"Sustainable Logistics and Operational Performance of Multinational Manufacturing Corporations in Kenya."*

The purpose of this letter is to kindly request you to assist and facilitate the student with necessary data which forms an integral part of the Project. The information and data required is needed for academic purposes only and will be treated in **Strict-Confidence**.

Your assistance will be highly appreciated.

Thank you

PROF. JACKSON MAALU
DEAN, FACULTY OF BUSINESS AND MANAGEMENT SCIENCES

Introduction

Please give the information needed by answering appropriately.

SECTION A: Biographic information

1. Kindly provide your organization (optional)………..……………………………

2. Which Position do you occupy?

    Warehouse manager   [ ]   logistics manager [   ]

    Procurement   [ ]   other (specify)…………………………….

    Operations Manager   [ ]

3. How many years has the Multinational Corporation been operational in Kenya?

      0-1   [ ]   1-5 years   [   ]

      6-10 years   [ ]   Over 10 years [ ]

4. Do you Practice Sustainable Logistics Practices?

      Yes   [ ]

      No   [ ]

SECTION B: Extent of adoption of Sustainable Logistics Practices

5. Subsequently listed are amongst the sustainable logistics that have been adopted by companies for the optimization of their performance. Kindly indicate the level that your MNCs has adopted them by ranking on a scale of 1-5; (1- very small extent, 2- small extent, 3- medium extent, 4- t large extent and 5- very large extent).

SUSTAINABLE LOGISTICS   **RATING**

ENVIRONMENTALLY SUSTAINABLE LOGISTICS	1	2	3	4	5
We practice reverse Logistics					
We plan routing for our Trucks					
We service our trucks and ensure they are road worthy					
Our products are ecologically packaged and designed					
We are ISO 14000 Certified					
SOCIALLY SUSTAINABLE LOGISTICS	1	2	3	4	5
We provide safe working environment for our employees					
We don't employ underage or practice child labour					
Our employees are well paid and remunerated					
We carry out corporate social responsibility					
We don't encourage discrimination					
ECONOMICALLY SUSTAINABLE LOGISTICS	1	2	3	4	5
We invest in Quality Products and services					
We only engage in activities that saves cost and reduce risks					
We comply with the set regulations					
We encourage innovativeness to stay ahead of competitors					
We value customer feedbacks and work on them accordingly					

SECTION C: Operational performance outcomes from the adoption of sustainable logistics practices.

6. Subsequently listed are operational performance indicators that entities experience upon implementation of sustainable logistics. Kindly rate your agreement level with the indicators by using a scale of 1-5; (1- very small extent, 2- small extent, 3- medium extent, 4- large extent and 5- very large extent)..

Operational Performance Outcomes   **Rating**

Cost	1	2	3	4	5
Firm obtains value for money					
Reduced transportation cost					
Cost of labour has been decreasing					
Minimized cost of production					
Speed	1	2	3	4	5
minimized cycle time					
Foreseeable time of throughput					
Enhanced frequency of delivery					
Better time in handling orders					
Quality	1	2	3	4	5
Sticking to requirements					
Reduced number of defects					
Improved service to clients					
Improved reputation and better brand image					

Others (please specify)

…………………………………………………………………...

....

....

THANK YOU!

APPENDIX III; MULTINATIONAL MANUFACTURING CORPORATIONS IN KENYA

1. Nestlé Foods
2. Procter and Gamble EA Ltd
3. Coca-Cola
4. Gillette
5. British American Tobacco
6. Unilever Kenya
7. General Motors East Africa
8. Bayer East Africa
9. Glaxo Smith Kline Kenya Ltd
10. Beta Healthcare International Limited
11. Chandaria Industries Limited
12. Orbit Chemicals Industries Limited
13. Bidco Africa Limited
14. East African Portland Cement Company (EAPC)
15. Colgate Palmolive (EA) Ltd
16. East African Breweries Ltd
17. General Motors East Africa
18. Haco Industries
19. Kapa Oil Refineries
20. East African Packaging Industries
21. Tetra Pack 22. De la Rue Ltd United Currency
22. Kenya United Steel Ltd (KUSCO)
23. Best foods Kenya Ltd
24. Pwani Oil Refineries
25. Henkel Kenya Ltd
26. Bata Shoe Company (Kenya)
27. Henkel Kenya Limited
28. Gargil Kenya Limited
29. Topen Industries
30. Weltech Industries
31. Osho Chemical Industries
32. Palmac Oil Industries
33. Sona Holdings
34. Rolmil Kenya Limited
35. Associated Steel Company Limited.
36. Kenya United Steel Ltd (KUSCO)
37. Bamburi Cement
38. Associated Paper & Stationery Ltd
39. Total Kenya Limited-Lubes Blending plant
40. Atlas Copco Kenya Ltd
41. General Electric
42. Pan paper
43. Aluminum Africa Limited
44. Oil Libya Lube Blending

Source: KAM Directory (2020)