

**E-PROCUREMENT AND SUPPLY CHAIN
PERFORMANCE OF LARGE RETAIL CHAINS IN
KENYA**

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**DOCTOR OF PHILOSOPHY IN
SUPPLY CHAIN MANAGEMENT**

**JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY**

2026

**E-Procurement and Supply Chain Performance of Large Retail
Chains in Kenya**

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**A Thesis Submitted in Partial Fulfilment of the Requirements for
Degree of Doctor of Philosophy in Supply Chain Management of the
Jomo Kenyatta University of Agriculture and Technology**

2026

DECLARATION

This thesis is my original work and has not been presented for a degree in any other University

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DEDICATION

I wish to dedicate this research thesis to my family with much love and thanks, for their perseverance and understanding during the period of my study. Thank you for encouraging and supporting me at all times. Be blessed abundantly.

ACKNOWLEDGEMENT

I thank the Almighty God for the gift of life, good health, endurance, knowledge and strength without which this work would not be in existence. My utmost appreciation goes to my supervisors Dr. Sammy Odari and Dr. Charles Ndeto who have been very patient with me and for their professional guidance throughout the entire period. I am indebted to all those who in one way or another contributed towards the successful completion of this work, not forgetting my boss for granting me the opportunity to pursue my studies. I am also grateful to all my colleagues at work for their support. Many thanks to all the students, staff and management of Jomo Kenyatta University of Agriculture and Technology for the time shared and also for allowing me access to the library.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES	xiii
LIST OF FIGURES	xv
LIST OF APPENDICES	xvi
ACRONYMS AND ABBREVIATIONS.....	xvii
DEFINITION OF OPERATIONAL TERMS	xviii
ABSTRACT	xx
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Introduction	1
1.2 Background of the Study	1
1.1.1 Global Perspective of E-Procurement Practices	4
1.1.2 Regional Perspective of E-Procurement Practices	6
1.1.3 Local Perspective of E-Procurement Practices.....	8

1.1.4 E-Procurement Practices.....	11
1.1.5 Performance of Large Retail Chains in Kenya	12
1.2 Statement of the Problem	14
1.3 Objectives of the Study	16
1.3.1 General Objectives.....	16
1.3.2 Specific Objectives	16
1.4 Research Hypothesis	17
1.5 Significance of the Study	17
1.5.1 Researchers	17
1.5.2 Policy Makers	18
1.5.3 Large Retail Chains	18
1.5.4 Supply Chain Professionals	18
1.5.5 Investors.....	18
1.5.6 Vendors.....	19
1.6 Scope of the Study.....	19
1.7 Limitations of the Study	20
CHAPTER TWO	22
LITERATURE REVIEW.....	22

2.1 Introduction	22
2.2 Theoretical Review.....	22
2.2.1 The Disruptive Innovation Theory	22
2.2.2 Resource Based Theory	24
2.2.3 The Dynamic Capability Theory	25
2.2.4 Technology Acceptance Theory	26
2.2.5 Power Theory.....	27
2.3 Conceptual Framework	28
2.3.1 Electronic Communication	29
2.3.2 Electronic Ordering	32
2.3.3 Electronic Contracting.....	34
2.3.4 Electronic Payment.....	36
2.3.5 Top Management Support	38
2.3.6 Supply Chain Performance	41
2.4 Empirical Review	42
2.4.1 Electronic Communication and Supply Chain Performance	42
2.4.2 Electronic Ordering and Supply Chain Performance	44
2.4.3 Electronic Contracting and Supply Chain Performance	45

2.4.4 Electronic Payment and Supply Chain Performance.....	47
2.4.5 Top Management Support and Supply Chain Performance	49
2.5 Critique of the Existing Literature Relevant to the Study	50
2.6 Summary of Literature Reviewed	53
2.7 Research Gaps	53
CHAPTER THREE	55
RESEARCH METHODOLOGY	55
3.1 Introduction	55
3.2 Research Philosophy	55
3.2.1 Research Design	56
3.3 Target Population of the Study.....	57
3.4 Sampling Frame	58
3.5 Census	59
3.6 Data Collection Instrument	59
3.7 Data Collection Procedures	60
3.8 Pilot Study	61
3.8.1 Reliability of the Instrument.....	61
3.8.2 Validity of the Instrument.....	62

3.9 Data Analysis and Presentation	63
3.9.1 Descriptive Statistics	63
3.9.2 Inferential Statistics	63
3.10 Diagnostic Tests	65
3.10.1 Multi Collinearity Test	66
3.10.2 Autocorrelation Test	66
3.10.3 Heteroscedasticity	66
3.10.4 Normality Test	67
3.10.5 Test of Hypotheses	68
CHAPTER FOUR.....	69
RESEARCH FINDINGS AND DISCUSSION.....	69
4.1 Introduction	69
4.2 Response Rate	69
4.3 Pilot Test Results.....	70
4.3.1 Reliability Test Results.....	70
4.3.2 Validity Test Results	71
4.4 Demographic Information	72
4.4.1 Respondents' Age.....	72

4.4.2 Respondents' Education Level	73
4.4.3 Respondents' Length of Service	74
4.5 Descriptive Statistics Analysis	75
4.5.1 Electronic Communication and Supply Chain Performance	76
4.5.2 Electronic Ordering and Supply Chain Performance	78
4.5.3 Electronic Contracting and Supply Chain Performance	79
4.5.4 Electronic Payments and Supply Chain Performance	81
4.5.5 Top Management Support and Supply Chain Performance	83
4.5.6 Supply Chain Performance	85
4.6 Qualitative Analysis	89
4.6.1 Electronic Communication	89
4.6.2 Electronic Ordering	90
4.6.3 Electronic Contracting	92
4.6.4 Electronic Payments	93
4.7 Diagnostic Tests	94
4.7.1 Multicollinearity Test	94
4.7.2 Autocorrelation Test	95
4.7.3 Heteroscedasticity	95

4.7.4 Normality Assumption	96
4.8 Correlation Analysis	97
4.9 Statistical Modelling.....	98
4.10 Simple Linear Regression	101
4.10.1 Simple Linear Regression for Electronic Communication	101
4.10.2 Simple Linear Regression for Electronic Ordering	103
4.10.3 Simple Linear Regression for Electronic Contracting.....	105
4.10.4 Simple Linear Regression for Electronic Payments	107
4.10.5 Simple Linear Regression for Top Management Support	109
4.11 Hypothesis Testing	113
4.12 Optimal Model	114
CHAPTER FIVE.....	117
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS ..	117
5.1 Introduction	117
5.2 Summary of Findings	117
5.2.1 Electronic Communication and Supply Chain Performance	117
5.2.2 Electronic Ordering and Supply Chain Performance	118
5.2.3 Electronic Contracting and Supply Chain Performance	119

5.2.4 Electronic Payments and Supply Chain Performance	119
5.2.5 Top Management Support and Supply Chain Performance	120
5.3 Conclusions	121
5.3.1 Electronic Communication	121
5.3.2 Electronic Ordering	121
5.3.3 Electronic Contracting.....	121
5.3.4 Electronic Payments	122
5.3.5 Top Management Support	122
5.4 Recommendations	123
5.4.1 Policy Recommendations	123
5.4.2 Managerial Recommendations	123
5.4.3 Operational Recommendations.....	124
5.5 Suggestions for Further Studies	124
REFERENCES.....	125
APPENDICES	133

LIST OF TABLES

Table 3.1: Unit of Observation.....	58
Table 3.2: Breusch-Pagan test for Heteroscedasticity.....	67
Table 3.3: Hypotheses Test	68
Table 4.1: Response Rate	69
Table 4.2: Reliability Test Results	71
Table 4.3: Factor Analysis for All Variables	72
Table 4.4: Electronic Communication and Supply Chain Performance	77
Table 4.5: Electronic Ordering and Supply Chain Performance.....	79
Table 4.6: Electronic Contracting and Supply Chain Performance	81
Table 4.7: Electronic Payments and Supply Chain Performance	82
Table 4.8: Management Support and Supply Chain Performance	85
Table 4.9: Supply Chain Performance	86
Table 4.10: Multicollinearity Test Statistics	95
Table 4.11: Durbin-Watson Autocorrelation Test.....	95
Table 4.12: Breusch-Pagan / Cook-Weisberg test for Heteroscedasticity	96
Table 4.13: Tests of Normality	96
Table 4.14: Correlation Coefficients.....	97

Table 4.15: Statistical Modelling	99
Table 4.16: Simple Linear Regression for Electronic Communication	103
Table 4.17: Simple Linear Regression for Electronic Ordering.....	105
Table 4.18: Model Summary for Electronic contracting.....	107
Table 4.19: Simple Linear Regression for Electronic Payments	109
Table 4.20: Model Summary for Moderation Effect.....	112
Table 4.21: Hypothesis testing	114

LIST OF FIGURES

Figure 2.1: Conceptual Framework	29
Figure 4.1: Respondents' Age.....	73
Figure 4.2: Respondents' Education Level	74
Figure 4.3: Respondents' Length of Service.....	75
Figure 4.4: Supply Chain Cost.....	87
Figure 4.5: Delivery Time.....	88
Figure 4.6: Supply Chain Reliability	89
Figure 4.7: Revised Conceptual Framework.....	116

LIST OF APPENDICES

Appendix I: Introduction Letter	133
Appendix II: Questionnaire	134
Appendix III: Secondary Data Collection Sheet	141
Appendix IV: List of Large Retail Chains in Kenya	142

ACRONYMS AND ABBREVIATIONS

B2B	Business-to-business
B2C	Business-to-consumer
BACS	Bankers Automated Communication System
EDI	Electronic Data Exchange
ERP	Enterprise Resource Planning
GDP	Gross Domestic Product
ICT	Information communication Technology
IFMIS	Integrated Financial Management Information System
IT	Information technology
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KAM	Kenya Association of Manufacturers
KIPPRA	Kenya Institute for Public Policy Research and Analysis
NACOSTI	National Commission for Science, Technology and Innovation
OLS	Ordinary Least Squares
OS	Operating System
PO	Purchase Order
RBT	Resource Based Theory
RFID	Radio Frequency Identification
RoK	Republic of Kenya
SCIT	Supply Chain Information Technology
SCM	Supply Chain Management
SPSS	Statistical Package for Social Sciences
TAT	Technology Acceptance Theory
UK	United Kingdom
USAID	United States Agency for International Development
VAT	Value Added Tax
VIF	Variance Inflation Factor

DEFINITION OF OPERATIONAL TERMS

Electronic Communication	It is the process of gathering and distributing purchasing information both from and to internal and external parties, using the internet technology (Kheng, & Al-Hawandeh, 2024).
Electronic Contracting	It is the process where organizations use electronic contracts/agreements when dealing with suppliers and other stakeholders (Angeles, 2025).
Electronic Ordering	It is the process of creating and approving purchasing requisition, placing purchase orders as well as receiving goods and services ordered, by using a software system based on internet technology (Brandon-Jones, & Carey, 2024).
Electronic Payment	It is an important mechanism used by individual and organizations as a secured and convenient way of making payments over the internet and at the same time a gateway to technological advancement in the field of world economy (Johnson <i>et al</i> , 2024).
Electronic Procurement	Refers to the use of digital technology and internet-based platforms to automate and streamline the procurement process within an organization. The primary goal of e-procurement systems is to enhance efficiency, reduce costs, and improve transparency in the procurement of goods and services (Turner & Townsend, 2024).
Large Retail Chains	Refer to expansive networks of retail stores or outlets that are owned, operated, or franchised by a single corporate entity. These chains typically have a significant presence in the market, often spanning multiple regions, states, or even countries (Jacques, <i>et al</i> , 2024)

Management Support	Refers to the active and visible backing provided by organizational leaders and supervisors to the implementation of projects, initiatives, or strategic plans (Klakota, 2025).
Supply chain Performance	It refers to the extent to which of supply chain activities meet end-customer requirements including availability of products, timely and efficient delivery of products and services as critical elements of supply chain performance (Dooley, 2024).

ABSTRACT

Despite high business turbulence recently witnessed, Retail Chains are one of the crucial retail sectors that contribute in achieving the Vision 2030. At a minimum, the industry is projected to contribute to the achievement of Vision 2030 by 10 % of GDP and 10% of total formal employment. However, based on the trend of performance, there has been a steady decrease in Retail Chains contribution to GDP from 8.0% in 2014 to 4.5% in 2018. In recent past, E-procurement has emerged as a new strategy to improve performance. However, there is no empirical evidence to support its use as a market strategy that can turn the large Chains industry's income in Kenya around with higher results. Hence this study sought to establish the relationship between e-procurement practices and supply chain performance in Large Retail Chains in Kenya. This study was guided by the following specific objectives: to examine the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya; to determine the relationship between electronic contracting and supply chain performance of Large Retail Chains in Kenya; to evaluate the relationship between electronic ordering supply chain performance of Large Retail Chains in Kenya; and to establish the relationship between electronic payments and supply chain performance of Large Retail Chains in Kenya. The study also sought to establish the moderating effect of top management support on the relationship between e-procurement and supply chain performance of Large Retail Chains in Kenya. The study was guided by technology acceptance theory, resource based theory, disruptive innovation theory The Dynamic Capability Theory and Schumpeterian Theory of Creative Destruction. The study adopted descriptive research design and positivist research paradigm. The study targeted 12 Large Retail Chains in Kenya; they formed the unit of analysis while the unit of observation was heads of procurement department, logistics department, finance department and ICT department. Therefore, the target population for this study was 240 respondents. Census method was used in this study. A total of 24 respondents from Medium size Retail Chains in Kenya participated in the pilot test which represents 10% of target population. The study used research questionnaires to collect primary data. The Statistical Package for Social Sciences (SPSS) version 25 software was used to analyze the data. Qualitative data was analysed using content analysis and presented in prose form. Qualitative data was analysed using descriptive and inferential analysis. Descriptive statistics such as frequency, percentages, and means were used. Pearson correlation coefficient was used for testing strength and direction between the independent and the dependent variables. A multiple regression model was used to test the significance of the relationship between the independent variables and the dependent variable. The findings were presented in Tables and figures. The study concludes that electronic communication, electronic ordering, electronic contracting and electronic payments have a positive and significant effect on supply chain performance of Large Retail Chains in Kenya, Kenya. The study concluded Top management support has a significant moderating effect on the relationship between e-procurement and supply chain performance of Large Retail Chains in Kenya. Based on the findings, this study recommends that the management of large retail chains in Kenya should implement integrated Electronic Data Interchange (EDI) systems to enhance

communication across their supply chains. This study also recommends that large retail chains in Kenya should implement an integrated electronic payment system that includes dedicated supplier portals. In addition, the management should actively foster strong top management support for their digital transformation initiatives.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The study focuses on the relationship between electronic procurement practices and supply chain performance of Large Retail Chains in Kenya. Specifically, the study focuses on the relationship between electronic communication, electronic ordering, electronic contracting and electronic payments and supply chain performance of Large Retail Chains in Kenya, The moderating effect of Top management support on the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya. The chapter covers background of the study, the statement of the problem, objectives of the study, research hypothesis, justification of the study, scope of the study, limitation of the study

1.2 Background of the Study

In the world of challenging and competitive business ecosystem, the use of technological tools and services to drive innovation is a necessity for both public and private organizations. It is relevant in today's world for businesses to provide clients with a cost-effective overall solution and good clients satisfaction using innovation and new technology (Muchelule, 2024). The advent of Information and Communication Technology (ICT), industries were compelled in switching business operations from the old-style to the philosophy of electronic business, electronic procurement and electronic supply chain to ensure sustainability. The private and public sectors have used Information Technology (IT) over the past decade to enhance and improve purchasing and some business processes (Koorn & Mueller, 2025).

In automating the supply chain processes, electronic procurement offers diverse advantages that almost all competitive company have to consider to ensure efficiency. In the 2000s, the Internet has substantially made feasible and supported a key resource for

the automation of the purchase process, with the added benefit of improving the processing capabilities of audiovisual aids (Githumbi, 2022). Supply chain (SC) practices by themselves will not deliver efficiency; efficiency can only be obtained by combining various supply chain practices. To imply, Dawe (2024) stated that in order to improve the supply chain's performance, extensive efforts should be made to improve all supply chain functions in an organisation, and by focusing on supply chain practices, moving away from a functional and independent system and toward a more enhanced and integrative system that is passed over to system. The result is that the effectiveness of every supply chain practice should be evaluated in terms of how the process impacts the efficient integration of the whole supply chain. Supply chain integration success may be accomplished by combining various supply chain methods and centralized organisational structures in a well-defined manner (Jacques, *et al*, 2024).

Electronic procurement practices are important ways of doing business to lower purchase prices and increase process efficiency. Collection management, e-tendering, e-auction, e-information, supplier management, order integration, catalog management, order status, dispatch notification, electronic bill, electronic payment of goods and management of contract constitute e-procurement value chain (Turner & Townsend, 2024). Efficient performance of the supply chain is vital to companies to stay in business. This efficiency maybe achieved through ensuring that all actions along the supply chain system, from one end customer to supplier, are properly synchronized and coordinated. Global purchasing has shifted its focus away from day-to-day sourcing and toward long-term, value-added purchasing and supply chain initiatives (Roma & Mc-Cue, 2024). The COVID-19 pandemic crisis is the biggest threat to the global economy since the economic crisis in 2019, electronic procurement has obtained much attention especially with the emergence of new technology. Simultaneously, it is responding to the problems and opportunities of electronic procurement by using the Internet to trade for products and services (Chepkwony, Kipkemboi & Lagat, 2023).

Many improvements have been made on the electronic information side: collecting and distributing purchasing information via internet technology from and to internal and

external parties, and using internet powered devices to purchase products and services from a variety of known and unknown vendors has improved sales processes (Vaidya, Sajeev & Callender, 2023). E-Market-Sites: Creates value chains by extending web-based ERP. According to Jessop, (2023) buying communities may link to suppliers' supply chains and buyers' financial systems to acquire commodities and services from preferred vendors, add shopping carts, make enquiries and receive permissions, accept orders, and process electronic invoicing. E-procurement solutions have arisen during the previous two decades. Despite the technology industry's exponential expansion, It is estimated that organizations will only employ around 25% of their solution capacity, partially owing to a lack of technical expertise or financial resources, but also because solutions are likely misaligned with expanding purchasing demands. Regardless of the listed limitations, electronic procurement has apparent prospective benefits that may be used to make a business case for financial support, increasing usage, or new alternatives investment (Koorn & Mueller, 2025).

The government of Kenya, through the Vision 2030 medium term plan 2013 - 2017, considered retail sector among the six priority sectors projected to make up the largest part of the country's Gross Domestic Product (GDP) and to create approximately fifty (50) per cent of total formal employment. Indeed, the vision 2030 singled out retail sector as one of the economic pillars with potential to improve the prosperity of all Kenyans by achieving a 10 per cent GDP growth rate by the end of 2030 (Muchelule, 2024). Further, the government expects the retail sector to be a key gateway to the market for goods from the manufacturing sector which is expected to contribute 15 percent of GDP by 2022 from 8.4 percent in 2017 (KAM, 2025). However, a closer look at the recent trends characterizing Kenya's retail sector reveals that the growth rate has been on the decline trajectory as a result of systematic failures of supply chain management (World Economic Situation Prospects [WESP], 2020). For example, the growth rate declined from 8.4 percent in the year 2017 to 3.6 percent in 2016 and by 2019, the growth rate stood at 3.9 percent signifying the inability of the sector to meet the Vision 2030. The decline in growth and other factors like mismanagement further led to the closure of a number of

giant Retail Chains outlets (e.g Nakumatt, Ukwala, Uchumi, Tuskes) which has affected both the shareholders and the employees, who lose jobs adding to an already growing pool of unemployed in the country (WESP, 2020).

Procurement covers every stage of purchasing, from the initial identification of a requirement, through the tendering process, to the payment and potentially the contract management (Porter & Millar, 2024). According to Croom and Brandon (2024), adoption of e-procurement technology in an organization enables a firm to organize its interactions with its most crucial suppliers, a set of built in monitoring tools to help control costs, assure maximum supplier performance and keeping an open line of communication with potential suppliers during a business process all of which contribute to the attainment and sustenance of competitive advantage. Bryan (2024) argues that there is a direct relationship between performance contracting and corporate performance. This study therefore advances e-procurement practices as a possible solution to supply chain performance gap with ICT infrastructure as a moderating factor in the retail sector in order to align the sector's contributions to the vision 2030.

1.1.1 Global Perspective of E-Procurement Practices

Over the years the world has seen a massive change in the management of businesses; from organizations relying more on specialized in-house service functions, conventional multipurpose service functions to outsourced services (Knudsen, 2024). Information technology (IT) has helped many businesses in improving their operational efficiencies by providing internet based solutions for their supply chain networks and electronic solutions (Kar, 2021). From the late 1990s a raft of new e-commerce technologies emerged which revolutionized working practices, threatening existing business models (Dooley, 2023). As a result of this development on the use of e-commerce in business-to-business market, there has been significant adoption of new supply chain related technology and applications by organizations globally (Croom, 2024).

In Sri Lanka, Jayawardhena and Jayaratne (2025) reported a significance impact on cost reduction especially on eliminating paperwork and associated errors, thus improving reliability and transparency of the procurement process. E-procurement also resulted in reduced customer complaints, reduced reverse logistics cost, improved fill rate and lead time reduction. Reduced workload resulted in improved satisfaction rate among all the stakeholders including customers, employees and suppliers. However, lack of compatibility, poorly developed IT security systems, and lack of a common technology across firms have impacted the effectiveness of e-procurement

In Malaysia, Mohd-Nawi, *et al* (2024) revealed that e-procurement systems had resulted in improved quality of services offered and improved supplier relationships. The findings reported that since the introduction of the e-tendering, construction firms reported improved contract fulfilment, significant cost reduction in terms of elimination of processing purchase orders, improved competitive bidding, reduced technical and financial risks, and reduction in the cost of purchasing goods. Electronic bidding was associated with increased supplier participation, better pricing and enhanced transparency

As part of its major e-government initiative, Singapore decided in 1998 to develop an ambitious e-procurement portal, moving the public sector procurement process online (Government Electronic Business [GeBIZ]) (2020). It extends from publicizing the tender to the delivery of bids to the invoicing and payment of the suppliers' invoices and remains the "one-stop, non-stop" centre for government and business to interact.

As of December 2015, there were more than 9,000 users in the public sector from 120 government agencies that were using GeBIZ for their procurement and other e-commerce activities (Kheng & Al-Hawamdeh, 2021). By 2018, there had been an enormous amount of activity via GeBIZ: 10,000 buyers; 79,000 quotations worth SGD900 million; 144 agencies regularly participating in GeBIZ; 181,000 orders placed, worth SGD2 billion; 5,800 tenders floated, worth SGD28.2 billion; and 42,000 suppliers that had participated in bids. E-procurement systems enable organizations to find suppliers globally (Quelch & Klein, 2020).

Jaipur Rugs (JR) is a company based in India that sells exclusive rugs to customers in over twenty countries (Jaipur, 2024). JR uses CAD software to develop innovative carpet designs which have resulted in improved sales and reduction of cost of operations (Chopra, 2025). The Thai Government has implemented e-government procurement (E-GP) to be more efficient and to enhance procurement governance and reduce corruption (Knudsen, 2024). A survey on food and beverage industry on the use of e-procurement in Australia (Williams & Hardy, 2024) showed that supply chain automation has become an increasingly strategic topic in companies in different industries across the private and public sectors. Compared to a similar survey conducted two years before, e-procurement implementations had increased in both scope and reach. More companies were investing in the electronic support of supply chain functions and processes.

Despite the benefits that can be achieved from a successful e-procurement implementation in the public sector, the business press has reported a number of failures of e-procurement initiatives in a number of state agencies in the USA, UK and New Zealand in recent years. As observed by Dai and Kauffman (2025) e-procurement will result in large investments of time and money, without absolute certainty that its full potential will be achieved every time.

1.1.2 Regional Perspective of E-Procurement Practices

Globalization has resulted in expansion of market horizon to a number of firms in Africa (Croom, 2024). It has further opened up African markets to global firms which have in turn mounted extreme competitive pressure on African products (Pires & Stanton, 2023). Consequently, a number of firms have embraced supply chain automation in an attempt to take advantage of the opportunities in the global market and fight stiff competitions emanating as a result of globalization (World Bank, 2022). In an effort to reduce corruption, improve transparency and efficiency, and minimize potential collusion among bidders, several countries are establishing electronic government procurement systems, also known as e-GP systems.

Rwanda was the first African country to implement an e-GP system nationally, and in a shorter span of time compared to other countries (Mitchell, 2023). The system is already delivering some benefits to users for instance, has reduced time and allowed cost savings for both government officials and contractors, as the single online portal provided all the documents and information required, eliminating the need for in-person visits and printing costs (Croom, 2024). The system also contributed in reducing fraud and corruption as there is no personal contact with bidders, and when complaints are received, these are responded to through the E-Procurement system in a transparent way (Boer, Harink, & Heijboer, 2024).

In South Africa for example, Trident Plastics (Pty) Ltd adopted e-tendering to reduce their cost of procurement, increase procurement turn around and explore other sources (Trident Plastics, 2024). In Ghana, Permafix Industries Ltd adopted e-payment system which resulted on efficiency in services to their vendors, payment traceability and audit trail with consequential effect of fraud management (Permafix Industries, 2024). According to Saleemi (2025) introduction of e-procurement system in food and beverage industry in Tanzania is part of e-procurement implementation. This new system which involves the use of e-procurement will among others enable suppliers to sell goods and services to the food and beverage industry through the internet.

In Nigeria, Kareem, Owomoyela, and Oyebamiji (2024) sampled 8 Retail Chains located in Ibadan city. Data was analyzed using regression analyses methods with findings showing that e-commerce adoption was associated with enhanced service operations, cost reductions and improved profit generation. The study also showed that e-commerce helps businesses understand international competitors and recommended increased IT training to improve systems utilization. In Uganda, Munubi, Kinanga and Ondiba (2024) showed that electronic procurement improved supplier selection, improved tender information dissemination to a wide range of potential suppliers, and bid evaluation, relationship management through online interactions, and improved decision making based on informed supplier bid assessment

1.1.3 Local Perspective of E-Procurement Practices

In Kenya, e-procurement has attracted a lot of interest in the recent past. The government has set up ICT board to spearhead the ICT revolution in the country which is a positive signal for e-procurement (Muchelule, 2024). Since then there has been a lot of pressure and reforms to ensure all public procurement functions are conducted online (GoK, 2024). The government has adopted integrated financial management information system (IFMIS) as the platform for conducting all public procurement in order to streamline the procurement system, increase efficiency and control (Githumbi, 2022).

In addition, British American Tobacco, Coca cola, Kenya Ports Authority, Unilever, Bamburi Cement, Magadi Soda, Williamson Tea, Homegrown and Kenya Medical Supplies Agency have all embraced the concept in their operation in an attempt to increase their performance (USIAD, 2024). Despite heavy investment in terms of human capital and infrastructure, there has been limited empirical research linking e-procurement and firm performance to justify continue investment (Muchelule, 2024) thus the need for the study on the relationship of e-procurement on performance of the Large Retail Chains in Kenya.

Recent trends characterizing Kenya's retail sector reveals that the growth rate has been on the decline trajectory as a result of systematic failures of supply chain management. For example, the growth rate declined from 8.4 percent in the year 2017 to 3.6 percent in 2016 and by 2019, the growth rate stood at 3.9 percent signifying the inability of the sector to meet both the Vision 2030 and the Big4 agendas goals. The decline in growth further led to the closure of a number of giant Retail Chains outlets which has affected both the shareholders and the employees, who lose jobs adding to an already growing pool of unemployed in the country. This study therefore advances e-procurement practices as a possible solution to supply chain performance gap with ICT infrastructure as a moderating factor in the retail sector in order to align the sector's contributions to the vision 2030 and the Bottom-up Economic Transformation Agenda goals.

The efficacious management of retail sector is based on the effective application of electronic tools in the operation activities of the retail sector, especially in the acquisition of the merchandise. As a result, Jacques, Samantha, Watson and Aimee (2024) promote electronic procurement platforms for possible considerations in streamlining and controlling upstream activities of supply chain with a view of increasing performance in Retail Chains setups through proper synchronization and coordination of activities across the entire supply chain network, ranging from suppliers to end-customers. Similarly, Turner and Townsend (2024) noted that e-procurement practices are capable of centralizing and automating interactions between organizations, customers, and other value chain partners to improve speed and efficiency of the supply chain management.

Roma and Mc-Cue (2024) define e-procurement, which is also known as electronic procurement or supplier exchange as the purchase and sale of merchandise, equipment and services through a web interface or other electronic networked systems. Jacques, Samantha, Watson and Aimee (2024) define e-procurement as the B2B/B2C or business-to-state purchase and sale of supplies, works, and services through the web as well as other electronic information and networking systems, such as electronic data interchange and enterprise resources. Chepkwony, Kipkemboi and Lagat (2023) observed that e-procurement tools provide platform for possible information sharing; which according to Vaidya, Sajeew and Callender (2023) is the extent to which valuable and copyrighted information is communicated to supply chain partners' thus potential efficiency and possibly high performance of the supply chain. According to Turner and Townsend (2024) Supply chain performance refers to the measurement and evaluation of the effectiveness and efficiency of a supply chain in meeting its objectives and delivering value to customers and stakeholders. The performance of a supply chain is critical for the success of any business or organization, as it directly impacts customer satisfaction, operational costs, and overall profitability. Margaret Rouse (2024) argues that firms with better Top management support are capable of deploying the right e-procurement practices for possible maximization of supply chain performance through enhanced operation controls

and information sharing. Thus, the study proposes to use Top management support as a moderating factor between e-procurement and supply chain performance.

In Kenya, the rollout of the e-Government Procurement (e-GP) system has made significant strides in enhancing transparency, efficiency, and accountability in the procurement process, especially for public sector organizations. The system aims to automate and streamline procurement activities, minimizing manual interventions that often lead to inefficiencies, corruption, and delays. While the e-GP system is primarily focused on public procurement, its influence on the broader supply chain, including large retail chains, is also significant (Mbuthia & Rotich, 2024). The e-GP system in Kenya is part of the government's broader effort to digitize public services and improve service delivery. It integrates various procurement stages, including tendering, contract management, and supplier payments, into a single digital platform. This system enhances accountability by providing real-time access to procurement information, reducing the likelihood of fraud and corruption. Retail chains in Kenya, especially those involved in large-scale sourcing from the public sector, benefit from the increased transparency and efficiency of the e-GP system (Wisner *et al.*, 2025).

However, the implementation of e-GP in Kenya has faced some challenges. The initial rollout of the system was slow, particularly in terms of training public sector employees and suppliers on how to use the platform. Additionally, some suppliers, particularly small businesses, struggled to adapt to the digital processes, which required both technological infrastructure and digital literacy. Despite these challenges, the government has made efforts to address them by providing training and incentives to encourage adoption (McConnell, 2025). For large retail chains in Kenya, the e-GP system has created opportunities for improved collaboration with suppliers, especially for those sourcing goods and services from the public sector. The system facilitates faster procurement cycles, better inventory management, and streamlined communication between retailers and their suppliers. Additionally, retailers can access a wider range of suppliers through the e-GP system, improving competition and reducing procurement costs (Kenya Retail Sector Report, 2020).

1.1.4 E-Procurement Practices

E-procurement practices refer to the use of information and communication technologies to automate and integrate procurement activities across the supply chain (Wang *et al.*, 2024). These practices encompass a range of electronic processes that support sourcing, purchasing, contracting, and payment transactions between organizations and their suppliers. E-procurement has increasingly become a strategic tool for enhancing efficiency, transparency, and responsiveness within supply chains, particularly in highly competitive retail environments (Wong *et al.*, 2024).

According to IvyPanda (2020) One of the key e-procurement practices is electronic communication, which involves the use of digital platforms such as Electronic Data Interchange (EDI), supplier portals, and web-based communication systems to facilitate real-time information sharing between buyers and suppliers. Effective electronic communication enhances coordination, reduces information asymmetry, minimizes errors, and improves decision-making across the supply chain. In large retail chains, timely exchange of demand forecasts, delivery schedules, and inventory data is critical for improving supply chain performance (Angeles, 2025).

Kilay, Simamora, and Putra, (2022) indicated that electronic ordering entails the use of electronic systems to generate, transmit, and process purchase orders. Electronic ordering systems are often integrated with inventory management and enterprise resource planning (ERP) systems, enabling automated replenishment, improved order accuracy, and reduced procurement cycle times. By enhancing order visibility and reducing manual intervention, electronic ordering contributes to improved operational efficiency and cost control.

Electronic contracting is also a critical component of e-procurement practices. It involves the creation, negotiation, execution, and management of contracts through electronic platforms. Electronic contracting enhances transparency, traceability, and compliance while reducing administrative costs and contract processing time. Advanced technologies

such as blockchain further strengthen electronic contracting by improving security, auditability, and trust among supply chain partners (Flynn *et al.*, 2025).

Finally, electronic payments refer to the use of digital payment systems to settle procurement-related transactions between buyers and suppliers. These systems include electronic funds transfers, online banking platforms, and integrated supplier payment portals. Electronic payments improve transaction speed, reduce payment errors, and enhance financial accountability. Timely and reliable electronic payments also strengthen supplier relationships, which are essential for sustained supply chain performance (Bottani *et al.*, 2025).

Overall, e-procurement practices integrate technology into procurement processes to create efficient, transparent, and responsive supply chains. For large retail chains in Kenya, the adoption of effective e-procurement practices is increasingly viewed as a critical driver of supply chain performance and competitive advantage (Kilay, Simamora, & Putra, 2022).

1.1.5 Performance of Large Retail Chains in Kenya

According to the Kenya Retail Sector Report (2020) themed “E-commerce Shaping the Retail Sector” the Kenyan retail sector’s performance dropped slightly with average rental yields declining by 0.3% points to 6.7% in 2020, from 7.0% in 2019, while the occupancy rates declined by 0.7% points to 76.6% in 2020, from 77.3% in 2019. In 2019, the retail sector performance in the Nairobi Metropolitan Area declined by 5.4% and 4.7%, respectively to record rental yields of 8.0% and occupancy rates of 75.1%, respectively (Kenya Retail Sector Report, 2025). In 2020, the retail sector performance recorded a decline of 0.3% and 0.7% points in average rental yields and occupancy rates, respectively, coming in at 6.7% and 76.6%, respectively (Kenya Retail Sector Report, 2020).

Retail Chains contribute immensely to the socio economic wellbeing of a country. Research shows that the potential economic impact of a new Retail is vast (Wisner et al., 2025). The most important is the new Retail Chains' ability to create jobs and income. National data shows that a new Retail Chains can have an employment multiplier effect on the economy. Furthermore, between 50 and 75 percent of directly created jobs are filled locally, helping to pump income into the local community (McConnell, 2025). Thirdly, opening a new Retail Chains has an immediate and significant effect on commercial and residential real estate. Data from the Pennsylvania Fresh Food Financing Initiative indicates that opening a new Retail Chains instantly boosts home values by between four and seven percent. The new Retail Chains acts as an anchor retailer, attracting smaller Retail Chains and spur economic development (Wisner *et al.*, 2025).

With the aforementioned significance of Retail Chains in an economy, Kenyan Vision 2030 considers Retail Chains as one of the most important retail sector in its achievement. The sector accounts for approximately 10 percent of the GDP and 10 percent of formal employment (ROK, 2021). KIPPRA (2024) adds that, the sector serves as an important tax collection point as value added tax (VAT) is gathered at the Retail Chains level in this country; and similarly contributes to the social welfare of consumers by offering goods at reasonable prices (ROK, 2021; KIPPRA, 2024). The vision emphasizes the need to improve performance and raise productivity in Retail Chains trade as the economy heads towards a 10 percent growth rate (Sire & Muturi, 2024). Nevertheless, unpaid suppliers (Mburu, 2024) have mired the retail sector with several challenges with a number of them enduring worrisome financial woes, accompanied by empty shelves, closure of branches both locally and regionally and complaints. As a result, the contribution of the retail sector to the GDP has been progressively declining; standing at 8.0 percent in 2018 and further declining to 7.5 percent as at 2017 (PWC, 2023) putting doubt on the sector's ability to effectively contribute to the realization of the country Vision 2030. This then calls for a new approach with potential of improving performance of the Retail Chains in order to realize Vision 2030 milestones (GoK, 2021).

However, Mbuthia and Rotich (2024), report that an alarming two thirds of Retail Chains firms in Kenya drop out of the growth curve of the product lifecycle with cases of Retail Chains shutting down. This has resulted in criticism of practices being used by the management of Retail Chains (Mburu, 2024). Sire and Muturi (2024) assert that, the performance of Retail Chains depends a great deal on the service levels provided by stock management and as reported by Mwiriki (2024), a number of Retail Chains in Kenya have started automating their procurement systems in an attempt to improve their performance. From the studies above, the impact of E-Procurement Practices and Top management support on Supply Chain Performance of Large Retail Chains in Kenya is yet to be empirically conclusively confirmed thus this study. As advised by Nyagah and Patrick, (2024), for Retail Chains firms in Kenya to meet the goals of Vision 2030, they need to aspire to achieve and guarantee product availability, on-time and efficient delivery of products and services to the end-customers. Thus this study on electronic procurement practices, Top management support and supply chain performance.

1.2 Statement of the Problem

In the dynamic and competitive landscape of the retail industry in Kenya, Large Retail Chains face the imperative of optimizing their supply chain performance to meet customer demands efficiently (Bryan, 2024). Research has shown that the supply chain performance of the Kenya retail industry has been on the decline. Juma, (2020) indicates that the Retail Chains industry's dominance structure has shifted dramatically, with the lesser companies of the past being leading players and the biggest actors of yesteryear either extinguished or struggling to stay afloat. For instance, Uchumi has become a shell of its past, shutting down Nakumatt, Ukwala, and Jack and Jill's shops. Several existing dominants have trouble staying afloat, primarily because of overheads (Kitheka and Ondiek, 2020). This has seen a steady decrease in Retail contribution to GDP from 8.0% in 2014 to 4.5% in 2017 (Mburu, & Njeru, 2024). Despite high business turbulence recently witnessed, Retail Chains are one of the crucial retail sectors that contributes in achieving the Vision 2030 and the government's Bottom-up Economic Transformation Agenda for socio-economic development. At a minimum, the industry is projected to contribute to the achievement of

Vision 2030 and the Government's Big 4 agenda by 10 % of GDP and 10% of total formal employment (GoK, 2020).

According to Croom and Brandon (2024), e-procurement in an organization enables a firm to organize its interactions with its most crucial suppliers, a set of built in monitoring tools to help control costs, assure maximum supplier performance and keeping an open line of communication with potential suppliers during a business process all of which contribute to the attainment and sustenance of competitive advantage. Bryan (2024) argues that there is a direct relationship between e-procurement and organization performance. It is therefore essential to establish the relationship between e-procurement and supply chain performance of Large Retail Chains in Kenya. Top management support is essential for the successful implementation of electronic procurement systems. Supportive leadership ensures that the necessary resources, both in terms of finances and human capital, are allocated to facilitate the smooth adoption of electronic procurement practices (Mwiriki, 2024). The retail industry, like many others, often faces resistance to change when implementing new technologies. Top management support can mitigate this resistance by fostering a positive organizational culture that embraces innovation. A supportive management team can communicate the benefits of electronic procurement to employees and address concerns, facilitating a more seamless transition (Wisner *et al.*, 2025).

Various studies have been conducted on e-procurement and organization performance. For instance: Kheng and AlHawandeh (2021) investigated the adoption of e-procurement in Singapore and presented stumbling blocks to this initiative from the point of view of Singaporean firms; Metoh (2025) did a study on the factors affecting implementation of electronic procurement system in the public sector: a case of National Aids Control Council; Muturi (2020) studies automation of inventory operations on performance of retail firms. Also, E-inventory management systems have been hypothesized to have significant effect on performance of retail firms (Mburu, 2024; Dedeké & Watson, 2024) through reduction of operation costs, effective control of inventories, untying working capital and improvement of customer services (Harshitha, 2024). Nevertheless, limited studies established the relationship between electronic procurement and supply

chain performance. To fill the highlighted gaps, the current study seeks to the relationship between electronic procurement (electronic communication, electronic contracting, electronic ordering, and electronic payments) and supply chain performance of Large Retail Chains in Kenya

1.3 Objectives of the Study

1.3.1 General Objectives

The study's general objective was to establish the relationship between electronic procurement and supply chain performance of Large Retail Chains in Kenya

1.3.2 Specific Objectives

This study was guided by the following specific objectives:

- i. To examine the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya.
- ii. To determine the relationship between electronic ordering and supply chain performance of Large Retail Chains in Kenya.
- iii. To evaluate the relationship between electronic contracting and supply chain performance of Large Retail Chains in Kenya.
- iv. To establish the relationship between electronic payments and supply chain performance of Large Retail Chains in Kenya.
- v. To assess the moderating effect of top management support on the relationship between e-procurement Practices and supply chain performance of Large Retail Chains in Kenya.

1.4 Research Hypothesis

This study was guided by the following proposed hypotheses:

- H01:** Electronic communication has no significant relationship with supply chain performance of Large Retail Chains in Kenya
- H02:** Electronic ordering has no significant relationship with supply chain performance of Large Retail Chains in Kenya.
- H03:** Electronic contracting has no significant relationship with supply chain performance of Large Retail Chains in Kenya
- H04:** Electronic payment has no significant relationship with supply chain performance of Large Retail Chains in Kenya.
- H05:** Top management support has no moderating effect on the relationship between e-procurement practices and supply chain performance of Large Retail Chains in Kenya.

1.5 Significance of the Study

The findings of this study are beneficial to researchers, procurement professionals, academicians, policy makers, vendors and investors.

1.5.1 Researchers

This study assists researchers in the area of e-procurement, as it serves as a point of reference for the researchers as they conduct studies in this and other related topics. Procurement being an area that is attracting a lot of professional, academic and scholarly attention, this project can be used as a reference to promote the general academic and scholarly input to the understanding of this body of knowledge. The study also assists in confirming the theoretical assumptions on the impact of e-procurement on supply chain performance.

1.5.2 Policy Makers

The findings of the study equally enable policy makers to devise e-procurement policies that are based on empirical evidence. The study further informs policy makers on how best to formulate policy on prudential guidelines also adopt best practices in order to maximize on e-procurement. It also informs them on ways in which top management support affects supply chain performance in Large Retail Chains in Kenya through its effect on e-procurement practices.

1.5.3 Large Retail Chains

The findings of this study also assist the Large Retail Chains in Kenya to understand the factors influencing the success of e-procurement initiatives as well as the various challenges that they face in implementing e-procurement technologies within their organizations. The findings assess issues on e-procurement and what strategies to put in place i.e. the soft-wares to adopt in the procurement systems, procuring entities are also better enlightened on the existent attitudes helping make informed choices

1.5.4 Supply Chain Professionals

The study is helpful in addressing the factors identified so as to increase the usage of e-procurement in enhancing supply chain performance among the population identified. The government find the information useful in diagnosing the problems affecting the financial sector and come up with policies that support electronic procurement adoption to enhance supply chain performance.

1.5.5 Investors

Investors in the Large Retail Chain sector may use the information from this study to make critical decisions regarding electronic procurement for cost minimization and profit maximization. They can use the findings as a benchmark for best practice in procurement practices. The findings of the study further enlightens on the benefits and the positive

impact of adopting e-procurement in their procurement systems to promote transparency and effectiveness. This also highlights them in terms of investments required to successfully form an integrated partnership and potential pitfalls likely to be encountered during the process.

1.5.6 Vendors

E-procurement websites allow qualified and registered vendors to look for buyers and other registered users to look for both buyers and sellers of goods and services. Buyers or sellers can initiate transactions or can be initiated completed by use of E-procurement websites. Ongoing purchases may qualify customers for volume discounts or special offers.

1.6 Scope of the Study

The study focuses on the relationship between electronic procurement and supply chain performance of Large Retail Chains in Kenya. Specifically, the study focuses on the relationship between electronic communication, electronic ordering, electronic contracting and electronic payments and supply chain performance of Large Retail Chains in Kenya. The moderating effect of Top management support on the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya. Supply chain performance was measured in terms of both financial and non-financial metrics (Fernandes & Vieira, 2024). The study was limited to 12 Large Retail Chains in Kenya as at 31st December 2021 (KAM 2022). The study covered whole country since large Retail chains are spread all over the country. The Retail chains formed the unit of analysis while the unit of observation was 240 employees working in 4 departments including procurement department, logistics department, finance department, and ICT department since they are in a position to provide needed information. This study used census method. This study used semi-structured research questionnaires to collect the primary data for the study. The study was conducted between September 2023 and September, 2024.

1.7 Limitations of the Study

This study encountered several limitations that should be considered when interpreting the findings. First, the study relied on data collected from senior employees, including heads of departments, assistants, secretaries, and lower management staff within large retail chains. Given their busy schedules and managerial responsibilities, securing adequate time and full participation from all targeted respondents was challenging. In some cases, respondents were reluctant to provide comprehensive information due to time constraints or concerns regarding confidentiality, which may have affected the depth and accuracy of the responses obtained.

Second, the study focused on four specific functional departments—procurement, logistics, finance, and ICT. While these departments are central to e-procurement and supply chain operations, excluding other departments such as marketing, human resources, and operations limits the breadth of perspectives captured. As a result, the findings may not fully reflect organization-wide dynamics related to e-procurement implementation and supply chain performance.

Third, the study was limited to large retail chains in Kenya, thereby constraining the generalizability of the findings. Large retail chains typically have more advanced technological infrastructure, greater financial resources, and more complex supply chain systems compared to small and medium-sized retail firms. Consequently, the results may not be directly applicable to small or medium-sized retail organizations, which may face different operational, financial, and technological constraints. Additionally, since only a section of retail firms was considered, the findings may not fully represent the broader retail sector in Kenya.

Fourth, the study adopted a descriptive research design and relied primarily on cross-sectional data, which limits the ability to establish causal relationships between e-procurement practices and supply chain performance. The use of self-reported questionnaire data also introduces the risk of response bias, including social desirability

bias, where respondents may overstate the extent of e-procurement adoption or its effectiveness within their organizations.

Finally, the study utilized quantitative methods supported by limited qualitative insights. While this approach enabled statistical analysis of relationships among variables, it may not have captured deeper contextual or behavioral factors influencing e-procurement adoption and performance outcomes. A mixed-method or longitudinal approach could provide richer insights into how e-procurement impacts supply chain performance over time.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review of the study by reviewing both theoretical and empirical literature from professionals and other researchers on the relationship between electronic procurement, Top management support and supply chain performance of Retail Chains. The chapter is organized as follows; critical review of the key theories upon which the study is anchored, the conceptual framework, the comprehensive empirical review of literature, chapter summary and finally the knowledge gap is provided.

2.2 Theoretical Review

This consists of concepts together with their definitions and reference to relevant scholarly literature (Ngechu, 2028), existing theory that is used for a particular study. A theory is a set of interrelated principles and definitions that present a systematic view of the phenomena by specifying relationships among variables with the purpose of explaining natural phenomena (Larry, 2024). In effect a theory includes a set of basic assumptions and axioms as the foundation and the body of the theory is composed of logically interrelated empirically verifiable prepositions. Thus, it is a collection of interrelated statements or principles that explains the major theories in relation to the influence of supply chain automation on performance of Retail Chains in Kenya. This study was anchored on The Disruptive Innovation Theory, The Dynamic Capability Theory, Resource Based Theory, Technology Acceptance Theory and Power Theory.

2.2.1 The Disruptive Innovation Theory

The disruptive innovation is probably one of the most important innovation theories of the last decade (Bird, 2021). The term disruptive innovation as we know it today first appeared in the best-seller *The Innovator's Dilemma* (Dai & Kauffman, 2021). In the book, Harvard

Business School professor Clayton Christensen investigated why some innovations that were radical in nature reinforced the incumbent's position in a certain industry, contrary to what previous models would predict. Electronic communication is radical in nature and it reinforces the manual incumbent's communication position (Angeles & Nath, 2021). More specifically he analyzed extensively the disk drive industry because it represented the most dynamic, technologically discontinuous and complex industry one could find.

On the other hand contemporary availing of tender documents online and notification of (un)successful vendors among supply chain partners are seen as dynamic, technologically discontinuous and complex (Bendoly & Schoenherr, 2023). The theory resonated among supply chain practitioners in several industries and also resulted in influencing thinking and research in the areas of electronic expressions of interest and availing of tender documents online especially for internationally competitive tenders (Cagliano, Caniato & Spina, 2022).

Researchers consider disruptive innovations as a powerful means for developing and broadening electronic communication. Recently, scholars have conceptualized disruptive innovation such as electronic communication systems as a function of conflict between the entrants and incumbents business models, not only an outcome of technological change. Evolutionary theories generally depict a continuously changing business environment at times punctuated by discontinuous shifts (Eadie, Perera & Heaney, 2022).

Disruptive theory is a theory that illustrates how new technologies are disrupting the old technologies or the status quo. Disruptive theory is relevant in this study because it explains the types of disruptive technologies Retail Chains are adopting and using. The electronic communication technology is a disruptive innovation because it does away with traditional physical and manual mailing. Communication is quicker and lesser bureaucratic hence better relations with supply chain partners. The theory will therefore be useful in this study in explaining the influence of electronic communication on supply chain performance of Retail Chains.

2.2.2 Resource Based Theory

Resource-based theory (RBT) has emerged as a promising new framework for analyzing the sustainability and sources of information technology (Bradley, 2023). According to Chan and Lee (2021), information technology measured as economic rent derives from strategic resources. Such Information Technology is sustainable to the extent that the resources on which it is based are inimitable, rare, valuable, and non-substitutable (Bales & Fearon, 2021).

Further, RBT rests on the premises that resources controlled by firms are relatively immobile and heterogeneous (Bottani & Rizzi, 2022). The imperfect mobility of resources (including inimitability and no substitutability) is due to a variety of isolation mechanisms which include co-specialization of assets unique historical conditions, causal ambiguity, social complexity, and tacit knowledge and skills (Ibem & Laryea, 2023). Given that organizational resource-based theory and learning both seek the objective of sustaining competitive advantage as far as information technology is concerned, it seems logical for organizational learning to be identified as a strategic resource within the resource-based view. Firms often derive information technology from resources which have been developed based on lessons from previous experiences (Issa, Flood & Caglasin, 2022). Information technology derived from such resources might be sustainable because attempt by other firms to duplicate them do not have the necessary learning capability, organizational knowledge or the time required to accumulate them. Given the dynamic nature of IT, it is believed that the sustainability of such an advantage must be defined in dynamic and time sensitive terms (Flynn, Huo& Zhao, 2021).

The theory is relevant to this study since it analyzes the sources and sustainability of information technology. Retail Chains companies require technical resources to be able to start and sustain the use of e-procurement systems. One of the key systems is e-contracting. The theory, therefore, links e-contracting system to supply chain performance of the Retail Chains.

2.2.3 The Dynamic Capability Theory

This theory was developed by Gary Pisano and Amy Shuen, in their 1997 paper “Dynamic Capabilities and Electronic Supply Chain Management”. Dynamic capability theory elaborates the organizations ability to deliberately optimize its resources. The ability of a firm to integrate, develop and leverage on the environmental competitive advantage to adapt to its dynamism according to Bagozzi and Lee (2025).

Dynamic capability is a theory of competitive advantage in rapidly changing environments (Boer & Heijboer, 2024). It examines the scope conditions of dynamic capability; that is, when the theory has more and less explanatory power. It finds that dynamic capability has greatest explanatory power when a partially foreseeable technological change is on the verge of transforming market competition such as online vendor evaluation; and less explanatory power when dynamic capabilities are not undervalued and in markets that reward short bursts of performance over long-term persistence, such as electronic catalogues (Hawking & Foster, 2024).

The attractiveness of the dynamic capability concept stems from its’ potential to connect the resource-based view of the firm with the emerging knowledge economy aspects such as electronic sourcing, discourse prevalent in contemporary debate. It appears to offer a means of realizing Mahoney’s (2021) belief that “economics based research (the management of resources) and research on organizational learning (the resources of management) need to be joined in the next generation of resource-based research.” Therefore electronic sourcing is one of the angles that both approaches have a mutual focal point hence its relevance in this study (Wang, Chang & Heng, 2024).

The dynamic capability theory is appropriate for this study because it articulates issues propagating the use of electronic ordering. The theory will therefore be used in examining the influence of electronic ordering supply chain performance of Retail Chains.

2.2.4 Technology Acceptance Theory

Devis (1986) came up with the technology acceptance theory. The theory holds that technological advancements will not enhance the effectiveness and performance within an organization if their users have not embraced change (Salford & Roche, 2025). This is one theory that has great potential to show the understanding of the impact of e- procurement on food and beverage firms. Davis, Bagozzi, and Warshaw (2020) propose Technology Acceptance Theory (TAT) to explain the conceptual model that users' intention or acceptance degree towards information system or new technology. TAT is constructed on the foundations of perceived usefulness and perceived ease of use.

Perceived usefulness refers to individual belief to improve the degree of job performance through using particular new technology and information system. Perceived ease of use indicates how easy an individual learns how to operate or use new technology or information system (Mentzer, 2021). The model places more emphasis on how perceived ease of use would positively affect perceived usefulness. Exogenous variables such as environment are also the antecedent that induces perceived usefulness and perceived ease of use (Pavlou, 2022). Thus, TAT is based on both important perceptive factors as perceived usefulness and perceived ease of use. TAT is widely applied on the research of information technology. Li (2022) examined the significant variables to build a successful website based on TAT theory. Pavlou (2022) combined TAT and rust to propose an integrated model for explaining online consumer behavior. Lavelle and Bardon (2021) proposes e-commerce acceptance model of online consumers by separating and applying experiment designs and survey.

Follow-up studies such as Horst, Kuttschreuter and Guttering (2021) discusses whether or not the government of Netherlands should serve the public with electronic government like other countries do. The study integrates TAT factors, the experiences of the public, perceived risk and faith. The empirical results show that the principle of e-government is that people fully trust the governmental organization and that they highly identify with information technology.

As a result of the empirical study, scholars find that TAT does not only apply to examine new information technology accept intention or behavior, but also ensures that TAT is suitable for the explanation of online user behavior issues (Klein, Conn & Sorra, 2021). The technology acceptance theory is relevant to this study since it emphasizes that technological adoption improves company performance. In the context of Large Retail Chains in Kenya, the use of digital technologies enhances cost effectiveness in placing orders. The theory will therefore be adopted to explain adoption of electronic payments and its relationship with supply chain performance of Large Retail Chains in Kenya.

2.2.5 Power Theory

The power theory was developed by Dahl (1957). The theory states that, strategic change and strategy-making provides insights into how power is exercised by managers to carry out strategic actions (Hardy, 2023). Jarzabkowski and Balogun (2025) argue that, according to power theory, managers focus on creating strategies by using their power influence and control managers at the middle level to ensure alignment during strategic plan execution. Therefore, the top management at execution level must deal with major aspects, that is, to provide resources and give leadership in the entire process (Burney, 2020). The effective implementation of strategy is triggered by management monitoring of the implementation process and offering a clear direction of the project. The management of the firm should be willing to change and accept the fact that the exercise involves learning at all levels including the upper level management (Okioga, 2022).

Also, effective execution of the strategic plan requires creating some core competencies by using strategies for change management to promote infusion of the strategic plan in the work place; where the attitude of key users is changed through communication (Al-Mashari et al, 2021). The implementation process needs top management support throughout the organization, since their approval is important to align the plan with strategic business goals. Therefore, the top-level managers' role in tying management bonuses to the success of the projects is of great importance. This includes allocating

necessary people for implementation and providing reasonable time in accomplishing the task (Al-Mashari, *et al*, 2021).

Moreover, managers can enhance commitment with involvement and integration of workers starting from a lower lever (Beer & Eisenstat, 2024). This creates a kind of ownership of the new strategy for which, in return, commitment is increased. That is why other scholars argue that firms need a contributing, capable, competent, effective and executive leader as far as strategy execution is concerned. This also is supported by Cater and Pucko (2024) who argue that, a well-crafted strategy with a strong and effective pool of skills delivered from human resources, positively impacts successful execution of strategies, while poor leadership is considered as one of the key obstacles for execution of strategies in an organisation. Further, poor communication in an organisation has negative effects on a firm's ability to execute and refine its strategy (Beer & Eisenstat, 2024). Therefore, this theory will be applicable in explaining the moderating effect of Top management support on the relationship between electronic procurement and supply chain performance of Large Retail Chains in Kenya.

2.3 Conceptual Framework

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Neuman, 2018). Mugenda and Mugenda (2018) define a conceptual framework as hypothesized model identifying the model under study and the relationship between study variables variables. Figure 2.1 presents the hypothesized relationship between the independent variables, the moderating variable and the dependent variable for testing in this study:

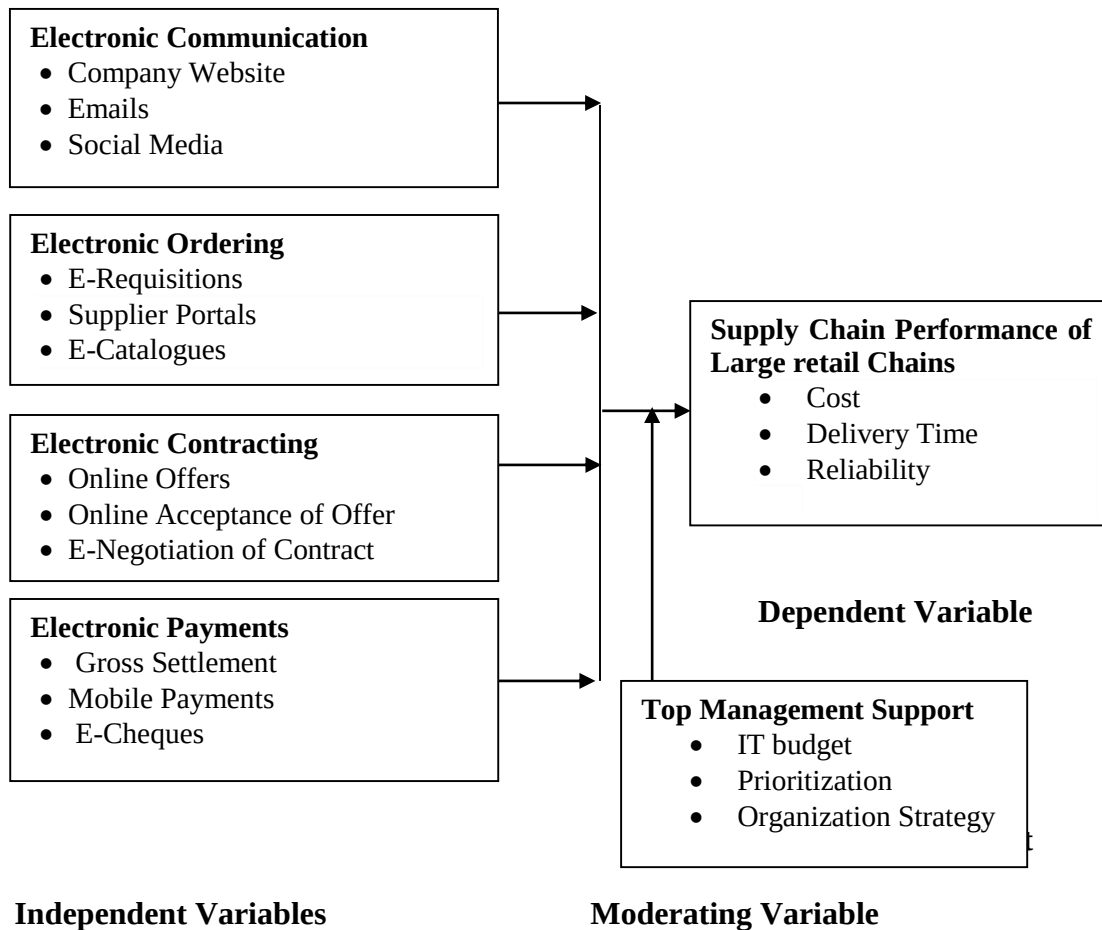


Figure 2.1: Conceptual Framework

2.3.1 Electronic Communication

Electronic communication refers to the transfer of information, messages, or data through electronic means. It is a vital component of modern business operations, enabling organizations to interact with stakeholders quickly and efficiently. Key forms of electronic communication include company websites, emails, and social media (Kheng, & Al-Hawandeh, 2021). Each of these tools offers unique advantages and challenges for businesses. A company website serves as the digital headquarters for an organization, offering a centralized platform where stakeholders can access information, interact with the business, and even make purchases (Kemei, Oboko, & Kidombo, 2024). It is an essential communication tool for sharing information such as company values, product

catalogs, operational updates, and customer support options. Many companies use their websites as a hub for online shopping, integrating e-commerce capabilities that allow customers to browse, order, and pay for products or services (Kheng, & Al-Hawandeh, 2021).

The website also functions as a branding tool, showcasing the company's identity through design, content, and testimonials. Blogs, case studies, and multimedia content such as videos and images further reinforce a company's image and attract visitors. A robust website enhances credibility and trust, as potential customers often evaluate a business's legitimacy based on its online presence (Kemei, Oboko, & Kidombo, 2024). However, maintaining a website comes with challenges. Regular updates are necessary to keep the content relevant, and ensuring optimal functionality requires technical expertise. Websites are also vulnerable to cybersecurity threats such as hacking and data breaches, which could harm both the business and its stakeholders. Additionally, poor user experience—such as slow loading speeds or lack of mobile optimization—can deter potential customers and lead to revenue loss (Kauffman, & Kriebel, 2024).

Email remains one of the most widely used and reliable forms of electronic communication in business. It facilitates formal and structured interactions with both internal and external stakeholders (Kamel, 2024). For instance, companies use email for marketing campaigns, sending newsletters, promotional offers, and updates to targeted customer groups. Internally, emails play a crucial role in collaboration, allowing employees to share information, files, and updates efficiently. One of the significant advantages of email communication is its cost-effectiveness (Juma, 2020). Sending an email is far less expensive than traditional forms of communication like physical mail. Furthermore, emails create a digital paper trail, enabling businesses to maintain records for future reference. This feature is especially beneficial for resolving disputes or tracking correspondence over time. Personalization is another key benefit of email communication (IvyPanda, 2020). Businesses can tailor messages to specific recipients based on their preferences or previous interactions, improving engagement and response rates. Moreover, emails transcend geographical boundaries, making them ideal for global

communication. However, email communication has its drawbacks. The sheer volume of emails employees and customers receive daily can lead to information overload, with important messages potentially being overlooked. Spam filters can also block legitimate emails, reducing their effectiveness. Additionally, cybersecurity threats such as phishing attacks and unauthorized access remain significant concerns, potentially compromising sensitive business information (Ho, 2024).

Social media has transformed the way businesses communicate, offering a dynamic platform for real-time interaction with customers and other stakeholders. Platforms like Facebook, Instagram, LinkedIn, and Twitter allow companies to share updates, market products, engage with customers, and even address public relations crises (Chopra, Meindl, & Kalra, 2025). Social media enables businesses to humanize their brand by sharing behind-the-scenes content, employee stories, and customer testimonials, creating a more personal connection with the audience. One of the key advantages of social media is its vast reach. With billions of active users worldwide, businesses can connect with diverse audiences and expand their customer base. Social media is also a cost-effective advertising tool. Paid promotions allow businesses to target specific demographics, ensuring their messages reach the right people. Additionally, social media platforms provide analytics tools that help businesses track engagement, monitor campaign performance, and refine their strategies (Centobelli, & Cerchione, 2024).

Social media is also an invaluable tool for market research. By analyzing customer feedback, comments, and trends, businesses can gain insights into consumer preferences and industry developments (Brandon-Jones, & Carey, 2024). Furthermore, the immediacy of social media allows businesses to respond to customer inquiries, complaints, or compliments in real time, enhancing customer satisfaction. Despite its advantages, social media comes with challenges. Negative comments or posts can quickly spiral into public relations issues, damaging a company's reputation. Maintaining an active and engaging social media presence is also time-intensive, requiring regular updates, creative content, and prompt responses (Wong *et al.*, 2024). Additionally, frequent changes in platform algorithms can affect content visibility, complicating marketing efforts. Businesses must

approach social media strategically, ensuring that their messaging aligns with their brand values while remaining responsive to audience needs. Proper training for social media teams and proactive monitoring of platform activity can help businesses harness the full potential of this communication tool (Wang *et al.*, 2024).

2.3.2 Electronic Ordering

Electronic ordering (e-ordering) refers to the process of initiating, managing, and completing procurement orders through digital platforms or electronic systems (Alhammadi, Tariq, 2020). It enables organizations to automate and streamline their purchasing processes by using tools such as e-procurement systems, supplier portals, or online catalogs. E-ordering facilitates real-time communication between buyers and suppliers, ensuring accuracy, speed, and efficiency in the procurement process (Brandon-Jones, & Carey, 2024). In an e-ordering system, buyers can browse an online catalog provided by suppliers, select the required items or services, and place orders electronically. These systems typically include features such as automated purchase order generation, order tracking, and integration with inventory and financial management systems (Centobelli, & Cerchione, 2024). For instance, a retailer may use an e-procurement platform to replenish stock by placing orders directly with suppliers without the need for manual paperwork. E-ordering enhances procurement processes in several ways, such as reducing errors associated with manual data entry, ensuring compliance with procurement policies, and improving visibility into order statuses. Moreover, it enables cost savings by facilitating bulk purchases and supplier negotiations. However, the implementation of e-ordering systems may require significant investment in technology and training, and organizations must ensure that their systems are secure to prevent unauthorized access or data breaches (Chirchir, 2024).

An e-requisition is an electronic request for goods or services initiated by a department or individual within an organization and submitted to the procurement team for approval. Unlike traditional paper-based requisitions, e-requisitions are generated and processed through digital systems such as enterprise resource planning (ERP) or e-procurement

platforms (Chopra, Meindl, & Kalra, 2025). E-requisitions streamline internal procurement processes by standardizing the request format and automating approval workflows. For example, an employee needing office supplies can submit an e-requisition through the company's procurement software. The system routes the requisition to the appropriate manager for approval and, once authorized, converts it into a purchase order that is sent to the supplier (Croom, 2024). The benefits of e-requisitions include improved efficiency, reduced paperwork, and enhanced transparency. Organizations can track requisition statuses in real time, ensuring accountability and reducing delays. Additionally, e-requisition systems often include budget controls, preventing unauthorized spending and ensuring alignment with financial plans (IvyPanda, 2020).

Supplier portals are digital platforms that facilitate communication and transactions between buyers and suppliers. These portals provide suppliers with access to procurement-related information, such as purchase orders, payment statuses, and delivery schedules, enabling seamless collaboration (Juma, 2020). Through supplier portals, buyers can issue purchase orders electronically, while suppliers can confirm receipt, provide updates on order fulfillment, and submit invoices. For example, a retailer might use a supplier portal to order merchandise from a supplier and track the shipment in real time. The portal may also allow suppliers to update product availability or pricing, ensuring accurate and up-to-date information for buyers (Kamel, 2024). Supplier portals enhance procurement efficiency by centralizing communication and documentation, reducing errors, and fostering stronger relationships with suppliers. Additionally, these portals improve data accuracy and compliance by maintaining an audit trail of all interactions and transactions. Despite these advantages, challenges such as high implementation costs, integration issues with existing systems, and resistance from suppliers unfamiliar with digital tools can arise. To address these challenges, organizations should select scalable, intuitive platforms and engage suppliers through training and support (Kamel, 2024).

E-catalogues are online product directories provided by suppliers that allow buyers to view, select, and order goods or services. These catalogues are typically integrated into e-procurement systems, offering detailed product descriptions, images, pricing, and

availability information (Kauffman, & Kriebel, 2024). E-catalogues streamline the ordering process by enabling buyers to quickly search for and select items that meet their requirements. For instance, a procurement officer in a manufacturing company can use an e-catalogue to browse raw materials, compare prices, and place orders directly from the system. E-catalogues also allow organizations to customize their procurement experience by featuring pre-approved suppliers and negotiated pricing agreements. The primary benefit of e-catalogues is the convenience and speed they offer. They eliminate the need for back-and-forth communication with suppliers by providing all necessary product information upfront. Additionally, e-catalogues improve compliance with procurement policies by ensuring that employees purchase only from approved suppliers (Kemei, Oboko, & Kidombo, 2024).

2.3.3 Electronic Contracting

Electronic contracting (e-contracting) refers to the process of creating, negotiating, and executing legally binding agreements using digital platforms and tools, without the need for physical documents or in-person interactions. This process leverages technology to streamline traditional contract management, enabling businesses to finalize agreements efficiently and securely over electronic mediums such as email, specialized software, or online platforms (Angeles, 2025). An electronic contract (e-contract) typically includes the same elements as a traditional contract—offer, acceptance, and consideration—but is executed in digital form. For instance, contracts can be signed electronically using tools like e-signatures, which are legally recognized under laws such as the Electronic Signatures in Global and National Commerce Act (E-SIGN Act) in the United States and the United Nations Convention on the Use of Electronic Communications in International Contracts globally. Electronic contracting is widely used in various industries for transactions such as service agreements, sales contracts, procurement, and non-disclosure agreements. It eliminates the need for physical paperwork, reduces the time required for negotiations, and increases efficiency in managing contracts (IvyPanda, 2020).

Online offers form the first step in electronic contracting, where a party communicates a proposal to enter into a legally binding agreement using digital platforms. These offers are typically presented through company websites, e-commerce platforms, or email communication (Amayi, 2024). For example, when a seller lists a product on an online marketplace with specific terms, such as price, delivery timelines, and return policies, this constitutes an online offer. Online offers are advantageous because they allow businesses to reach a global audience instantly, breaking geographical barriers. Companies can display their terms and conditions clearly, ensuring transparency in the contractual process. Additionally, automation tools enable businesses to personalize offers for individual customers or client segments, enhancing customer engagement and satisfaction. However, online offers also have challenges (Githumbi, 2022). For instance, ambiguities in the terms or failure to provide detailed conditions can lead to disputes. Additionally, the dynamic nature of digital platforms may result in outdated or incorrect offers being displayed, which could confuse customers and harm the company's reputation. To overcome these issues, businesses must ensure that their offers are clear, up-to-date, and legally compliant (IvyPanda, 2020).

Online acceptance of an offer occurs when the party receiving the offer agrees to its terms electronically. This acceptance can be expressed through various methods, such as clicking an "Accept" button, signing electronically using e-signature software, or responding affirmatively via email (Juma, 2020). For instance, when a customer clicks "Buy Now" on an e-commerce site and proceeds with payment, this constitutes an online acceptance of the seller's offer. The convenience of online acceptance is one of its most significant advantages. It allows for instantaneous agreement, eliminating the need for physical signatures or face-to-face interactions (Kamel, 2024). This is particularly beneficial in international transactions, where parties may be located in different time zones or countries. Additionally, digital tools ensure that records of acceptance are automatically stored, creating a clear audit trail that can be referenced in case of disputes (Kauffman, & Kriebel, 2024). Despite these benefits, online acceptance also has potential drawbacks. Miscommunication or misinterpretation of terms may occur if the conditions

of the offer are not clear or easily accessible to the accepting party. Furthermore, concerns around cybersecurity and fraud may arise, as unauthorized individuals could potentially accept offers on behalf of others. To address these challenges, organizations should use secure platforms, provide clear documentation, and include mechanisms for verifying the authenticity of the accepting party (Kemei, Oboko, & Kidombo, 2024).

E-negotiation refers to the process of discussing and refining the terms of a contract through electronic communication channels, such as email, video conferencing, or specialized negotiation software. Unlike traditional negotiations, which require in-person meetings, e-negotiations allow parties to engage remotely, saving time and resources. E-negotiation tools often include features such as real-time chat, collaborative document editing, and automated suggestions for contract clauses, making the process more efficient. For example, a supplier and retailer might use a cloud-based platform to simultaneously review and modify the terms of a supply agreement. These tools also allow for the use of data analytics, which can provide insights into negotiation strategies and outcomes (Kheng, & Al-Hawandeh, 2021). One key advantage of e-negotiation is its ability to facilitate collaboration across different locations, enabling businesses to work with partners, suppliers, or clients globally. Additionally, the process can be recorded, ensuring transparency and accountability. However, e-negotiations are not without challenges. Misunderstandings can arise due to the lack of face-to-face interaction, and technical issues such as platform malfunctions or poor internet connectivity can disrupt the process. Furthermore, confidentiality and data security are critical concerns, as sensitive information shared during negotiations may be at risk of unauthorized access (Kilay, Simamora, & Putra, 2022).

2.3.4 Electronic Payment

Electronic Payment (e-payment) refers to the digital process of transferring money or funds from one account to another for the purpose of purchasing goods, services, or settling debts over the internet or other electronic networks (Kilay, Simamora & Putra, 2022). Unlike traditional payment methods such as cash or checks, electronic payments

are conducted through various digital platforms or channels, including online banking systems, mobile apps, credit/debit card transactions, and payment service providers like PayPal, Venmo, or Stripe (Moon, 2023). E-payments can be initiated by both individuals and businesses, enabling seamless transactions without the need for physical exchanges of money. The system involves encryption and security protocols to ensure the safety of sensitive data, such as bank account information or credit card details, throughout the payment process (Johnson *et al*, 2024).

Gross settlement refers to a payment system where each transaction is settled individually and in real-time, without being offset against other transactions. In a gross settlement system, payments are transferred directly from one party's account to another, and the transfer is final and irrevocable once completed (Hawking *et al*, 2024). This type of system is commonly used for high-value, time-sensitive transactions, such as large corporate payments, interbank transfers, or government settlements. One of the most well-known examples of gross settlement is the Real-Time Gross Settlement (RTGS) systems, which are used by central banks and financial institutions to settle interbank payments (Dooley, 2024). The key benefit of gross settlement is that it eliminates counterparty risk—the risk that one party may default or fail to settle their side of the transaction—since each payment is settled immediately and fully. This system ensures that there is no aggregation of payments and, therefore, no risk of settlement delays or netting issues that can arise in systems that settle payments on a net basis (where multiple payments are grouped together and settled at once) (Kilay, Simamora & Putra, 2022).

Mobile payments are transactions made via a mobile device, such as a smartphone or tablet, to transfer funds in exchange for goods or services. These payments leverage mobile technologies and applications, such as Apple Pay, Google Pay, or Samsung Pay, as well as specialized mobile payment systems like Venmo or Alipay, which allow users to pay directly from their mobile devices either in-store (via near-field communication or NFC technology), online, or through peer-to-peer transfers (Johnson *et al*, 2024). Mobile payments offer significant convenience, enabling consumers to make purchases without needing to carry physical cash or credit cards. Mobile wallets, which store payment

information securely on a device, make the process seamless and fast, especially with features like biometric authentication (fingerprint or facial recognition) for added security. Moreover, mobile payment systems often integrate loyalty programs, discounts, and reward offers, creating a more engaging and personalized customer experience (Hawking *et al*, 2024). For businesses, mobile payments can increase sales by providing a fast, secure, and efficient checkout process, especially in e-commerce or point-of-sale environments. They also offer increased data collection opportunities, which can be used to improve marketing and customer service. However, challenges such as cybersecurity risks, privacy concerns, and the need for widespread adoption among both merchants and consumers still exist (Dooley, 2024).

An e-cheque (electronic cheque) is a digital version of the traditional paper cheque that allows payments to be made electronically. Just like a paper cheque, an e-cheque involves the transfer of funds from the payer's account to the payee's account; however, it eliminates the need for physical paper documentation and manual processing (Kilay, Simamora & Putra, 2022). The payer authorizes the payment by inputting the necessary details, such as the bank account number and routing information, into an online form or payment platform. E-cheques are typically processed through an Automated Clearing House (ACH) network or similar electronic clearing systems, which ensure secure, real-time transfer of funds (Johnson *et al*, 2024). This system allows both businesses and individuals to make payments more efficiently, particularly for larger sums or recurring transactions, such as payroll or supplier payments. E-cheques offer several benefits over paper cheques, including lower processing costs, faster clearing times, and reduced risk of fraud or loss. They are also more environmentally friendly because they eliminate the need for paper and physical delivery (Hawking *et al*, 2024).

2.3.5 Top Management Support

Top management support refers to the commitment, involvement, and advocacy of senior leadership in driving and supporting organizational initiatives, projects, and processes (Klakota, 2025). It encompasses the actions and decisions of executives, such as CEOs,

directors, and senior managers, to allocate resources, provide guidance, and promote a culture that aligns with strategic goals (Kheng, & Al-Hawandeh, 2024). In the context of projects or organizational change, top management support is critical as it ensures that key initiatives receive the necessary attention, funding, and prioritization. It also involves active participation by leaders in decision-making, monitoring progress, and addressing challenges (Kemei, Oboko, & Kidombo, 2024). For example, in a supply chain management project, top management support might include approving budgets for new technologies, facilitating inter-departmental collaboration, and setting clear goals for performance improvement. This support influences organizational success by fostering employee confidence, encouraging stakeholder buy-in, and ensuring accountability at all levels. Without strong top management support, projects often face challenges such as resource shortages, lack of alignment with organizational priorities, and resistance to change. As such, it is a vital factor in achieving organizational objectives and sustaining long-term growth (Kauffman, & Kriebel, 2024).

The allocation of an adequate IT budget is one of the most visible forms of top management support. Technology investments are essential for modern organizations to remain competitive, and leaders play a critical role in ensuring that sufficient resources are directed toward IT systems, infrastructure, and innovation (Kamel, 2024). An IT budget determines the organization's ability to procure and maintain hardware, software, and services that support critical functions such as electronic procurement, supply chain management, and data analytics (Juma, 2020). For instance, a large retail chain aiming to implement an e-procurement system requires financial backing for software licenses, system integration, employee training, and ongoing maintenance. Without appropriate funding from top management, such projects may face delays or fail altogether. By allocating resources wisely, top management not only demonstrates their commitment to technological advancement but also helps foster a culture of innovation. However, to maximize returns on IT investments, senior leaders must align the IT budget with organizational priorities and ensure robust monitoring of expenditures to avoid wasteful spending (IvyPanda, 2020).

Top management support is critical in determining the prioritization of projects and initiatives. With limited resources and competing demands, organizations must decide which projects take precedence (Croom, 2024). Senior leaders are responsible for making these decisions, often guided by the potential return on investment, strategic alignment, and organizational goals. For example, in a supply chain management context, top management may prioritize the implementation of an e-ordering system over less critical upgrades because of its potential to enhance operational efficiency and reduce costs (Chopra, Meindl, & Kalra, 2025). By setting clear priorities, senior leaders ensure that teams focus their efforts and resources on high-impact initiatives. Prioritization also involves addressing organizational bottlenecks and resolving conflicts that may arise between departments. When top management actively supports a project, it signals its importance to the entire organization, fostering collaboration and reducing resistance to change. Conversely, a lack of prioritization from senior leaders often leads to confusion, delays, and fragmented efforts (Centobelli, & Cerchione, 2024).

The alignment of initiatives with the broader organizational strategy is another critical aspect of top management support. Senior leaders are responsible for ensuring that projects and programs contribute to achieving the organization's long-term vision, mission, and objectives. For example, a retail chain focused on enhancing customer experience may invest in an integrated e-communication platform that allows real-time updates between suppliers and stores (Camarinha-Matos, Afsarmanesh, & Ollus, 2024). By aligning this investment with the company's strategy, top management ensures that technology adoption supports core business objectives, such as improving supply chain efficiency or increasing customer satisfaction. Top management also ensures that organizational strategies are communicated effectively across all levels of the organization. This clarity helps employees understand how their roles contribute to achieving the larger goals, which, in turn, improves engagement and motivation. Moreover, strategic alignment enables better decision-making, as all efforts are channeled toward shared objectives (Alhammadi & Tariq, 2020).

2.3.6 Supply Chain Performance

Supply Chain Performance refers to the ability of a supply chain to meet its objectives effectively and efficiently. It encompasses a range of metrics and indicators that assess how well a supply chain is functioning in terms of cost, speed, quality, flexibility, and customer satisfaction (Gioconda, 2024). The performance of a supply chain is influenced by various factors, including supplier relationships, inventory management, logistics, demand forecasting, and the overall coordination among different entities within the chain—from raw material suppliers to end customers (Croom & Brandon-Jones, 2024). Cost is one of the most critical factors in evaluating the performance of a supply chain. It encompasses all expenses associated with the procurement, production, and delivery of goods and services, including raw materials, labor, transportation, warehousing, inventory holding, and overhead costs. Managing costs effectively is crucial for maintaining profitability, as supply chain expenses can significantly impact the bottom line (Dooley, 2024). Organizations often aim to optimize their supply chain costs by improving operational efficiency, negotiating better contracts with suppliers, leveraging economies of scale, or utilizing more cost-effective technologies. However, it's important to balance cost reduction with other performance factors such as quality and customer service (Aboelmaged, 2025). While reducing costs can improve profitability, doing so at the expense of quality or timely deliveries can harm the organization's reputation and long-term sustainability. Therefore, managing supply chain costs requires a careful approach that considers both short-term financial benefits and long-term strategic goals (Angeles, 2025).

Delivery time refers to the period it takes for a product or service to be delivered to the customer, from the moment an order is placed to when the goods arrive at their destination. This metric is a key indicator of supply chain efficiency and customer satisfaction. Reducing delivery time can give companies a competitive edge by improving responsiveness to customer needs and enhancing overall service levels (Maina, 2024). Companies can shorten delivery times through better forecasting, improved inventory management, streamlined production processes, or faster logistics networks. However,

faster delivery often involves higher transportation costs or the need for more advanced supply chain technology (Kamotho, 2024). The challenge is to balance the desire for speed with the associated costs, while maintaining the ability to meet customer expectations for on-time delivery. In industries such as e-commerce, where customers often expect next-day or even same-day delivery, optimizing delivery time is increasingly vital for retaining customer loyalty and competing in the market (Amayi, 2024).

Reliability in the context of supply chain performance refers to the consistency and dependability of the entire supply chain in meeting expectations, particularly in terms of product quality, availability, and on-time delivery. A reliable supply chain minimizes disruptions and uncertainties, ensuring that products are delivered as promised without errors, defects, or delays (Gioconda, 2024). Reliability is often measured by the accuracy of order fulfillment, the consistency of product quality, and the ability to deliver on time. A supply chain that is reliable builds trust with customers, strengthens vendor relationships, and reduces the risks associated with stockouts or overstocking. It also fosters a strong reputation in the marketplace, which is essential for long-term business success (Croom & Brandon-Jones, 2024). However, achieving reliability requires close coordination across various stages of the supply chain, including suppliers, manufacturers, and logistics partners. It also requires businesses to have contingency plans in place to address potential risks such as supply disruptions, transportation delays, or unexpected changes in demand. In short, reliability ensures that customers can depend on the business to deliver as promised, which is a critical aspect of supply chain excellence (Dooley, 2024).

2.4 Empirical Review

2.4.1 Electronic Communication and Supply Chain Performance

Wang *et al.*, (2024) investigated the electronic mailing system in state corporations in Sri Lanka and adopted a cross sectional research design. Specifically, the study assessed the concept of e-mailing as an instrument meant to modernize, simplify, and improve the

existing manual communication process. Findings found that there is a positive relationship between e-mailing and procurement performance. The study was conducted in Sri Lanka and therefore presents a contextual gap.

Wong *et al.*, (2024) scrutinized the institutional responses to electronic mailing in the public sector in UK and employed cross sectional research design. Findings revealed that despite being very different in form and function, every organization had already adopted bankers automated communication system (BACS). Besides, the following activities were being conducted electronically: online expression of interest, availing tender documents online and online vendor notifications to suppliers to settle bills. The study found a positive relationship between e-mailing and procurement performance; and further revealed that all five entities were actively planning to implement the following: e-tendering; e-award; e-contract and e-catalogue systems, but none had any intention of adopting e-marketplaces or e-auctions. The study reveals a contextual gap since it was conducted in UK.

Mose *et al.*, (2024) investigated the factors affecting procurement performance in the large manufacturing firms in Kenya and adopted a descriptive research design. The findings indicated that there is poor communication characterized by delays in payments of suppliers; poor planning and management of contracts is being experienced; projects takes long to complete; lack of procurement professionals; lengthy procedure of document processing; lack of proper mechanism for contract evaluation and monitoring. The study concentrated on procurement performance and not profitability, thus presenting a conceptual gap.

Githumbi (2022) scrutinized e-mailing readiness factors in Kenya's public sector agencies with an objective of determining the extent of e-communication levels in public institutions in Kenya. Findings of the study revealed that e-communication in the public sector have been implemented, though not fully. The study also found that procurement performance of firms that have adopted e-procurement has been significantly enhanced.

Further, it was revealed that integrated financial management information system (IFMIS) and SAP software are majorly the only ERPs used by public institutions to procure online.

2.4.2 Electronic Ordering and Supply Chain Performance

Flynn *et al.*, (2025) scrutinized the e-procurement adoption at the municipal level in Germany and adopted a descriptive research design. Findings revealed that perceptions of risks and benefits are the strongest determinants of e-procurement adoption. Further, the study found the following benefits as a result of e-procurement adoption leading to procurement performance: enhanced customer service level, procurement policy and procurement cycle-time and investment cost reduction. The study was done in Germany, thus presents a contextual gap.

Eadie *et al.*, (2024) explored the factors affecting the uptake of application of e-ordering within the UK public sector and adopted a cross sectional research design. The findings revealed that in order to enhance procurement performance yielding efficiency in resource utilization, reduction in procurement lead-time, policy compliance and enhanced service delivery among public entities; there is need for thorough understanding agency's procurement landscape; the impact (both negative and positive) of public policy on adoption; the impact of enhanced organizational standing and the need for clear vision and leadership from senior stakeholders; and finally, the need for a comprehensive definition of e-procurement to ensure that organizations pursue a holistic approach to its adoption.

Croom *et al.*, (2024) investigated procurement processes and performance with the aims of identifying financial and non-financial measures that can contribute to improved performance of the procurement function. The study employed a descriptive research design. The findings revealed that other than financial measures (which include: cost reduction and streamlined procurement processes leading to savings), non-financial measures (which include: reduced lead-time, enhanced procurement policy compliance

and customer service level) also contribute significantly in enhancing procurement performance. However, the study did not focus on Retail Chain.

Bottani *et al.*, (2025) examined the effect of e-ordering on customer satisfaction and adopted a descriptive research design. It was revealed that whatever the effects of e-procurement on the procurement department will inevitably affect other departments because they rely on procurement to bring in materials at the right time, price, quality, quantity and from the right source which are used to produce goods for the end customer. Thus they opined that e-procurement contributes immensely to both internal and external customer satisfaction. However, the study did not focus on Retail Chains in Kenya.

Oteki, Namusonge, Sakwa, and Ngeno, (2024) studied the influence of electronic order processing on supply chain performance of sugar processing firms in Kenya. The study was guided by specific objective, to establish the influence of electronic order processing practice on supply chain performance. Mixed research design was applied and the target population comprised of 12 sugar processing firms in Kenya with a target population of 7,584. Stratified random sampling was applied to come up with a sample size of 367. Data was gathered by a self-administered drop and pick questionnaire, interviews and observation. The results reveal that there is significant relationship between electronic order processing practice and supply chain performance. The study concludes that electronic order processing practice enhances supply chain performance. The study recommends that Sugar firms in Kenya need to incorporate all the electronic order processing practices into the system to enable improve their supply chain performance.

2.4.3 Electronic Contracting and Supply Chain Performance

IvyPanda (2020) assessed the benefits of e-contracting. A critical review of e-contracting was conducted in this study. This is achieved conducting a background analysis of the concept of e-contracting in which the benefits associated with e-contracting are highlighted. The method used to achieve this is literature review. The author asserts that there are a number of challenges associated with e-contracting. As a result, it is vital to

minimize these challenges so as to achieve the benefits of e-contracting. The author identifies a number of e-contracting challenges on which he formulates a set of hypothesis. Some of the challenges which the firm evaluates relates to modeling and representing contractual relationship, negotiation, monitoring, and contract management. Finally, a conclusion of the entire study is given together with a recommendation for further research to be conducted in order to seal the existing gaps.

Angeles (2025) explored the effectiveness of e-contracting in Ghana's public corporations and adopted a descriptive research design. Findings of the study revealed that e-contracting strategies enhances procurement performance by reducing transaction costs and cycle times; allowing possibility of developing vendor managed inventory and improvements in just in time deliveries; facilitating more accurate deliveries due to reduced input order errors by suppliers; shared performance measurement data which encourages improved supplier performance; potential for less expediting by the buyer as the supplier acknowledges orders by exception which automatically updates the buyers system; reduced stock due to shared sales/forecast information; possibility of using self-billing. However, the study was conducted in Ghana.

Amayi (2024) investigated the adoption of e-procurement strategy and procurement performance in state corporations with reference to Kenya Revenue Authority. The study adopted a cased study approach. Findings of the study revealed that electronic contracts processing positively influenced procurement performance leading to annual savings; reduced procurement cycle-time and procure-to-pay cycle. The study presents a methodological gap since it was a case study whereas the proposed study is a census.

Githumbi (2022) investigated the impact of e-procurement on procurement performance among state corporations in Kenya. Findings of the study revealed that e-contracting has greatly enhanced procurement performance. As a result, the following was realized: reduction of errors in order transmission, reductions in inventory, assured supply and reduction of production stoppages, reduced work content in the total .requisition to payment. process, transaction cost reduction, reduction in the time taken to complete the

procurement process, ensuring stronger vendor-buyer relationship, improved procurement resource utilization, ensuring better contracts and delivery of best-value contracted goods and service. The study presents a contextual gap since it did not focus on Retail Chains. Li, (2012) explored e-procurement adoption employing six hotels as case study with an objective of identifying key factors that are associated with the low adoption of e-procurement specifically in the hotel industry in Hong Kong, a major tourism destination in Asia. The study was cross section in Nature. The study revealed six major factors associated with the low adoption of e-procurement, namely: technical factors; perceived benefits; conflicts between hotel owners and management; resistance to change; product diversity; and rumors. They also found that companies majorly use e-procurement as a strategic tool for enhancing procurement performance.

2.4.4 Electronic Payment and Supply Chain Performance

Kilay, Simamora, and Putra, (2022) measured the influence of the use of e-payment and e-commerce services on MSME supply chain performance, as well as suggesting open innovations and solutions to accelerate the digitization of MSMEs. We collected data from 164 MSMEs in Indonesia, then conducted multiple linear regression analysis, descriptive analysis of research indicators, and interviews and discussions with research experts. The results demonstrate that there exists a positive and significant influence of both e-payment and e-commerce service variables on the performance of MSME supply chains in Indonesia. The study determined ten research indicators with low values, which thus pose an obstacle to the digitization of MSMEs, and their implications, in order of open innovation and solutions, are presented in order to assist MSME actors, the government, and related institutions in accelerating the digitalization of MSMEs in Indonesia.

Moon (2023) examined the e-procurement management in state governments in U.S.A with a focus on diffusion of e-procurement practices and its determinants. The study adopted an explanatory research design. The study findings revealed that many state governments have implemented e-payment initiatives to improve their procurement performance and management. As such, e-payment was found to have enhanced

procurement performance and hence was quickly adopted. Further; the study revealed that relatively simple e-payment tools have diffused widely and rapidly among state governments in the past years. However, a contextual gap exists since the study was conducted in U.S.A.

Johnson *et al.*, (2024) evaluated the features of different e-payment systems from the view of Iranian users. The research findings identified security and trust as the most important features. The ability to transform and track was the least important features of e-payment systems. The features specified by different users for e-payment systems are not only considered important in designing new systems, but also engender its acceptance among users. Though the study supports the importance of e-payment, it presents a contextual gap since it was carried out in Iran.

Hawking *et al.*, (2024) evaluated the quality of the internet banking and payment services from the view of customers. Results indicated that customers were satisfied with four indices, including trustworthiness, accessibility, security, accountability, and task performance and dissatisfied with the user-friendly index. After evaluating the quality of electronic services on customers` satisfaction and return, results of Flynn *et al.*, (2021) indicated that efficiency, privacy, and accountability are effective and accessibility, service completion, and contact had no effect on customer satisfaction; eventually, customer satisfaction affects customers in reusing the electronic services. However, these studies did not focus on Retail Chains and thus present a contextual gap.

Dooley (2024) analyzed the effect of e-payment on customer satisfaction in Nigeria and adopted a descriptive research design. The study revealed a significant relationship between e-payment and customer satisfaction. Further, although e-payment is full of insecurities, it is common among the people of Nigeria due to its convenience, flexibility, speed, efficiency, and accessibility of transactions. The study reveals a contextual gap since it was conducted in Nigeria, which is a different environment from that of Kenya.

2.4.5 Top Management Support and Supply Chain Performance

In Tanzania, Salum (2024) conducted a study on the influence of top management and organization resources on implementation of strategic plans in public sector. The study used simple random sampling to select five (5) agencies; and convenient sampling to obtain fifty (50) respondents. Primary data were collected using questionnaires; then were analysed using of SPSS and Excel spread sheet; while documentary review was used to collect secondary data. The study found that, top management influence implementation of strategic plans as average of 68% of respondents agreed on the supports received from top management during implementation process; and average of 67% of respondents agreed that, resources such as human and financial are very key in the implantation process of strategic plans in public sector. Therefore, top management and organisation resources positively influence implementation of strategic plans in the public sector with purpose improving quality service delivery

Thompson, Strickland & Gamble, (2024) points out that, an excellent strategy is the best test for managerial excellence and the most reliable recipe for organisation success. Awino (2024) studied the effect of selected variables on corporate performance using 49 large private insurance firms in Kenya. His findings revealed that, culture and management were very critical variables in firms' performance; and concluded that, among the selected variables, both financial and non-financial performance were affected to varying degree.

Abok, (2024) conducted a study on the factors affecting the implementation of strategic plans in Non-Governmental Organisations (NGOs). This study concluded that, organisations which provided a conducive environment were effective in incorporating culture that encouraged togetherness, team spirit, and willingness to share and execute goals of organisation. On the other hand, Mintzberg (2023) affirmed that, a successful execution of strategic plans is dependent on the learning and development environment for employees who are the true foot soldiers of implementations. This learning orientations requires emphasis on openness, collaborations, trust, equity, risk taking and continuous improvement. Also, Guth and McMillan (2023) revealed that, middle level

manager's participation enhances successful strategy execution, and hence, managerial involvement is essential for organisations to attain the execution of planned strategies.

Iqbal *et al* (2023) conducted a study on moderating effect of top management support on relationship between transformational leadership and project Success. The study covers a total of 125 project managers selected through systematic sampling technique by using mail survey method. PLS-SEM has been utilized to analyze the study data. The study concludes that project success can be enhanced through unfolding the relationships between project managers' transformational leadership and top management support. The study is pioneer to discuss these relationships particularly in a developing country. However, the study findings only rely on the higher education sector of Pakistan.

2.5 Critique of the Existing Literature Relevant to the Study

Empirical literature on e-procurement demonstrates growing scholarly interest in its influence on organizational and procurement performance; however, several conceptual, theoretical, methodological, and contextual gaps remain evident.

In the United States, Gioconda (2024) examined the impact of e-procurement technology (EPT) usage on procurement process reengineering (PPR) and procurement performance (PP) using data from 368 procurement specialists. The study established a positive relationship between EPT usage and managers' perceptions of procurement performance. While the study contributes valuable insights into e-procurement adoption, it adopts a broad technological view and does not disaggregate e-procurement into specific functional dimensions such as electronic communication, electronic ordering, electronic contracting, and electronic payments. Consequently, the study offers limited guidance on how individual e-procurement components influence supply chain performance. From a theoretical perspective, the study lacks grounding in the Resource-Based View (RBV) or Dynamic Capability Theory, which are essential for explaining how e-procurement capabilities can create sustained competitive advantage. Methodologically, the reliance on self-reported perceptual measures and a cross-sectional design limits causal inference and

raises concerns regarding common method bias, thereby constraining the generalizability of the findings to the current study.

In the United Kingdom, Croom and Brandon-Jones (2024) investigated the implementation and impact of e-procurement across nine public sector organizations over an 18-month period. The study highlights key implementation themes such as system specification, governance changes, and acquisition cost implications. While the longitudinal nature of the study enhances its methodological rigor, the focus remains largely on public sector institutional arrangements, emphasizing compliance and governance rather than performance outcomes across the supply chain. The study is predominantly informed by institutional and structural perspectives, with limited integration of RBV or Schumpeterian innovation lenses, which are critical for understanding e-procurement as a strategic resource in competitive retail environments. Furthermore, the public-sector context of a developed economy limits the applicability of the findings to developing economies such as Kenya, where infrastructural constraints, regulatory dynamics, and managerial capabilities differ significantly.

Similarly, Dooley (2024) analyzed institutional responses to electronic procurement in the UK public sector, while Wang et al. (2024) examined e-procurement systems in Sri Lankan state corporations. Although these studies contribute to understanding institutional and regulatory influences on e-procurement adoption, they are largely institution-centric, focusing on policy compliance rather than strategic performance outcomes. The studies do not sufficiently apply Dynamic Capability Theory to explain how organizations adapt, reconfigure, and leverage e-procurement systems to enhance supply chain performance. Methodologically, both studies rely heavily on survey-based designs without incorporating robustness checks or triangulation with objective performance data.

Moon (2024) explored the diffusion of e-procurement practices in U.S. state governments, while Aboelmaged (2025) assessed e-payment systems from the perspective of Iranian users. Angeles (2025) investigated the impact of e-payment systems on customer

satisfaction in Nigeria and later examined the effectiveness of e-contracting in Ghanaian public corporations. Although these studies address specific components of e-procurement, they are largely fragmented, examining isolated practices rather than an integrated e-procurement framework. Theoretically, most of these studies do not explicitly anchor their analyses in RBV, Institutional Theory, or Disruptive Innovation Theory, thereby limiting their explanatory power regarding how e-procurement creates sustained organizational value. Additionally, the studies are contextually situated in public sector or consumer-focused environments, reducing their relevance to supply chain performance in large retail chains.

Within the Kenyan context, Maina (2024) examined factors affecting procurement performance in public entities, Kamotho (2024) analyzed the impact of e-procurement on procurement performance among state corporations, and Amayi (2024) investigated e-procurement adoption at the Kenya Revenue Authority. While these studies provide valuable local insights, they are heavily skewed toward public sector institutions, which operate under rigid regulatory frameworks and non-competitive market conditions. Consequently, they do not adequately capture the dynamics of large retail chains, which face intense competition, demand volatility, and profit-driven supply chain efficiency requirements. Methodologically, these studies predominantly employed cross-sectional survey designs and relied on subjective performance measures, limiting their ability to explain long-term strategic impacts of e-procurement.

Overall, the reviewed literature reveals significant gaps. First, there is limited empirical evidence on how specific e-procurement dimensions electronic communication, electronic ordering, electronic contracting, and electronic payments jointly influence supply chain performance. Second, most studies lack strong theoretical integration, particularly of RBV, Dynamic Capability Theory, and Schumpeterian Theory of Creative Destruction, which are essential for explaining e-procurement as a strategic and innovative capability. Third, methodological limitations, including over-reliance on self-reported data, cross-sectional designs, and limited robustness testing, weaken the explanatory power of prior findings. Finally, there is a clear sectoral gap, as existing Kenyan studies focus on public

entities and state corporations rather than large retail chains. This study therefore addresses these gaps by examining the relationship between e-procurement and supply chain performance in large retail chains in Kenya, integrating multiple theoretical perspectives and adopting a comprehensive, multidimensional view of e-procurement.

2.6 Summary of Literature Reviewed

This chapter reviewed the various theories that explain the independent and dependent variables. The key theories discussed included technology acceptance theory, resource based theory, The disruptive innovation theory The Dynamic Capability Theory and power theory. The chapter concentrated on empirical facets of determinants of firm performance; these included e-contracting, e-ordering, e-payment and e-mailing. The chapter also presents the conceptual framework which presented diagrammatically the independent variables showing the specific constituents that influence a particular variable. Local and global studies that have been done on supply chain automation practices did not focus on the factors affecting the firm performance for Retail Chains; therefore there is a gap in the empirical evidence available.

2.7 Research Gaps

The literatures reviewed have indicated that there are limited studies linking e-procurement to firm performance in Kenya. Further, majority of these studies focus outside Africa, especially America and Europe; for example, Bendoly *et al.*, (2024) conducted a study on ICT adoption by the European firm; Cagliano *et al.*, (2024) studied the adoption of regulation based ICT in Asia. In USA, Gioconda (2024) conducted a study on the impact of e-procurement on procurement practices and performance. In UK, Croom and Brandon-Jones (2024) researched on the impact of e-procurement: Experiences from implementation in the UK public sector. Dooley (2024) scrutinized the Institutional responses to electronic procurement in the public sector in UK and Wang *et al.*, (2024) investigated the electronic procurement system in state corporations in Sri Lanka. These studies were conducted in different countries, sectors, and context. Countries differ in

terms of geographical boundaries, economic development, legal framework and institutional framework hence findings from one country cannot be generalized to another country.

In Kenya, Maina (2024) investigated the factors affecting procurement performance in the public entities in Kenya. Kamotho (2024) investigated the impact of e-procurement on procurement performance among state corporations in Kenya. Amayi (2024) investigated the adoption of e-procurement strategy and procurement performance in state corporations with reference to Kenya revenue authority. Nevertheless, none of these studies focused on the relationship between electronic procurement and supply chain performance of Large Retail Chains in Kenya. In addition, none of these studies showed the moderating effect of Top management support on the relationship between the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya. To fill the highlighted gaps, the current study seeks to establish the relationship between electronic procurement (electronic communication, electronic ordering, electronic contracting and electronic payments) and supply chain performance of Large Retail Chains in Kenya. In addition, the study seeks to assess the moderating effect of Top management support on the relationship between the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter details the methodology to assist in achieving the research objectives. According to Newing (2018), a research methodology is concerned with what is actually done in order to address the specific objectives and research questions developed. This chapter covers the research design adopted by the study, the target population, the sample and sampling method used to draw the unit of observation, data collection tools, data collection procedure, data analysis and presentation.

3.2 Research Philosophy

Research philosophy is the foundation of knowledge and the nature of that knowledge contains important assumptions about the way in which researchers view the world (Saunders, Lewis, & Thornhill, 2019). Research methods are influenced by philosophical orientations such as epistemology. Epistemology attempts to answer the basic question: what distinguishes true (adequate) knowledge from false (inadequate) knowledge. Epistemology is concerned with determination of the nature of knowledge and the extent of human knowledge (Burrell & Morgan, 2018). There are three epistemological positions: realism, interpretivism and positivism (Saunders, Lewis, & Thornhill, 2019).

This study adopted a positivist research paradigm. Cooper and Schindler (2019) asserts that positivist research paradigm takes the quantitative approach and is based on real facts, objectivity, neutrality, measurement and validity of results. The roots of positivism lie particularly with empiricism, that is, all factual knowledge is based on positive information gained from observable experiences, and only analytic statements are allowed to be known as true through reason alone. Positivism maintains that knowledge should be based on facts and not abstractions; thus knowledge is predicated on observations and experiments based on existing theory (Cooper & Schindler, 2019). Epistemological

research in the positivist paradigm is how the social world can be investigated as natural science. Hypotheses have to be tested by empirical approaches. Koul (2018) posits that since the focus of the positivist paradigm is to discover the ‘truth’ through empirical investigation, the quality standards under this paradigm are validity and reliability.

3.2.1 Research Design

Research design refers to the overall blueprint that guides the collection, measurement, analysis, and interpretation of data in a manner that adequately addresses the research problem and objectives (Saunders, Lewis, & Thornhill, 2019). It provides a systematic framework for conducting research by specifying the procedures for data collection, sampling, measurement of variables, and data analysis. The choice of a research design depends on the nature of the research problem, the objectives of the study, and the type of relationships the researcher intends to examine.

This study adopted an explanatory research design. Explanatory research design is appropriate where a study seeks to establish and explain the causal or predictive relationships between variables by testing hypotheses derived from theory (Creswell & Creswell, 2018). Unlike descriptive research, which is limited to describing the characteristics of a phenomenon, explanatory research investigates how and why one variable influences another. It therefore enables researchers to determine whether changes in independent variables significantly explain variations in the dependent variable.

The explanatory research design was considered appropriate because this study sought to examine the influence of electronic communication, electronic contracting, electronic ordering, and electronic payments on supply chain performance of large retail chains in Kenya, while also determining the moderating effect of top management support on these relationships. The study was guided by clearly stated hypotheses developed from established theories and empirical literature, making an explanatory approach more suitable for testing the proposed relationships.

The design further facilitated the use of quantitative methods to collect data from the target respondents and enabled the application of inferential statistical techniques, including correlation analysis, multiple regression analysis, and moderated regression analysis, to determine the significance, strength, and direction of the relationships among the study variables. Consequently, the explanatory research design provided a robust methodological framework for achieving the study objectives and generating empirical evidence on the effect of e-procurement practices on supply chain performance among large retail chains in Kenya.

3.3 Target Population of the Study

Target population refers to the aggregation of elements from which the sample is selected (Rubin & Babbie, 2018). Population is the entire group of individuals or objects for which the study data are to be used to make inferences; is the researcher's 'universe' (Kothari, 2018). According to (Burns & Grove, 2018) population is all the elements that meet the criteria for inclusion in a study. Cooper and Schindler (2019) observe that a population is the total collection of elements about which one wants to make inferences. It is the entire set of individuals (or objects) having some common characteristics as defined by the sampling criteria established for the study (Ngechu, 2018).

Retail chains in Kenya vary in size, ranging from large-scale operators to smaller, localized entities. Large-scale retail chains such as Naivas, Carrefour, and Quickmart have extensive networks of outlets across the country, serving diverse customer bases. Medium-sized retail chains, including Chandarana Foodplus and Tumaini Supermarkets, operate in specific regions or urban centers with moderate branch networks. On the other hand, small-scale chains like Eastmatt and Magunas target niche markets with a limited number of outlets, often in smaller towns or neighborhoods (Retail Trade Association of Kenya (RETRAK, 2023).

In this study, the target population was Large Retail Chains in Kenya. Large Retail chains typically refer to retail businesses that operate multiple stores across a region, country, or

even internationally. These chains have a significant market presence and a wide network of outlets. They often offer a diverse range of products, including groceries, household items, electronics, clothing, and more. Large Retail chains leverage economies of scale to negotiate better deals with suppliers, providing consumers with competitive prices. In Kenya, 12 Retail Chains qualify to be in the category of large Retails. These include; Chandarana Retails, Eastmatt Retails, Carrefour Retail, Khetias Retails, Magunas Retails, Shivling Retails, Cleanshelf Retail, Woolmatt Retails, Jumaa Retails, Maathai Retails, Quick Mart Limited and Naivas Limited (KAM, 2023).

The large Retail chains formed the unit of analysis while the unit of observation was senior employees working in 4 departments including procurement department, logistics department, finance department, and ICT department. These employees included; (the head of department, assistant head, secretary and 2 lower management employees). Therefore, the target population for this study was 240 respondents as shown in Table 3.1.

Table 3.1: Unit of Observation

Category	Total population
Procurement Department	60
Logistics Department	60
Finance Department	60
ICT Department	60
Total	240

3.4 Sampling Frame

Sampling frame has been defined as the source from which the sample is drawn being the list of all the elements in the population (Noor, 2018). It is a list of members of the research population from which a random sample may be drawn (Kothari & Garg, 2018). For the current study, the sample frame incorporated the 12 Large Retail Chains in Kenya (Appendix IV) and their respective senior employees working in 4 departments including procurement department, logistics department, finance department, and ICT department

(KAM, 2022). Therefore, the sampling frame was a list of 240 respondents working in procurement department, logistics department, and ICT department from 12 Large Retail Chains in Kenya.

3.5 Census

Kothari (2018) explains that a sample size refers to the number of items to be selected from the universe to constitute a sample while sampling procedures refers to the technique used in selecting the items of the sample. The Census Method is a research technique used to collect data from an entire population, rather than using a sample. In this method, data is collected from every individual or unit within the target population, leaving no room for sampling error. The Census Method is commonly used in situations where the population size is relatively small or when resources allow for the collection of data from the entire population. This study used census method hence all the 240 respondents participated in the study.

3.6 Data Collection Instrument

This study collected both primary and secondary data. Secondary data refers to information that has already been collected, processed, and made available for use by others (Mugenda & Mugenda, 2018). Secondary data in this study was collected from the annual reports of the Large Retail Chains in Kenya. The study collected data for a period of 5 years from 2018-2022. For primary data, this study used semi-structured questionnaire. According to (Mugenda & Mugenda, 2018) questionnaire is a pre-formulated written set of questions to which the respondents record the appropriate responses as indicated and in accordance with the question's options provided if any.

Semi-structured questionnaires were structured into sections 1-5. Section one collected general information regarding the Retail Chains, while sections 2-4 collected information relevant to various study independent variables while section five targets information on Performance. The primary data was collected using a self-administered semi-structured

questionnaire (Appendix II). The questionnaire contains both open and close ended questions based on the study objectives. According to Mugenda and Mugenda (2018), a questionnaire is appropriate for data collection from a large number of respondents as it helps to save on time spent in data collection. The researcher used semi-structured questionnaire as the primary data collection instrument for this study due to its practicability and applicability to the research problem and the size of the population. It is also cost effective (Denscombe, 2018).

3.7 Data Collection Procedures

According to Rotich (2018) data collection refers to the gathering of information to serve or prove some facts. Burns and Grove (2018) define data collection as the precise, systematic gathering of information relevant to the research sub-problems, using methods such as interviews, participant observations, focus group discussion, narratives and case histories. The questionnaire method has been selected because it is an unobtrusive and inexpensive method for data collection (Grønhaug, 2018). For purposes of this study, data collection was done through the use of questionnaires. Based on the nature of the survey interaction, a questionnaire can be distributed to respondents using several modes that is, mail, telephone, internet or face to face (Rotich, 2018).

This study adopted the self-administered questionnaire approach. Self-administered questionnaires offer researchers the potential to reach a large number of potential respondents in a variety of locations (Cooper & Schindler, 2019). The studies by Gitahi (2023) and Sialala (2023) and Hassan (2024) used self-administered questionnaires.

Before embarking on data collection, relevant approvals were obtained. An introductory letter from the JKUAT Nairobi campus introducing the researcher to relevant authorities for field data collection was first obtained. This letter was used to obtain the permit for research from the National Commission for Science, Technology and Innovation (NACOSTI). In addition, the researcher sought permission from the respective chief executives in order to be allowed to collect data from the Retail Chains.

During the appointment, the significance of the study was explained. The data collection from the field was done with an aid of five research assistants. It is expected that the use of the research assistants improved the return rate of the questionnaires since any clarifications on the questionnaire was made contemporaneously. The research assistants were trained on research ethics and on the research instrument and its administration, interview skills and data recording. An introductory letter for the research assistant to collect data on the researcher's behalf was given to the research assistants.

3.8 Pilot Study

According to Mugenda and Mugenda (2018), a pilot study is a small-scale preliminary study conducted to evaluate feasibility, duration, cost, adverse events, and improve upon the study design prior to performance of a full-scale research project. Pilot study facilitated pre-testing and validation of the questionnaire. Cronbach's alpha methodology, which measures internal consistency, was used. Cronbach's alpha provides the average of the measures of the items that are measurable and their correlations. This is in line with the research design to be used in this study. The main aim of the pilot test is testing how reliable the data collection tool is. A total of 24 respondents from Medium size Retail Chains in Kenya participated in the pilot test which represents 10% of target population. Medium size Retail Chains were chosen because they share similar characteristics with Large Retail Chains in Kenya. Findings of pilot test were not included in the actual study.

3.8.1 Reliability of the Instrument

Mugenda and Mugenda (2018) stated that reliability is the degree of consistency of the findings even after several trials. Silverman (2018) indicated some of the ways through which reliability can be enhanced and they are prior testing of the questions; using responses that are of fixed choices; and collection, transcription, and reports of field that are systematic. Through the pilot study, the research instrument was pre-tested for reliability and any inconsistencies that arose were corrected. This made sure that they provide the measure of what they are designed to measure. Also, another way to enhance

reliability of the instruments is by ensuring that the items are clear to the respondents. It was also increased by adding several items that are the same on a single measure, testing a sample that is diversified, and applying the use of test procedures that are uniform. Reliability of the questionnaire was evaluated through Cronbach's Alpha which measures internal consistency. Cooper and Schindler (2019) stated that the alpha coefficient value that is acceptable is 0.7 and above.

3.8.2 Validity of the Instrument

According to McNabb (2018), validity is the extent to which results acquired from the process of analysis of the data actually embodies the phenomenon under study. There are three types of validity: face validity, content validity, and construct validity. Face validity refers to the extent to which a question, scale, or measure appears logically to reflect accurately what it was intended to measure. According to Devi (2019), pre-testing is a proper way of improving face validity. Face validity of the research instrument was also improved by carrying out a pilot test and changing any unclear and ambiguous questions. On the other hand, content validity, also referred to as logical validity, refers to the degree to which a measure depicts all facets of a given social construct. In this study, content validity was improved by seeking the opinions of experts in the field of study, including the Supervisors. Both face validity and content validity were enhanced by developing the research instruments as per the objectives of the study.

According to Saunders *et al.* (2018), construct validity tests how accurate a set of questions measure the presence of a construct. This study used confirmatory factor analysis to test the construct validity of the study variables. Confirmatory factor analysis shows how well a measures represent a construct.

For the items to have construct validity, they need to explain a variance of 0.5 or above towards the construct. The Average Variance Explained (AVE) for the construct should also be above 0.4 (Lincoln & Guba, 2018). SPSS Analysis of Moment Structures (AMOS) version 24 was used to provide statistics for the testing of construct validity.

3.9 Data Analysis and Presentation

Data analysis is the process where data is analyzed systematically and the process where the hypothesis is tested with the aim of acquiring some information. Because of difficulty in analysing raw data collected from the field, cleaning, coding, entering, and analysing of the data was done first (Mugenda & Mugenda, 2018). Data from questionnaires will be coded and analyzed using the latest Statistical Package for Social Sciences (SPSS) computer software. SPSS software was used because of its ability to appropriately create graphical presentations of questions, data for reporting and presentation. The analyzed data was presented in the form of frequency distribution tables, pie charts and bar graphs where appropriate. The study employed mixed methods data analysis by applying the use of descriptive and inferential statistics.

3.9.1 Descriptive Statistics

The objectives of the study guided data analysis. SPSS was used to analyze the data collected from the field. To allow data to be entered into the software, the questionnaires were referenced, and the data coded. Both quantitative and qualitative data were collected. Quantitative data collected was analyzed using descriptive statistics techniques. Through descriptive analyses, correlational as well as experimental studies emerge; and they provide clues on the issues that require more attention which leads to further research (Mugenda & Mugenda, 2018). Qualitative data was analyzed using content analysis which was performed in SPSS. Before the data is analyzed, it was first coded, cleaned, and grouped as per their variables.

3.9.2 Inferential Statistics

Pearson R correlation was used to measure strength and the direction of linear relationship between variables. The information was provide initial achievement of objectives 1, 2, 3 and 4 supply chain automation (electronic payments, electronic contracting, electronic mailing, and electronic ordering) and influence on supply chain performance of Retail

Chains. A large correlation implies a strong relation exists between the variables. The extent of the level of association between 2 variables is determined using correlation analysis (Levin & Rubin, 2018). Through correlation analysis, the researcher will be able to detect if there exist any chances of multicollinearity. If the Correlation coefficient is zero, then it suggests the variables are not related, if the value is ± 1 the variables are strongly associated (Hair et al., 2019). Small association is indicated by values ranging from 0.1- 0.29, medium association is indicated by value ranging from 0.3-0.49, and strong association is indicated by value of 0.5 and above.

Multiple regression models were fitted to the data to determine how the predictor/independent variables affect the response/dependent variable. Multiple regression analysis was used in this study because it uses the predictor variables in predicting the response variable. It is a statistical tool attempting to establish whether some variables can be used together in predicting a particular variable (Mugenda & Mugenda, 2018).

To determine any causal relationship, multiple linear regression analysis was conducted. As stated by Gujarati (2018), causation models are best explained by linear regression analysis and thus, the study used linear regression results for each variable to measure hypothesis 1, 2, 3, and 4. The model was;

Performance of performance of Retail Chains = f (electronic communication, electronic ordering, electronic contracting, electronic payments)

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \dots\dots\dots \text{Equation}$$

Where :

$\beta_1, \beta_2, \beta_3$ and β_4 are the regression coefficients of the predictors in the model

Y is supply chain performance of Large Retail Chains in Kenya.

X₁ is electronic communication

X_2 is electronic ordering

X_3 is electronic contracting

X_4 is electronic payments

β_0 is a constant

ε is Error term (random variation due to other unmeasured factors).

Moderator is a variable that affects the direction and the strength of the relationship between an independent or predictor variable and a dependent criterion variable (Baron & Kenny, 2018). This variable may reduce or enhance the direction of the relationship between a predictor variable and a dependent variable, or it may change the direction of the relationship between the two variables from positive to negative (Baron & Kenny, 2018; Lindley & Walker, 2018). This study used multiple regressions analysis (stepwise method) to establish the moderating effect of Top management support (Z) on the relationship between supply chain automation and supply chain performance of Large Retail Chains in Kenya. The regression model for the moderating effect was as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_z Z + \beta_{iz} X_i Z + \varepsilon, (i=1, 2, 3, 4)$$

Where

$X_i Z_i$ is the interaction between the moderator with each of the independent variables (X_1, X_2, X_3, X_4).

BZ_i is the coefficient of $X*Z$ the interaction term between the moderator and each of the independent variables for $i = 1, 2, 3, 4$;

β_0 is constant (Y- intercept) which represent the value of Y when $X = 0$

3.10 Diagnostic Tests

Diagnostic test were carried out to test the five key assumptions, which include linear relationship, multivariate normality, no or little multicollinearity, no auto-correlation and homoscedasticity

3.10.1 Multi Collinearity Test

Multicollinearity refers to high correlations between explanatory variables. Bryman and Cramer, (2018), hold that multicollinearity is not a significant problem in econometric estimation in the sense that it does not violate any assumptions. However, it can cause standard errors to be very large and hence the need to investigate whether some explanatory variables may be insignificant due to the presence of high multicollinearity. This study employed variance inflation factor (VIF) to test for multicollinearity, a test that was used to assess the component of an explanatory variable's standard error caused by its correlation with other explanatory variables. Values of correlation coefficient greater than 0.8 were used as indicator of the presence of multicollinearity problem in this study.

3.10.2 Autocorrelation Test

Autocorrelation was checked using Durbin-Watson test. The null hypothesis for the Durbin-Watson's d tests is that the residuals aren't linearly auto correlated. The d value ranges from 0 to 3, if the value is found to be less or equal to 2 then it implies absence of autocorrelation. If the d values are $1.5 < d < 2.5$ it implies absence of autocorrelation in the data. Durbin-Watson test was used to analyze linear autocorrelation for only direct neighbors being the effects of first order

3.10.3 Heteroscedasticity

Violation of Heteroscedasticity tends to inhibit critical evaluation of forecast errors of standard deviation, which often leads to confidence intervals that are extremely narrow or extremely wide. Heteroscedasticity in this study was assessed using the Breusch-Pagan test. The null hypothesis for this test was that the error variances were equal and were a multiple function of variables. Heteroscedasticity normally occurs when the chi-square value is greater than the significance level (0.05).

As indicated in Table 3.2, the chi-square value was 0.3211, which was greater than the significance level of 0.05. This implies that there was homoscedasticity in the regression model.

Table 3.2: Breusch-Pagan test for Heteroscedasticity

Ho: Constant variance	
Variables: Fitted with values of project performance	
Chi2 (1)	0.96
Prob>chi2	0.3211

3.10.4 Normality Test

Many of the parametric tests including correlation, regression, t tests, and analysis of variance are based on the assumption that the data follows a normal distribution. That is to mean that it is assumed that the populations from which the samples are taken are normally distributed. The assumption of normality is especially critical when constructing reference intervals for variables. Normality assumptions are important, for when the assumptions do not hold, it is impossible to draw accurate and reliable conclusions about reality. It is important to ascertain whether data show a serious deviation from normality using the normality tests which are supplementary to the graphical assessment of normality (Cooper & Schindler, 2019).

The main tests for the assessment of normality that was considered in this study are Kolmogorov-Smirnov (K-S) test, Shapiro-Wilk test Anderson-Darling test and Jarque-Bera test. The study used Shapiro-Wilk tests to test normality since the data was analyzed using SPSS. For normal distribution, the significance value of the Shapiro-Wilk Test should be greater than 0.05. If it is below 0.05, the data significantly deviate from a normal distribution (Sahu, 2018).

3.10.5 Test of Hypotheses

The study performed individual tests of all independent variables to determine which regression coefficient may be zero and which one may not. If the p-value is less than 0.05 then the researcher concludes that the overall model is significant and has good predictors of the dependent variable and that the results are not based on chance. If the p-value is greater than 0.05 then the model is not significant and cannot be used to explain the variations in the dependent variable. We reject null hypothesis is 0 value is less than 0.05. The decision rule is summarized in Table 3.3

Table 3.3: Hypotheses Test

Hypotheses statement	Hypothesis test	Decision rule
H01: Electronic communication has no significant relationship with supply chain performance of Large Retail Chains in Kenya	Karl-Pearson's coefficient of correlation -F-test (ANOVA) -T-test H01 : $\beta_1 = 0$	Reject H01 if P-value ≤ 0.05 otherwise fail to reject H01 if P is > 0.05
H02: Electronic ordering has no significant relationship with supply chain performance of Large Retail Chains in Kenya.	Karl-Pearson's coefficient of correlation -F-test (ANOVA) -T-test H02 : $\beta_2 = 0$	Reject H02 if P-value ≤ 0.05 otherwise fail to reject H02 if P is > 0.05
H03: Electronic contracting has no significant relationship with supply chain performance of Large Retail Chains in Kenya	Karl-Pearson's coefficient of correlation -F-test (ANOVA) -T-test H03 : $\beta_2 = 0$	Reject H02 if P-value ≤ 0.05 otherwise fail to reject H03 if P is > 0.05
H04: Electronic payment has no significant relationship with supply chain performance of Large Retail Chains in Kenya	Karl-Pearson's coefficient of correlation -F-test (ANOVA) -T-test H04 : $\beta_4 = 0$	Reject H04 if P-value ≤ 0.05 otherwise fail to reject H04 if P is > 0.05
H05: Top management support has no moderating effect on the relationship between electronic procurement and supply chain performance of Large Retail Chains in Kenya	Karl-Pearson's coefficient of correlation -F-test (ANOVA) -T-test H05 : $\beta_5 = 0$	Reject H05 if P-value ≤ 0.05 otherwise fail to reject H05 if P is > 0.05

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter covers data analysis, results interpretation, presentation and discussion of the findings based on the general and specific objectives of the study. The chapter covers response rate, pilot test results, demographic information and descriptive statistics. The chapter also encompasses inferential statistics which included correlation analysis and regression analysis.

4.2 Response Rate

The researcher sampled 240 respondents who were each administered with the questionnaires. From the 240 questionnaires 220 were completely filled and returned hence a response rate of 91.7%. The high response rate was achieved as a result of regular follow ups and reminder to the respondents which was done through use of emails and phone calls. The response rate was considered as suitable for making inferences from the data collected. As indicated by Metsamuuronen (2019), a response rate that is above fifty percent is considered adequate for data analysis and reporting while a response rate that is above 70% is classified as excellent. Hence, the response rate of this study was within the acceptable limits for drawing conclusions and making recommendations.

Table 4.1: Response Rate

Response Rate	Frequency	Percent
Response	220	91.7
Non-Response	20	8.3
Total	240	100

4.3 Pilot Test Results

According to Mugenda and Mugenda (2018), a pilot study is a small-scale preliminary study conducted to evaluate feasibility, duration, cost, adverse events, and improve upon the study design prior to performance of a full-scale research project. Pilot study facilitated pre-testing and validation of the questionnaire. In this study a pilot study was conducted to test validity and reliability of the data collection instrument. The study identified 24 respondents for the pilot as per the recommendations.

4.3.1 Reliability Test Results

Reliability implies to the consistency of a set of measurement item. Reliability is the consistency of measurement or the degree to which an instrument measures the same way each time it is used under the same condition with the same subjects (Kothari, 2018). In short, it is the repeatability of measurement. When a person's score on the same test given twice is similar, then, a measure is considered to be reliable. Ten percent of the questionnaires were piloted by issuing them to respondents who will not be included in the final study sample. The 24 questionnaires were coded and responses input into SPSS which was used to generate the reliability coefficient.

The study made use of the most common internal consistency measure known as Cronbach's Alpha (α) which was generated by SPSS. It was used to indicate the extent to which a set of test items can be treated as measuring a single latent variable (Cronbach, 2018). The recommended value of 0.7 was used as a cut-off of reliability for this study. The value of Cronbach alpha must be at least 0.7 or higher for the research instrument to be reliable (Sismund, 2018). The reliability test results are as shown in Table 4.2

From the findings, the construct electronic communication had an average Cronbach's reliability alpha of 0.802, electronic ordering had a Cronbach's reliability alpha of 0.745, electronic contracting had an average Cronbach's reliability alpha of 0.809, electronic payments had a Cronbach's reliability alpha of 0.824, Top management support had a

Cronbach's reliability alpha of 0.811 and supply chain performance had an average Cronbach's reliability alpha of 0.807. This shows that the study questionnaire met the reliability criteria ($\alpha > 0.7$).

Table 4.2: Reliability Test Results

Variable	Cronbach's Alpha	Number of Items	Interpretation
electronic communication	0.802	7	Reliable
electronic ordering	0.745	9	Reliable
electronic contracting	0.809	9	Reliable
electronic payments	0.824	9	Reliable
management support	0.811	8	Reliable
supply chain performance	0.807	10	Reliable

4.3.2 Validity Test Results

According to Somekh, & Cathy (2018) validity is the degree by which the sample of test items represent the content the test is designed to measure. Validity shows the research has given results that are able to represent the actual phenomenon on the ground. To ensure content and construct validity, the study used industry experts and the research supervisor to review the questionnaire to enhance its content validity. This facilitated necessary revision and modification of the research instrument thereby enhancing validity (Bryman & Cramer, 2018). Content validity addresses how well the items developed to operationalize a construct provide an adequate and representative sample of all the items that might measure the construct of interest. In this study, content validity was achieved through expert judgements of the research supervisors. The research supervisors indicated whether the items are relevant or not. The results of their responses were analyzed to establish the percentage representation using the content validity index. The content validity formula by Amin (2018) was used.

Factor analysis was adopted to ascertain validity of the collection instruments. Tabachnick and Fidell (2018) validates the statement by arguing that (average variance extracted) EFA is used when a researcher wants to discover the number of factors influencing variables

and to analyze which variables go together. This study considered loadings of 0.50 and above as the threshold for interpretations. A low value for communality less than 0.50 indicated that the variable does not fit well with the other variables in its component, and is undesirable according to Khoi (2018). The results were as shown in Table 4.2. The results show that electronic communication had an average variance extracted (AVE) value of 0.538, electronic ordering had AVE of 0.546, electronic contracting an AVE of 0.513, electronic payments had an AVE of 0.524, Top management support had an AVE of 0.568 and supply chain performance had an AVE of 0.534. These finding showed that factor loadings were above the threshold of 0.50 adopted by the study that therefore implied that all the constructs were suitable for further analysis.

Table 4.3: Factor Analysis for All Variables

Variables	Average Factor Loading	No. of Items	Comment
electronic communication	.538	7	All items were accepted
electronic ordering	.546	9	All items were accepted
electronic contracting	.513	9	All items were accepted
electronic payments	.524	9	All items were accepted
management support	.568	8	All items were accepted
supply chain performance	.534	10	All items were accepted

4.4 Demographic Information

The demographic information of the respondents comprised of age of the respondents, level of education and length of service. The results were presented through use of figures and tables.

4.4.1 Respondents' Age

The respondents were requested to indicate their age. The results were as shown in Figure 4.1. From the results, 44% of the respondents indicated 31-40 years, 38% of the respondents indicated 41-50 years while 18% of the respondents indicated above 50 years. This implies that most of the respondents indicated 31-40 years. Studies have shown that

professionals in their 30s and 40s are often more open to adopting new technologies compared to their older counterparts. This demographic is typically more adaptable and willing to embrace e-procurement systems that can streamline operations and improve supply chain performance (Venkatesh, Morris, Davis, & Davis, 2019). In addition, Wu, Zsidisin, and Ross, (2018) indicated that experienced employees are better at understanding the complexities of supply chain management and can leverage e-procurement systems to enhance efficiency and reduce costs. Their experience allows them to identify and mitigate potential risks associated with e-procurement implementation

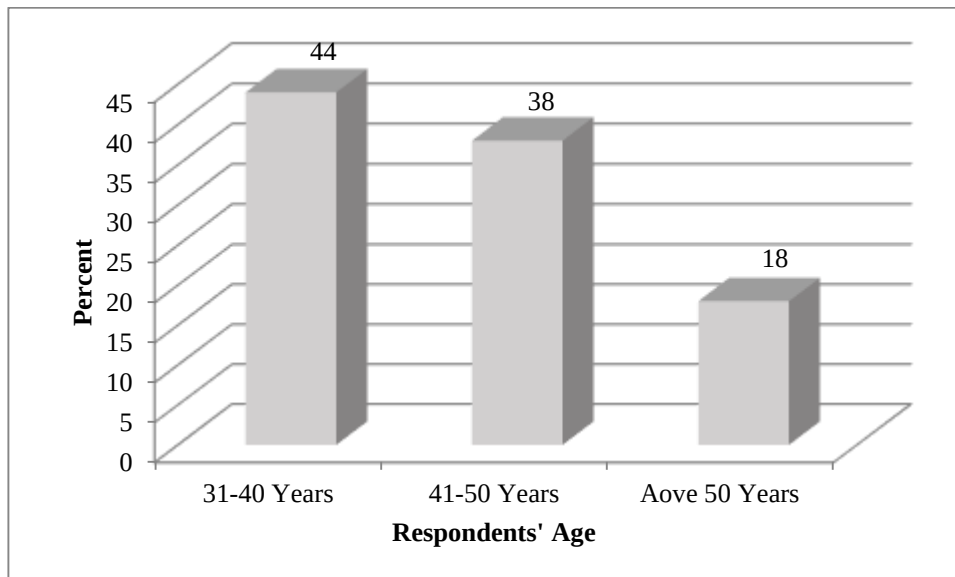


Figure 4.1: Respondents' Age

4.4.2 Respondents' Education Level

The respondents were also requested to indicate their level of education. The results were as shown in Figure 4.2. From the results, 52% of the respondents indicated undergraduate degree while 48% of the respondents indicated post graduate degree. This implies that the respondents had adequate education to provide the information needed. Studies have shown that higher education levels correlate with better understanding and more effective

use of technology in business processes. Professionals with advanced education are more likely to comprehend the strategic importance of e-procurement and are better equipped to leverage these systems to improve supply chain performance (Harland, Lamming, & Walker, 2019). Carter, Monczka, Ragatz, & Jennings, 2020) indicates that advanced education, particularly at the postgraduate level, enhances an individual's ability to perform complex analyses and make strategic decisions. This is particularly relevant in the context of e-procurement, where strategic alignment with organizational goals is crucial

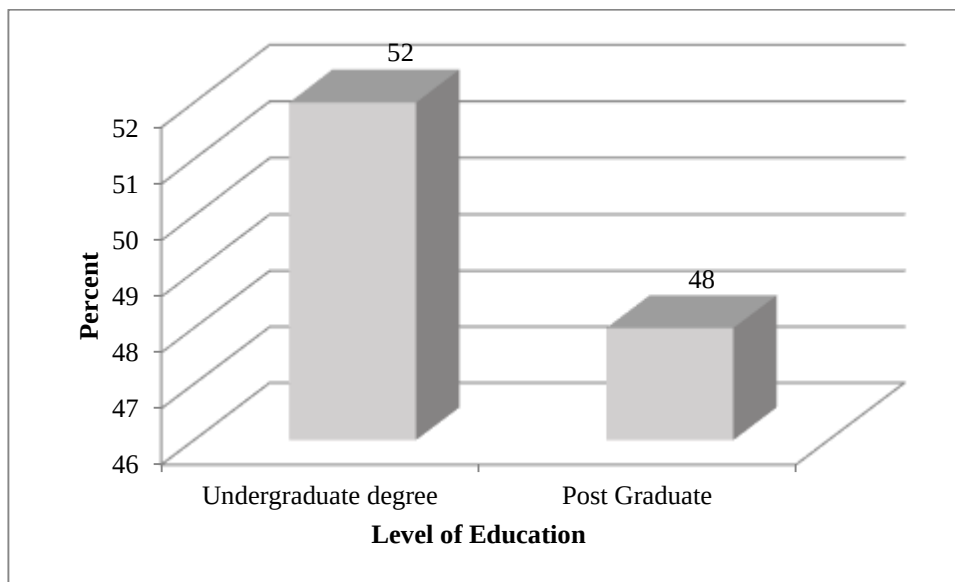


Figure 4.2: Respondents' Education Level

4.4.3 Respondents' Length of Service

The respondents were also requested to indicate their length of service. The results were as shown in figure 4.3. From the results, 38% of the respondents indicated 6-8 years, 35% of the respondents indicated 3-5 years while 27% of the respondents indicated above 9 years. This implies that most of the respondents indicated 6-8 years. Empirical literature supports the notion that experienced professionals are better at leveraging technology to enhance supply chain performance, driving process improvements, and aligning new

systems with strategic objectives (Gunasekaran *et al.*, 2019). Additionally, the presence of long-serving employees provides valuable leadership and mentorship, ensuring that the transition to e-procurement is smooth and effective (Croom & Brandon-Jones, 2024). This diverse range of experience levels within the workforce is essential for maximizing the benefits of e-procurement and improving supply chain performance in large retail chains in Kenya.

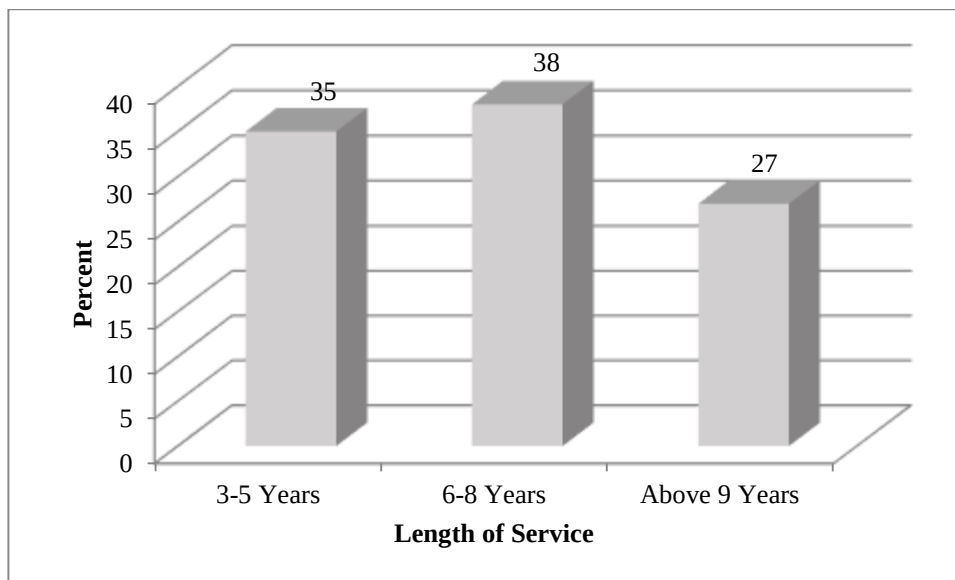


Figure 4.3: Respondents' Length of Service

4.5 Descriptive Statistics Analysis

In this section, the study presents the finding on the specific objectives of the study. On the likert scale questions, the scale was 5 with 1 Strongly Disagree, 2 Disagree, 3 Moderate, 4 Agree and 5 Strongly agree. Means and standard deviations were used to interpret the results with a mean of 0-1.4 implied that the respondents strongly disagreed, a mean of 1.4-2.4 implied they disagreed, 2.5-3.4 suggest that they were neutral, a mean of 3.5-4.4 suggest they agreed, and a mean of 4.5-5 implies the respondents strongly agreed (Trochim, 2018).

4.5.1 Electronic Communication and Supply Chain Performance

The first specific objective of the study was to examine the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya. The respondents were requested to indicate their level of agreement on statements relating to electronic communication and supply chain performance of Large Retail Chains in Kenya. The results were as presented in Table 4.4.

From the results, the respondents agreed that the use of electronic communication tools has enhanced their ability to meet delivery deadlines ($M=3.957$, $SD= 0.875$). In addition, the respondents agreed that electronic communication has contributed to cost savings in their supply chain ($M=3.948$, $SD= 0.823$). Further, the respondents agreed that they have seen a reduction in inventory discrepancies due to effective electronic communication ($M=3.909$, $SD= 0.635$).

The respondents also agreed that the speed of decision-making in their supply chain has increased due to electronic communication ($M=3.804$, $SD= 0.671$). Further, the respondents agreed that electronic communication has improved their supply chain's responsiveness to market changes ($M=3.801$, $SD= 0.793$). The respondents also agreed that the quality of their supplier relationships has improved due to better electronic communication ($M=3.787$, $SD= 0.776$). In addition, the respondents agreed that electronic communication has enabled better risk management in their supply chain ($M=3.754$, $SD=0.823$). Further, the respondents agreed that the integration of electronic communication tools has streamlined their supply chain processes ($M=3.688$, $SD=0.867$). The respondents also agreed that the organization has achieved higher levels of collaboration and information sharing with their supply chain partners through electronic communication ($M=3.625$, $SD=0.753$).

The standard deviations in these results provide insights into the consensus and variability among respondents regarding the impact of electronic communication on supply chain dynamics. Lower standard deviations, such as for the speed of decision-making

(SD=0.671) and collaboration and information sharing (SD=0.753), indicate a strong consensus, suggesting these benefits are widely recognized and consistently experienced across the organization. Moderate standard deviations, like those for the quality of supplier relationships (SD=0.776) and responsiveness to market changes (SD=0.793), show general agreement but with some variability, indicating that while many respondents perceive improvements, their experiences may slightly differ. Higher standard deviations, such as for better risk management (SD=0.823) and streamlined supply chain processes (SD=0.867), suggest more diverse opinions, reflecting broader ranges of experiences or perceptions.

Table 4.4: Electronic Communication and Supply Chain Performance

	Mean	Std. Deviation
The use of electronic communication tools has enhanced our ability to meet delivery deadlines.	3.957	0.875
Electronic communication has contributed to cost savings in our supply chain.	3.948	0.823
We have seen a reduction in inventory discrepancies due to effective electronic communication.	3.909	0.635
The speed of decision-making in our supply chain has increased due to electronic communication.	3.804	0.671
Electronic communication has improved our supply chain's responsiveness to market changes.	3.801	0.793
The quality of our supplier relationships has improved due to better electronic communication.	3.787	0.776
Electronic communication has enabled better risk management in our supply chain.	3.754	0.823
The integration of electronic communication tools has streamlined our supply chain processes.	3.688	0.867
The organization has achieved higher levels of collaboration and information sharing with our supply chain partners through electronic communication	3.625	0.753
Aggregate	3.808	0.780

4.5.2 Electronic Ordering and Supply Chain Performance

The second specific objective of the study was to determine the relationship between electronic ordering and supply chain performance of Large Retail Chains in Kenya. The respondents were requested to indicate their level of agreement on the statements relating to electronic ordering and supply chain performance of Large Retail Chains in Kenya. The results were as shown in Table 4.5

From the results, the respondents agreed that electronic requisitioning greatly reduces delivery time ($M=3.902$, $SD= 0.897$). In addition, the respondents agreed that supplier portals greatly reduces delivery time ($M=3.884$, $SD= 0.731$). Further, the respondents agreed that electronic catalogues reduces delivery time ($M=3.843$, $SD= 0.763$). The respondents also agreed that electronic requisitioning greatly influences customer satisfaction ($M=3.816$, $SD=0.641$). In addition, the respondents agreed that supplier portals greatly influence customer satisfaction ($M=3.736$, $SD= 0.675$). The respondents agreed that electronic catalogues greatly influences customer satisfaction ($M=3.721$, $SD=0.866$). The respondents also agreed that electronic requisitioning greatly reduces costs ($M=3.688$, $SD=0.741$). In addition, the respondents agreed that supplier portals greatly reduce costs ($M=3.644$, $SD=0.888$). Further, the respondents agreed that electronic catalogues greatly reduces costs ($M=3.638$, $SD=0.576$).

The standard deviations in these results indicate the degree of agreement and variability among respondents regarding the impact of electronic procurement tools on delivery time, customer satisfaction, and cost reduction. Lower standard deviations, such as for the influence of electronic requisitioning on customer satisfaction ($SD=0.641$) and the reduction in costs from electronic catalogues ($SD=0.576$), reflect a strong consensus, suggesting these benefits are consistently recognized across the organization. Moderate standard deviations, like those for the impact of supplier portals on customer satisfaction ($SD=0.675$) and electronic requisitioning on cost reduction ($SD=0.741$), indicate general agreement with some variability, implying that experiences and perceptions are mostly aligned but with slight differences. Higher standard deviations, such as for the impact of

supplier portals on cost reduction (SD=0.888) and electronic catalogues on customer satisfaction (SD=0.866), reveal more diverse opinions, suggesting that the implementation or effectiveness of these tools might vary across different contexts within the organization.

Table 4.5: Electronic Ordering and Supply Chain Performance

	Mean	Std. Deviation
Electronic requisitioning greatly reduces delivery time	3.902	0.897
Supplier portals greatly reduces delivery time	3.884	0.731
Electronic catalogues reduces delivery time	3.843	0.763
Electronic requisitioning greatly influences customer satisfaction	3.816	0.641
Supplier portals greatly influence customer satisfaction	3.736	0.675
Electronic catalogues greatly influences customer satisfaction	3.721	0.866
Electronic requisitioning greatly reduces costs	3.688	0.741
Supplier portals greatly reduce costs	3.644	0.888
Electronic catalogues greatly reduces costs	3.638	0.576
Aggregate	3.764	0.753

4.5.3 Electronic Contracting and Supply Chain Performance

The third specific objective of the study was to evaluate the relationship between electronic contracting and supply chain performance of Large Retail Chains in Kenya. The respondents were requested to indicate their level of agreement on various statements relating to electronic contracting and supply chain performance of Large Retail Chains in Kenya. The results were as presented in Table 4.6.

From the results, the respondents agreed that online offers greatly reduce delivery time (M=3.925, SD= 0.898). In addition, the respondents agreed that online acceptance of offers greatly reduces delivery time (M=3.817, SD= 0.665). Further, the respondents agreed that electronic negotiations of contracts reduce delivery time (M=3.731, SD= 0.761). The respondents also agreed that online offers greatly influences customer satisfaction (M=3.727, SD= 0.889). In addition, the respondents agreed that online acceptance of offers greatly influences customer satisfaction (M=3.599, SD= 0.781). The

respondents also agreed that electronic negotiations of contracts greatly influences customer satisfaction ($M=3.597$, $SD= 0.899$). The respondents agreed that online offers greatly reduce costs ($M=3.588$, $SD=0.816$). In addition, the respondents agreed that online acceptance of offers greatly reduces costs ($M=3.567$, $SD=0.688$). Further, the respondents agreed that electronic negotiations of contracts greatly reduces costs ($M=3.546$, $SD=0.787$).

The standard deviations in these results illustrate the level of agreement and variability in respondents' perceptions of how online processes impact delivery time, customer satisfaction, and costs. Lower standard deviations, such as for the influence of online acceptance of offers on delivery time ($SD=0.665$) and cost reduction ($SD=0.688$), indicate strong consensus, suggesting these benefits are widely and uniformly recognized. Moderate standard deviations, like those for the impact of electronic negotiations on delivery time ($SD=0.761$) and online acceptance on customer satisfaction ($SD=0.781$), suggest general agreement with some variability, indicating slightly differing experiences or perceptions among respondents. Higher standard deviations, such as for the influence of online offers on customer satisfaction ($SD=0.889$) and electronic negotiations on customer satisfaction ($SD=0.899$), point to more diverse opinions, reflecting broader ranges of experiences or views.

Table 4.6: Electronic Contracting and Supply Chain Performance

	Mean	Std. Deviation
Online offers greatly reduce delivery time	3.925	0.898
Online acceptance of offers greatly reduces delivery time	3.817	0.665
Electronic negotiations of contracts reduce delivery time	3.731	0.761
Online offers greatly influences customer satisfaction	3.727	0.889
Online acceptance of offers greatly influences customer satisfaction	3.599	0.781
Electronic negotiations of contracts greatly influences customer satisfaction	3.597	0.899
Online offers greatly reduce costs	3.588	0.816
Online acceptance of offers greatly reduces costs	3.567	0.688
Electronic negotiations of contracts greatly reduces costs	3.546	0.787
Aggregate	3.677	0.798

4.5.4 Electronic Payments and Supply Chain Performance

The fourth specific objective of the study was to establish the relationship between electronic payments and supply chain performance of Large Retail Chains in Kenya. The respondents were requested to indicate their level of agreement on various statements relating to electronic payments and supply chain performance of Large Retail Chains in Kenya. The results were as presented in Table 4.7.

From the results, the respondents agreed that real time gross settlement greatly reduces delivery time ($M=3.931$, $SD= 0.891$). In addition, the respondents agreed that mobile payments greatly reduce delivery time ($M=3.855$, $SD= 0.857$). Further, the respondents agreed that E-cards and E-cheques greatly reduce delivery time ($M=3.720$, $SD= 0.714$). The respondents also agreed that real time gross settlement greatly influences customer satisfaction ($M=3.685$, $SD= 0.677$). Further, the respondents agreed that mobile payments greatly influence customer satisfaction ($M=3.678$, $SD= 0.656$).

The respondents agreed that E-cards and E-cheques greatly influences customer satisfaction ($M=3.658$, $SD=0.759$). In addition, the respondents agreed that real time gross settlement greatly reduce costs ($M=3.649$, $SD=0.898$). The respondents also agreed that

mobile payments greatly reduces costs (M=3.641, SD=0.789). Further, the respondents agreed that E-cards and E-cheques greatly reduces costs (M=3.587, SD=0.632).

The standard deviations in these results highlight the variability in respondents' perceptions regarding the impact of various payment methods on delivery time, customer satisfaction, and cost reduction. Lower standard deviations, such as for the influence of mobile payments on customer satisfaction (SD=0.656) and the impact of E-cards and E-cheques on cost reduction (SD=0.632), indicate strong consensus among respondents, suggesting these benefits are uniformly experienced. Moderate standard deviations, like for the impact of E-cards and E-cheques on delivery time (SD=0.714) and customer satisfaction (SD=0.759), show general agreement but with some variability, indicating that while many recognize these benefits, individual experiences might differ slightly. Higher standard deviations, such as for the impact of real-time gross settlement on cost reduction (SD=0.898) and delivery time (SD=0.891), suggest more diverse opinions, reflecting a broader range of experiences or perceptions.

Table 4.7: Electronic Payments and Supply Chain Performance

	Mean	Std. Deviation
Real time gross settlement greatly reduces delivery time	3.931	0.891
Mobile payments greatly reduce delivery time	3.855	0.857
E-cards and E-cheques greatly reduce delivery time	3.720	0.714
Real time gross settlement greatly influences customer satisfaction	3.685	0.677
Mobile payments greatly influence customer satisfaction	3.678	0.656
E-cards and E-cheques greatly influences customer satisfaction	3.658	0.759
Real time gross settlement greatly reduce costs	3.649	0.898
Mobile payments greatly reduces costs	3.641	0.789
E-cards and E-cheques greatly reduces costs	3.587	0.632
Aggregate	3.712	0.764

4.5.5 Top Management Support and Supply Chain Performance

The fifth specific objective of the study was to assess the moderating effect of top management support on the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya. The respondents were requested to indicate their level of agreement on various statements relating to management support on the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya. The results were as presented in Table 4.8.

From the results, the respondents agreed that top management actively supports supply chain initiatives within their organization ($M=3.885$, $SD= 0.887$). In addition, the respondents agreed that there is a clear commitment from top management to invest in supply chain improvements ($M=3.808$, $SD= 0.745$). The respondents also agreed that top management regularly communicates the importance of supply chain performance to all employees ($M=3.787$, $SD= 0.623$). Further, the respondents agreed that adequate resources (financial, human, technological) are allocated by top management to enhance supply chain operations ($M=3.720$, $SD= 0.768$).

The respondents agreed that top management encourages innovation and continuous improvement in supply chain processes ($M=3.719$, $SD=0.756$). The respondents also agreed that there is strong alignment between top management's strategic goals and supply chain objectives ($M=3.704$, $SD=0.567$). In addition, the respondents agreed that top management participates in setting and reviewing supply chain performance metrics ($M=3.687$, $SD=0.897$). Further, the respondents agreed that top management provides the necessary training and development programs for supply chain staff ($M=3.679$, $SD=0.664$). The respondents agreed that decisions made by top management consider their impact on supply chain performance ($M=3.664$, $SD=0.756$).

The standard deviations in the responses reveal the level of consensus among respondents regarding top management's support for supply chain initiatives. Lower standard deviations, such as for the alignment between top management's strategic goals and supply chain objectives (SD=0.567) and the regular communication of supply chain performance importance (SD=0.623), indicate a strong consensus, suggesting that these aspects are consistently experienced and perceived across the organization. Moderate standard deviations, like for the allocation of adequate resources (SD=0.768) and encouragement of innovation (SD=0.756), point to a general agreement but with some variability, indicating that while many respondents recognize these supports, their experiences may vary slightly. Higher standard deviations, such as for top management's participation in setting and reviewing supply chain performance metrics (SD=0.897) and active support for supply chain initiatives (SD=0.887), suggest more diverse opinions, reflecting differences in individual perceptions or experiences, potentially due to varying levels of visibility or engagement with top management across different areas of the organization.

Table 4.8: Management Support and Supply Chain Performance

Statement	Mean	Std. Deviation
Top management actively supports supply chain initiatives within our organization.	3.885	0.887
There is a clear commitment from top management to invest in supply chain improvements.	3.808	0.745
Top management regularly communicates the importance of supply chain performance to all employees.	3.787	0.623
Adequate resources (financial, human, technological) are allocated by top management to enhance supply chain operations.	3.720	0.768
Top management encourages innovation and continuous improvement in supply chain processes.	3.719	0.756
There is strong alignment between top management's strategic goals and supply chain objectives.	3.704	0.567
Top management participates in setting and reviewing supply chain performance metrics.	3.687	0.897
Top management provides the necessary training and development programs for supply chain staff.	3.679	0.664
Decisions made by top management consider their impact on supply chain performance.	3.664	0.756
Aggregate	3.739	0.740

4.5.6 Supply Chain Performance

The respondents were requested to indicate their level of agreement on various statements relating to supply chain performance of Large Retail Chains in Kenya. The results were as presented in Table 4.9.

From the results, the respondents agreed that supply chain automation reduces purchasing cost (M=3.882, SD=0.876). In addition, the respondents agreed that there is improved efficiency and time taken to complete procurement process (M=3.876, SD=0.897). Further, the respondents agreed that there are standardized purchasing processes in the organization (M=3.872, SD=0.784). The respondents also agreed that there is reduced administrative cost with improved efficiency (M=3.869, SD=0.698).

The respondents agreed that there is improved effectiveness of supply chain processes (M=3.854, SD=0.653). In addition, the respondents agreed that there is reduced discretion and improved transparency (M=3.765, SD=0.789). Further, the respondents agreed that there is reduction in error of order transmission (M=3.741, SD=0.712). The respondents also agreed that there is reduction in overall company cost (M=3.645, SD=0.587). The respondents agreed that service quality has improved (M=3.626, SD=0.876).

The standard deviations reveal the degree of consensus or variability in respondents' perceptions regarding the impact of supply chain automation. Lower standard deviations, such as for reduced administrative costs (SD=0.698) and overall company costs (SD=0.587), indicate a strong consensus, suggesting that these benefits are widely recognized and consistently experienced across the organization. Conversely, higher standard deviations, such as for reduced purchasing costs (SD=0.876) and improved service quality (SD=0.876), suggest more varied opinions, indicating that while many respondents agree on the benefits, there are notable differences in individual experiences or perceptions.

Table 4.9: Supply Chain Performance

Statement	Mean	Std. Deviation
Supply chain automation reduces purchasing cost	3.882	0.876
There is improved efficiency and time taken to complete procurement process	3.876	0.897
There are standardized purchasing processes in the organization	3.872	0.784
There is reduces administrative cost with improved efficiency	3.869	0.698
There is improved effectiveness of supply chain processes	3.854	0.653
There is reduced discretion and improved transparency	3.765	0.789
There is reduction in error of order transmission	3.741	0.712
There is reduction in overall company cost	3.645	0.587
Service quality has improved	3.626	0.876
Aggregate	3.792	0.764

Secondary data was also collected to measure supply chain performance (cost, delivery time and reliability) of Large Retail Chains in Kenya. The study collected data for a period of 5 years from 2018-2022. The results were as shown in Figures below.

4.5.6.1 Supply Chain Cost

The study collected data on Supply Chain Cost of Large Retail Chains in Kenya for a period of 5 years from 2018 to 2022. The results were as shown in Figure 4.4. From the results, Supply Chain Cost of Large Retail Chains in Kenya improved by 19% in the year 2018, in the years 2019, Supply Chain Cost also improved by 21% and slightly improved by 22% in 2020 before improving to 23% and 25% in 2021 and 2022 respectively.

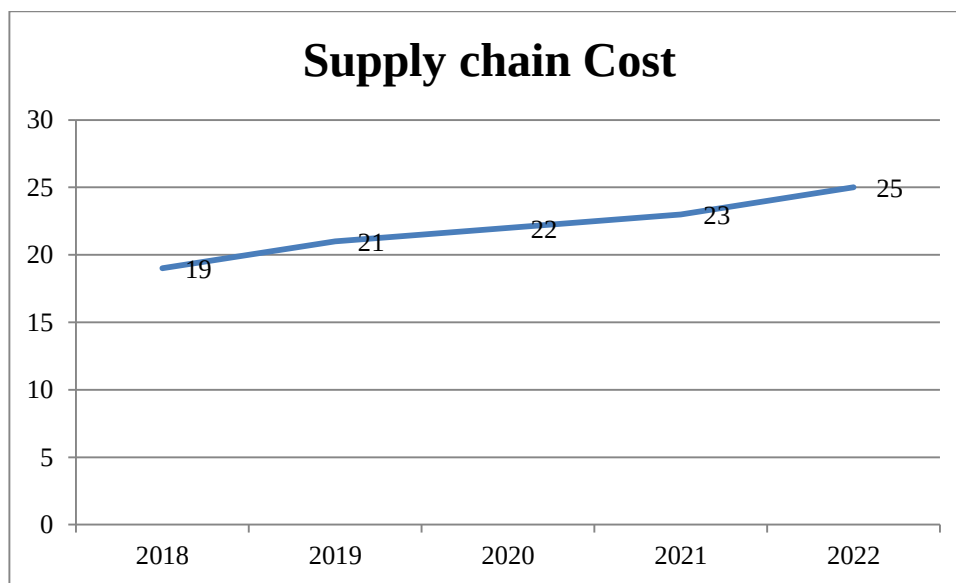


Figure 4.4: Supply Chain Cost

4.5.6.2 Delivery Time

The study collected data on Supply Chain Delivery Time of Large Retail Chains in Kenya for a period of 5 years from 2018 to 2022. The results were as shown in Figure 4.5. From the results, the Supply Chain Delivery Time of Large Retail Chains in Kenya improved by 17% in the year 2018, in the years 2019, the Supply Chain Delivery Time also

improved by 21% and slightly improved to 22% in 2020 before improving to 23% and 24% in 2021 and 2022 respectively.

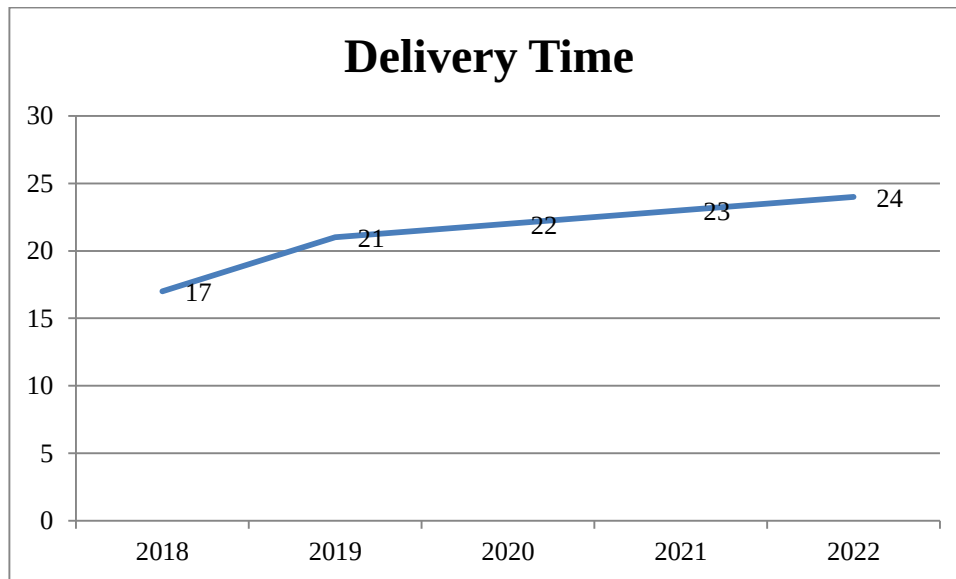


Figure 4.5: Delivery Time

4.5.6.3 Supply Chain Reliability

The study collected data on Supply Chain Reliability of Large Retail Chains in Kenya for a period of 5 years from 2018 to 2022. The results were as shown in Figure 4.6. From the results, the Supply Chain Reliability of Large Retail Chains in Kenya improved by 23% in the year 2018, in the years 2019, the Supply Chain Reliability improved by 25% and slightly improved to 26% in 2020 before improving to 28% and 30% in 2021 and 2022 respectively.

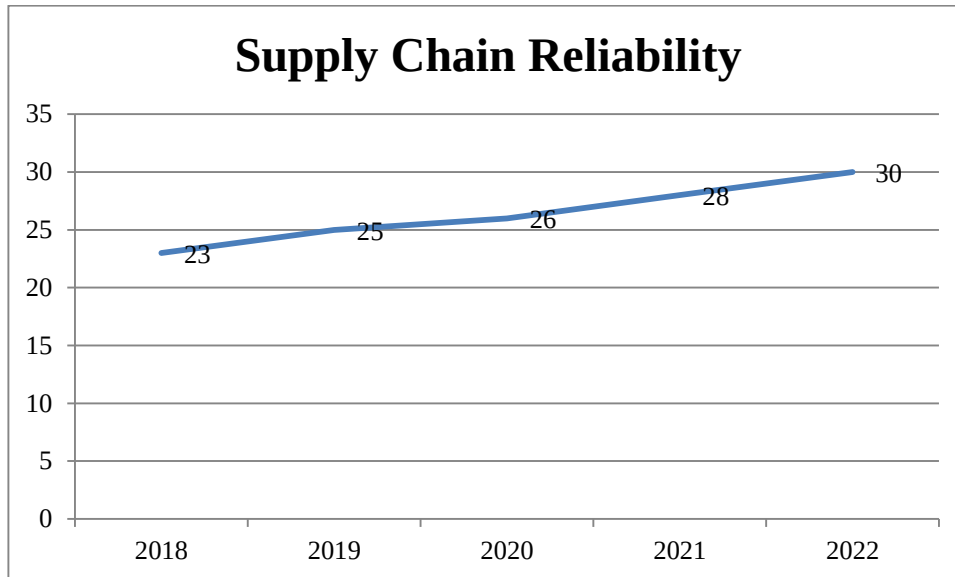


Figure 4.6: Supply Chain Reliability

4.6 Qualitative Analysis

4.6.1 Electronic Communication

The respondents were further requested to indicate the challenges and possible solutions to Electronic Communication and Supply Chain Performance. From the results, the respondents indicated that one of the primary challenges of electronic communication is ensuring the security and privacy of sensitive information. In large retail chains, vast amounts of data, including customer details, transaction records, and supply chain information, are exchanged electronically. This makes the organization susceptible to cyber-attacks, data breaches, and unauthorized access, which can lead to significant financial losses and damage to reputation. In addition, large retail chains often use a variety of electronic communication systems and platforms. Ensuring these systems are compatible and seamlessly integrated can be challenging. Disparate systems can lead to communication breakdowns, data silos, and inefficiencies in the supply chain. Additionally, the constant evolution of technology requires ongoing updates and maintenance, which can be resource-intensive. Further, the respondents indicated that the

reliability of electronic communication systems is crucial for efficient supply chain operations. Issues such as server downtimes, internet outages, and connectivity problems can disrupt communication, leading to delays and inefficiencies. In some regions, especially in developing countries like Kenya, inconsistent internet infrastructure can exacerbate these problems, impacting overall supply chain performance.

In relation to possible solutions to electronic communication challenges, the respondents indicated that to address data security and privacy concerns, large retail chains should invest in robust cybersecurity measures. This includes implementing advanced encryption techniques, multi-factor authentication, and regular security audits. Additionally, educating employees about data security best practices and ensuring compliance with relevant regulations can help mitigate risks. In addition, the respondents indicated that to overcome technological integration issues, retail chains should adopt integrated communication platforms that facilitate seamless data exchange and collaboration across different systems. Utilizing cloud-based solutions can offer scalability and flexibility, ensuring that all parts of the supply chain are connected and can communicate effectively. Regular updates and compatibility checks should be conducted to ensure smooth operations. Further, the respondents indicated that addressing reliability and connectivity problems requires investing in robust IT infrastructure. This includes ensuring reliable internet connectivity, possibly through multiple internet service providers to provide redundancy. Implementing backup systems and having contingency plans in place can help minimize disruptions due to connectivity issues. Retail chains should also consider partnering with local providers to enhance infrastructure in regions with poor connectivity.

4.6.2 Electronic Ordering

The respondents were further requested to indicate the challenges and possible solutions to Electronic Ordering and Supply Chain Performance. From the results, the respondents indicated that integrating various electronic ordering systems used across different departments and suppliers is a significant challenge. Different vendors and partners may use disparate systems that do not communicate seamlessly with each other. This can lead

to data inconsistencies, delayed order processing, and increased manual intervention to ensure data integrity across systems. In addition, the respondents indicated that maintaining accurate and up-to-date data is critical for efficient electronic ordering. Inaccuracies in product codes, quantities, pricing, and inventory levels can lead to incorrect orders, stockouts, and overstock situations. This not only affects inventory management but also leads to customer dissatisfaction due to delays and errors in order fulfillment. Further, the respondents indicated that ensuring that all employees are proficient in using electronic ordering systems can be challenging. Resistance to change, varying levels of technological literacy, and inadequate training can hinder the effective use of these systems. This can result in errors during order placement, delays in processing, and overall inefficiencies in the supply chain.

In relation to possible solutions to electronic ordering challenges, the respondents indicated that to address system integration and compatibility issues, invest in integrated supply chain management software that allows seamless communication between different systems. Using standardized data formats and APIs can facilitate smoother data exchange. Regular system audits and updates can ensure ongoing compatibility and efficiency. Further, the respondents indicated that the firms should implement strict data validation and verification processes to maintain data accuracy. Automated data entry systems, such as barcode scanners and RFID technology, can reduce human errors. Regular employee training on the importance of accurate data entry and periodic data audits can further ensure reliability. The respondents also indicated that the retail firms should develop comprehensive training programs for all employees involved in the electronic ordering process. These programs should cover system usage, troubleshooting common issues, and best practices for data entry. Continuous training and support can improve user proficiency and confidence, leading to higher adoption rates and fewer errors.

4.6.3 Electronic Contracting

The respondents were further requested to indicate the challenges and possible solutions to electronic contracting and Supply Chain Performance. From the results, the respondents indicated that one of the primary challenges of electronic contracting is ensuring compliance with legal and regulatory requirements. Different jurisdictions have varying laws regarding electronic signatures, digital contracts, and data privacy. Navigating these legal complexities and ensuring that electronic contracts are enforceable and legally binding can be difficult and time-consuming. In addition, the respondents indicated that protecting the security and confidentiality of electronic contracts is crucial. Electronic contracts often contain sensitive information, and they are vulnerable to cyber threats such as hacking, data breaches, and unauthorized access. Ensuring that the integrity and confidentiality of these documents are maintained throughout their lifecycle is a significant challenge. Further, the respondents indicated that integrating electronic contracting systems with existing organizational workflows and other software applications can be challenging. Disparate systems and platforms may not be fully compatible, leading to issues with data exchange and process automation. This can result in inefficiencies, errors, and delays in contract management.

In relation to possible solutions to electronic contracting challenges, the respondents indicated that to address legal and regulatory compliance challenges, work with legal experts to understand the specific requirements in different jurisdictions. Implementing electronic contracting solutions that comply with these regulations and ensuring that electronic signatures are legally binding is essential. Further, the respondents indicated that the retail firms should invest in robust security measures to protect the confidentiality and integrity of electronic contracts. Use encryption, secure access controls, and multi-factor authentication to safeguard sensitive information. Regularly conduct security audits and risk assessments to identify and mitigate potential vulnerabilities. Educate employees about best practices for data security and confidentiality. The respondents also indicated that the retail firms Choose electronic contracting solutions that offer seamless integration with existing systems and workflows. Utilize standardized data formats and APIs to

facilitate data exchange and process automation. Conduct thorough testing and regular updates to ensure compatibility and efficiency. Engage IT professionals to support the integration process and address technical issues promptly.

4.6.4 Electronic Payments

The respondents were further requested to indicate the challenges and possible solutions to Electronic Payments and Supply Chain Performance. From the results, the respondents indicated that one of the primary challenges of electronic payments is ensuring the security of transactions and preventing fraud. Cyber-attacks, data breaches, and fraudulent activities can compromise sensitive financial information, leading to significant financial losses and damage to the organization's reputation. Ensuring robust security measures to protect against these threats is a constant challenge. In addition, the respondents indicated that electronic payment systems are susceptible to technical issues and system downtimes. Network outages, software glitches, and server failures can disrupt payment processing, leading to delays, transaction failures, and customer dissatisfaction. Ensuring the reliability and availability of electronic payment systems is crucial for smooth operations. The respondents also indicated that integrating electronic payment systems with existing financial and operational systems can be complex. Disparate systems may not communicate seamlessly, leading to data inconsistencies and processing errors. Achieving a smooth and efficient integration that supports real-time data synchronization and accurate financial reporting is a significant challenge.

In relation to possible solutions to electronic payments challenges, the respondents indicated that to address security and fraud risks, invest in robust cybersecurity measures such as encryption, tokenization, and multi-factor authentication. Regularly update and patch systems to protect against emerging threats. Implement fraud detection and prevention mechanisms to identify and mitigate suspicious activities. Conduct regular security audits and employee training to ensure compliance with best practices. In addition, the respondents indicated that to mitigate technical issues and system downtimes, invest in reliable IT infrastructure and redundant systems to ensure high

availability. Implement regular maintenance schedules and proactive monitoring to detect and address potential issues before they cause disruptions. Establish a contingency plan, including backup systems and manual processing procedures, to ensure continuity during unexpected downtimes. Further, the respondents indicated that to achieve seamless integration with existing systems, choose electronic payment solutions that offer compatibility and interoperability with your current financial and operational systems. Utilize standardized data formats and APIs to facilitate data exchange and real-time synchronization. Engage IT professionals to support the integration process and conduct thorough testing to ensure accuracy and efficiency.

4.7 Diagnostic Tests

The underlying assumptions in linear regression include: normality, no autocorrelation, little or no multicollinearity, homoscedasticity and linear relationship. In case of violation of the regression assumptions, the confidence intervals as well as other scientific insights derived from the regression model may be regarded as misleading, biased or inefficient and therefore the inferences derived incapable of being generalizable on other data.

4.7.1 Multicollinearity Test

In this study, tolerance was applied in testing multicollinearity. The tolerance provides measures of the effect caused by a single independent variable on other independent variables. Tolerance is; $T = 1 - R^2$. If the value of T is less than 0.01 then it is certain that multicollinearity is present. From the findings presented in Table 4.10, the VIF values for all the variables were less than 5, a clear indication that multicollinearity doesn't exist between the study variables. The variables were found to lack high correlations among themselves; therefore, multiple regression analysis can be conducted.

Table 4.10: Multicollinearity Test Statistics

Model	Collinearity Statistics	
	Tolerance	VIF
electronic communication	.726	1.378
electronic ordering	.653	1.531
electronic contracting	.471	2.124
electronic payments	.452	2.212
Top management support	.634	1.578

4.7.2 Autocorrelation Test

Autocorrelation was checked using Durbin-Watson test. The null hypothesis for the Durbin-Watson's d tests is that the residuals aren't linearly auto correlated. The d value ranges from 0 to 4, if the value is found to be less or equal to 2 then it implies absence of autocorrelation. If the d values are $1.5 < d < 2.5$ it implies absence of autocorrelation in the data. Durbin-Watson test was used to analyze linear autocorrelation for only direct neighbors being the effects of first order. Findings presented in Table 4.11 show that the d-value was 1.990; since the value lies within the range $1.5 < d < 2.5$, then we conclude that there is no autocorrelation in the data and therefore regression analysis can be computed.

Table 4.11: Durbin-Watson Autocorrelation Test

Model	Std. Error of the Estimate	Durbin-Watson
1	1.29748	1.990

4.7.3 Heteroscedasticity

Violation of Heteroscedasticity tends to inhibit critical evaluation of forecast errors of standard deviation, which often leads to confidence intervals that are extremely narrow or extremely wide. Heteroscedasticity in this study was assessed using the Breusch-Pagan test. The null hypothesis for this test was that the error variances were equal and were a multiple function of variables. Heteroscedasticity normally occurs when the chi-square value is greater than the significance level (0.05). As indicated in Table 4.12, the chi-

square value was 0.3211, which was greater than the significance level of 0.05. This implies that there was homoscedasticity in the regression model.

Table 4.12: Breusch-Pagan / Cook-Weisberg test for Heteroscedasticity

Ho: Constant variance	
Variables: Fitted with values of project performance	
Chi2 (1)	0.96
Prob>chi2	0.3211

4.7.4 Normality Assumption

This study used Shapiro Wilk test to determine if the variables follow a normal distribution (Cooper & Schindler, 2019). The null-hypothesis for Shapiro Wilk test is that the population follows a normal distribution therefore, if the alpha level is 0.05 and the p-value is less than 0.05, then the null hypothesis that the data are normally distributed is rejected. If the p-value is greater than 0.05, then the null hypothesis is not rejected since there is enough evidence that the data is not normally distributed. From the findings in Table 4.13, the results of the analysis shows that electronic communication had p-value=0.127>0.05; electronic ordering had p-value=0.607>0.05; electronic contracting had p-value=0.988>0.05; electronic payments had p-value=0.565>0.05; and Top management support had p-value=0.665>0.05; supply chain performance had p-value=0.385>0.05. This shows that all the variables were normally distributed and hence the data meets the regression analysis assumption of normality of data.

Table 4.13: Tests of Normality

	Shapiro-Wilk		
	Statistic	N	Sig.
electronic communication	.579	220	.127
electronic ordering	.968	220	.607
electronic contracting	.988	220	.988
electronic payments	.966	220	.565
Top management support	.970	220	.665
Supply Chain Performance	.963	220	.385

4.8 Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables (electronic communication, electronic ordering, electronic contracting and electronic payments) and the dependent variable (supply chain performance of Large Retail Chains in Kenya). Pearson correlation coefficient range between zero and one, where by the strength of association increase with increase in the value of the correlation coefficients.

Table 4.14: Correlation Coefficients

		Supply Chain Performance	Electronic Communication	Electronic Ordering	Electronic Contracting	Electronic Payments
Supply Chain Performance	Pearson	1				
	Correlation					
	Sig. (2-tailed)					
Electronic Communication	N	220				
	Pearson	.865**	1			
	Correlation					
Electronic Ordering	Sig. (2-tailed)	.001				
	N	220	220			
	Pearson	.827**	.379	1		
Electronic Contracting	Correlation					
	Sig. (2-tailed)	.003	.071			
	N	220	220	220		
Electronic Payments	Pearson	.846**	.262	.163	1	
	Correlation					
	Sig. (2-tailed)	.002	.076	.090		
	N	220	220	220	220	
	Pearson	.895**	.345	.119	.369	1
	Correlation					
	Sig. (2-tailed)	.000	.032	.067	.014	
	N	220	220	220	220	220

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

From the results, there was a very strong relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya ($r = 0.865$, p value $=0.001$). The relationship was significant since the p value 0.001 was less than 0.05 (significant level). The findings are in line with the findings of Wang *et al.*, (2024) who indicated that there is a very strong relationship between electronic communication and supply chain performance.

Moreover, the results revealed that there is a very strong relationship between electronic ordering and supply chain performance of Large Retail Chains in Kenya ($r = 0.827$, p value $=0.003$). The relationship was significant since the p value 0.003 was less than 0.05 (significant level). The findings conform to the findings of IvyPanda (2020) that there is a very strong relationship between electronic ordering and supply chain performance.

Further, the results revealed that there is a very strong relationship between electronic contracting and supply chain performance of Large Retail Chains in Kenya ($r = 0.846$, p value $=0.002$). The relationship was significant since the p value 0.002 was less than 0.05 (significant level). The findings are in line with the findings of Flynn *et al.*, (2025) that there is a very strong relationship between electronic contracting and supply chain performance.

The results also revealed that there was a very strong relationship between electronic payments and supply chain performance of Large Retail Chains in Kenya ($r = 0.895$, p value $=0.000$). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the results of Moon (2023) who revealed that there is a very strong relationship between electronic payments and supply chain performance.

4.9 Statistical Modelling

Multivariate regression analysis was used to assess the relationship between independent variables (electronic communication, electronic ordering, electronic contracting and electronic payments) and the dependent variable (supply chain performance of Large Retail Chains in Kenya).

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r -squared for the relationship between the independent variables and the dependent variable was 0.852 . This implied that 85.2% of the variation in the dependent variable (supply chain performance of Large Retail Chains

in Kenya) could be explained by independent variables (electronic communication, electronic ordering, electronic contracting and electronic payments).

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 65.80 while the F critical was 2.414. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of electronic communication, electronic ordering, electronic contracting and electronic payments on supply chain performance of Large Retail Chains in Kenya.

Table 4.15: Statistical Modelling

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.923	.852	.851	.10129

a. Predictors: (Constant), electronic communication, electronic ordering, electronic contracting and electronic payments

Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	8.027	4	2.007	65.80	.000 ^b
1 Residual	6.555	215	.0305		
Total	14.582	219			

a. Dependent Variable: supply chain performance of Large Retail Chains in Kenya

b. Predictors: (Constant), electronic communication, electronic ordering, electronic contracting and electronic payments

Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.202	0.028		7.214	0.000
	electronic communication	0.364	0.089	0.365	4.090	0.002
	electronic ordering	0.481	0.097	0.480	4.959	0.001
	electronic contracting	0.374	0.094	0.375	3.979	0.003
	electronic payments	0.425	0.081	0.424	5.247	0.000

a Dependent Variable: supply chain performance of Large Retail Chains in Kenya

The regression model was as follows:

$$Y = 0.202 + 0.364X_1 + 0.481X_2 + 0.374X_3 + 0.425X_4$$

According to the results, electronic communication has a significant effect on supply chain performance of Large Retail Chains in Kenya ($\beta_1=0.364$, p value= 0.002). The relationship was considered significant since the p value 0.002 was less than the significant level of 0.05. The findings are in line with the findings of Wang *et al.*, (2024) who indicated that there is a very strong relationship between electronic communication and supply chain performance.

The results also revealed that electronic ordering has significant effect on supply chain performance of Large Retail Chains in Kenya, ($\beta_1=0.481$, p value= 0.001). The relationship was considered significant since the p value 0.001 was less than the significant level of 0.05. The findings conform to the findings of IvyPanda (2020) that there is a very strong relationship between electronic ordering and supply chain performance

Furthermore, the results revealed that electronic contracting has significant effect on supply chain performance of Large Retail Chains in Kenya $\beta_1=0.374$, p value= 0.003). The relationship was considered significant since the p value 0.003 was less than the significant level of 0.05. The findings are in line with the findings of Flynn *et al.*, (2025) that there is a very strong relationship between electronic contracting and supply chain performance.

In addition, the results revealed that electronic payments has significant effect on supply chain performance of Large Retail Chains in Kenya $\beta_1=0.425$, p value= 0.000). The relationship was considered significant since the p value 0.000 was less than the significant level of 0.05. The findings are in line with the results of Moon (2023) who revealed that there is a very strong relationship between electronic payments and supply chain performance.

4.10 Simple Linear Regression

4.10.1 Simple Linear Regression for Electronic Communication

The first specific objective of the study was to examine the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya. The associated null hypothesis was that Electronic communication has no significant relationship with supply chain performance of Large Retail Chains in Kenya. A univariate analysis was conducted in which supply chain performance of Large Retail Chains in Kenya was regressed on electronic communication.

The R-Squared depicted the variation in the dependent variable that can be explained by the independent variables. The greater the value of R-squared the greater the effect of independent variable. The R Squared can range from 0.000 to 1.000, with 1.000 showing a perfect fit that indicates that each point is on the line. As indicated in Table 4.16, the R-squared for the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya was 0.241; this is an indication that at 95%

confidence interval, 24.1% of variation in supply chain performance of Large Retail Chains in Kenya can be attributed to changes in electronic communication. Therefore, electronic communication can be used to explain 24.1% of changes in supply chain performance of Large Retail Chains in Kenya but there are other factors that can be attributed to 75.9% change in supply chain performance of Large Retail Chains in Kenya.

The analysis of variance was used to determine whether the regression model is a good fit for the data. It also gave the F-test statistic; the linear regression's F-test has the null hypothesis that there is no linear relationship between the two variables. From the analysis of variance (ANOVA) findings in Table 4.16, the study found out that that $\text{Prob} > F_{1,218} = 0.000$ was less than the selected 0.05 level of significance. This suggests that the model as constituted was fit to predict supply chain performance. Further, the F-calculated, from the table (2085) was greater than the F-critical, from f-distribution tables (3.884) supporting the findings that Electronic communication can be used to predict supply chain performance.

From the results in Table 4.16, the following regression model was fitted.

$$Y = 2.069 + 0.433 X_1$$

(X_1 is Electronic communication)

The coefficient results showed that the constant had a coefficient of 2.069 suggesting that if Electronic communication was held constant at zero, supply chain performance would be 2.069 units. In addition, results showed that Electronic communication coefficient was 0.433 indicating that a unit increase in Electronic communication would result in a 0.433 improvement in supply chain performance. It was also noted that the P-value for freight Electronic communication coefficient was 0.000 which is less than the set 0.05 significance level indicating that Electronic communication was significant. Based on these results, the study rejected the null hypothesis and accepted the alternative that

Electronic communication has positive significant influence on supply chain performance of Large Retail Chains in Kenya.

Table 4.16: Simple Linear Regression for Electronic Communication

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.491 ^a	.241	.239	.69655

a. Predictors: (Constant), Electronic communication

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	25.87	1	45.87	2085	.000 ^b
Residual	4.735	218	0.022		
Total	30.605	219			

a. Dependent Variable: supply chain performance of Large Retail Chains

b. Predictors: (Constant), freight management security

Beta Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.069	.174		11.881	.000
Electronic communication	.433	.045	.491	9.723	.000

a. Dependent Variable: Supply Chain Performance

4.10.2 Simple Linear Regression for Electronic Ordering

The second objective of the study was to determine the relationship between electronic ordering and supply chain performance of Large Retail Chains in Kenya. The corresponding hypothesis was:

Ho₂: Electronic ordering has no significant relationship with supply chain performance of Large Retail Chains in Kenya.

A univariate analysis was therefore conducted to test the null hypothesis. From the model summary findings in Table 4.17, the r-squared for the relationship between Electronic ordering and supply chain performance was 0.269; this is an indication that at 95%

confidence interval, 26.9% variation in supply chain performance can be attributed to changes in Electronic ordering. Therefore, Electronic ordering can be used to explain 26.9% change in supply chain performance. However, the remaining 73.1% variation in supply chain performance suggests that there are other factors other than Electronic ordering that explain supply chain performance of ministry of Large Retail Chains in Kenya.

The analysis of variance was used to determine whether the regression model is a good fit for the data. From the analysis of variance (ANOVA) findings in Table 4.22, the study found out that that $\text{Prob} > F_{1,218} = 0.000$ was less than the selected 0.05 level of significance. This suggests that the model as constituted was fit to predict supply chain performance. Further, the F-calculated, from the table (469.35) was greater than the F-critical, from f-distribution tables (3.884) supporting the findings that Electronic ordering can be used to predict supply chain performance of Large Retail Chains in Kenya.

From the results in table 4.17, the following regression model was fitted.

$$Y = 1.792 + 0.497 X_2$$

(X_2 is Electronic ordering)

The coefficient results showed that the constant had a coefficient of 1.792 suggesting that if Electronic ordering was held constant at zero, supply chain performance would be at 1.792 units. In addition, results showed that Electronic ordering coefficient was 0.497 indicating that a unit increase in Electronic ordering would result in a 0.497 increase in supply chain performance. It was also noted that the P-value for Electronic ordering coefficient was 0.000 which is less than the set 0.05 significance level indicating that Electronic ordering was significant. Based on these results, the study rejected the null hypothesis and accepted the alternative that Electronic ordering has negative significant influence supply chain performance of Large Retail Chains in Kenya.

Table 4.17: Simple Linear Regression for Electronic Ordering

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.519 ^a	.269	.267	.68365

a. Predictors: (Constant), Electronic ordering

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	51.159	1	51.159	469.35	.000 ^b
1 Residual	23.817	218	0.109		
Total	74.976	219			

a. Dependent Variable: supply chain performance

b. Predictors: (Constant), Electronic ordering

Beta Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.792	.188		9.523	.000
1 Electronic ordering	.479	.046	.519	10.462	.000

a. Dependent Variable: supply chain performance

4.10.3 Simple Linear Regression for Electronic Contracting

The third objective of the study was to evaluate the relationship between electronic contracting and supply chain performance of Large Retail Chains in Kenya. The corresponding hypothesis was:

Ho₃ Electronic contracting has no significant relationship with supply chain performance of Large Retail Chains in Kenya.

A univariate analysis was therefore conducted to test the null hypothesis. From the model summary findings in Table 4.18, the r-squared for the relationship between Electronic contracting and supply chain performance was 0.215; this is an indication that at 95% confidence interval, 21.5% variation in supply chain performance can be attributed to changes in Electronic contracting. Therefore, Electronic contracting can be used to explain 21.5% change in supply chain performance. However, the remaining 78.5% variation in

supply chain performance of Large Retail Chains in Kenya suggests that there are other factors other than Electronic contracting that explain supply chain performance of Large Retail Chains in Kenya

The analysis of variance was used to determine whether the regression model is a good fit for the data. From the analysis of variance (ANOVA) findings in Table 4.18, the study found out that that $\text{Prob} > F_{1,218} = 0.000$ was less than the selected 0.05 level of significance. This suggests that the model as constituted was fit to predict supply chain performance of Large Retail Chains in Kenya. Further, the F-calculated, from the table (271.08) was greater than the F-critical, from f-distribution tables (3.884) supporting the findings that Electronic contracting can be used to predict to predict supply chain performance of Large Retail Chains in Kenya.

From the results in table 4.18, the following regression model was fitted.

$$Y = 1.808 + 0.469 X_3$$

(X_3 is Electronic contracting)

The coefficient results showed that the constant had a coefficient of 1.808 suggesting that if Electronic contracting was held constant at zero, supply chain performance would be at 1.808 units. In addition, results showed that Electronic contracting coefficient was 0.469 indicating that a unit increase in Electronic contracting would result in a 0.469 unit improvement in supply chain performance. It was also noted that the P-value for Electronic contracting was 0.000 which is less than the set 0.05 significance level indicating that Electronic contracting was significant. Based on these results, the study rejected the null hypothesis and accepted the alternative that Electronic contracting has positive significant influence on supply chain performance of Large Retail Chains in Kenya.

Table 4.18: Model Summary for Electronic contracting

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.464 ^a	.215	.213	.70838

a. Predictors: (Constant), Electronic contracting

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	40.933	1	40.933	349.85	.000 ^b
1 Residual	25.602	218	0.117		
Total	66.535	219			

a. Dependent Variable: supply chain performance

b. Predictors: (Constant), Electronic contracting

Beta Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.808	.215		8.398	.000
Electronic contracting	.469	.052	.464	9.032	.000

4.10.4 Simple Linear Regression for Electronic Payments

The fourth objective of the study was to establish the relationship between electronic payments and supply chain performance of Large Retail Chains in Kenya. The corresponding hypothesis was:

Ho₄: Electronic payment has no significant relationship with supply chain performance of Large Retail Chains in Kenya.

A univariate analysis was therefore conducted to test the null hypothesis. From the model summary findings in Table 4.19, the r-squared for the relationship between Electronic payment and supply chain performance was 0.222; this is an indication that at 95% confidence interval, 22.2% variation in supply chain performance can be attributed to Electronic payment. Therefore, Electronic payment can be used to explain 22.2% change in supply chain performance. However, the remaining 77.8% variation in supply chain

performance suggests that there are other factors other than Electronic payment that explain supply chain performance of Large Retail Chains in Kenya

The analysis of variance was used to determine whether the regression model is a good fit for the data. From the analysis of variance (ANOVA) findings in Table 4.19, the study found out that that $\text{Prob}>F_{1,218} = 0.000$ was less than the selected 0.05 level of significance. This suggests that the model as constituted was fit to predict supply chain performance. Further, the F-calculated, from the table (360.50) was greater than the F-critical, from f-distribution tables (3.884) supporting the findings that Electronic payment can be used to predict to predict supply chain performance of Large Retail Chains in Kenya.

From the results in table 4.19, the following regression model was fitted.

$$Y = 2.142 + 0.411 X_4$$

(X_4 is Electronic payment)

The coefficient results showed that the constant had a coefficient of 2.142 suggesting that if Electronic payment was held constant at zero, supply chain performance of Large Retail Chains in Kenya would be at 2.142 units. In addition, results showed that Electronic payment coefficient was 0.411 indicating that a unit increase in Electronic payment would result in a 0.411 unit improvement in supply chain performance. It was also noted that the P-value for past strategy was 0.000 which is less than the set 0.05 significance level indicating that Electronic payment was significant. Based on these results, the study rejected the null hypothesis and accepted the alternative that electronic payment has positive significant influence on supply chain performance of Large Retail Chains in Kenya.

Table 4.19: Simple Linear Regression for Electronic Payments

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.471 ^a	.222	.219	.70542

a. Predictors: (Constant), Electronic payment

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	42.179	1	42.179	360.50	.000 ^b
Residual	25.398	218	.117		
Total	67.577	219			

a. Dependent Variable: supply chain performance

b. Predictors: (Constant), Electronic payment

Beta Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.142	.176		12.185	.000
Electronic Payment	.411	.045	.471	9.207	.000

a. Dependent Variable: supply chain performance

4.10.5 Simple Linear Regression for Top Management Support

The fifth objective of the study was to assess the moderating effect of top management support on the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya. Moderation happens when the relationship between the dependent variable and the independent variables is dependent on a third variable (moderating variable). The effect that this variable has is termed as interaction as it affects the direction or strength of the relationship between the dependent and independent variable. To achieve the fifth research objective, the study computed moderating effect regression analysis. This (moderating effect regression analysis) also guided the study in testing the fifth research hypothesis. Top management support (M) was introduced as the moderating variable.

Ho₅: Top management support has no moderating effect on the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya.

The model for the moderating effect was:

$$Y = \beta_0 + \beta_1 X_1 * Z + \beta_2 X_2 * Z + \beta_3 X_3 * Z + \beta_4 X_4 * Z + \varepsilon$$

Where Z is the moderator (Top management support), X₁ – X₄ are the independent variables

The study combined all the four variables ((electronic communication, electronic ordering, electronic contracting and electronic payments) to form a new variable X. The study then used stepwise regression to establish the moderating effect of Top management support (M) on the relationship between independent variable (X) and supply chain performance of Large Retail Chains in Kenya (Y).

From the model summary findings in Table 4.20, the first model for which is the regression between supply chain performance of Large Retail Chains in Kenya (X) without moderator, Top management support (M) and interaction, the value of R-squared was 0.336 which suggests that 33.6% change in supply chain performance of Large Retail Chains in Kenya can be explained by changes in e-procurement. The p-value for the first model (0.000) was less than the selected level of significance (0.05) suggesting that the model was significant. The findings in the second model which constituted components of e-procurement, Top management support and supply chain performance of Large Retail Chains in Kenya (X*M) as predictors, the r-squared was 0.568. This implies that the introduction of Top management support in the second model led to a 0.232 increase in r-squared, showing that Top management support positively moderates supply chain performance of Large Retail Chains in Kenya.

From the model summary findings in Table 4.20, the F-calculated for the first model, was 644.77 and for the second model was 571.21 Since the F-calculated for the two models

were more than the F-critical, 3.884 (first model) and 2.646 (second model), the two models were good fit for the data and hence they could be used in predicting the moderating effect of top management support on the supply chain performance of large retail chains in Kenya.

Further, by substituting the beta values as well as the constant term from the coefficient's findings for the first step regression modelling, the following regression model will be fitted:

$$Y = 1.387 + 0.608 X$$

Where X is E-procurement

The findings show that when E-procurement is held to a constant zero, supply chain performance of Large Retail Chains in Kenya will be at a constant value of 1.387. The findings also show that e-procurement has a statistically significant effect on supply chain performance of Large Retail Chains in Kenya as shown by a regression coefficient of 0.608 (p-value= .000).

By substituting the beta values as well as the constant term from model 2 emanating from the second step in regression modeling the following regression model was fitted:

$$Y = 3.876 + 0.220 X + 0.325 M + 0.283 X*M$$

Where X is e-procurement; M is top management support and X*M is the interaction term between e-procurement and top management support.

The findings show that when e-procurement, top management support, interaction (X*M) are held to a constant zero, supply chain performance of Large Retail Chains in Kenya will be at a constant value of 3.876. The model also indicated that e-procurement had a positive and statistically significant effect on supply chain performance of Large Retail Chains in Kenya as shown by a regression coefficient of 0.220 (p-value= 0.002). It is also

seen that top management support had a positive and significant effect on supply chain performance of Large Retail Chains in Kenya as shown by a regression coefficient 0.325. On the other hand, interaction of e-procurement and top management support (X*M) also had a positive and significant effect on supply chain performance of Large Retail Chains in Kenya as shown by a regression coefficient of 0.283 (p-value= 0.000).

It is therefore seen that e-procurement on its own has 22% effect on supply chain performance of Large Retail Chains in Kenya. However, when interacted with top management support, it has an effect of 28.3%. This is a clear indication that introduction of top management support as moderating variable has positive influence on supply chain performance of Large Retail Chains in Kenya. The study therefore rejects the null hypothesis and accepts the alternative that top management support has significant moderating effect on the relationship between e-procurement and supply chain performance of Large Retail Chains in Kenya.

Table 4.20: Model Summary for Moderation Effect

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.580 ^a	.336	.334	.65170	.336	150.295	1	184	.000
2	.754 ^b	.568	.564	.52727	.232	79.360	3	183	.000

a. Predictors: (Constant), supply chain security management

b. Predictors: (Constant), E-procurement, top management support, Interaction (X*M)

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	63.832	1	63.832	644.77	.000 ^b
Residual	21.675	218	0.099		
Total	85.507	219			
2 Regression	107.958	3	35.986	571.21	.000 ^c
Residual	13.622	216	0.063		
Total	121.58	219			

a. Dependent Variable: supply chain performance

b. Predictors: (Constant), electronic communication * Top management support, facility management security * Top management support, electronic ordering * Top management support, electronic contracting * Top management support, electronic payments * Top management support,

Beta Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.387	.194		7.163	.000
E-procurement	.608	.050	.580	12.260	.000
(Constant)	3.876	1.009		3.841	.000
E-procurement	.220	.067	.782	3.284	.002
2 Top management support	.325	.048	.310	6.748	.000
Interaction (X*M)	.283	.065	1.661	4.357	.000

a. Dependent Variable: supply chain performance

4.11 Hypothesis Testing

Hypothesis testing was conducted to determine whether the proposed relationships between the independent variables and the dependent variable were statistically significant. The hypotheses were developed from the study objectives, conceptual framework, and underpinning theories and were tested using multiple regression analysis and hierarchical moderated regression analysis for the moderating variable.

The significance of each independent variable was evaluated using the t-test associated with its regression coefficient (β), while the overall significance and goodness-of-fit of the regression model were assessed using the F-test from the Analysis of Variance

(ANOVA). The F-test was used to determine whether the regression model, taken as a whole, significantly explained variations in supply chain performance, whereas the t-test assessed the individual contribution of each predictor variable.

The study adopted a 5% level of significance ($\alpha = 0.05$) as the criterion for hypothesis testing. A null hypothesis was rejected where the p-value was less than 0.05 ($p < 0.05$), indicating that the corresponding independent variable had a statistically significant effect on supply chain performance. Conversely, where the p-value was greater than or equal to 0.05 ($p \geq 0.05$), the null hypothesis was not rejected, indicating insufficient statistical evidence of a significant effect.

For the moderating variable, hierarchical regression analysis was employed by introducing the interaction term between e-procurement practices and top management support into the regression model. The moderating effect was considered statistically significant where the interaction term was significant ($p < 0.05$) and resulted in a significant improvement in the explanatory power of the model, as evidenced by the change in the coefficient of determination (ΔR^2). This approach enabled the study to establish both the direct effects of e-procurement practices on supply chain performance and the moderating influence of top management support on these relationships.

Table 4.21: Hypothesis testing

Hypothesis testing	F-Critical	F-Calculated	Verdict
Electronic Communication	3.884	2085	Rejected
Electronic Ordering	3.884	469.35	Rejected
Electronic Contracting	3.884	349.85	Rejected
Electronic Payments	3.884	360.50	Rejected
Top Management Support	3.884	571.21	Rejected

4.12 Optimal Model

From the coefficients in hypothesis testing, the following regression model was fitted;

$$Y = 0.202 + 0.433 X_1 + 0.497 X_2 + 0.469 X_3 + 0.411 X_4$$

Where

Y is supply chain performance of Large Retail Chains in Kenya;

X_1 is; Electronic Communication

X_2 is; Electronic Ordering

X_3 is Electronic Contracting;

X_4 is Electronic Payments

Since Electronic Ordering had the highest effect followed by Electronic Contracting, Electronic Communication and Electronic Payments, the revised Conceptual framework is as shown below

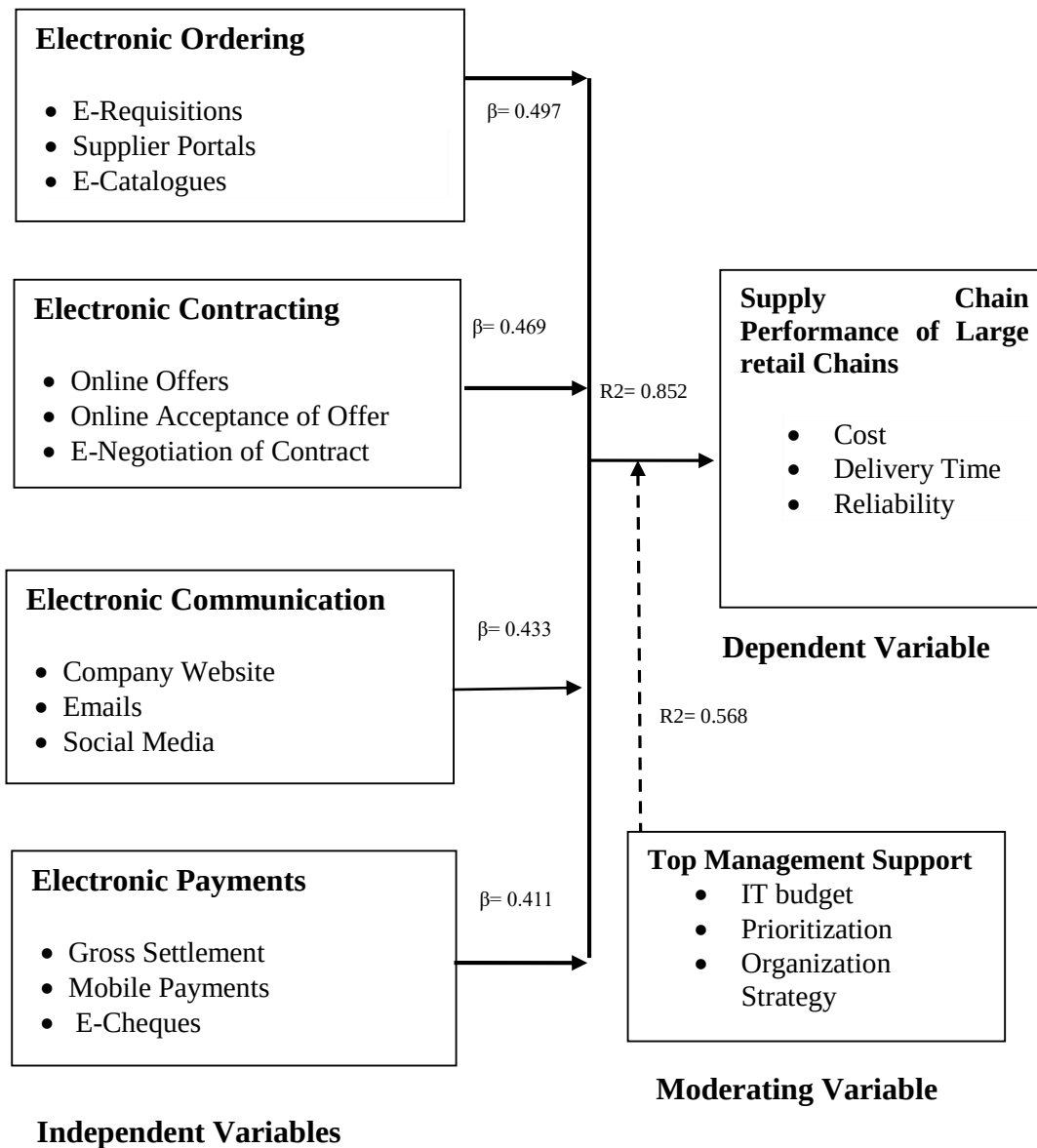


Figure 4.7: Revised Conceptual Framework

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study focuses on the discussion of summary of the research findings, conclusion and recommendations. The main focus of the study is to establish the relationship between electronic procurement and supply chain performance of Large Retail Chains in Kenya. The specific objectives were; to examine the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya, to determine the relationship between electronic ordering and supply chain performance of Large Retail Chains in Kenya, to evaluate the relationship between electronic contracting and supply chain performance of Large Retail Chains in Kenya, to establish the relationship between electronic payments and supply chain performance of Large Retail Chains in Kenya and to assess the moderating effect of top management support on the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya.

5.2 Summary of Findings

This sub-section presents the summary of the findings on the relationship between electronic procurement (electronic communication, electronic ordering, electronic contracting and electronic payments) on supply chain performance of Large Retail Chains in Kenya.

5.2.1 Electronic Communication and Supply Chain Performance

The first objective of the study was to examine the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya. The study found that electronic communication has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. From the results, the respondents agreed

that the use of electronic communication tools has enhanced their ability to meet delivery deadlines. In addition, the respondents agreed that electronic communication has contributed to cost savings in their supply chain. Further, the respondents agreed that they have seen a reduction in inventory discrepancies due to effective electronic communication.

The respondents also agreed that the speed of decision-making in their supply chain has increased due to electronic communication. Further, the respondents agreed that electronic communication has improved their supply chain's responsiveness to market changes. The respondents also agreed that the quality of their supplier relationships has improved due to better electronic communication. In addition, the respondents agreed that electronic communication has enabled better risk management in their supply chain. Further, the respondents agreed that the integration of electronic communication tools has streamlined their supply chain processes. The respondents also agreed that they have achieved higher levels of collaboration and information sharing with their supply chain partners through electronic communication.

5.2.2 Electronic Ordering and Supply Chain Performance

The second objective of the study was to examine the relationship between electronic ordering and supply chain performance of Large Retail Chains in Kenya. The study found that electronic ordering has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. From the results, the respondents agreed that electronic requisitioning greatly reduces delivery time. In addition, the respondents agreed that supplier portals greatly reduce delivery time. Further, the respondents agreed that electronic catalogues reduces delivery time. The respondents also agreed that electronic requisitioning greatly influences customer satisfaction. In addition, the respondents agreed that supplier portals greatly influence customer satisfaction.

The respondents agreed that electronic catalogues greatly influences customer satisfaction. The respondents also agreed that electronic requisitioning greatly reduces

costs. In addition, the respondents agreed that supplier portals greatly reduce costs. Further, the respondents agreed that electronic catalogues greatly reduces costs.

5.2.3 Electronic Contracting and Supply Chain Performance

The third objective of the study was to examine the relationship between electronic contracting and supply chain performance of Large Retail Chains in Kenya. The study found that electronic contracting has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. From the results, the respondents agreed that online offers greatly reduce delivery time. In addition, the respondents agreed that online acceptance of offers greatly reduces delivery time. Further, the respondents agreed that electronic negotiations of contracts reduce delivery time. The respondents also agreed that online offers greatly influence customer satisfaction. In addition, the respondents agreed that online acceptance of offers greatly influences customer satisfaction. The respondents also agreed that electronic negotiations of contracts greatly influence customer satisfaction. The respondents agreed that online offers greatly reduce costs. In addition, the respondents agreed that online acceptance of offers greatly reduces costs. Further, the respondents agreed that electronic negotiations of contracts greatly reduces costs

5.2.4 Electronic Payments and Supply Chain Performance

The fourth objective of the study was to examine the relationship between electronic payments and supply chain performance of Large Retail Chains in Kenya. The study found that electronic payments have a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. From the results the respondents agreed that real time gross settlement greatly reduces delivery time. In addition, the respondents agreed that mobile payments greatly reduce delivery time. Further, the respondents agreed that E-cards and E-cheques greatly reduce delivery time. The respondents also agreed that real time gross settlement greatly influences customer satisfaction. Further, the respondents agreed that mobile payments greatly influence customer satisfaction.

The respondents agreed that E-cards and E-cheques greatly influence customer satisfaction. In addition, the respondents agreed that real time gross settlement greatly reduce costs. The respondents also agreed that mobile payments greatly reduce costs. Further, the respondents agreed that E-cards and E-cheques greatly reduce costs.

5.2.5 Top Management Support and Supply Chain Performance

The fifth objective of the study was to assess the moderating effect of top management support on the relationship between e-communication, e-ordering, e-contracting, e-payment and supply chain performance of Large Retail Chains in Kenya. The study found that top management support has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. From the results, the respondents agreed that top management actively supports supply chain initiatives within their organization. In addition, the respondents agreed that there is a clear commitment from top management to invest in supply chain improvements. The respondents also agreed that top management regularly communicates the importance of supply chain performance to all employees. Further, the respondents agreed that adequate resources (financial, human, technological) are allocated by top management to enhance supply chain operations.

The respondents agreed that top management encourages innovation and continuous improvement in supply chain processes. The respondents also agreed that there is strong alignment between top management's strategic goals and supply chain objectives. In addition, the respondents agreed that top management participates in setting and reviewing supply chain performance metrics. Further, the respondents agreed that top management provides the necessary training and development programs for supply chain staff. The respondents agreed that decisions made by top management consider their impact on supply chain performance.

5.3 Conclusions

5.3.1 Electronic Communication

The first null hypothesis test was ‘Electronic Communication has no significant influence on supply chain performance of Large Retail Chains in Kenya. The study found that electronic communication is statistically significant in explaining supply chain performance of Large Retail Chains in Kenya. The influence was found to be positive. The study concludes that electronic communication has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. Findings revealed that company website, emails and social media influences supply chain performance of Large Retail Chains in Kenya. This implies that a unit improvement in electronic communication would lead to improvement in supply chain performance of Large Retail Chains in Kenya

5.3.2 Electronic Ordering

The second null hypothesis test was ‘Electronic Ordering has no significant influence on supply chain performance of Large Retail Chains in Kenya. The study found that electronic Ordering is statistically significant in explaining supply chain performance of Large Retail Chains in Kenya. The influence was found to be positive. The study concludes that electronic ordering has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. Findings revealed that e-requisitions, supplier portals and e-catalogues influences supply chain performance of Large Retail Chains in Kenya. This implies that a unit improvement in electronic ordering would lead to improvement in supply chain performance of Large Retail Chains in Kenya

5.3.3 Electronic Contracting

The third null hypothesis test was ‘Electronic Contracting has no significant influence on supply chain performance of Large Retail Chains in Kenya. The study found that electronic Contracting is statistically significant in explaining supply chain performance of Large Retail Chains in Kenya. The influence was found to be positive. The study

concludes that electronic contracting has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. Findings revealed that online offers, online acceptance of offer and e-negotiation of contract influences supply chain performance of Large Retail Chains in Kenya. This implies that a unit improvement in electronic contracting would lead to improvement in supply chain performance of Large Retail Chains in Kenya

5.3.4 Electronic Payments

The fourth null hypothesis test was ‘Electronic Payments has no significant influence on supply chain performance of Large Retail Chains in Kenya. The study found that electronic Payments is statistically significant in explaining supply chain performance of Large Retail Chains in Kenya. The influence was found to be positive. The study concludes that electronic payments have a positive and significant effect on supply chain performance of Large Retail Chains in Kenya, Kenya. Findings revealed that gross settlement, mobile payments and e-cheques influences supply chain performance of Large Retail Chains in Kenya. This implies that a unit improvement in electronic payments would lead to improvement in supply chain performance of Large Retail Chains in Kenya

5.3.5 Top Management Support

The fifth null hypothesis test was ‘Top management support has no significant moderating effect on the relationship between e-procurement and supply chain performance of Large Retail Chains in Kenya. The study found that Top management support has a significant moderating effect on the relationship between e-procurement and supply chain performance of Large Retail Chains in Kenya. The influence was found to be positive. The study concluded Top management support has a significant moderating effect on the relationship between e-procurement and supply chain performance of Large Retail Chains in Kenya. Findings revealed that IT budget, prioritization and organization strategy influences supply chain performance of Large Retail Chains in Kenya. This implies that a

unit improvement in top management support would lead to improvement in supply chain performance of Large Retail Chains in Kenya

5.4 Recommendations

Based on the study findings, the following policy, managerial, and operational recommendations are proposed to enhance supply chain performance of large retail chains in Kenya through effective adoption of e-procurement practices.

5.4.1 Policy Recommendations

The study established that electronic communication, electronic ordering, electronic contracting, and electronic payments have a positive and significant effect on supply chain performance of large retail chains in Kenya. In light of these findings, policymakers and regulatory agencies such as the Ministry of Trade and Industry and the Communications Authority of Kenya should develop and strengthen policies that promote the adoption of digital procurement systems within the retail sector. Specifically, there is a need for supportive regulatory frameworks that encourage the use of Electronic Data Interchange (EDI), secure electronic contracting platforms, and interoperable electronic payment systems. In addition, policies aimed at enhancing digital infrastructure, cybersecurity standards, and data protection will provide a conducive environment for effective e-procurement implementation across retail supply chains.

5.4.2 Managerial Recommendations

The findings indicate that top management support has a positive and significant moderating effect on the relationship between e-procurement and supply chain performance. Therefore, the management of large retail chains in Kenya should actively champion digital transformation initiatives by allocating adequate financial resources, providing strategic direction, and fostering a supportive organizational culture. Senior executives should prioritize e-procurement as a strategic capability rather than a purely operational tool and integrate it into the overall corporate and supply chain strategies.

Management should also invest in continuous training and capacity building to enhance employee competence in using electronic procurement systems and to ensure successful change management.

5.4.3 Operational Recommendations

At the operational level, the study recommends that large retail chains in Kenya should implement integrated Electronic Data Interchange (EDI) systems to enhance real-time electronic communication with suppliers and logistics partners. The adoption of advanced electronic ordering systems with real-time inventory management capabilities is also recommended to improve order accuracy, reduce stock-outs, and optimize replenishment cycles. Furthermore, retail chains should implement secure electronic contracting systems, including blockchain-based platforms, to improve contract transparency, traceability, and compliance. Finally, the study recommends the deployment of integrated electronic payment systems with dedicated supplier portals to enhance transaction efficiency, reduce payment delays, and strengthen supplier relationships, thereby improving overall supply chain performance.

5.5 Suggestions for Further Studies

This study was limited to the relationship between electronic procurement and supply chain performance of Large Retail Chains in Kenya hence the study findings cannot be generalized to supply chain performance in other organizations in Kenya. The study therefore suggests further studies on the relationship between electronic procurement and supply chain performance of Large Retail Chains in Kenya.

Further, the study found that the independent variables (electronic communication, electronic ordering, electronic contracting and electronic payments) could only explain 85.2% of supply chain performance of Large Retail Chains in Kenya. This study therefore suggests further research on other factors affecting supply chain performance of Large Retail Chains in Kenya.

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APPENDICES

Appendix I: Introduction Letter

Date.....

Dear Respondent,

I am a PhD student at Jomo Kenyatta University of Agriculture and Technology (JKUAT). As part of the requirement for the course, I am undertaking a research study on the *E-PROCUREMENT PRACTICES, TOP MANAGEMENT SUPPORT AND SUPPLY CHAIN PERFORMANCE OF LARGE RETAIL CHAINS IN KENYA*.

The purpose of this letter is to kindly request you to spare your time and complete this questionnaire or respond to the questions therein. The information obtained will be purely for this study and will be treated with utmost confidentiality. Your contribution to this study by completing this questionnaire will be of great value and will be highly appreciated.

Thank you for your cooperation and assistance.

Yours faithfully,

Reuben Mwenda Mauki

Appendix II: Questionnaire

Kindly read the questions carefully and answer them as honestly as possible by ticking (✓), rating, specifying or writing the correct answers precisely on the spaces provided.

PART 1: DEMOGRAPHIC INFORMATION

1. Department of the respondent

2. Kindly indicate your age. (Please tick in the appropriate bracket)

31-40 years ☐ 41-50 years ☐ above 50 years ☐

3. What is your level of education? (Please tick in the appropriate bracket)

Undergraduate ☐ Post-Graduate ☐

4. Number of years served in your current office

3-5 ☐ 6-8 ☐ 9 and above ☐

Section 2: Electronic Communication

5. Please indicate the extent to which you agree or disagree with the following statements. (Please Tick 1 for Strongly Disagree, 2 for Disagree, 3 for neutral, 4 for Agree and 5 for Strongly Agree).

No	Statement	1	2	3	4	5
a)	The use of electronic communication tools has enhanced our ability to meet delivery deadlines.					
b)	Electronic communication has contributed to cost savings in our supply chain.					
c)	We have seen a reduction in inventory discrepancies due to effective electronic communication.					
d)	The speed of decision-making in our supply chain has increased due to electronic communication.					

No	Statement	1	2	3	4	5
e)	Electronic communication has improved our supply chain's responsiveness to market changes.					
f)	The quality of our supplier relationships has improved due to better electronic communication.					
g)	Electronic communication has enabled better risk management in our supply chain.					
h)	The integration of electronic communication tools has streamlined our supply chain processes.					
i)	We have achieved higher levels of collaboration and information sharing with our supply chain partners through electronic communication.					

Kindly indicate the challenges of Electronic Communication in your organization

What are the possible solutions to the electronic Communication challenges

SECTION 3: Electronic Ordering

7. Please indicate the extent to which you agree or disagree with the following statements. (Please Tick 1 for Strongly Disagree, 2 for Disagree, 3 for neutral, 4 for Agree and 5 for Strongly Agree).

No	Statement	1	2	3	4	5
a)	Electronic requisitioning greatly reduces delivery time					
b)	Supplier portals greatly reduces delivery time					
c)	Electronic catalogues reduces delivery time					
d)	Electronic requisitioning greatly influences customer satisfaction					
e)	Supplier portals greatly influence customer satisfaction					
f)	Electronic catalogues greatly influences customer satisfaction					
g)	Electronic requisitioning greatly reduces costs					
h)	Supplier portals greatly reduce costs					

No	Statement	1	2	3	4	5
i)	Electronic catalogues greatly reduces costs					

Kindly indicate the challenges of Electronic Ordering in your organization

What are the possible solutions to the Electronic Ordering challenges

SECTION 4: Electronic Contracting

9. Please indicate the extent to which you agree or disagree with the following statements. (Please Tick 1 for Strongly Disagree, 2 for Disagree, 3 for neutral, 4 for Agree and 5 for Strongly Agree).

No	Statement	1	2	3	4	5
a)	Online offers greatly reduce delivery time					
b)	Online acceptance of offers greatly reduces delivery time					
c)	Electronic negotiations of contracts reduce delivery time					
d)	Online offers greatly influences customer satisfaction					
e)	Online acceptance of offers greatly influences customer satisfaction					
f)	Electronic negotiations of contracts greatly influences customer satisfaction					
g)	Online offers greatly reduce costs					
h)	Online acceptance of offers greatly reduces costs					
i)	Electronic negotiations of contracts greatly reduces costs					

Kindly indicate the challenges of Electronic Contracting in your organization

What are the possible solutions to the Electronic Contracting challenges

SECTION 5: Electronic Payments

11. Please indicate the extent to which you agree or disagree with the following statements (Please Tick 1 for Strongly Disagree, 2 for Disagree, 3 for neutral, 4 for Agree and 5 for Strongly Agree).

No	Statement	1	2	3	4	5
a)	Real time gross settlement greatly reduces delivery time					
b)	Mobile payments greatly reduce delivery time					
c)	E-cards and E-cheques greatly reduce delivery time					
d)	Real time gross settlement greatly influences customer satisfaction					
e)	Mobile payments greatly influence customer satisfaction					
f)	E-cards and E-cheques greatly influences customer satisfaction					
g)	Real time gross settlement greatly reduce costs					
h)	Mobile payments greatly reduces costs					
i)	E-cards and E-cheques greatly reduces costs					

Kindly indicate the challenges of electronic payments in your organization

What are the possible solutions to the Electronic Payments challenges

SECTION 6: Management Support

13. Please indicate your level of agreement with the following statements on moderating effect of management support. Please kindly tick (✓) in the appropriate space that represents your opinion. Use the scale: **Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5)**

No	Statement	1	2	3	4	5
a)	Top management actively supports supply chain initiatives within our organization.					
b)	There is a clear commitment from top management to invest in supply chain improvements.					
c)	Top management regularly communicates the importance of supply chain performance to all employees.					
d)	Adequate resources (financial, human, technological) are allocated by top management to enhance supply chain operations.					
e)	Top management encourages innovation and continuous improvement in supply chain processes.					
f)	There is strong alignment between top management's strategic goals and supply chain objectives.					
g)	Top management participates in setting and reviewing supply chain performance metrics.					
h)	Top management provides the necessary training and development programs for supply chain staff.					
i)	Decisions made by top management consider their impact on supply chain performance.					

SECTION 7: Supply Chain Performance of Large Retail Chains in Kenya

14. Please indicate your level of agreement with the following statements on supply chain performance of Large Retail Chains in Kenya. Please kindly tick (✓) in the appropriate

space that represents your opinion. Use the scale: **Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5)**

No	Statement	1	2	3	4	5
a)	Supply chain automation reduces purchasing cost					
b)	There is improved efficiency and time taken to complete procurement process					
c)	There are standardized purchasing processes in the organization					
d)	There is reduces administrative cost with improved efficiency					
e)	There is improved effectiveness of supply chain processes					
f)	There is reduced discretion and improved transparency					
g)	There is reduction in error of order transmission					
h)	There is reduction in overall company cost					
i)	Service quality has improved					

THANK YOU FOR YOUR TIME

Appendix III: Secondary Data Collection Sheet

	2018	2019	2020	2021	2022
Supply Chain Cost					
Delivery Time					
Supply Chain Reliability					

Appendix IV: List of Large Retail Chains in Kenya

S/No	Name of the Retail Chain	Category
1.	Chandarana Retails	Local
2.	Eastmatt Retails	Local
3.	Carrefour Retail	International
4.	Khetias Retails	Local
5.	Magunas Retails	Local
6.	Shivling Retails	Local
7.	Cleanshelf Retail	Local
8.	Woolmatt Retails	Local
9.	Jumaa Retails	Local
10.	Maathai Retails	Local
11.	Quick Mart Limited	Hybrid**
12.	Naivas Limited	International*

Source: CMA Report (2023)