

**GREEN SUPPLY CHAIN MANAGEMENT PRACTICES AND ORGANIZATIONAL
COMPETITIVENESS OF COMMERCIAL STATE CORPORATIONS IN KENYA**


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DECLARATION


I, the undersigned, declare that this research project is my original work and has not been presented to any institution to any institution or university other than the University Nairobi for examination.

Signed  _____ Date 30th November 2023 _____

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Declaration by Supervisor

This research project has been submitted for examination with my consent as the University Supervisor.

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TABLE OF CONTENTS

DECLARATION	ii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
ABBREVIATIONS AND ACRONYMS	ix
ABSTRACT	x
CHAPTER ONE: INTRODUCTION	1
1.1 Background to the Study	1
1.2 Green Supply Chain Management	2
1.3 Organizational Competitiveness	2
1.4 Commercial State Corporations	3
1.5 Statement of the Problem	4
1.6 Objectives of Study	6
1.6.1 General Objective	6
1.6.2 Specific Objectives	6
1.7 Value of Study.....	6
CHAPTER TWO: LITERATURE REVIEW	8
2.1 Introduction	8
2.2 Theoretical Foundation	8
2.2.1 Game Theory	8
2.2.2 Institutional Theory	9
2.3 GSCM practices	9
2.4 Organizational Competitiveness	10
2.5 Green Supply Chain Management Practices and Organizational Competitiveness.....	11
2.4 Conceptual Framework	13
2.5 Summary of the Research Gaps	14
CHAPTER THREE: RESEARCH METHODOLOGY	17
3.1 Introduction	17
3.2 Research Design.....	17
3.3 Target Population	17

3.4 Data Collection Instruments.....	18
3.5 Data Analysis and Presentation.....	18
CHAPTER FOUR: DATA ANALYSIS, INTERPRETATIONS AND PRESENTATION. 19	
4.1 Introduction.....	19
4.2 Response Rate.....	19
4.3 General Information.....	19
4.3.1 Gender of the Respondents.....	19
4.3.2 Age Bracket of the Respondents.....	20
4.3.3 Respondents' Highest Education Level.....	21
4.3.4 Duration of Working in Present Positions.....	22
4.4 Adoption of Green Supply Chain Management Practices.....	23
4.5 Green Supply Chain Management Practices.....	24
4.5.1 Green Purchasing.....	24
4.5.2 Reverse Logistics.....	25
4.5.3 Green Distribution.....	26
4.5.4 Eco designs.....	27
4.6 Organizational Competitiveness.....	28
4.6.1 Profitability in Commercial State Corporations in Kenya.....	29
4.6.2 Market Share in Commercial State Corporations in Kenya.....	30
4.7 GSCM practices on the organizational competitiveness of commercial State Corporations in Kenya.....	31
4.8 Discussion of the Findings.....	33
4.8.1 Adoption of Green Supply Chain Management Practices.....	33
4.5 Green Supply Chain Management Practices and Organizational Competitiveness.....	34
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS..... 35	
5.1 Introduction.....	35
5.2 Summary of the Key Findings.....	35
5.2.1 Adoption of Green Supply Chain Management Practices.....	35
5.2.2 Effect of Green Supply Chain Management on Organizational Competitiveness.....	35
5.3 Conclusions.....	37
5.4 Recommendations.....	37

5.5 Areas for Further Studies	38
REFERENCES.....	39
APPENDICES	42
Appendix I: Questionnaire	42
Appendix II: List of Commercial and Manufacturing State Corporations.....	46

LIST OF TABLES

Table 1: Summary of Empirical Literature and Research Gaps	15
Table 4. 1: GSCM practices adopted by commercial State Corporations in Kenya.....	24
Table 4. 2: Green Purchasing.....	25
Table 4. 3: Reverse Logistics.....	26
Table 4. 4: Green Distribution	27
Table 4. 5: Eco designs	28
Table 4. 6: Organizational Competitiveness.....	29
Table 4. 7: Correlation Coefficients.....	33

LIST OF FIGURES

Figure 2. 1: Conceptual Framework	14
Figure 4. 1: Gender of the Respondents.....	20
Figure 4. 2: Age Bracket of the Respondents	21
Figure 4. 3: Respondents' Highest Education Level	22
Figure 4. 4: Duration of Working in Present Positions.....	23
Figure 4. 5: Trend of Profitability in Commercial State Corporations	30
Figure 4. 6: Trend of Market Share in Commercial State Corporations.....	31

ABBREVIATIONS AND ACRONYMS

GSCM: Green Supply Chain Management

SCM: Supply chain management

COVID 19: Coronavirus Disease 2019

ABSTRACT

The competitiveness of commercial state corporations has been declining for the period between 2018 and 2022. Green supply chain management practices plays a crucial role in improving the competitiveness of firms, including commercial state corporations, in terms of profitability, market share, and innovation. However, despite the use of green supply chain management practices, the average competitiveness of organizations in commercial state corporations remained low. The objectives of this study were to establish the extent of green supply chain management practices adopted by commercial State Corporations in Kenya and to determine the effect of green supply chain management practices on the organization of commercial State Corporations in Kenya. The study adopted a descriptive research design. The target population was all the 33 commercial state corporations in Kenya. A census approach was used; hence, it involved the entire target population of heads of supply chain departments in 33 Kenyan commercial and manufacturing state corporations. Primary data was collected by use of structured questionnaires. The study used descriptive statistics to achieve the first objective, including mean, standard deviation, and percentages. To achieve the second objective, the study used descriptive and inferential statistics. The descriptive statistics involved standard deviation, mean, and percentages, while inferential statistics included Pearson correlation analysis. The study found that green purchasing, sustainable supplier selection, reverse logistics, and eco-design had been adopted in commercial state corporations in Kenya to a great extent. Other GSCM practices include green product design, packaging, transportation, and supplier collaboration. The study found that green purchasing positively and significantly affects the organizational competitiveness of commercial State Corporations in Kenya. In addition, green distribution completely and significantly affected the corporate competitiveness of commercial State Corporations in Kenya.

Further, the study found that eco-design found it had a positive and significant effect on the organizational competitiveness of commercial State Corporations in Kenya. The study further established that reverse logistics has a positive and significant effect on the corporate competitiveness of commercial State Corporations in Kenya. The study recommends that commercial State Corporations formalize and integrate sustainable procurement policies that align with green purchasing requirements. This includes actively seeking suppliers committed to environmentally friendly practices. In addition, the management of commercial state corporations should ensure the continued adoption of green distribution initiatives, emphasizing the development of innovative and environmentally friendly distribution methods. They should also emphasize integrating green distribution processes to enhance customer satisfaction, loyalty, and overall market positioning.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The international business environment is currently characterized by increasing globalization, competition, and consumer demands, which have led to a decline in the competitiveness of different organizations (Singh & Trivedi, 2016). According to Zuñiga-Collazos (2019), organizational competitiveness involves a firm's ability to compete successfully in global markets. To achieve corporate competitiveness, organizations must integrate Green Supply management (GSCM) strategies to incorporate environmental considerations into the management of their supply chains (Sarkis, 2012). GSCM seeks to include environmental considerations for making decisions at every supply chain phase, from inbound logistics of material management to outbound logistics of consumer disposal (Nuruzzaman, 2015). Despite its importance in improving the competitiveness of firms, the use of sustainable supply chain management techniques in companies worldwide remains low.

This research will be anchored on the game and institutional hypotheses. In the game hypothesis, interdependence between parties allows every player to consider the potential plans or decisions of the opposing players when developing a strategy (Abedian et al., 2022). Successful adoption of GSCM techniques is dependent on the involvement of all stakeholders. The institutional hypothesis examines the methods by which systems, such as laws, customs, and routines, come to be recognized as reliable recommendations for social behavior (Berthod, 2018). Environmental regulations require firms from both the public and commercial sectors to adopt green supply management strategies to reduce pollution and emission of greenhouse gases.

Commercial State Corporations in Kenya have been established for social and commercial functions (Ngundi & Namada, 2022). Specifically, commercial state corporations facilitate economic growth and sustainability, alleviate poverty, and enhance the country's citizens' social lives by producing high-quality goods and services (Njoroge, 2015). In order to shield customers from exorbitant costs and subpar goods, state companies also prohibit market monopolization, or the dominance of the market by a single, dominating firm.

Chelangat (2017) states that only 21% of all public institutions, including commercial state corporations, have fully implemented GSCM practices.

1.2 Green Supply Chain Management

Supply chain management (SCM) controls all processes included in the creation, transformation, acquisition, and distribution of services and products from the place of production to the consumption place (Hugos, 2018). GSCM is a group of ecological operations that support enhancing the environmental performance of two or more firms that are part of a similar supply chain (Lea, 2020). Srivastava (2007) states that GSCM is the procedure of incorporating ecological factors into aspects of supply chain management involving the development of products, selection and procurement of materials, distribution of finished products, and management of a commodity's end-of-life. According to Min and Kim (2012), GSCM includes ecological factors in supply chain management strategies used across organizations. In this research, "GSCM practices" were described as techniques for incorporating factors of the environment into supply chains for businesses.

Various studies have used different measures of GSCM techniques. According to Akhtar (2019), GSCM techniques include all practices that address the supply chain's ecological problems, involving the products' green design, production, transportation, packaging, and storage. Priyashani and Gunarathne (2021) observed that GSCM techniques are reverse logistics, eco-design, eco-distribution, eco-purchasing, and eco-marketing. In addition, Pakso (2018) discovered that GSCM practices include green distribution, green purchasing, green marketing, and reverse logistics. Further, Dyckhoff, Lackes, and Reese (2004) observed that GSCM practices include green management of risk, green reverse logistics, green marketing, and green purchasing. The research will examine GSCM practices for green purchasing, reverse logistics, distribution, and eco-design.

1.3 Organizational Competitiveness

Organizational competitiveness is a vital component of the success and sustainability of any business (Zuñiga-Collazos, 2019). Organizational competitiveness is a broad phrase employed to describe an organization's capacity to effectively utilize its resources to provide services and products that meet or exceed the expectations of clients. It describes

how a business controls its competitive edge in goods and services while reaching business objectives (Laguir et al., 2022). Kilili (2020) asserts that an organization's competitiveness is determined by its ability to adapt to changing conditions, special skills, and relentless pursuit of improved outcomes. According to Varga (2017), organizational competitiveness is a set of skills that a business must possess to be able to supply clients with services and products that they will be willing to pay more for over the long run than they would for those provided by rival businesses while still making a profit. Organizational competitiveness involves how effective a firm meets its customers' needs as compared to other organizations in the same industry offering the same products or services. This study will define organizational competitiveness as how an organization controls its market position for services and goods, maximizes its profitability, and ensures continuous innovation of products.

Various studies have conceptualized organizational competitiveness using different measures. Zuñiga-Collazos (2019) conceptualized organizational competitiveness in terms of market share, financial performance (equity return, assets return, and sales return), labor productivity, the size of the firm, and innovation. In addition, Hitt (2016) looked at organizational competitiveness regarding cost reduction, quality, innovation, and market share. Kaur (2019) measured organizational competitiveness by considering product quality, profitability, differentiation, and price advantages. In addition, Cameron and González (2019) measured organizational competitiveness in terms of market share and profitability. This study will examine organizational competitiveness regarding market share, innovation, and profitability.

1.4 Commercial State Corporations

Commercial State corporations in Kenya have been developed for social and commercial functions. State corporations play a crucial role in preventing market monopolization, or the domination of the market by one dominating firm, to shield customers from exorbitant pricing and subpar goods. Commercial state corporations also have obligations that are key to the achievement of Kenya Vision 2030, and while their functions are performed commercially, they serve vital and strategic socio-economic roles (Public Service

Commission, 2022). Kenya has thirty-three (33) commercial state corporations (Public Service Commission, 2022).

State Corporations Act, Chapter 446 of Kenyan Laws, provides for forming state corporations and their management and regulation. It also governs and regulates the operations of commercial state corporations (Public Service Commission, 2022). A State Corporation is a corporate entity developed by Section 3 of the State Corporations Act, Cap 446, or by a law passed by Parliament or the Companies Act, Cap 486, where the Government owns large or all shares. State Corporation Act also established the Inspectorate of State Corporations, an organization responsible for performing management audits at state corporations to verify adherence to established policies, norms, and procedures; it also offered Government and other stakeholders consulting services on issues impacting state corporations. Its duties include using a surcharge method to return lost money to the State Corporations.

Commercial state corporations are distributed in many economic sectors, such as the energy sector, sugar sector, education sector, telecommunication sector, agricultural sector, water sector, tourism sector, food and beverage sector, transport sector, health sector, and construction sector (Public Service Commission, 2022). Commercial state corporations have adopted GSCM practices in the last two decades, although slowly. Among commercial state corporations in Kenya, only 21% have fully implemented GSCM practices (Chelangat, 2017).

1.5 Statement of the problem

The competitiveness of commercial state corporations has been declining. For instance, the performance index of Kenyan commercial state corporations declined from 57.3% in 2018 to 43.9% in 2022 (Public Service Commission, 2022). According to Hugos (2018), GSCM practices play a crucial role in improving the competitiveness of firms, including commercial state corporations, in terms of profitability, market share, and innovation. Wyawahare and Udawatta (2021) observed that green purchasing leads to cost savings and improved resource efficiency due to reduced energy consumption and operational costs. In addition, Pakso (2018) indicates that implementing efficient reverse logistics processes

enhances customer satisfaction and loyalty, improving market share. Despite the use of GSCM techniques, the average competitiveness of organizations in commercial state corporations remained low at 57.3% in 2018, which decreased to 43.9% in 2022 (Public Service Commission, 2022).

Studies conducted on GSCM techniques have shown mixed results. For instance, Younis, Sundarakani, and Vel (2016) observed that the execution of GSCM techniques contributes to improvement in corporate image and environmental performance, which ultimately results in a company's competitive edge. However, Hijjawi (2022) observed that the use of GSCM practices, like green purchase, green production, and green distribution, had no significant effect on the competitiveness of firms. It is, therefore, essential to examine whether GSCM practices significantly influence the organizational competitiveness of commercial state corporations.

Marhamati and Azizi (2017) examined the impacts of GSCM on company competitiveness in Pakistan and found that the GSCM significantly affects competitiveness. Priyashani and Gunarathne (2021) evaluated the influence of GSCM strategies on the industrial sector of Sri Lanka's organizational performance and found that GSCM practices significantly influence organizational performance. Further, Adam, Yusuf, and Usman (2021) examined the association between the management of the green supply chain and Nigeria's publicly traded oil and gas companies' performance. He discovered that GSCM significantly impacted operational performance.

In Kenya, Kioko (2018) evaluated the connection between the management of green supply chain strategies and the productivity of logistics companies in Mombasa County and discovered that using a green supply chain reduced operating expenses and expanded the customer base. Additionally, Mosbei (2021) researched to investigate the connection between the management of green supply chain methods and the performance of Kenya's beverage and food manufacturing industry and discovered that GSCM techniques significantly impacted performances. Further, Omonge (2021) examined the impacts of the management of green supply chain techniques on the competitiveness of Kenyan commercial banks and discovered that employing GSCM techniques enhanced the competitive edge of commercial banking institutions.

Studies conducted on GSCM techniques have been limited to certain countries, regions, and organizations. However, studies conducted in different organizations can never be generalized to their organizations because of differences in legal framework regulating different organizations, organizational structures, and resource availability, all of which can influence decisions to implement sustainable supply chain management techniques. In addition, studies have looked at different dependent variables and have conceptualized GSCM techniques in various ways. To cover these gaps, this research sought to answer the question: What is the influence of GSCM strategies on the organizational competitiveness of Kenyan commercial State Corporations?

1.6 Objectives of the study

1.6.1 General Objective

The general objective of this research was to examine effect of GSCM practices and the organizational competitiveness of commercial State Corporation in Kenya.

1.6.2 Specific Objectives

The specific objectives of the research were;

- i. To establish the extent of GSCM practices adopted by commercial State Corporations in Kenya
- ii. To determine the effect of GSCM practices on the organizational competitiveness of commercial State Corporation in Kenya

1.7 Value of the Study

To other researchers and academicians, this study provides research material for developing the literature review on the effect of GSCM strategies on commercial state corporations' competitiveness. Moreover, research provides additional information to the existing knowledge bodies on how GSCM techniques influence the competitiveness of Kenyan commercial state corporations. Furthermore, the research provides a foundation for subsequent research on the effects of GSCM strategies on the competitiveness of Kenyan commercial state corporations.

To the Government of Kenya, this research provides essential information on the effect of GSCM techniques on the competitiveness of Kenyan commercial state corporations. The information may help the Government develop proper policies to ensure that the commercial state corporations adopt various GSCM techniques like backward logistics, green marketing, distribution, and purchasing to improve organizational competitiveness.

To manage commercial state corporations, this study provides information on how GSCM techniques (reverse logistics, green purchasing, green markets, and green distributions) influence the competitiveness of commercial state corporations. The information could help review and establish new GSCM actions that enhance the competitiveness of commercial state corporations. Furthermore, research offers information that can be employed in developing strategies based on reverse logistics, green marketing, green distribution, and green purchasing to improve the competitiveness of their organizations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter covers a review of the literature on GSCM techniques and the competitiveness of organizations. Notably, the section covers the theoretical foundation of research, empirical reviews, and the conceptual framework summary of research gaps.

2.2 Theoretical Foundation

A theory is a well-substantiated explanation or framework that seeks to explain phenomena, events, or observations (Bhattacharjee, 2012). This investigation will be anchored on the hypothesis of the game and institutional hypothesis.

2.2.1 Game Theory

John von Neumann and Oskar Morgenstern formulated the game hypothesis in the 1940s. Game hypothesis offers mathematical instruments to simulate strategic interactions in which multiple players (decision makers) compete to optimize their benefits by utilizing a particular strategy that considers other players' strategies (Abedian et al., 2022). The essence of the game hypothesis is that a player's result relies on another player's move. The game displays the players' choices, opinions, potential strategies, and how these strategies affect the final result. Each participant must consider the other's perspective options or methods when making their own because of dependency (Taylor & Ravindran, 2019). The two most prevalent categories of game hypotheses are non-cooperative and cooperative. The cooperative game hypothesis examines the interaction between alliances or partnership groupings only if the benefits are recognized (Taylor & Ravindran, 2019). A fair tendering process follows the cooperative game theory concept. In non-cooperative games, players cannot commit in advance to a specific tactic in a legally enforceable way; hence, they involve themselves in collusion (Abedian et al., 2022).

It is a cooperative game that studies how groups work together and share benefits amongst their members rather than being played by individuals (Muggy & Stamm, 2014). The research will use the cooperative game hypothesis to describe the impacts of GSCM strategies and organizational competitiveness of Kenyan commercial State Corporations.

About the execution of GSCM strategies, the cooperative game hypothesis is applied to examine the incentives and strategies for cooperation among various supply chain participants. The interdependence between parties encourages each player to think about alternative decisions or strategies the other player uses before deciding on a plan. Successful execution of green supply management strategies depends on all stakeholders' involvement.

2.2.2 Institutional Theory

Institutional theory was formulated in 1977 by John Wilfred Meyer and Brian Rowan. According to the theory, organizations can enhance performance by better coordinating and controlling tasks. According to Berthod (2018), institutional theory is interested in how institutions, procedures, rules, and norms are developed as the standards for proper conduct. This theory's assumptions are based on the fact that the center of an organization's world, both internal and external, is based on well-understood things visible to the organization's members (Cai & Mehari, 2015). Organizations are not lone rangers that aim to get the best of the economic opportunities available, they are based on social norms and expectations that are part of the things management have to consider before making decisions that relate to the firm (Berthod, 2018).

This study adopted the institution theory to describe the impacts of GSCM strategies on organizations' performances. The institutional hypothesis examines methods by which systems, such as laws, customs, and routines, come to be recognized as reliable recommendations for social behavior (Berthod, 2018). Environmental regulations need businesses in private and public sectors to employ green supply management strategies to reduce pollution and emission of greenhouse gases. Adopting GSCM strategies can differentiate an organization from its competitors. It can lead to cost savings through resource efficiency, increased operational effectiveness, access to new markets or customer segments, and improved relationships with environmentally conscious suppliers.

2.3 GSCM practices

Green Supply Chain Management (GSCM) practices involve the integration of environmentally sustainable principles and practices into supply chain activities

(Nuruzzaman, 2015). The goal of GSCM is to reduce the environmental impact of the entire supply chain while maintaining or improving overall performance and efficiency. GSCM practices help minimize the negative environmental impact of supply chain activities (Abedian et al., 2022). They often lead to cost savings in the long run. Energy-efficient operations, waste reduction, and optimized transportation contribute to lower operational costs, thus improving overall profitability (Berthod, 2018). Consumers are increasingly concerned about the environmental impact of the environment and the products they buy. Organizations that demonstrate a commitment to sustainability through GSCM practices build trust and loyalty with environmentally conscious customers, enhancing their brand reputation.

Studies conducted around the world have used different GSCM practices. For instance, Azhar and Ayyaz (2022) indicate that GSCM practices in the textile, automobile, and tobacco industries include green manufacturing, cooperation with customers, green purchasing, eco-design, and green information systems. In addition, Gera, Chadha, and Sergeevna (2022) used green design, green purchasing, green production, green distribution, logistics marketing and reverse logistics as the main supply chain management practices used in organizations.

2.4 Organizational competitiveness

Organizational competitiveness is the ability of a company, institution, or organization to outperform its rivals in the market, industry, or sector in which it operates (Zuñiga-Collazos, 2019). It involves the company's capacity to create and sustain a competitive advantage, leading to better performance, growth, and market position. The organizational competitiveness of state-owned corporations refers to the ability of these government-owned enterprises to effectively compete and succeed in their respective industries or markets (Hitt, 2016). State-owned corporations often operate in specific industries or sectors where the Government has a strategic interest or national importance (Kaur, 2019). Their competitiveness depends on their ability to navigate industry dynamics, respond to market changes, and understand customer needs.

Various studies have conceptualized organizational competitiveness using different measures. Cameron and González (2019) measured organizational competitiveness regarding profitability, market share, and innovation. The state-owned corporation's market share in its industry or sector provides an indication of its competitive position compared to other players. A higher market share suggests a more substantial competitive presence (Hitt, 2016). Analyzing financial metrics such as revenue growth, profitability, return on investment, and cash flow provides insights into the corporation's financial health and ability to generate value (Kilili, 2020). Innovation is a crucial measure of organizational competitiveness for state-owned corporations. Emphasizing innovation allows state-owned corporations to develop new products, services, processes, or business models, leading to a sustainable competitive advantage (Varga, 2017).

2.5 Green Supply Chain Management Practices and Organizational Competitiveness

In India, Sahoo and Vijayvargy (2021) researched GSCM techniques and their influence on the performance of organizations. Information was gathered based on a cross-sectional study of 160 Indian manufacturing company managers. The influence of GSCM (GSCM) techniques on the productivity of each organization's results was examined by employing a structural modeling equation. Outcomes indicated that except internal management of the environment and green purchasing, every other GSCM factor, including reverse logistics and eco-design, is discovered to have a significant impact on at least one of the performance aspects, in either a direct or indirect way. However, research focused on organizational performance, which is different from organizational competitiveness. In addition, the research was carried out in India among manufacturing industries in the private sector, which are different from commercial state corporations.

In Pakistan, Amjad, Abbass, and Hussain (2022) they conducted a study examining the impacts of GSCM techniques on the productivity of industries and sustainable growth. Information was gathered from 12 leather firms based in Pakistan employing questionnaires. Outcomes indicated that the firm's performance was favorably impacted by GSCM operations, with investment recovery and competitiveness mediating between internal green practices. However, the study was limited to leather companies in Pakistan,

which differ from commercial state corporations in Kenya regarding governance, organizational structure, and regulatory framework.

In Italy, Zhang, Gao, and Luqman (2022) investigated the association between competitiveness and GSCM techniques during Covid 19. The research employed a descriptive design. The population targeted was 400 companies in the food industry, which was directed at operations supervisors, logistics executives, distribution executives, and middle-level executives. The survey participants were chosen from the food sector. Outcomes demonstrated that GSCM strategies strongly impacted organizational competitiveness. However, the focus of the study was on the food industry in the private sector, which is different from commercial state corporations in terms of legal framework.

In Ethiopia, Adamu and Kerebih (2019) investigated the effects of GSCM strategies on an organization's competitive advantage. The population of the research was employees of companies in the manufacturing sector. The research employed primary and secondary information with related studies, books, and websites for literature review and definitions. Information was analyzed using descriptive and inferential statistical methods. Findings demonstrated that all GSCM techniques positively and significantly affect the competitive advantage except for green distribution, which had an insignificant effect on the company's competitive advantage. Nonetheless, the study was conducted in the manufacturing sector in Ethiopia, which is different from commercial state corporations in Kenya in terms of legal framework and organizational structure.

In Nigeria, Quadri (2021) examined the connection between GSCM techniques and the productivity of Nigerian Bottling Industry Limited. The research adopted a survey design. The population targeted was a full-time staff of Nigerian Bottling Company Limited across various plants within Nigeria. This research employed stratified random sampling in gathering information. The research discovered that Nigerian Bottling Company Limited adopted all GSCM techniques involving reverse logistics, eco-design, eco-distribution, and eco-purchasing. However, while all other practices for the GSCM positively influence productivity, eco-design had no significant impact on the financial performance of Nigerian Bottling Company Limited.

In Kenya, Onyinkwa and Ochiri (2016) researched the impacts of GSCM techniques on corporate competitiveness in the beverage and food industry. The research employed a descriptive design that distributed questionnaires to Kenyan food and beverage companies. The study's demographic and population targeted consisted of 71 businesses enrolled with the Kenya Association of Manufacturers. Findings showed that most businesses' green supply chain operations included buying, ecological monitoring, collaboration, and greening the manufacturing phase. Findings also revealed that green supply chain methods influenced the competitiveness of beverage and food companies. However, research was limited to the food and beverage industry, mainly the private sector.

Kioko (2015) analyzed logistics companies' competitiveness and GSCM techniques. A descriptive design was employed for this research. It was directed at the Mombasa County-based logistics companies. Fifty businesses were chosen as a sample. Questionnaires were employed to gather information. The outcomes revealed that GSCM strategies were at the execution phase, and most logistic businesses were considering adoption. Using GSCM resulted in less environmental damage, lower operating costs, and a more extensive client base. However, this was conducted among logistics firms in Mombasa County and differs from commercial state corporations.

Omonge (2021) examined the impacts of GSCM techniques on Kenyan commercial banks' competitiveness. The research employed a survey design. The research discovered that GSCM techniques led to an improvement in commercial banks' competitiveness. The results indicated that banks' competitiveness due to green supply chain strategies includes greater operational effectiveness, a more extensive client base, better services, and decreased waste levels, leading to enhanced financial performance. Nonetheless, the research was conducted among commercial banks in Kenya, whose primary goal is to offer financial services.

2.4 Conceptual Framework

Figure 2.1 displays diagrammatic depictions of the relationship between the independent and dependent variables. The Independent variable was GSCM techniques, while the dependent variable was organizational competitiveness.

Independent Variables

Dependent Variable

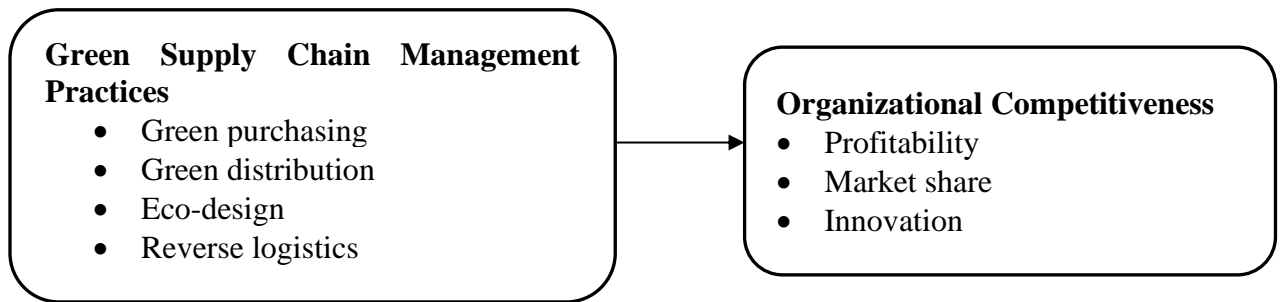


Figure 2. 1: Conceptual Framework

2.5 Summary of the Research Gaps

Numerous investigations have been done worldwide on GSCM techniques and organizational competitiveness. However, these investigations have been limited to particular institutions and nations and have used different methodologies.

Table 1: Summary of Empirical Literature and Research Gaps

Author	Study	Results	Research Gaps	The focus of this study
Marinich (2020)	The relationship between risk identification and project success.	Risk identification had statistically significant relationships with project success.	The study used a correlational research design	This study used descriptive research design
Sahoo and Vijayvargy (2021)	GSCM techniques and their influence on the performance of organizations in India	GSCM techniques had a significant effect on the performance of organizations	The research focused on organizational performance. In addition, the research was carried out in India among manufacturing industries in the private sector.	The dependent variable was organizational competitiveness. This study was conducted among commercial states in Kenya corporations.
Amjad, Abbass and Hussain (2022)	Impact of GSCM techniques on the productivity of industries and sustainable growth	GSCM operations favorably impacted the firm's performance	The study was limited to leather companies in Pakistan	This study was conducted among commercial state corporations in Kenya
Gao and Luqman (2022)	Association between GSCM techniques and competitiveness among firms during Covid 19	that GSCM strategies strongly impacted organizational competitiveness	The focus of the study was on the food industry in the private sector	This study was conducted among commercial state corporations in Kenya
Quadri (2021)	GSCM techniques and productivity of Nigerian Bottling Industry Limited	GSCM techniques such as reverse logistics, eco-design, eco-distribution, and eco-purchasing affected the performance of Nigerian Bottling Company Limited	The study was limited to Nigerian Bottling Company Limited	The focus of this study is on commercial state corporations in Kenya

Author	Study	Results	Research Gaps	The focus of this study
Onyinkwa and Ochiri (2016)	Impacts of GSCM techniques on corporate competitiveness in beverage and food industry	Green supply chain methods influenced the competitiveness of beverage and food companies. The re	search was limited to the food and beverage industry, mainly the private sector.	This study was conducted among commercial state corporations in Kenya
Omonge (2021)	Impacts of GSCM techniques on Kenyan commercial banks' competitiveness	Commercial banks' competitiveness improved as a result of green supply chain strategies	The research was conducted among commercial banks in Kenya, whose primary goal is to offer financial services.	The focus of this study is on commercial state corporations in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is a methodical strategy and process researchers employ to carry out scientific studies and gather data to address research problems (Babbie, 2017). The chapter concentrates on the study's research design, the population targeted, sampling and sample size, data collection tools, the procedure for collecting data, and the information analysis.

3.2 Research Design

This investigation involved descriptive design. Descriptive design entails gathering the information that is currently accessible regarding the state of a particular occurrence to give a thorough account of the circumstances surrounding the variables and conditions being studied without altering the variables themselves (Babbie, 2017). This research design has previously been employed in comparable research. For example, Chelangat (2017) employed descriptive design to evaluate the effective execution of sustainable purchasing methods in Kenyan federal parastatals. In addition, Mosbei (2021) used a descriptive research design to evaluate the impacts of GSCM techniques on the productivity of the beverage and food manufacturing industry. The descriptive research design was used because it is cost-effective and time-saving compared to experimental studies. Additionally, this research design was employed since it allows the researchers to examine the variables of their study in a natural setting without making any changes to them (Bhattacharjee, 2012). It also helps researchers answer questions on how, when, what, and where the research problem is.

3.3 Target Population

The unit of analysis was all Kenyan commercial state corporations. Kenya has 33 manufacturing and commercial state corporations, as shown in Appendix I (Public Service Commission, 2022). The research used a census approach and involved the entire target population of heads of supply chain departments in 33 Kenyan commercial and manufacturing state corporations. The census approach was utilized because the research population is small. This is supported by Bhattacharjee's (2012) argument that a census approach should be used for small populations.

3.4 Data Collection Instruments

The research employed primary information, which was gathered using structured questionnaires. A structured questionnaire composed of closed-ended questions. The first part of the questionnaire covered questions on the participants' demographic information, including their age, academic level, and the duration of time they had been working in their organizations. The second section covered questions on the first objective of the research, which was to determine the extent of GSCM techniques adopted by Kenyan commercial state corporations. The third section covered questions on the second objective of the research, which was to evaluate the effect of GSCM techniques on the competitiveness of organizations in Kenyan commercial State Corporations.

Research obtained data from the heads of supply chain and accounting officers in Kenya's commercial and manufacturing state corporations. Heads of supply chain departments and accounting officers are responsible for procuring goods and services for commercial and manufacturing state corporations. Hence, they were best positioned to provide information on the practices of GSCM that they use. The research included all 33 heads of supply chain departments and 33 accounting officers in Kenya's commercial and manufacturing state corporations. However, the study excluded any heads of supply chain departments working in their organization for less than one month.

3.5 Data Analysis and Presentation

The study employed descriptive statistics like percentages and frequencies in analyzing questions on respondents' demographic information. To achieve the first objective to determine the extent of GSCM techniques adoption by Kenyan commercial State Corporation, research will employ descriptive statistics involving mean, standard deviation and percentages. The research employed descriptive and inferential statistics to achieve the second objective, which is to evaluate the effect of GSCM techniques on the competitiveness of organizations in Kenyan commercial State Corporations. The descriptive statistics involved standard deviation, mean, and percentages, while inferential statistics included Pearson correlation analysis.

CHAPTER FOUR: DATA ANALYSIS, INTERPRETATIONS AND PRESENTATION

4.1 Introduction

Chapter four focuses on study findings and discussions of the results per the study's objectives. The chapter begins with response rate and general information establish the extent of GSCM practices adoption by commercial state corporations in Kenya and determine the effect of GSCM practices on the organizational competitiveness of commercial State Corporation in Kenya as well as a discussion of the findings.

4.2 Response Rate

The study's target population comprised heads of supply chain departments in 33 Kenyan commercial and manufacturing state corporations. Out of the 33 questionnaires distributed, 30 questionnaires were dully filled and returned to the researcher hence providing a response rate of 90.90%, considered sufficient for data analysis. This is supported by Bhattacharjee (2012), who suggests that a 75 percent response rate is adequate for data analysis.

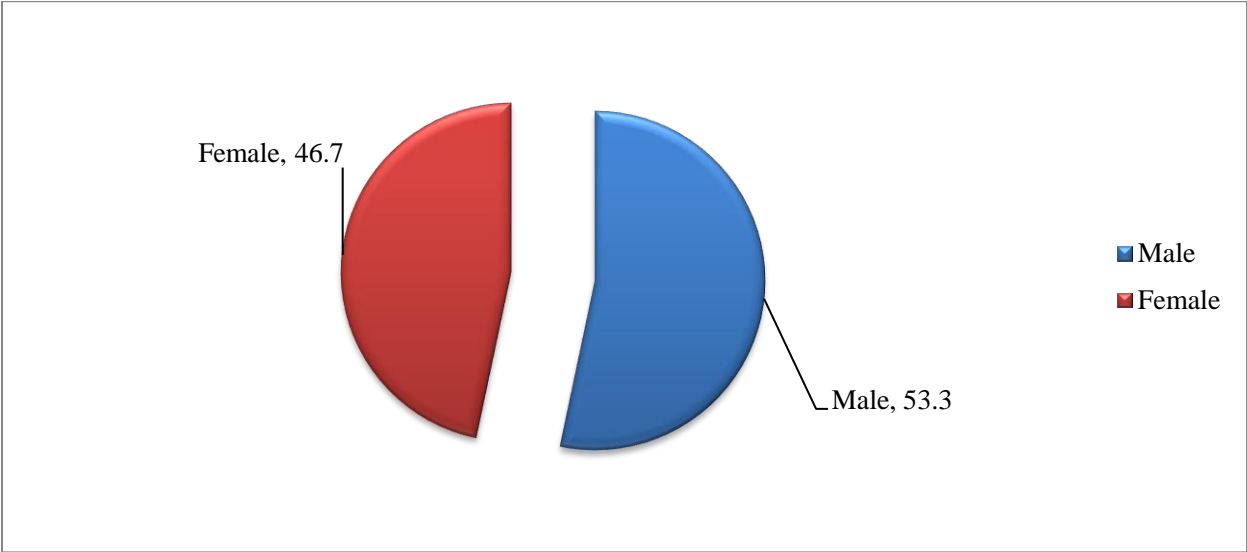
4.3 General Information

The general information of this study comprised the gender of the respondents, age bracket of the respondents, respondents' highest education level, and duration of working in their present positions.

4.3.1 Gender of the Respondents

The respondents were requested to indicate their gender. The results are shown in Figure 4.1. Figure 4.1 shows that 53.3% of the heads of the supply chain are male, and 46.7% are female. This indicates a significant representation of female and male leaders in the supply chain function in commercial state corporations. However, they make up a slightly smaller proportion than their male counterparts.

Figure 4. 1: Gender of the Respondents

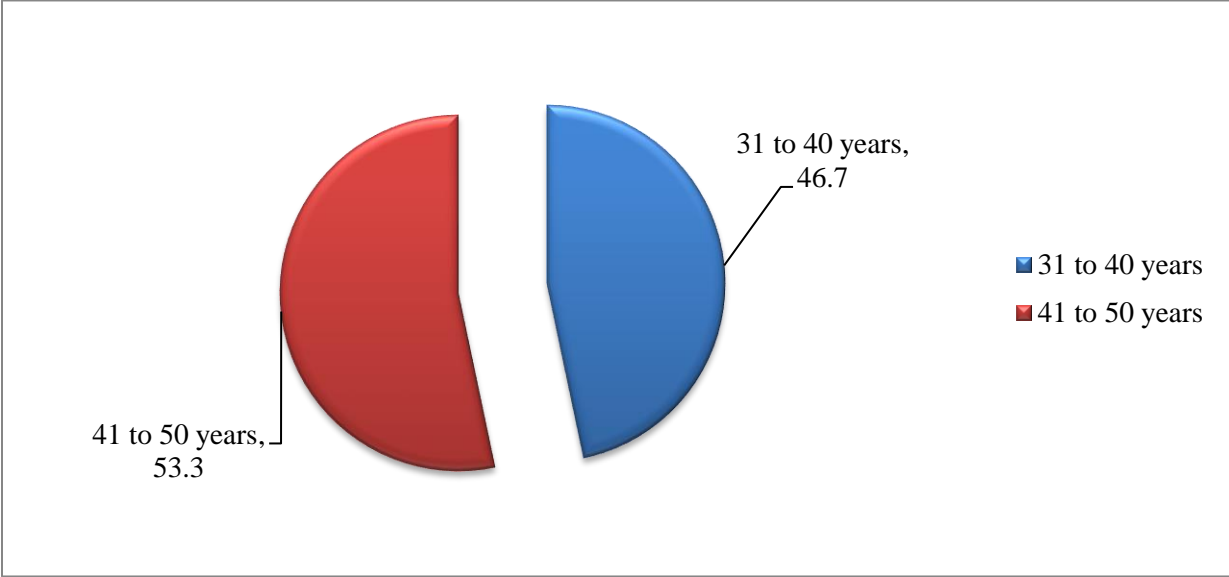


Source: Researcher, 2023

4.3.2 Age Bracket of the Respondents

The respondents were requested to indicate their age bracket—the results were as shown in Figure 4.2. Figure 4.2 shows that 53.3 percent of heads of the supply chain fall within the age bracket of 41 to 50 years, while 46.7% fall within the age bracket of 31 to 40 years. This suggests a relatively higher proportion of individuals in their mid to late career stages or with more years of professional experience. These individuals may bring a wealth of experience and expertise to the supply chain leadership role.

Figure 4. 2: Age Bracket of the Respondents

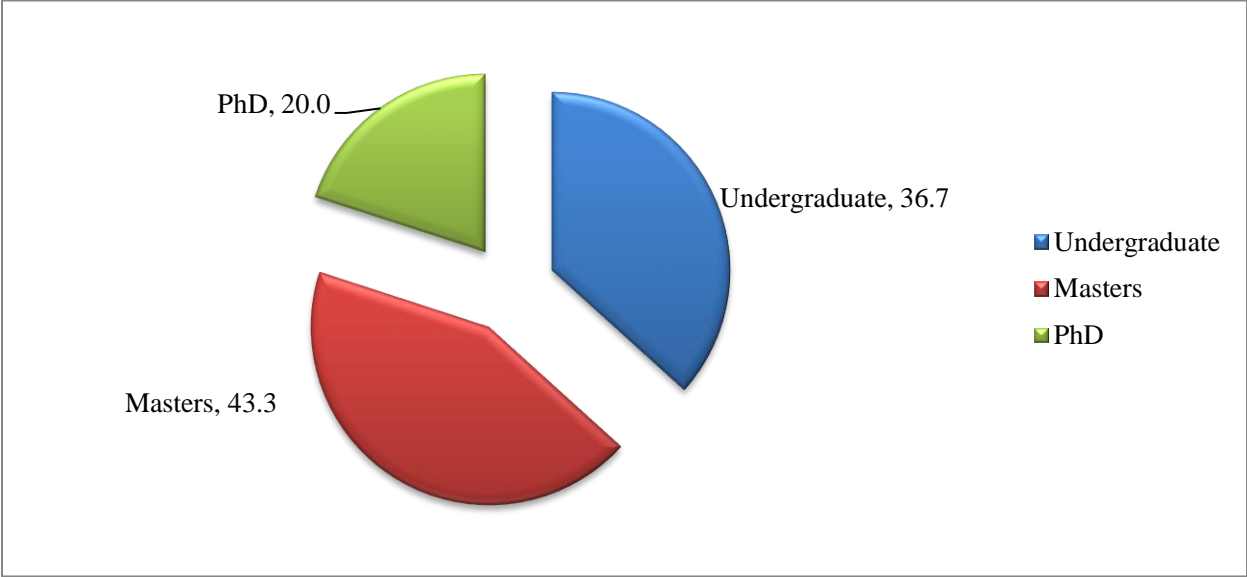


Source: Researcher, 2023

4.3.3 Respondents’ Highest Education Level

The respondents were asked to indicate their highest level of education. The results are presented in Figure 4.3. Figure 4.3 shows that 43.3% of heads of the supply chain hold a master's degree as their highest level of education, 36.7% have an undergraduate level of education, and 20.0% have attained PhDs. The results show that most supply chain heads in commercial state corporations in Kenya had master's Degrees. The distribution across different educational levels provides insights into the educational diversity within the leadership of the supply chain function.

Figure 4. 3: Respondents' Highest Education Level

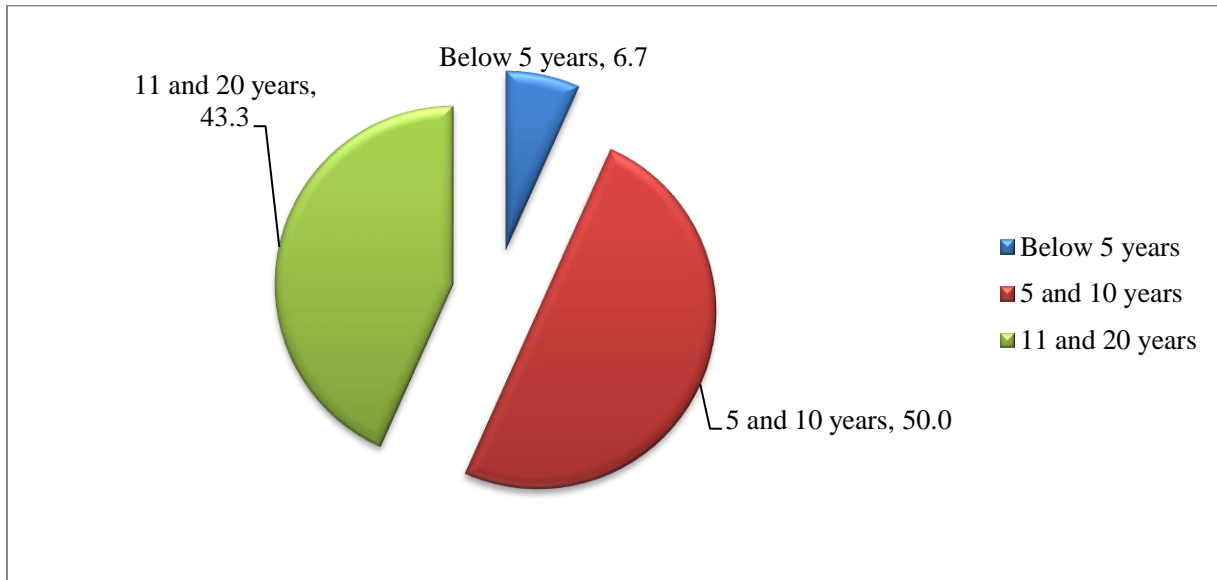


Source: Researcher, 2023

4.3.4 Duration of Working in Present Positions

The respondents were asked to indicate the duration of time they had been working in their present positions. The results are presented in Figure 4.4. Figure 4.4 shows that 50.0% of heads of the supply chain have been in their present positions for a duration ranging from 5 to 10 years. 43.3% had been in their present positions for a duration ranging from 11 to 20 years, and 6.7% had been in their present positions for less than five years. This shows that most of the supply chain heads had been in their positions for a period between 5 and 10 years. The distribution across different durations of working in present positions provides insights into the tenure diversity within the leadership of the supply chain function.

Figure 4. 4: Duration of Working in Present Positions



Source: Researcher, 2023

4.4 Adoption of Green Supply Chain Management Practices

The participants had to indicate how much their organizations had adopted the various green supply chain management practices. In the interpretation of the results, a mean of between 1 and 1.4 was considered as no extent at all, 1.5 to 2.4 was considered as low extent, 2.5 to 3.4 was considered to be moderate extent, 3.5 to 4.4 was considered as the great extent, and a mean of 4.5 and above was considered as very great extent. With a mean of 4.066 (SD=0.944), the organizations had adopted green purchasing to a great extent. In addition, the respondents indicated with a mean of 4.100 (SD=0.959) that their organizations had adopted sustainable supplier selection to a great extent. Also, a mean of 3.733 (SD=1.048) showed that their organizations had adopted reverse logistics to a great extent.

Moreover, the respondents indicated with a mean of 3.900 (SD=1.093) that their organizations had adopted eco design to a great extent. As shown by an aggregate mean of 3.950 (SD=0.984), GSCM practices in commercial state corporations in Kenya have been adopted to a great extent. The findings indicated that their organizations had also adopted green product design, green packaging, green transportation, and supplier collaboration and selection.

Table 4. 1: GSCM practices adopted by commercial State Corporations in Kenya

GSCM practices	1	2	3	4	5	Mean	Std. Deviation
Green purchasing	3.3	3.3	10.0	50.0	33.3	4.066	.944
Sustainable Supplier Selection		6.7	20.0	30.0	43.3	4.100	.959
Reverse logistics	3.3	10.0	20.0	43.3	23.3	3.733	1.048
Eco-design	3.3	10.0	13.3	40.0	33.3	3.900	1.093
Aggregate mean scores						3.950	0.984

Source: Researcher, 2023

4.5 Green Supply Chain Management Practices

This section covers the extent of utilization of green supply chain management practices. In the interpretation of the results from the Five Point Likert Scale, a mean of between 1 and 1.4 was considered as strongly, 1.5 to 2.4 was considered as disagree, 2.5 to 3.4 was considered to be neutral, 3.5 to 4.4 was considered as agree and a mean of 4.5 and above was considered as strongly agree.

4.5.1 Green Purchasing

The respondents were asked to indicate their level of agreement with various statements on the effect of green purchasing on the organizational competitiveness of commercial State corporations in Kenya. Table 4.2 shows that the respondents agreed with a mean of 3.966 (Std. Deviation = 0.808) that commercial state corporations actively seek suppliers that align with their green purchasing requirements. In addition, the respondents agreed with a a mean of 3.900 (Std. Deviation = 1.061) showed that by adopting green purchasing, their organization reduces waste and operational costs, leading to increased profitability. Further, the respondents agreed with a mean of 3.700 (Std. Deviation = 1.055) that by implementing green purchasing practices, their organization gains a competitive edge, leading to higher market share. Also, the respondents agreed with a mean of 3.600 (Std. Deviation = 1.220) that their organization's commitment to green purchasing positively influences their brand image and customer loyalty. The aggregate mean score for various statements on green purchasing was 3.792(SD=1.036), which implies that commercial state corporations had adopted green purchasing to a great extent.

Table 4. 2: Green Purchasing

Statements	N	Mean	Std. Deviation
Commercial state corporations actively seek suppliers that align with their green purchasing requirements.	30	3.966	.808
By adopting green purchasing, our organization reduces waste and operational costs, leading to increased profitability	30	3.900	1.061
We gain a competitive edge by implementing Green Purchasing practices, leading to higher market share.	30	3.700	1.055
Our organization's commitment to Green Purchasing positively influences our brand image and customer loyalty.	30	3.600	1.220
Aggregate mean scores		3.792	1.036

Source: Researcher, 2023

4.5.2 Reverse Logistics

The respondents were asked to indicate their level of agreement with various statements on the effect of reverse logistics on the organizational competitiveness of commercial State Corporation in Kenya. As shown in Table 4.3, a mean of 3.900 (Std. Deviation = 0.994) shows that implementing reverse logistics practices positively impacts the organization's overall profitability. With a mean of 3.866 (Std. Deviation = 0.924), the study found that integrating reverse logistics processes stimulates creative problem-solving and innovation within the organization. They also agreed with a mean of 3.800 (Std. Deviation = 1.214) that their organization actively seeks opportunities to optimize reverse logistics processes and reduce costs. In addition, a mean of 3.666 (Std. Deviation = 1.268) shows that their organization prioritizes efficiently handling product returns and reverse logistics operations. Further, a mean of 3.666 (Std. Deviation = 1.184) shows that effective reverse logistics processes result in improved responsiveness to customer needs, positively impacting their organization's market share. The aggregate mean score for various statements on green purchasing was 3.780(SD=1.117), which implies that commercial state corporations had adopted reverse logistics to a great extent.

Table 4. 3: Reverse Logistics

Statements	N	Mean	Std. Deviation
Our organization prioritizes the efficient handling of product returns and reverse logistics operations.	30	3.6667	1.26854
Our organization actively seeks opportunities to optimize reverse logistics processes and reduce costs.	30	3.8000	1.21485
Implementing effective Reverse Logistics practices positively impacts our organization's overall profitability	30	3.9000	.99481
Effective Reverse Logistics processes result in improved responsiveness to customer needs, positively impacting our market share.	30	3.6667	1.18419
Integrating reverse logistics processes stimulates creative problem-solving and innovation within our organization.	30	3.8667	0.92428
Aggregate mean scores		3.780	1.117

Source: Researcher, 2023

4.5.3 Green Distribution

The respondents were requested to indicate their level of agreement with various statements on the effect of green distribution on the organizational competitiveness of commercial state Corporations in Kenya. Table 4.4 shows that the respondents agreed with a a mean of 3.766 (Std. Deviation = 1.194) that their organization has adopted green distribution of products and services. They also agreed with a mean of 3.800 (Std. Deviation = 1.063) that green distribution initiatives lead to developing new and innovative environmentally friendly distribution methods. The respondents further agreed with a mean of 3.566 (Std. Deviation = 1.104) that green distribution initiatives attract environmentally conscious customers, expanding their organization's market share. In addition, the respondents agreed with a mean of 3.833 (Std. Deviation = 0.949) that integrating green distribution processes enhances customer satisfaction and loyalty, increasing market share.

Further, they agreed with a mean of 3.733 (Std. Deviation = 1.080) that effective green distribution fosters better relationships with distributors and retailers, leading to cost efficiencies and improved

profitability. In addition, the respondents agreed with a mean of 3.833 (Std. Deviation = 1.053) that green distribution supports their organization's brand image, attracting environmentally conscious customers and enhancing profitability. The aggregate mean score for various statements on green purchasing was 3.755 (SD=1.074), which implies that commercial state corporations had adopted green distribution to a great extent.

Table 4. 4: Green Distribution

Statements	N	Mean	Std. Deviation
Our organization has adopted green distribution of products and services	30	3.766	1.194
Green distribution initiatives lead to the development of new and innovative environmentally friendly distribution methods.	30	3.800	1.063
Green distribution initiatives attract environmentally conscious customers, expanding our market share.	30	3.566	1.104
Integrating green distribution processes enhances customer satisfaction and loyalty, increasing market share.	30	3.833	.949
Effective green distribution fosters better relationships with distributors and retailers, leading to cost efficiencies and improved profitability.	30	3.733	1.080
The green distribution supports our organization's brand image, attracting environmentally conscious customers and enhancing profitability.	30	3.833	1.053
Aggregate mean scores		3.755	1.074

Source: Researcher, 2023

4.5.4 Eco designs

The respondents were asked to indicate their level of agreement with various statements on the effect of eco designs on the organizational competitiveness of commercial State Corporation in Kenya. Table 4.5 shows that the respondents agreed with a mean of 3.966 (Std. Deviation = 1.066) that eco-design is a priority in their product development process. They also agreed with a mean of 3.800 (Std. Deviation = 1.214) that implementing eco-design practices positively impacts

their organization's innovation ability. In addition, the respondents agreed with a mean of 3.900 (Std. Deviation = 1.328) that eco-design initiatives lead to the development of new and environmentally friendly product offerings, promoting innovation. Further, the respondents agreed with a mean of 3.633 (Std. Deviation = 1.129) that effective eco-design processes result in innovative products that differentiate their organization from competitors, positively affecting market share. Also, the respondents agreed with a mean of 3.824 (Std. Deviation = 1.275) that eco-design initiatives result in the development of products with higher profit margins, enhancing overall profitability. The aggregate mean score for various statements on green purchasing was 3.825(SD=1.202), which implies that commercial state corporations had adopted eco designs to a great extent.

Table 4. 5: Eco designs

Statements	N	Mean	Std. Deviation
Eco-design is a priority in our product development process.	30	3.966	1.066
Implementing eco-design practices positively impacts our organization's ability to innovate.	30	3.800	1.214
Eco-design initiatives lead to developing new and environmentally friendly product offerings, promoting innovation.	30	3.900	1.328
Effective eco-design processes result in innovative products that differentiate us from competitors, positively affecting market share	30	3.633	1.129
Eco-design initiatives result in the development of products with higher profit margins, enhancing overall profitability.	30	3.824	1.275
Aggregate mean scores		3.825	1.202

Source: Researcher, 2023

4.6 Organizational Competitiveness

The respondents were requested to indicate their level of agreement with various statements on innovation in commercial State Corporations in Kenya. As shown in Table 4.6, the respondents agreed with a mean of 3.833 (Std. Deviation = 1.176) that their organization encourages creativity among employees. In addition, the respondents agreed with a mean of 3.833 (Std. Deviation = 1.205) that encouraging and fostering innovation is a priority for commercial state corporations.

Further, the respondents agreed with a mean of 3.766 (Std. Deviation = 1.194) that the ability to innovate sets commercial state corporations apart from competitors. The aggregate mean score for organizational competitiveness in commercial state corporations was 3.811(SD=1.192)

Table 4. 6: Organizational Competitiveness

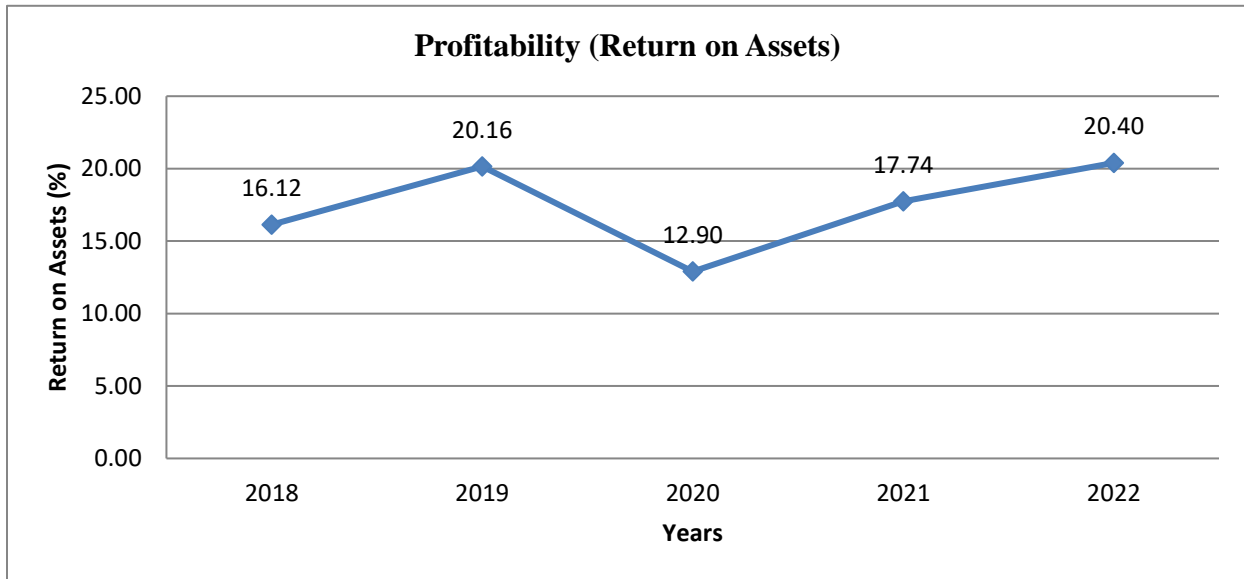
Statements	N	Mean	Std. Deviation
Our organization encourages creativity among employees	30	3.833	1.176
Encouraging and fostering innovation is a priority for commercial state corporations.	30	3.833	1.205
The ability to innovate sets commercial state corporations apart from competitors.	30	3.766	1.194
Aggregate mean scores		3.811	1.192

Source: Researcher, 2023

4.6.1 Profitability in Commercial State Corporations in Kenya

Figure 4.5 shows the trend of profitability in commercial state corporations in Kenya, measured in terms of return on assets, for the period between 2018 and 2022. As shown in Figure 4.5, in 2018, the profitability of commercial state corporations in Kenya, measured by return on assets, was 16.12 percent. There was an increase in profitability in 2019, with the Return on Assets reaching 20.16 percent. This indicates a positive performance compared to the previous year, suggesting that the commercial state corporations were able to generate a higher return on their assets. In 2020, there was a decrease in profitability, with the Return on Assets dropping to 12.90 percent. Various factors influence this decline, such as COVID-19 affecting commercial state corporations. Profitability rebounded in 2021, reaching 17.74 percent. This suggests a recovery or improved financial performance compared to the previous year, driven by strategic initiatives or changes in market conditions. The positive trend continued into 2022, with the Return on Assets further increasing to 20.40 percent. This indicates a robust financial performance, surpassing the levels observed in both 2018 and 2019.

Figure 4. 5: Trend of Profitability in Commercial State Corporations

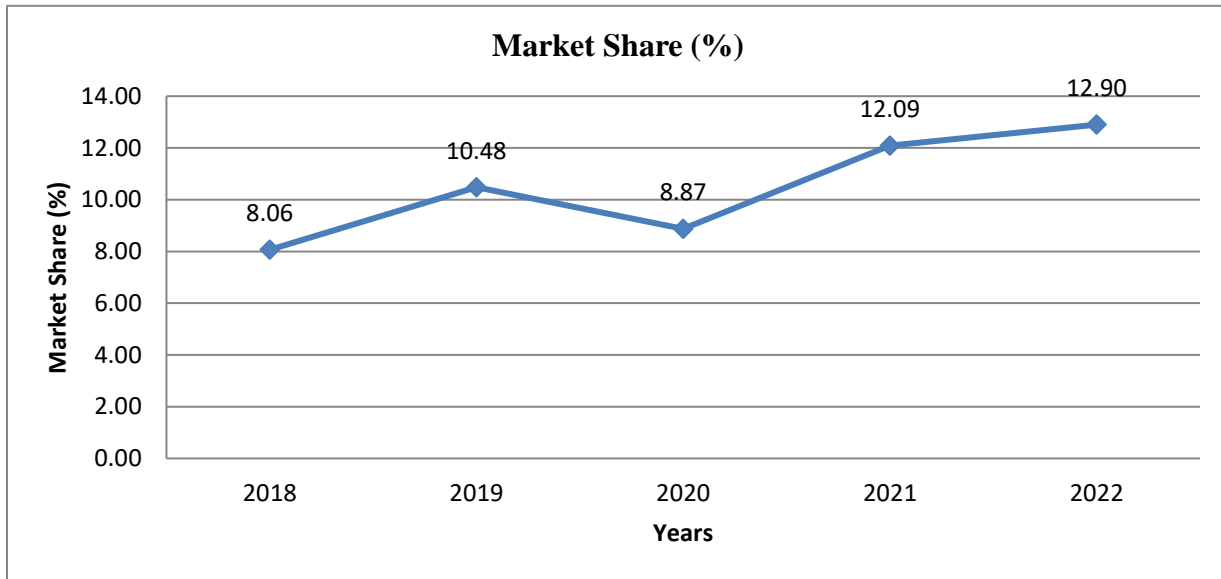


Source: Researcher, 2023

4.6.2 Market Share in Commercial State Corporations in Kenya

Figure 4.6 shows the trend of trend of market share in commercial state corporations in Kenya for the period between 2018 and 2022. In 2018, the market share of commercial state corporations in Kenya was 8.06 percent. The market share increased to 10.48 percent in 2019, indicating a significant growth compared to the previous year. In 2020, there was a slight decrease in market share to 8.87 percent compared to the previous year. The market share experienced a notable increase in 2021, reaching 12.09 percent. The positive trend continued into 2022, with the market share increasing to 12.90 percent. This suggests a sustained growth trajectory and highlights the effectiveness of the commercial state corporations' strategies in maintaining and expanding their market presence.

Figure 4. 6: Trend of Market Share in Commercial State Corporations



Source: Researcher, 2023

4.7 GSCM practices on the organizational Competitiveness of Commercial State Corporations in Kenya

The second objective of the study was to determine the effect of GSCM practices on the organizational competitiveness of commercial State Corporations in Kenya, which was analyzed using Pearson correlation analysis. Table 4.7 shows the Pearson correlation coefficient for the relationship between green supply chain management practices and organizational competitiveness. The study found that there exists a positive and significant relationship between green purchasing and the organizational competitiveness of commercial State Corporations in Kenya ($r=0.725$, $p\text{-value}=0.000$). The $p\text{-value}$ (0.000) is lower than the significance level (0.05), which means that there is a statistically significant relationship between the two variables. This means that as companies increase their adoption of green purchasing practices, their organizational competitiveness tends to improve as well.

The study established a positive and significant relationship between green distribution and the organizational competitiveness of commercial corporations in Kenya ($r=0.662$, $p\text{-value}=0.000$). The $p\text{-value}$ (0.000) is lower than the significance level (0.05), which means that there is a statistically significant relationship between the two variables. This means that as companies

implement environmentally friendly distribution practices, their organizational competitiveness also tends to increase.

In addition, the results indicated that there exists a positive and significant relationship between eco-design and organizational competitiveness of commercial State Corporations in Kenya ($r=0.671$, $p\text{-value}=0.000$). The $p\text{-value}$ (0.000) is lower than the significance level (0.05), which means that there is a statistically significant relationship between the two variables. This means that as companies incorporate eco-conscious design principles into their products and processes, their Organizational Competitiveness also tends to improve.

Further, the results indicated a positive and significant relationship between reverse logistics and organizational competitiveness of commercial State Corporation in Kenya ($r=0.513$, $p\text{-value}=0.000$). The $p\text{-value}$ (0.000) is lower than the significance level (0.05), meaning a statistically significant relationship exists between the two variables. This means that as companies adopt Reverse Logistics practices, such as product take-back and recycling, their Organizational Competitiveness tends to increase. However, the relationship is less intense than the other correlations.

Table 4. 7: Correlation Coefficients

		Organizational Competitiveness	Green Purchasing	Green Distribution	Eco- Design	Reverse Logistics
Organizational Competitiveness	Pearson Correlation Sig. (2- tailed) N	1 (2- tailed) 125				
Green Purchasing	Pearson Correlation Sig. (2-.000 tailed) N	.725** (2-.000 tailed) 30	1 30			
Green Distribution	Pearson Correlation Sig. (2-.000 tailed) N	.662** (2-.000 tailed) 30	.023 30	1 30		
Eco-Design	Pearson Correlation Sig. (2-.000 tailed) N	.671** (2-.000 tailed) 30	.131 30	-.026 30	1 30	
Reverse Logistics	Pearson Correlation Sig. (2-.000 tailed) N	.513** (2-.000 tailed) 30	.023 30	.075 30	-.010 30	1 30

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

Source: Researcher, 2023

4.8 Discussion of the Findings

4.8.1 Adoption of Green Supply Chain Management Practices

These findings, which indicate that green purchasing, sustainable supplier selection, reverse logistics, and eco-design had been adopted in commercial state corporations in Kenya to a great extent, agree with Akhtar's (2019) findings that GSCM techniques include all practices used in addressing ecological problems in supply chain involves the green design of the product, green production, green transportation, green packaging, and green storage. Similarly, the findings agree with Priyashani and Gunarathne's (2021) observation that GSCM techniques are reverse logistics, eco-design, eco-distribution, eco-purchasing, and eco-marketing. Also, the findings align with

Pakso's (2018) findings that GSCM practices include green distribution, purchasing, marketing, and reverse logistics.

4.5 Green Supply Chain Management Practices and Organizational Competitiveness

The findings, indicating that green purchasing had a positive and significant effect on organizational competitiveness of commercial State Corporation in Kenya, agree with Sahoo and Vijayvargy's (2021) findings that green purchasing has a significant effect on performance on manufacturing firms in India. The findings also agree with Amjad et al. (2022) findings that green purchasing significantly affects the competitiveness of firms in Pakistan. The findings agree with Kioko's (2015) argument that green purchasing significantly affects logistics companies' competitiveness. The findings indicating that green distribution had a positive and significant effect on the organizational competitiveness of commercial State Corporations in Kenya agree with Amjad et al. (2022) findings that green distribution significantly affects the productivity and sustainability of leather firms based in Pakistan. The findings also agree with Onyinkwa and Ochiri's (2016) argument that green distribution significantly affects corporate competitiveness in the beverage and food industry. The findings agree with Omonge's (2021) findings that green distribution affects Kenyan commercial banks' competitiveness.

The findings indicating that eco-design had a positive and significant effect on the organizational competitiveness of commercial State Corporations in Kenya agree with Zhang, Gao, and Luqman's (2022) findings that eco-design has a positive and significant effect on the competitiveness of firms in Italy. However, the findings are contrary to Adamu and Kerebih's (2019) findings that green distribution had an insignificant effect on the company's competitive advantage in Ethiopia. The findings indicating that reverse logistics had a positive and significant effect on organizational competitiveness of commercial State Corporations in Kenya are in line with Sahoo and Vijayvargy's (2021) findings that reverse logistics has a significant effect on performance of manufacturing firms in India. The findings concur with Adamu and Kerebih's (2019) findings that reverse logistics significantly affects competitive advantage in Ethiopia. The findings were, however, contrary to Quadri's (2021) findings that eco-design had no significant effect on the productivity of Nigerian Bottling Company Limited.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings, conclusions, practice recommendations, and further research on the problem—the main objective of this study was to examine the effect of GSCM practices and organizational competitiveness of commercial State Corporations in Kenya.

5.2 Summary of the Key Findings

This section presents a summary of the findings of green supply chain Management Practices adopted by commercial state corporations in Kenya, as well as the effect of green supply chain management on organizational competitiveness.

5.2.1 Adoption of Green Supply Chain Management Practices

The study found that green purchasing, sustainable supplier selection, reverse logistics, and eco-design had been adopted in commercial state corporations in Kenya to a great extent. Green purchasing involves sourcing products with eco-friendly materials, energy-efficient production processes, and considering the overall sustainability of the supply chain. Sustainable supplier selection involves choosing suppliers based on cost and quality and their commitment to environmental sustainability. Reverse logistics involves the management of product returns and the reverse flow of materials from consumers back to the point of origin. Eco-design focuses on incorporating environmental considerations into the design of products and processes and has been widely embraced by commercial state corporations. Other GSCM practices include green product design, packaging, transportation, and supplier collaboration.

5.2.2 Effect of Green Supply Chain Management on Organizational Competitiveness

The study establishes that green purchasing positively and significantly affects the organizational competitiveness of commercial State Corporations in Kenya. This implies that actively engaging in environmentally sustainable procurement practices positively contributes to the overall competitiveness of these organizations. Commercial state corporations actively seek suppliers aligned with green purchasing requirements, indicating a strategic approach to supplier selection. Green purchasing is associated with waste reduction and operational cost savings, increasing

profitability. Adopting green purchasing practices provides a competitive edge and positively influences the brand image of commercial state corporations. This, in turn, enhances customer loyalty and contributes to higher market share.

The study establishes that green distribution positively and significantly affects organizational competitiveness. Implementing environmentally sustainable distribution practices contributes to the overall competitiveness of commercial State Corporations. Commercial state corporations have adopted green distribution of products and services. Green distribution initiatives lead to developing new and innovative environmentally friendly distribution methods, showcasing a commitment to innovation and sustainability. Green distribution initiatives attract environmentally conscious customers, expanding the organization's market share. The study highlights the positive correlation between environmentally friendly distribution practices and increased market share. Integrating green distribution processes enhances customer satisfaction and loyalty, increasing market share. Effective green distribution fosters better relationships with distributors and retailers, leading to cost efficiencies and improved profitability. The green distribution supports State Corporation's commercial brand image, attracting environmentally conscious customers and enhancing profitability.

The study establishes that eco-design has a positive and significant effect on organizational competitiveness. This emphasizes the importance of incorporating environmental considerations into product development for enhanced competitiveness. Eco-design is a priority in commercial state corporations' product development process, indicating a commitment to environmentally friendly innovation. Implementing eco-design practices positively impacts the organization's ability to innovate. Eco-design initiatives lead to developing new and environmentally friendly product offerings, differentiating commercial state corporations from competitors and positively affecting market share. Effective eco-design processes result in innovative products with higher profit margins, contributing to the overall profitability of commercial state corporations.

The study establishes that reverse logistics has a positive and significant effect on organizational competitiveness. This implies that effective management of product returns and reverse logistics positively contributes to the overall competitiveness of commercial State Corporations in Kenya. Integrating reverse logistics processes stimulates creative problem-solving and innovation within

commercial state corporations. Actively seeking opportunities to optimize reverse logistics processes and reduce costs indicates a strategic focus on efficiency and cost-effectiveness. Commercial state corporations prioritize the efficient handling of product returns and reverse logistics operations. Effective reverse logistics processes improve customer responsiveness, positively impacting the organization's market share.

5.3 Conclusions

The study concludes that green purchasing, sustainable supplier selection, reverse logistics, and eco-design have been adopted in commercial state corporations in Kenya to a great extent. Other GSCM practices include green product design, packaging, transportation, and supplier collaboration. The study concluded that GSCM practices positively and significantly affect the organizational competitiveness of commercial State Corporations in Kenya. The findings indicated that green purchasing has a positive and significant effect on the organizational competitiveness of commercial State Corporation in Kenya. In addition, green distribution had a positive and significant effect on the organizational competitiveness of commercial State Corporation in Kenya. The study further revealed that eco-design has a positive and significant effect on the organizational competitiveness of commercial State Corporations in Kenya. The study also established that reverse logistics has a positive and significance on the organizational competitiveness of commercial State Corporations in Kenya.

5.4 Recommendations

The study found that green purchasing had a positive and significant effect on organizational competitiveness of commercial State Corporations in Kenya. The study recommends that commercial State Corporations formalize and integrate sustainable procurement policies that align with green purchasing requirements. This includes actively seeking suppliers committed to environmentally friendly practices. In addition, they should encourage the continuous adoption of green procurement practices, as this contributes to waste reduction and positively impacts operational costs, ultimately leading to increased profitability.

The study also established that green distribution positively and significantly affected the organizational competitiveness of commercial State Corporations in Kenya. Therefore, the management of commercial state corporations should ensure the continued adoption of green

distribution initiatives, emphasizing the development of innovative and environmentally friendly distribution methods. They should also emphasize integrating green distribution processes to enhance customer satisfaction, loyalty, and overall market positioning.

The study revealed that eco-design positively and significantly affected the organizational competitiveness of commercial State Corporations in Kenya. Thus, the management of commercial state corporations should encourage the continued prioritization of eco-design in the product development process, as it has been identified as a significant factor positively affecting organizational competitiveness. Supply chain managers should suggest strategies to promote innovation through eco-design, emphasizing the development of environmentally friendly product offerings.

The study established that reverse logistics had a positive and significant effect on the organizational competitiveness of commercial State Corporations in Kenya. To manage commercial state corporations, the study recommends optimizing reverse logistics practices, emphasizing the positive impact on overall profitability. They should encourage the stimulation of creative problem-solving and innovation within commercial State Corporations through the integration of effective reverse logistics processes. Supply chain managers should suggest continuous efforts to seek opportunities for optimizing reverse logistics, reducing costs, and improving the efficient handling of product returns.

5.5 Areas for Further Studies

The study sought to examine the effect of GSCM practices on the organizational competitiveness of commercial state corporations in Kenya. However, the study was limited to commercial State Corporations in Kenya, and hence its findings cannot be generalized to the private sector in Kenya. As such, the study suggests that further studies should be conducted on the effect of GSCM practices on organizational competitiveness among firms in the manufacturing, insurance, and financial sectors, among others. In addition, this study focused on the the effect of GSCM practices on organizational competitiveness. As such, further studies should be conducted on other factors that affect the performance of commercial state corporations in Kenya.

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APPENDICES

Appendix I: Questionnaire

This questionnaire intends to gather information on GSCM practices and commercial state corporations' performance. The information gathered will be confidential and handled with scholarly discretion and confidentiality. Please complete the questionnaire with accurate information.

Section A. General Information

1. Specify your Gender

Male Female

2. Specify your age bracket

20 to 30 years 31 to 40 years
 41 to 50 years More than 50 years

3. Indicate your highest education level

Secondary School Diploma
 Undergraduate Masters
 PhD

4. Duration of working in your present position?

Below 5 years 5 and 10 years
 11 and 20 years Above 20 years

Section C: Adoption of Green Supply Chain Management Practices

5. To what extent has your organization adopted the following green supply chain management practices? Where 1 represents No Extent At All, 2 represents Low Extent, 3 represents Moderate Extent, 4 represents Great Extent and 5 represents Very Great Extent

Green Supply Chain Management Practices	1	2	3	4	5
Green purchasing					
Sustainable Supplier Selection					
Green Distribution					
Reverse logistics					

Eco-design					
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6. Which other green supply chain management techniques have been adopted in your organization?

Section C: Green Supply Chain Management Practices and Organizational Competitiveness

7. Indicate your level of agreement with statements below in regard to the effect of green supply chain management practices on the organizational competitiveness of commercial State Corporation in Kenya Where 1 denotes strongly disagree, 2 denotes disagree, 3 denotes neutral, 4 denotes agree, 5 denotes strongly agree.

STATEMENT	1	2	3	4	5
Green Purchasing					
Commercial state corporations actively seek suppliers that align with their green purchasing requirements.					
By adopting green purchasing, our organization reduces waste and operational costs, leading to increased profitability.					
We gain a competitive edge by implementing Green Purchasing practices, leading to higher market share.					
Our organization's commitment to Green Purchasing positively influences our brand image and customer loyalty.					
Reverse Logistics					
Our organization prioritizes the efficient handling of product returns and reverse logistics operations.					
Our organization actively seeks opportunities to optimize reverse logistics processes and reduce costs.					
Implementing effective Reverse Logistics practices positively impacts our organization's overall profitability.					

Effective Reverse Logistics processes result in improved responsiveness to customer needs, positively impacting our market share.					
Integrating reverse logistics processes stimulates creative problem-solving and innovation within our organization.					
Green Distribution					
Our organization has adopted green distribution of products and services.					
Green distribution initiatives lead to developing new and innovative environmentally friendly distribution methods.					
Green distribution initiatives attract environmentally conscious customers, expanding our market share.					
Integrating green distribution processes enhances customer satisfaction and loyalty, increasing market share.					
Effective green distribution fosters better relationships with distributors and retailers, leading to cost efficiencies and improved profitability.					
The green distribution supports our organization's brand image, attracting environmentally conscious customers and enhancing profitability.					
Eco designs					
Ecodesign is a priority in our product development process.					
Implementing eco-design practices positively impacts our organization's ability to innovate.					
Eco-design initiatives lead to developing new and environmentally friendly product offerings, promoting innovation.					
Effective eco-design processes result in innovative products that differentiate us from competitors, positively affecting market share.					
Eco-design initiatives result in the development of products with higher profit margins, enhancing overall profitability.					

Section B: Organizational Competitiveness

8. Specify your concurrence level with the statements below relating to innovation in your organization.

STATEMENT	1	2	3	4	5
Our organization encourages creativity among employees					
Encouraging and fostering innovation is a priority for commercial state corporations.					
The ability to innovate sets commercial state corporations apart from competitors.					

9. What has been the trend of the following measures of organizational competitiveness for the last five years?

Measures of Organizational Competitiveness	2018	2019	2020	2021	2022
Profitability					
Market share					

Appendix II: List of Commercial and Manufacturing State Corporations

No	Commercial and Manufacturing
1	Agro-Chemicals and Food Company
2	Chemelil Sugar Company
3	East African Portland Cement Company
4	Gilgil Telecommunications Industries
5	Jomo Kenyatta Foundation
6	Kenya Airports Authority
7	Kenya Broadcasting Corporation
8	Kenya Electricity Generating Company
9	Kenya Literature Bureau
10	Kenya Ordinance Factories Corporation
11	Kenya Pipeline Company
12	Kenya Ports Authority
13	Kenya Power and Lighting Company
14	Kenya Railways Corporation
15	Kenya Civil Aviation Authority
16	Kenya Safari Lodges and Hotels
17	Kenya Seed Company Limited
18	Kenya Wine Agencies
19	Kenyatta International Convention Center
20	National Cereals and Produce Board
21	National Housing Corporation
22	National Oil Corporation of Kenya
23	National Water Conservation and Pipeline Corporation
24	Numerical Machining Complex
25	Nzoia Sugar Company
26	Postal Corporation of Kenya
27	Pyrethrum Board of Kenya
28	School Equipment Production Unit
29	South Nyanza Sugar Company
30	Telkom Kenya Limited
31	University of Nairobi Enterprises and Services Limited
32	New Kenya Co-operative Creameries Ltd
33	Kenya Electricity Transmission Company