SUPPLY CHAIN STRATEGIC ALLIANCES AND PERFORMANCE OF MANUFACTURING FIRMS IN KENYA

FATUMA ALI RAJAB

DOCTOR OF PHILOSOPHY

(Supply Chain Management)

JOMO KENYATTA UNIVERSITY

OF

AGRICULTURE AND TECHNOLOGY

2024

Supply Chain Strategic Alliances and Performance of Manufacturing Firms in Kenya

Fatuma Ali Rajab

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

2024

DECLARATION

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

Signature……. Date……..

Fatuma Ali Rajab

This thesis has been submitted for examination with our approval as the university supervisors

Signature……. Date……..

Prof. Patrick Karanja Ngugi, (PhD)

JKUAT, Kenya

Signature……. Date……..

Dr. David Mburu Kiarie, PhD

Kimathi University, Kenya

DEDICATION

I dedicate this work to my mother Amina Khamis, my sister Zubeda Rajab for her never ending support, love, encouragement and commitment to my work. I also dedicate my work to my late brother Rajab Ali. Special thanks to Alfred Wakwoba for his support and encouragement. Finally, I dedicate this work to my loving children Iman George Habib, Harith, Azzam, Hamid and Zidane.

ACKNOWLEDGEMENT

I thank the Majestic God for the gifts of life, courage, strength and guidance He has given me that made it possible to work on this thesis. I sincerely thank each member of my family who continue to pray for me and for their patience, love, support and kindness during the period. I would also like to thank my supervisors, Prof. Patrick Karanja Ngugi and Dr. David Kiarie, for their tireless support and supervision they have accorded me since I started writing this research. To all my lecturers and fellow students, I appreciate the guidance and time we spent together toiling in class to ensure success. I am also thankful to members of staff of the School for Human Resource Development, JKUAT, and Nairobi CBD Campus for their warm and friendly nature whenever I needed their assistance. The highest gratitude is to Zubeda Ali who made this possible through the immense financial support and her dedication to see me through this research.

For those who I have not mentioned please accept my gratitude, you might not be mentioned but your names are forever engraved in my heart for your input towards the proposal of this research study. Thank you and May God bless you all.

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**

ABBREVIATIONS AND ACRONYMS ..... **xvii**

DEFINITION OF OPERATIONAL TERMS ..... **xx**

ABSTRACT ..... **xxiii**

CHAPTER ONE **1**

INTRODUCTION **1**

1.1 Background to the Study 1

1.1.1 Manufacturing Firms 3

1.1.2 Firm Performance 6

1.1.3 Supply Chain Strategic Alliances 8

1.2 Statement of the Problem 12

1.3 Study Objectives 15

1.3.1 General Objective 15

1.3.2 Specific Objectives 15

1.4 Research Hypotheses 15

1.5 Significance of the Study 16

1.5.1 Policy Makers 16

1.5.2 Academic and Research Institutions 16

1.5.3 Manufacturing Industry 16

1.5.4 The General public 17

1.6 Scope of the study 17

1.7 The Study Limitations 18

CHAPTER TWO 20

LITERATURE REVIEW 20

2.1 Introduction 20

2.2 Theoretical Framework 20

2.2.1 Knowledge Based View Theory 20

2.2.2 Network Theory (NT) 23

2.2.3 Resource Dependency Theory (RDT) 26

2.2.4 Transaction Cost Theory 30

2.2.5 Goal Approach Theory 34

2.3 Conceptual Framework 36

2.3.1Technical Alliance 38

2.3.2 Marketing Alliances 40

2.3.3 Innovation Alliances 43

2.3.4 Cost and Risk Sharing Alliances 45

2.3.5 Business Environment 48

2.3.6 Performance of Manufacturing Firms 55

2.4 Empirical Review 57

2.4.1 Technical Alliances 57

2.4.2 Marketing Alliances 59

2.4.3 Innovation Alliances 61

2.4.4 Cost and Risk Sharing Alliances 63

2.4.5 Business Environment and Performance of Manufacturing Firms 64

2.5 Critique of Literature Reviewed 66

2.6 Research Gaps 71

2.7 Summary of Literature Reviewed 74

CHAPTER THREE 76

RESEARCH METHODOLOGY 76

3.1 Introduction 76

3.2 Research Philosophy 76

3.2.1 Research Design 78

3.3 Target Population 79

3.4 Sampling Frame 80

3.5 Sampling Technique and Sample Size 81

3.6 Data Collection Instruments 83

3.7 Data Collection Procedures 83

3.8 Pilot Study 83

3.8.1 Reliability of Research Instruments 84

3.8.2 Validity of Research Instruments 86

3.9 Data Analysis and Presentation 86

3.9.1 Factor Analysis 89

3.9.2 Descriptive Statistics 90

3.9.3 Statistical Modelling 90

3.10 Test of Assumptions/Diagnostic Tests 91

3.10.1 Normality Test 92

3.10.2 Linearity 92

3.10.3 Multicollinearity 93

3.10.4 Heteroscedasticity 94

3.11 Operationalization of Study Variables 95

3.12 Ethical Considerations 97

CHAPTER FOUR 98

RESEARCH FINDINGS AND DISCUSSIONS 98

4.1 Introduction 98

4.2 Response Rate 98

4.3 Pilot Study Results 99

4.3.1 Validity 99

4.3.2 Reliability 100

4.3.3 Factor Analysis (Communalities) 102

4.4 Descriptive Analysis of the Study 102

4.4.1 Technical Alliances 103

4.4.2 Technical Alliances Indicators in Order of Preference in Improving Performance 103

4.4.3 Technical Alliances in Improving Performance of an Organization 105

4.4.4 Extent of Agreement on Technical Alliances Aspects 106

4.4.5 Marketing Alliances 108

4.4.6 Marketing Alliances Indicators in Order of Preference in Improving Performance 108

4.4.7 Extent of Agreement on Marketing Alliances 109

4.4.8 Innovation Alliances 111

4.4.9 Innovation Alliances Indicators in Order of Importance 112

4.4.10 Innovation Alliances Implementation in Improving Firm Performance 113

4.4.11 Innovation Alliances 114

4.4.12 Cost and Risk Sharing Alliances 116

4.4.13 Cost and Risk Sharing Alliances Indicators in Order of Preference 116

4.4.14 Risk Sharing Alliances in the Organization 117

4.4.15 Cost and Risk Sharing Alliances Indicators 118

4.4.16 Business Environment 121

4.4.17 Effectiveness of Business Environment in Improving Performance 122

4.4.18 Significance of Business Environment Aspects in Performance of Firms 122

4.4.19 Extent of Agreement on Business Environment Aspects 123

4.4.20 Performance of Manufacturing Firms 126

4.4.21 Profitability 127

4.4.22 Market Share 128

4.4.23 Other Factors Affecting Performance of Manufacturing Firms 128

4.5 Hypotheses Testing 130

4.6 Diagnostic Testing 134

4.6.1 Normality Test 134

4.6.2 Linearity Test 136

4.6.3 Multicollinearity Test 138

4.6.4 Heteroscedasticity Test 138

4.6.5 Test of Autocorrelation 140

4.7 Statistical Modelling/ Inferential Statistics 140

4.7.1 Correlation Analysis 140

4.7.2 Univariate Regression Analysis 145

4.7.3 Technical Alliances on Performance of Manufacturing Firms 145

4.7.4 Influence of Marketing Alliances on Performance of Manufacturing Firms. 148

4.7.5 Influence of Innovation Alliances on Performance of Manufacturing Firms. 150

4.7.6 Influence of Cost and Risk Sharing Alliances on Performance of Firms.153

4.7.7 Multiple Regression Model of all the Four Variables before Moderation155

4.7.8 The Moderating Role of Business Environment 160

4.8 Optimal Model 164

CHAPTER FIVE 166

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 166

5.1 Introduction 166

5.2 Summary of Findings 166

5.2.1 Technical Alliances 167

5.2.2 Marketing Alliances. 169

5.2.3 Innovation Alliances. 171

5.2.4 Cost and Risk Sharing Alliances 172

5.2.5 Business Environment 174

5.3 Conclusions 175

5.4 Recommendations 176

5.5 Contribution of the Study to Existing Knowledge, Policy and Theory..... 178

5.6 Areas of Further Study 181

REFERENCES 182

APPENDICES 213

LIST OF TABLES

Table 3.1: Target Population 80

Table 3.2: Sample Table 82

Table 3.3: Internal Consistency Using Cronbach's Alpha 85

Table 3.4: Operationalization of Variables 96

Table 4.1: Response Rate 98

Table 4.2: Factorial Test Results for Construct Validity 100

Table 4.3: Reliability Results 102

Table 4.4: Technical Alliances Indicators 105

Table 4.5: Technical Alliances 107

Table 4.6: Marketing Alliances Indicators in Order of Importance 109

Table 4.7: Marketing Alliances Indicators in Order of Importance 111

Table 4.8: Innovation Alliances 113

Table 4.9: Innovation Alliances Implementation 116

Table 4.10: Cost and Risk Sharing Alliances Indicators 117

Table 4.11: Cost and Risk Sharing Alliances Strategies 121

Table 4.12: Rating the Effectiveness of Business Environment 122

Table 4.13: Rating the Aspects of Business Environment 123

Table 4.14: Business environment 125

Table 4.15: Productivity 127

Table 4.16: Revenue 128

Table 4.17: Market Share 128

Table 4.18: Factors affecting performance of firms 129

Table 4.19: Hypotheses Test Results 133

Table 4.20: Normality Results 135

Table 4.21: Collinearity Statistics 138

Table 4.22: Test of Autocorrelation 140

Table 4.23: Correlation Matrix 145

Table 4.24: Regression Analysis for Technical Alliances 147

Table 4.25: Marketing Alliances 150

Table 4.26: Regression Analysis for Innovation Alliances 152

Table 4.27: Regression Analysis for Cost and Risk Sharing Alliances 154

Table 4.28: Multivariate Regression Analysis before Moderation 159

Table 4.29: Moderating Role of Business Environment 163

LIST OF FIGURES

Figure 2.1: Conceptual Framework 37

Figure 4.1: Implementation of Technical Alliances..... 105

Figure 4.2: Effectiveness of Innovation Alliances Implementation 114

Figure 4.3: Cost and Risk Sharing Alliances Strategies Grading 118

Figure 4.4: Normality Plot 135

Figure 4.5: Linearity Test of Technical Alliance 136

Figure 4.6: Linearity Test of Marketing Alliance 136

Figure 4.7: Linearity Test of Innovation Alliance 137

Figure 4.8: Linearity Test of Cost and Risk Sharing Alliance..... 137

Figure 4.9: Linearity Test of Business Environment 137

Figure 4.10: Graphical P-P Plots..... 139

LIST OF APPENDICES

Appendix I: Introductory Letter to the Respondents 213

Appendix II: Questionnaire 214

Appendix III: Factor Analysis (Communalities)..... 224

Appendix IV: Descriptive Statistics 227

Appendix V: Item Statistics 229

Appendix VI: Total Variance Explained 232

Appendix VII: List of Manufacturing Firms in Kenya..... 236

ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
ANOVA	Analysis of Variance
BAT	British American Tobacco
BUSINESSNZ	Business New Zealand
COMESA	Common Markets of Eastern and Southern Africa
EAA	Ethiopian Economic Association
EAC	East African Community
EDI	Electronic Data Interchange
EEA	Ethiopia Economic Association
EPZ	Export Processing Zone
FDI	Foreign direct investment
GDP	Gross Domestic Product
ICDC	Industrial and Commercial Development Corporation
IS	Information Systems
JICA	Japan International Cooperation Agency
KAM	Kenya Association of Manufacturers
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KITP	Kenya Industrial Transformation Programme

KM	Knowledge Management
KMO	Kaiser–Meyer–Olkin
KMS	Knowledge Management Systems
KNBS	Kenya National Bureau of Statistics
KRA	Kenya Revenue Authority
MANOVA	Multivariate Analysis of Variance
MITC	Ministry of Industry, Trade and Cooperatives
NTBF	New Technology Based Firm
NZ	New Zealand
ODI	Overseas Development Institute
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
PCA	Principal Component Analysis
R&D	Research and Development
RDT	Resource dependence theory
SC	Supply Chain
SCA	Supply chain agility
SCM	Supply chain management
SD	Standard Deviation

KBV	Knowledge Based View Theory
SEZ	Special Economic Zones
SGR	Standard Gauge Railway
SMEs	small to medium sized enterprise
SPSS	Statistical Package for Social Science
RDT	Resourse Dependency theory
UNIDO	United Nations Industrial Development Organization
USA	United State of America
VAT	Value-Added Tax
VIF	Variance Inflation Factor
WB	World Bank
WTO	World Trade Organization

DEFINITION OF OPERATIONAL TERMS

Alliances is used to signify a wide range of collaborative relationship types. Large percentage of relationships along the supply chain operate on an alliance's basis (Bamel *et al*., 2021).

Business Environment Consists of factors both internal and external to the firm that directly or indirectly affect performance (Imran *et al*., 2020).

Manufacturing Firms Any business that uses components, parts or raw materials to make finished goods. These finished goods can be sued directly by consumers or by other manufacturers as raw material or parts to make other goods (Gachanja *et al*., 2020).

Performance of Manufacturing Firms It describes key indicators, methods, and processes that are necessary for measuring success. Performance is made up of actual output of a firm as weighed against the intended results or output. Performance comprises three specific areas of firm outcomes which include product performance, financial performance and shareholder, which is total shareholder return and economic value added (Gachanja *et al.*, 2020).

Supply Chain Cost Supply Chain Cost is defined as all relevant costs in the supply chain of the company or organization in question. They are costs that constitute a considerable percentage of the total sales price of a product or service. Manufacturers usually define supply chain costs using the total cost of ownership (Emami *et al*.,).

Supply Chain Management is the management of the flow of goods and services and includes all processes that transform raw materials into final products (Shan *et al*., 2020).

Supply Chain Marketing Alliances It is the practice and procedure for involving directly with suppliers. It is a systematic way of establishing what firms needs from a supplier and defining and controlling firm-to-firm link to achieve these needs. Supply chain marketing alliances is the series of actions that gives the blue print for how connections with customers are developed and maintained (Cacciolatti *et al*. (2020).

Supply Chain Risk Supply chain risk refers to the potential disruption or unavailability of necessary resources provided through external sources and the resulting disruption to business operations. It is the potential for harm or compromise that may arise as a result of security risks from suppliers, their supply chains, and their products or services. Supply chain risks include exposures, threats, and vulnerabilities associated with the products and services traversing the supply chain as well as the exposures, threats, and vulnerabilities to the supply chain (Emami *et al*., 2022).

Supply Chain Strategic Alliances a collaborative or synergistic relationship that adds value above and beyond what is achievable through simple long or short term contracts. It also implies cooperatively working together on many aspects so as to gain competitive advantage and reap maximum benefits along the supply chain (Bamel *et al*., 2021).

Supply Chain Technical Alliances This is whereby the suppliers and the manufacturing companies collaborate to bridge any technical gaps (Li *et al*., 2021).

ABSTRACT

This study seeks to investigate the influence of supply chain strategic alliances and performance of manufacturing firms in Kenya. The study specifically investigated the effect of supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances and supply chain cost and risk sharing alliances on the performance of manufacturing firms in Kenya. Likewise, the moderating effect of business environment on performance of manufacturing firms in Kenya was assessed. The study adopted a mixture of descriptive research design and explanatory research design. The targeted population of this study is comprised of 596 manufacturing companies in Kenya. A proportionate stratified random sampling method was used based on the manufacturing sectors as well as with the help of Fisher's formula to arrive at 234 manufacturing firms. Primary data was collected using self-administered questionnaires which were tested for validity and reliability. The dependent variables tested had a Cronbach alpha of above 0.7, the moderating variable had a Cronbach alpha of more than 0.7, this means that they all met the threshold to be adopted to the main study. Validity was tested using KMO, the corresponding significance values of the KMO values were significant since they fell under the 0.05 threshold for testing significance (p-value < 0.05). Quantitative data was analyzed using both descriptive and inferential statistics and with the help of SPSS version 25. Correlation and regression analysis were used to show the relationship between the dependent variable and the independent variables. The results are presented using tables, charts, frequencies, percentages and graphs. From the findings, the study concludes that there is positive and significant influence of supply chain technical alliances ($P=0.000$; $\beta=0.575$; $R^2=0.423$), supply chain marketing alliances ($P=0.000$; $\beta=0.703$; $R^2=0.463$), supply chain innovation alliances ($P=0.000$; $\beta=0.680$; $R^2=0.374$) and supply chain cost and risk sharing alliances ($P=0.000$; $\beta=0.794$; $R^2=0.46$) on the performance of manufacturing firms in Kenya, ($P=0.000$; $R^2=0.735$). The study likewise concludes that there is a positive and significant moderating influence of business environment on the relationship of supply chain strategic alliances and performance of manufacturing firms in Kenya ($P=0.000$; $R^2=0.773$). These findings generate knowledge on how these strategic alliance formations contribute towards performance of manufacturing firms in the Kenyan context, which expands the conceptual scope of the set of studies done on strategic alliances. Thus, the study recommends that manufacturing firms should put into consideration to monitor and define its strategic partnership to improve performance in productivity, market share and profitability. The findings are in line with the Network Theory that forming alliances along the supply chain improves the performance of firms. The study has certain limitations; a cross-sectional survey approach method was used for the study and data was collected at only one point in time, this may bias the findings; single respondent was used in data collection, which may bias or determine the nature of responses. Future research directions include a replication of study in a longitudinal approach while using path analysis or structural equation models and consideration of other sectors, firm characteristics and resource constraints.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The manufacturing sector in Kenya is believed to be the third largest industrial sector after transport, communication and agriculture. It is the third top sector contributor to gross domestic product in Kenya. The manufacturing sector is made up of only 10% of the industrial sector benefaction even though Kenya is said to be the most highly industrially developed country in East Africa. According to the US Department of State, this exposes a gap in the country's ability to achieve a fully industrialized economy by 2020. The key indicators of the performance of the sector such as production capacity, ratio of imports to exports volume, quality of the products and lead time among others have been marginally met in the sector (Gachanja *et al.,* 2020).

Kenyan manufacturing sector contribute significant to the Gross Domestic Product and it is one of the big four agenda of the government at the moment (KNBS, 2022). Food and beverage sub-sector has the biggest proportion of manufacturing sector in Kenya at 22% according to a report by Kenya association of manufactures (KAM, 2022). According to economic survey by Kenya National Bureau of Statistics (KNBS, 2021) Kenyan manufacturing sector growth slowed down in the year 2020 as the real gross value added went down by 0.1% according to economic survey by Kenya National Bureau of Statistics (KNBS, 2021). This presented a significant decline since the sector grew by 2.5% in the year 2019.

According to Kenya Bureau of Statistics (KNBS, 2021), the decline in growth was further aggravated by COVID 19 pandemic. Kenya's manufacturing sector contributed 10.3% of the total GDP. Manufacturing sector has been experiencing growth that falls below the GDP growth. For instance, the manufacturing sector growth increased by only 0.3% from year 2015 to 2016; from 3.2% to 3.5%. This growth is not commensurate to the expectations that manufacturing sector could contribute to 10%, 13% and 12.5% increase in GDP, employment and exports

respectively over the medium term period 2013-2021 (Watiri & Kihara, 2017). Supply chain management practices allow manufacturing firms to reduce costs, increase operational efficiency, and improved operational performance.

According to Gligor *et al*. (2020), the modern manufacturing industry has shifted from the sole focus on production processes, and now it is bringing other key approaches that make the sector more competitive. These approaches include supply chain alliances and supplier-based strength, and at the centre of these approaches is information and technology (Kitainge *et al*., 2019). To steer the sectors' performance, therefore, supply chain strategic alliances is paramount.

Firms get into strategic alliances with their customers and suppliers in order to achieve various objectives which include acquisition of resources, entering new markets and thus strategic alliances are very powerful tools if a firm is to remain competitive in the ever-increasing challenging business environment. There have been many theoretical advances to analyze strategic alliances from different perspectives.

Business environment has become complex and requires flexible operations, firms have become more susceptible to supply chain disruptions. Supply chain resilience, which decreases the impact of supply chain risks by actively pointing out on strategies that enable supply chains to respond and recover to their original state or an even better condition is very vital to many firms' survival. Firms are now actively involved in forming supply chain strategies so as to develop new and improved processes, practices and strategies accordingly. Literature shows that there are many benefits of forming strategic alliances but despite those benefits, many organizations have not entered into formal alliances because they lack adequate knowledge of what strategic alliances entails and its impact on the performance of their firms.

This chapter covers the background information of the study, in which a description of the current state of supply chain strategic alliances globally, regionally and locally is provided. This is followed up with the problem statement, the general objective of the study, the specific objective of the study, the null hypotheses, and significance of

the study, the limitations of the study, study scope and finally a summary of the chapter.

1.1.1 Manufacturing Firms

Since competitive advantage has to do with an organization manufacturing performance we can rightfully say that manufacturing firm's capacity to achieve competitive advantage primarily lies in its manufacturing performance (Schroeder *et al*., 2002). Manufacturing performance, in turn, seems to be affected by various plant specific factors such as competitive priorities and manufacturing choices/decisions as well as innovative manufacturing practices. These aspects constitute manufacturing strategy content (Peng *et al.*, 2011). The rising performance in the manufacturing sector has been the major component in the successful transformation of most economies that have seen sustained rises in their per capital incomes (WB, 2014).

A vital element of India's rapid economic growth since the early 1990s has been the improved performance of its manufacturing sector. Output in manufacturing grew by 5.7% per year in the period 1993-2005 (Reserve Bank of India, 2008). Manufacturing sector is very vital to the economy of New Zealand (NZ). It is the largest economic sector in New Zealand, contributing 14.6 percent to the country's GDP in 2012 (BusinessNZ, 2014). This makes New Zealand one of the more manufacturing-heavy economies (OECD, 2014).

According to NAM (2015), USA's 12% GDP is accounted for by its manufacturing sector, while it employs about 9% of countries workforce, every dollar spent in manufacturing adds $1.37to the US economy, and every 100 jobs in a manufacturing facility creates an additional 250 jobs in other sectors. USA's manufacturing output growth has over the years outperformed that of most European countries and Japan, however it has continued to lag behind that of China, Korea and other Asian countries (Levinson, 2015).

According to Owuoth (2010), Kenya as realized that the manufacturing sector is the lifeline of its economy simply because it plays a very crucial role in the long term prosperity of a country. Kariithi & Kihara (2017) posit that Africa's manufacturing

sector has been changing over time, and showing transformations in dynamic domestic demands, national policies and also the world market (Kariithi & Kihara, 2017). Importance of the manufacturing sector to the national economies of the Africa countries has varied across different periods since independence, however, in the recent years its contribution to the national income and hence its importance has been on the rise adds Kariithi & Kihara(2017). In most of Africa, performance of manufacturing has been particularly poor over the decades compared to that of developing countries (WB, 2014).

According to a report by ODI (2016), Kenyan manufacturing sector is growing slower at the rate of 7% than those in Ethiopia at 24%, Rwanda 35% Tanzania 25% and Uganda 22%. Governments in East African Countries seem to be putting more pronounced effort into building manufacturing through creation of industrial parks like Ethiopia and making land available for manufacturing and particularly labor intensive manufacturing (ODI, 2016). Ethiopia's manufacturing sector responsibility in the nation's economic development has been increasing year after year according to the Ethiopia Economic Association (EEA) (EEA, 2011). At present, the government seems to have given increased attention to the industrial sector, especially to manufacturing, as it is expected to take the lead in the economy as of the year 2014/15 (EEA, 2011).

Performance of the manufacturing sector in Kenya has been recognized as the main route towards a self-sustaining economy that is not over-reliant of the external market to thrive (Lukhoba & Muturi, 2015). With the benefit of essential minerals and raw materials as well as a technically vibrant human capital, Kenya's manufacturing sector has a huge potential in being the country's economic backbone (Cheptum, 2019). The key indicators of the performance of the sector such as production capacity, ratio of imports to exports volume, quality of the products and lead time among others have been marginally met in the sector (Gachanja *et al*., 2020). According to Gligor *et al*. (2020), the modern manufacturing industry has shifted from the sole focus on production processes, and now it is bringing other key approaches that make the sector more competitive. These approaches include supply

chain strategic alliances and supplier-based strength, and at the center of these approaches is information and technology (Kitainge et al., 2019).

Based on the Kenya's economic survey by the Kenya National Bureau of Statistics, it is evident that the manufacturing sector in Kenya has not been vibrant in terms of performance and expansion for the past decade. Under Kenya's vision 2030, the manufacturing sector is expected to contribute to over 20% of the country's Gross Domestic Product (GDP). Six years now to 2030, the sector only contributes to 11% of the GDP, which raises the doubt on whether the sector will achieve the vision. Moreover, the past 10 years have seen an increase in the number of manufacturing companies falling from grace, despite the increase in the demand for the products they manufacture. Taking sugar for instance, its consumption increased from 772,731 metric tonnes in 2010 to 1,831,055 metric tonnes in 2022, while at the same period, the country's largest sugar millers (Mumias Sugar Company and Nzoia Sugar) were in the verge of collapsing. Similarly, cement consumption grew from 1.6 metric tonnes in 2005 to 9.2 million metric tonnes in 2021, while in the same period, Athi River Mining and East Africa Portland- country's largest cement manufacturing companies were steadily declining in terms of production and profitability (KNBS, 2022). This raises the question on what could be ailing the Kenya's manufacturing sector. A report by the OECD (2019) revealed that supply chain processes accounted to over 60% of the costs incurred by the manufacturing sector. On the other hand, Brockhaus et al. (2016) noted that the efficiency and effectiveness of the supply chain processes had more than 54% probability of enhancing the performance of manufacturing industry.

In 2016 the manufacturing sector contributed approximately 13.6% to the GDP which is clearly a decline from the previous year of 2015 where the statistics showed 15.6% growth (KNBS, 2016). In terms of regional comparison, with other East African countries, Kenya has the largest and most advanced manufacturing firms. The manufacturing sector in Kenya is the main channel for collaborations into regional and world markets. The sector is a major source of employment in urban areas and possesses substantial backward and forward linkages to the rest of the economy. According to Awino (2011) this sector has the potential to generate foreign

exchange earnings through exports and diversify the country's economy. Kenya is the most advanced country in East Africa in as far as industries are concerned, and the manufacturing sector is the fourth largest (Wanyoike, 2016). According to the Economic Recovery Strategy for Employment and Wealth Creation Report (2015). Though it still has the highest capacity to develop, the sector has remained Kenya's biggest contributor to economic growth.

1.1.2 Firm Performance

Manufacturing firm performance is described as the extent to which firms fulfilled their objectives, through its ability to exploit its environment to access the limited resources and thereby achieving its financial goals, (Gachanja *et al*, 2020). Attaining supply chain performance is very crucial in raising a firm's performance. If a supply chain is doing well like its fully integrated, responsive to market needs and adaptable to market transformation, then a firm can upgrade its performance in terms of profitability, operating costs and quality (Gligor *et al.*, 2020). Statistics show that manufacturing firms have continued to have low profits or never changing profits over long periods due to unforeseeable business environments (WB, 2018).

Based on the Kenya's economic survey by the Kenya National Bureau of Statistics, it is evident that the manufacturing sector in Kenya has not been vibrant in terms of performance and expansion for the past decade. Under Kenya's vision 2030, the manufacturing sector is expected to contribute to over 20% of the country's Gross Domestic Product (GDP). Six years now to 2030, the sector contribution stands at 11% of the GDP, which raises the doubt on whether the sector will achieve the vision. Moreover, the past 10 years have seen an increase in the number of manufacturing companies falling from grace, despite the increase in the demand for the products they manufacture. Taking sugar for instance, its consumption increased from 772,731 metric tonnes in 2010 to 1,831,055 metric tonnes in 2022, while at the same period, the country's largest sugar millers (Mumias Sugar Company and Nzoia Sugar) were in the verge of collapsing. Similarly, cement consumption grew from 1.6 metric tonnes in 2005 to 9.2 million metric tonnes in 2021, while in the same period, Athi River Mining and East Africa Portland-country's largest cement manufacturing

companies were steadily declining in terms of production and profitability (KNBS, 2022). This raises the question on what could be ailing the Kenya's manufacturing sector. A report by the OECD (2019) revealed that supply chain processes accounted to over 60% of the costs incurred by the manufacturing sector. The efficiency and effectiveness of the supply chain processes had more than 54% probability of enhancing the performance of manufacturing industry.

The COVID-19 pandemic has had significant impact on the manufacturing sector with some sub sectors and manufacturers being more resilient than others. In comparison to 2020, enterprises are currently operating without the economic reliefs measures that were put in place last year to cushion them against the adverse effect that the pandemic had on businesses (KAM,2021). According to KAM (2021), before the onset of the COVID-19 pandemic in Kenya in March 2020, the top three priorities for manufacturers were to increase profitability, increase revenue and gaining new markets. However, the pandemic necessitated a change of focus for business to stay afloat during the turbulent times. Reducing costs, retaining jobs, and improving cash flow are the main priorities for businesses.

A Survey undertaken by Kenya Association of Manufacturers (KAM) and KPMG in about 180 industries in EAC found that about 40% of workforce has been reduced with most manufactures working to reduce cost, retain jobs and improve cash flows; 91% of non-essential goods manufacturers have seen a significant fall in demand compared to 74% of essential goods manufacturers; Production has dropped and 42% are currently operating at less than half their production capacity, while the average utilized capacity for MSMEs is 37% and 76% are having difficulties in locally sourcing or importing raw materials and 67% found access to market challenging (KAM, 2020).

Further statistics from the Kenya Association of Manufacturers have shown that certain manufactures implied that they were to close shop and move their businesses to other low cost countries like Egypt because of low profits (KAM, 2021). Manufacturing firm achievements in Africa has been particularly poor over the last decade (OECD, 2019). Kenya's share of manufacturing exports to global market is

about 0.02%, and whereas this compares favourably with neighbouring countries like Uganda and Tanzania, the performance is very low compared to countries like South Africa, Singapore, China and Malaysia (KNBS, 2022). Creation of strategic alliances along the supply chain can be the way in which firms in Kenya improve on performance.

In Africa studies show that $330 million is lost every year while the governments also lose about $67 of tax revenue due to unexpected environmental factors. Statistics show that the manufacturing sectors in East Africa have lost approximately 70% of their markets due to unpredictable business environment (WB, 2016a). Firms like Procter & Gamble, Johnson &Johnson Reckitt & Benkiser, Colgate, Palmolive, Unilever, Smithkline and Bridgestone have shifted or entirely changed their operations choosing to fulfill the needs of the local market through importing from low cost countries. This has resulted in massive unemployment (Gachanja *et al*, 2020).

According to a World Bank Report (2018), in spite of Kenya being applauded for its powerful economy that is bound to become the top five fastest-growing economies in East and Central Africa, manufacturing yield remains short compared to other sectors. An economic growth rate of 4.3 per cent lagged the average expansion of the economy at 6.2 per cent between 2010 and 2013 due to a challenging operating environment (WB, 2018). This has resulted in Kenya being a heavy consumer of goods produced in the Far East. Moreover, the relative size of Kenya's manufacturing sector has been stagnant and the sector has lost international competitiveness and is struggling with low productivity and structural inefficiencies (Kimwaki *et al*, 2023).

1.1.3 Supply Chain Strategic Alliances

According to Bamel *et al*. (2021) strategic alliances are formed when two or more firms join to achieve certain goals that they agree upon. Klus *et al*, (2019) further point out those firms entering strategic alliances share resources to achieve superior organizational performance and increase their reputation and market share since they have access to a pool of resources and competencies that they didn't have as

individuals. Cui *et al*, (2018) further indicate that firms in strategic alliances pool properties, resources, competencies and expertise to realize mutual objectives. This is informed by the fact that the information, properties, resources, competencies, and expertise needed to enhance the profitability of the individual firms exist outside the firms themselves. The firm's management lacks direct control of these key resources. Through strategic alliances, firms are provided with opportunities to benefit from new information, expertise and develop new competencies.

Strategic alliances are viewed as an open relationship which is based on reciprocal need between autonomous organization so as to achieve mutually determined and individual objectives, where decisions are made together and risks and benefits, knowledge and resources are shared (Creswell, 2017). These alliances also entail sharing of information, dedicating investment, making joint decisions, and aligning incentives (Lioukas & Reuer, 2020). Strategic alliances are considered a major factor in maintaining a supply chain's competitive position. It has received increased awareness in the arena of supply chain management (Barasa *et al*., 2017). The foundational need for combined thinking and operations and the need to link the supply chain have not changed even though they supply chain management keep changing (Gregory *et al.*, 2019). Supply chains, being inter-organizational and inter-functional, are known to be more effective with the coordinated and collaborative efforts among partners (Achuka, 2016).

Technical alliances take the form of cross-licensing rather than joint ventures. The organizations come together to research and develop new products or processes to satisfy world markets (Darby *et al*., 2020). The reason is that researching, and application of the knowledge gained from research for the development of new as well as different products, properties, policies and processes helps in the creation of more profitable business opportunities. Research & Development in the automobile industry provides new ideas as well as innovation where applicable (Yuan *et al,* 2019).

A Marketing alliance refers to a functional alliance whereby various associates share many marketing expertise and services. In most instances, the partner brings forth

their goods and services to the market in the presence of other parties. The established firm helps the newcomer through promotions, advertisement, and/or distributing its products or services. In this case, the nature of arrangement involves one partner introducing their products or services into a defined market where the other partner already has a presence. In this case, the established partner provides the newcomer with the necessary assistance in exchange for a fee (Bamel *et al*., 2021).

As technology has become vital in the supply chain and companies strive to innovate, meet consumer demands, handle disruptions and drive competitive advantage, alliances and partnerships in technology have emerged as crucial strategies for success. These alliances and partnerships take different forms and shapes (Drewniak, 2020). No firm, no matter how vast its resources, can claim expertise in every aspect of technology. By forging strategic alliances, companies can tap into the expertise and offerings of their partners. This not only facilitates the cross-pollination of ideas but also speeds up the adoption and implementation of different supply chain technologies (Barakat, 2020). The technological landscape is becoming more intricate, complex and dynamic. It is marked by both cut-throat competition and the constant need for innovation. In this environment, alliances and partnerships are not mere strategic moves, they are imperatives for survival and growth. They foster a culture of collaboration, driving companies to look beyond their boundaries and embrace a more inclusive, synergistic approach to innovation both with their customer and with other tech vendors (Shan, Li and Shi, 2020).

Supply chain risk has been defined as purely negative consequence within information, financial and material flows. Supply chain risk sources are unpredictable variables within an organization, network or environment. These risks exist because of uncertainty about future risk events, which can appear at any point in time in the supply chain (Jia-qiang, 2021). Risk mitigation and control strategies are classified into two approaches: proactive and reactive. Adopting an effective risk management strategy based on global supply chain environment is becoming increasingly challenging (Shin, Park, and Park (2019).

Cacciolatti *et al.* (2020) suggest that strategic alliances are crucial in helping companies to attain the evolving client requirements, as well as achievement of high firm performance and still command a substantive market share within the regulated markets. The formation of strategic alliances proves to be one of the most useful strategies capable of enabling companies' aspect of retention alongside increasing the market share within highly dynamic as well as competitive global markets. This also includes maintaining high levels of profitability over long periods. However, the implementation of the alliances should align to the overall corporate strategy of the respective partners.

Muange and Kiptoo (2020) established that companies in alliances freely utilize their partners' various strengths such as competencies, expertise, as well as strategic resources. Notably, large corporations currently join alliances with medium-sized firms within the same industries for the purposes of improving their reputation, competitiveness, as well as level of performance that reduces risks and costs.

The perspective of collaborative advantage enables supply chain partners to view strategic alliances as a positive venture rather than a risky one, and therefore partners endeavour to gain favourably and gain competitive advantages (Hubbard *et al*., 2019). According to Li (2019), in 2000, a fire destroyed the entire production capacity of a plant of Phillips Electronics in Albuquerque, which is was a sub supplier of the Scandinavian cell phone maker of Nokia and Ericsson. Zheng *et al.,* (2018) added that Nokia decided to enter an alliance with Phillips to chip its chip orders to other Phillip plants so as to use their extra capacity whereas Ericsson who did nothing incurred a loss of $400 million.

This shows that the changes of the focal firm strategy can be attributed to formation of strategic alliances. This formation of strategic alliances encourages information sharing, logistics cost management and resource sharing (Liu, 2018). These actions in return will benefit the firms to acquire and retain customers faster (Zheng *et al*., 2018) as well as focal firm's financial performance (Guo, 2020). BAT Kenya strives for the development of people capabilities through continuous training. In 2016, BAT formed an alliance with its distribution partners and ran training programs

named POSITIVE to equip its distribution partners with skills to operate in challenging environment (KAM, 2016).

Many scholars have focused on the interactions between alliances and supply chain performance. Early studies primarily considered alliances, trust and commitment as independent variables, supply chain capability and information sharing as mediating variables, and competitive advantage and supply chain cooperation performance as dependent variables (Huang & Hou, 2019; Shan, Li and Shi, 2020). Some believe that, in the long run, a lack of reliable trust alliance between partner companies may lead to an inability to achieve the desired performance goals. Others show that contract and commitment relationships reached by close alliances among supply chain companies might have negative influences, leading to reluctance toward innovative practices or low improvement in innovation performance (Shan, Li and Shi, 2020).

This paper focused on the strategic alliances practices that have been highlighted as important in the recent supply chain management literature: Supply chain technical alliances; Supply chain marketing alliances; supply chain innovation alliances and Supply chain cost and risk sharing alliances. While these have been highlighted separately in the literature, there is room for an empirical study focusing on the role of these practices together as a driver for firm performance.

1.2 Statement of the Problem

The manufacturing sector in Kenya faces several challenges that hinder its performance and competitiveness in the global market. These challenges include limited access to financing, inadequate infrastructure, high energy costs, and inadequate skills among the workforce. Additionally, the complexity and fragmentation of supply chains in Kenya create inefficiencies, delays, and high costs for manufacturing firms. The Contribution of the manufacturing sector in Kenya's GDP has stagnated at an average of 10% over the years, despite the industry's potential to contribute to over 30% of the GDP (KNBS, 2021). In 2016, the sector contributed up to 11% of the GDP, but dropped to 9.2% in 2017, 9.0% in 2018, and 8.9% in 2019, and 7.1% in 2021 (Economic Survey,2021). The overall value growth

of the sector dropped from 2.7% in 2016 to 0.2% in 2017, and 0.1% in 2018 (Economic Survey, 2021).

According to the Kenya Association of Manufacturers [KAM] (2022), in 2022, the Kenyan Manufacturing sector dropped over 7,000 jobs, despite benefiting from tax incentives from the government, where most of the firms cited unstable revenues and inability to meet the overhead costs. Manufacturing firms have been recording losses while others are downsizing their operations to minimize the cost of operation, while others have exited the market altogether (Gachanja *et al*, 2020). Companies like Eveready, Athi River Mining, East African Portland Cement Plc, Mumias Sugar, and East African Cables have fallen from giants to loss-making within a span of less than 10 years, a situation that according to KNBS (2022), is worrying not only to the future of the manufacturing industry in the country but also on the continued growth of the country's economy. While there exists a number of studies on the performance of manufacturing industry in Kenya (Cheptum, 2019), the studies have failed to provide a conclusive elucidation on the waning performance in the sector.

According to the report from World Bank (2016), the manufacturing sector is the third largest contributor to the economy at 10.3% after transport and communication which stands at 11.3%, followed by agriculture and forestry at 23.4% (KNBS, 2018). Statistics point out that manufacturing firms in Kenya function at a technical efficiency of approximately 59% in relation to their counterparts in Malaysia that average approximately 74% (Odhiambo, 2015). This makes it hard to believe that the sector is capable of achieving the goals of Vision 2030. Kenya was ranked at position 115 out of 152 in the latest Competitive Industrial Performance Index Report (2020), which benchmarks the ability of countries to produce and export manufactured goods competitively. The country was ranked lower than Egypt (64) and South Africa (52) but led East African counterparts with Tanzania (123) and Uganda (128). Based on the Kenya's economic survey by the Kenya National Bureau of Statistics, it is evident that the manufacturing sector in Kenya has not been vibrant in terms of performance and expansion for the past decade.

Under Kenya's vision 2030, the manufacturing sector is expected to contribute to over 20% of the country's Gross Domestic Product (GDP). Six years now to 2030, the sector only contributes to 11% of the GDP, which raises the doubt on whether the sector will achieve the vision. Moreover, the past 10 years have seen an increase in the number of manufacturing companies falling from grace, despite the increase in the demand for the products they manufacture. Taking sugar for instance, its consumption increased from 772,731 metric tonnes in 2010 to 1,831,055 metric tonnes in 2022, while at the same period, the country's largest sugar millers (Mumias Sugar Company and Nzoia Sugar) were in the verge of collapsing. Similarly, cement consumption grew from 1.6 metric tonnes in 2005 to 9.2 million metric tonnes in 2021, while in the same period, Athi River Mining and East Africa Portland-country's largest cement manufacturing companies were steadily declining in terms of production and profitability (KNBS, 2022). This raises the question on what could be ailing the Kenya's manufacturing sector. A report by the OECD (2019) revealed that supply chain processes accounted to over 60% of the costs incurred by the manufacturing sector. On the other hand, Brockhaus *et al.* (2016) noted that the efficiency and effectiveness of the supply chain processes had more than 54% probability of enhancing the performance of manufacturing industry.

Empirical evidence show that supply chain strategic alliance is one of the key drivers in improving the efficiency and effectiveness of a supply chain processes and thereby reducing the supply chain processes costs and ultimately improving the performance of manufacturing firms (Lioukas & Reuer, 2020). Strategic alliances are considered a major factor in maintaining a supply chain's competitive position, supply chains, being inter-organizational and inter-functional, are known to be more effective with the coordinated and collaborative efforts among partners (Achuka, 2016). It is based on this background that the study sort to investigate the influence of supply chain strategic alliances on performance of manufacturing firms in Kenya.

1.3 Study Objectives

1.3.1 General Objective

The main objective of this study was to assess the relationship between supply chain strategic alliances and performance of manufacturing firms in Kenya.

1.3.2 Specific Objectives

1. To determine the relationship between technical alliances and performance of manufacturing firms in Kenya
2. To establish how marketing alliances, relate to performance of manufacturing firms in Kenya.
3. To ascertain the relationship of innovation alliances on performance of manufacturing firms in Kenya.
4. To establish the effect of cost and risk sharing alliances on performance of manufacturing firms in Kenya.
5. To evaluate the moderating role of business environment on the relationship of supply chain strategic alliances and performance of manufacturing firms in Kenya.

1.4 Research Hypotheses

The study was based on the following hypotheses;

H_{01}: Technical alliances has no significant influence on performance of manufacturing firms in Kenya.

H_{02}: Marketing alliances has no significant influence on performance of manufacturing firms in Kenya.

H_{03}: Innovation alliances does not significantly influence the performance of manufacturing firms in Kenya.

H_{04}: Cost and risk sharing alliances does not significantly influence the performance of manufacturing firms in Kenya.

H_{05}: Business environment has no significant moderating effect on the relationship between supply chain strategic alliances and performance of manufacturing firms in Kenya.

1.5 Significance of the Study

The study seeks to assess the influence of supply chain strategic alliances on performance of manufacturing firms in Kenya. While this study may be of value to any person interested in highlighting the opportunities and challenges that may exist in supply chain strategic alliances and its consequent influence on the performance of manufacturing firms, it is hoped that the study findings specifically would benefit the following groups:

1.5.1 Policy Makers

The study will aid the government formulate policies and regulations on strategic alliances that will enable both private and public entities improve their performance through SCM process. This will ensure high service level at a lower cost. From the findings and recommendations of this research the government will be able to appreciate various practices of strategic integration and alliances so as to give direction on how the strategy can be utilized effectively in Kenyan economy.

1.5.2 Academic and Research Institutions

The research will help universities and other learning institutions which offer Supply Chain Management courses to design appropriate curriculum tailored to procurement personnel in practice. This will link theoretical concepts to actual practice in the field and make necessary adjustments to suit the market. More importantly the study will be important to the business society.

1.5.3 Manufacturing Industry

The study is of great importance to manufacturing firms since it will make them to re-evaluate their supply chain alliances practices and ensure that they set up value

creation strategies in their business operations to enable them achieve high level of performance.

1.5.4 The General public

The community is the consumers and suppliers to manufacturing firms and is directly or indirectly affected by the operation of these companies. Additional community benefits will be achieved because positive results from manufacturing firms which include charitable donations, bursaries, community projects and facilities and support for local community services.

1.6 Scope of the study

This research study was on manufacturing firms in Kenya, those registered with KAM in 2020 in Nairobi and its environs. These firms are concentrated in major urban areas within Nairobi Metropolitan carrying more than 80% of the large ones. The 2020 KAM directory has listing of members (firms) by sectors which contain a register of 14 sectors. The study population consisted of 596 manufacturing firms. The KAM directory of 2020 has a total of 596 manufacturing firms which are operating in Kenya, among these 80 per cent of their members are located in Nairobi. The study selected Nairobi City County which is the epicenter of manufacturing activities in the country. In addition, this study covered a specific duration due to the limitation of time and the available resources thus restricting the study findings to this timeframe.

This study used Fisher's formula to sample 234 manufacturing firms from the total population. The researcher collected data from organizational managers or their equivalent in each of the 234 firms because they are believed to have the necessary skills and knowledge in key areas of the study and could therefore give correct information. Data was accumulated by the process of distributing questionnaires to managers that are in charge of supply chain or strategy formulation or their equivalent. The choice of manufacturing firms is because of their stagnating performance since the government supports the small and medium sized enterprises.

The study focused on supply chain strategic alliance as the independent variable and performance of manufacturing firms as the dependent variable. This defined the variable scope of the study and the study findings are linked to the effects of supply chain strategic alliance on performance of manufacturing firms sector in Nairobi, Kenya. In addition, the study adopted business environment as a moderating variable. The study theoretical scope is guided by the theories adopted by this study. The study adopted the knowledge based view, network theory, resource dependency theory and transaction cost theory to support the independent variables and The goal approach theory to support the dependent variable.

1.7 The Study Limitations

The limitations of the study included unavailability of key respondents taking into account that the target respondents are senior executives with busy schedules. This was mitigated by having prior arrangements with the respondents for inclusion of a session to respond to the questionnaire in their schedules. The study was faced with the challenge of gaining access to respondents from the targeted firms. To facilitate this, an introduction letter was included to the questionnaire clarifying the objective of the study and a research permit from the National Council for Science, Technology, and Innovation (NACOSTI) was also obtained. During data gathering, adequate time was scheduled to accommodate any unforeseeable delays and to provide additional time to make follow-up where necessary. Moreover, the study used self-administered questionnaires, which were answered at the convenience of the respondents, thus minimizing the face-to-face meetings that take long to organize.

The other challenge was undue delay due to lack of time for those respondents willing to participate but could be pressed of time. In addition, some respondents were unwilling to disclose certain information owing to the sensitivity of the data being sought or because the information was deemed highly strategic. This was mitigated by assuring the respondents that the sole use of the data was academic purpose and would not be disclosed to any third parties.

The study was undertaken in Nairobi City County, where most manufacturing firms are concentrated, and this limited the generalization of the study findings to firms in other counties. Additionally, the findings of this study are restricted to the manufacturing sector, which was the focus of this study. The sector was selected due to its critical contribution to the Kenyan economy. Besides these limitations, the study offers comparable data for future studies from other counties in Kenya focusing on strategic alliances.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with theoretical and empirical analysis of literature on supply chain strategic alliances and performance of manufacturing firms. It discusses the theoretical framework, conceptual framework, strategic alliances practices that include supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances and supply chain cost and risk sharing alliances. The chapter presents the linkages between theoretical and empirical literature to establish the existing relationships among the variables. Finally, the chapter looked at the critique of available literature on strategic alliances on performance of firms, research gaps and summary of the literature. A good and full literature search will provide the context within which to place your study (Yukl, 2018).

2.2 Theoretical Framework

A theory is a generalization about a phenomenon, an explanation of how or why something occurs. It is any statement that explains what is measured or described about cause or effect implicitly (Kumar *et al.,* 2015). Theories describe, explain, predict, or control human phenomena in a variety of contexts. According to Newman and Gough (2020) a theory is a system of interconnected ideas that condense and organize knowledge about the world. Theoretical review refers to putting forward opinions of theories to give good understanding of previous research work and help to identify and analyze important factors and relationships within envisaged situations, (Newman and Gough,2020). This research study was based on the following theories; Knowledge Based View Theory, Network Theory, Resource Dependency Theory, Transaction Cost Theory and Goal Approach Theory.

2.2.1 Knowledge Based View Theory

The knowledge based view (KBV) of the firm defines knowledge as the resource with the highest strategic value that can be generated, acquired and applied within

and between firms (Grant, 1997). This perspective builds on the Resource Based View (RBV) (Barney, 1991; Penrose, 1959) by suggesting that knowledge promotes competitive advantage because knowledge resources have characteristics consistent with a developing capability that are rare, valuable, imperfectly imitable and non-substitutable (Barney, 1991) being of themselves largely intangible resources consistent with possessing these characteristics. The KBV of the firm also supports the building of competencies through improving absorptive capacity. As firms' employees are involved in accessing knowledge through boundary spanning activities, recent empirical studies have shown the capacity for organizational learning is increased (Teigland & Wasko, 2003).

Further, the KBV has been applied to problems of definition of firm boundaries (Grant & Baden-Fuller, 1995), governance of inter organizational relationships (Grant, 1997; Grant & Baden-Fuller, 2004; Heiman and Nickerson, 2002), solution choice based on problem complexity (Nickerson & Zenger, 2004), and collaborative supply chain practice (Hult *et al*., 2007). The implications at the firm level are important because the value of a firm is not just a function of its constituent parts (Hult *et al*., 2007). As Hult *et al*., points out, knowledge that resides outside of a firm cannot be assumed to be public, and in fact may be embedded in the rules and norms of the relationships between firms.

Knowledge externally held could therefore be expected to have characteristics similar to those of tacit knowledge in individuals (being difficult to codify and often having an important social context). It could also need to be supported by credible rules and sanctioning mechanisms, explicit codification of rules and conditions of engagement (Teigland & Wasko, 2003) that provide an explicit structural governance framework. From a KBV perspective, collaboration between trading partners represents on one level a factor minimizing the cost and time for effective transfer of knowledge between firms, and at a deeper level a potential significant source of value. As such, the value of knowledge as a strategic resource enabling more effective management of the supply chain has been recognized (Hult et al., 2006; Hult et al., 2004).

A further extension of the implied nature of much of the knowledge that exists in relationships or networks is that if we accept that transfer will be costly and difficult, the same conditions serve to limit imitation (by competitors). As such, the distribution of such knowledge across multiple heterogeneous sources becomes a source of competitive advantage (Grant & Baden-Fuller, 1995). In this sense, the KBV perspective provides support for the proposition that collaboration is an effective strategy for accessing knowledge distributed amongst trading partners. Access to diverse sources of knowledge, therefore, promotes growth of the knowledge base (for the firm and/or the network) and builds competitive advantage (Grant & Baden-Fuller, 1995).

Knowledge-based view as a comparatively newer theory of organizational processes considers intangible resources of organizations also. Grant and Baden-Fuller (1995), who made important contributions to the development of knowledge-based theory, describes the contribution of many authors from numerous dimensions to the development of this view. These dimensions are: organizational learning, evolutionary economics, organizational capabilities and competencies, and innovation and new product development. Whereas the economic view of operations, like those described by Resource Dependency Theory and classical resource based view, promote the acquisition of factors of production i.e. labor and capital, for achieving organizational goals, the knowledge-based view promotes the sharing of knowledge. From the supply chain management perspective, this theory provides evidence of value creation through knowledge sharing in internal and external organizational supply chain collaboration.

Ketchen and Giunipero (2004) applied the knowledge-based view to the information process and knowledge development in organizational supply chain performance. They could describe the substantial variance in cycle time of organizational offer chain performance using knowledge-based view. In another study, Ketchen and Giunipero (2004) mentioned the application of knowledge-based view in strategic management of organizational supply chain management. They tried to illustrate the use of this view to elucidate the impact of knowledge sharing across supply chain, in firms' outcomes. Whereas this theory has been used to illustrate the role of

knowledge sharing in value creation, less attention has been paid to explain the process by which, the knowledge sharing will completely have an effect on the organizational output. To this end Knowledge Based View Theory was beneficial in explaining the influence of supply chain technical alliances on performance of manufacturing firms.

Contrasting with this view we still find, as well, certain countries very rich in natural resources falling in the commodity trap, this meaning that they belief that their mines, rather than their minds, are the source of their prosperity. Nations' real wealth doesn't reside in forests of rubber trees or acres of diamond mines, but in the techniques and technologies for exploiting them (Stewart,1998). The problem is that it is much more difficult to count ideas and specialization than to count money, or quantities of products (Reinhardt *et al*., 2003).

2.2.2 Network Theory (NT)

The network theory is one of the grand theories for purchasing and supply management which have been introduced during the last decades. Mainly the network theory is considered to describe the relationships in which companies, suppliers, customers or buyer are engaged. The theory was first introduced during the 1970s and the 1980s and developed from the focus on relationships between just two entities, or strategic alliances, towards an approach which entails multiple relationships between different counterparts throughout the supply chain. Harland (1996), defines the network as a specific type of relation linking a defined set of persons, objects or events (Harland, 1996).

Chang, Chiang and Pai (2012) further state that the supply chain network is a complicated network model, and its specific context depends on the relationships among the network members (Chang, Chiang, & Pai). Next to this Thorelli (1986) states that the term network refers to two or more organizations involved in long term relationships (Thorelli, 1986). Moreover, networks are seen as beneficial for every company embedded through the investments and actions of the other counterparts involved in the process (Håkansson & Ford, 2002). Furthermore, it was found that there are several underlying assumptions, as for instance that a central

position of companies within a network could lead to competitive advantage, or that companies share information and knowledge with their partners. Moreover, in terms of the contribution to purchasing it can be said that the theory is applicable to the most important decision points.

The theory helps with the demand planning through the simplification of the resource allocation reached through the settlement of strategic long-term partnerships (Thorelli, 1986). Moreover, companies embedded in a network have the ability to choose from a greater set of suppliers and through this can even ensure the supply of critical commodities. Furthermore, the relationships among companies are assumed to be trustworthy and thus contribute to the value addition on both sides and further simplify the decision about the selection of the supply strategy. Lastly, the network theory contributes to the fourth decision point, namely the negotiation, since companies in networks aim to engage in long-term contracts through which strong partnerships between the counterparts are designed (Håkansson & Ford, 2002).

Although the network theory has no clear origin when it was first introduced, it was still an important topic discussed in research during the 1970s and 1980s. Researchers have been primarily concerned with the grasp of what makes an organisation effective, and which processes are required for this. However, the understanding of achieving effectiveness though the exchange and interaction with other parties of the supply chain was recognized throughout the past decades (Håkansson & Snehota, 1989). Nevertheless, as Miles & Snow (2007) claim in their article, the emergence of the multi-firm network organization opened a whole new arena for strategic choice, and many firms became much stronger competitors by linking with specialist providers in an integrated supply chain (Miles & Snow, 2007).

The first underlying assumption of the network theory is that companies embedded within a network cannot freely decide how to act towards their own aims, nor can they operate in isolation from each other (Håkansson & Ford, 2002). However, the organizations actions and operations with other firms in a network are assumed to be fully understood as a fragment of significant counterparts as well as strategic relationships (Håkansson & Ford, 2002). According to Harland (1996), there are

different factors which can be identified as being important while formatting a network, namely the selection of collaborative partners, the establishment of a competitive position, the monitoring of competitors, and the correct management of relationships (Harland, 1996). Further, Håkansson and Snehota (1989) claim that if a company was able to attract other firms to do business with, and they share a common interest and a certain business environment with each other, the company is embedded in relationships with other organizations, and thus be part of a network (Håkansson & Snehota, 1989). Shook *et al.* (2009), concludes that the network theory does not explicitly provide an explanation for companies of when to make, buy or ally, however it seems to give an explanation for companies of which other firm they should choose to buy from, or hire as strategic alliance partners (Shook, *et al.*, 2009). It is to this end that Network Theory was used to explain the Supply Chain Marketing Alliance.

However, there are also critics on the theory presented in the existing literature. First, it can be claimed that although some empirical studies of the network theory can be found, to date they are still very limited studies on the real-life contribution of networks due to the difficulties of obtaining data (Kim, *et al*., 2011). Furthermore, the absence of knowledge of the dynamics of the structures of networks, the collaboration mechanisms and the environment still produce a gap in the evolution of supply networks (Li, et al., 2009). Network companies are defined by strong connections between members of the supply chain and although this idea is relatively easy to understand, the structure of a network is still a very complicated concept (Chen & Paulraj, 2004). Most often the interactions, which are the building blocks of the theory are simply taken for granted (Salancik, 1995). Nevertheless, these interactions involve various parties, be they manufacturers, distributors, retailers, as well as consumers. Due to the fact that this includes a large number of decision-makers, coupled with several decision-making criteria, managers are challenged to serve the demand of the partners, but also be careful to reach own goals (Nagurney, *et al*., 2005).

2.2.3 Resource Dependency Theory (RDT)

The world is changing and becoming a global village, business environment too is evolving and we have many international business alliances and strategic alliances. Because of the developing reliance between purchasers and suppliers the requirement for connection and trade has increased (Davis &Cobb 2010). The study used resource dependency theory to explain the influence of supply chain innovation alliances as a form of alliances strategy and the effect it has on performance of manufacturing firms. Resource Dependency theory (RDT) inspects how business partners who form alliances with each other shield one another from harmful subsidiary with differing relationships. (Scott, 2003).

Resource dependence theory (RDT) offers inter-firm governance as a strategic response to conditions of uncertainty and dependence between exchange partners (Boyd, 1990), building on social alternate theoretical perspective, RDT specializes in how some corporations end up reliant on others for needed resources along with items and substances, and the way companies can effectively manage such relationships (Jajja *et al*., 2017). The uneven interdependence that is present in such relationships is often considered vital for reduction of environmental uncertainty (Scott, 2003). In the supply chain context, supply chain contributors often work collectively to acquire common goals and grow to be increasingly more dependent on each other, for that reason, RDT gives a dominant explanatory energy on this context. Several authors speak implications of this principle for key elements of supply chain control (Davis & Cobb, 2010).

One commonplace reason for the formation of supply chain relationships that fits the resource dependence paradigm is that corporations enter into partnerships to take advantage of complementary belongings. This strategy is accepted, as an example, amongst small biotech companies and massive pharmaceutical agencies. The massive businesses are keen to partner with small companies as a way of tapping into their reducing part research and entrepreneurial energy. In addition, the small firms are keen to accomplice with large groups to benefit get right of entry to their financial resources and distribution channels (Hillman *et al*., 2009). Each aspect

comes collectively due to resource desires. Other forms of alliances fulfill distinct resource desires. As an example, membership in a trade association might also offer a company access to big offerings at low fees, relevant enterprise information, legal and technical advice (through a trade journal or website), and a platform for collective lobbying (Boyd, 1990).

While resource dependence theory has trustworthy appeal, it has limitations with regard to explaining supply chain alliance formation (Hillman *et al*.,2009). As an example, it does not give an explanation for why corporations may pursue other strategies besides alliances to meet perceived resource deficiencies. Strategies consisting of mergers and acquisitions, recruitment of key personnel from competition, and elevating new capital to achieve an aid through a market transaction are often decided on as opposed to supply chain alliance formation (Hillman *et al*., 2009). Similarly, as no firm is self-sufficient, and hence companies must interface with their environments to reap needed assets as per the RDT. How groups decide to try this, and whether or not variables consisting of transaction costs, possibilities for studying, and organizational legitimacy are taken into consideration, is left to other theories to determine.

Ultimately, resource based theories do no longer shed much light on how organizational competencies are developed. The concept makes a specialty of the need for vital resources and the need for social exchange, as opposed to the extra complicated theoretical project of describing how skills are evolved and how inter-company transfers of talents virtually take area. The resource-dependence theory (RDT) focuses on a group of power relationships based on exchange of resources (Scott, 2003). The asymmetric interdependency that exists in these inter-firm relationships is crucial to reduce environmental uncertainty for a few companies. It recognises that firms don't possess all the resources they could require in the process of value-creation, hence will usually become dependent on one another (Hillman *et al*., 2009). Thus, RDT contains a high level of value in the supply chain context. The key issue then becomes how organisations manage their power-dependence relationships to take care of their functional and operational necessities (Heide, 1994). In this regard, RDT assumes that organisations usually form coalitions to

extend their power and make other organisations dependent on themselves (Pfeffer, 1982).

Resource manipulation and control exertion are the strategies offered by RDT to manage uncertainty and dependence in business transactions. The articles by Ireland and Webb and Crook and Combs discuss RDT's implications for key aspects of supply chain management. Davis and Cobb (2010) highlighted the dissimilar nature of dependence within the traditional and modern value supply chains. Whereas traditional supply chains have an inclination to behave opportunistically in relation to their power-dependence advantage along the chain, modern value supply chains exploit dependency as a means of fostering trust and commitment to fulfil supply chain requirements (Davis & Webb, 2010).

Resource dependence theory assumes that variation in uncertainty deriving from the organizational environment is responsible for both internal power distributions between organizational entities and external power distribution between market participants (Hillman *et al*., 2009). External power, in addition, is influenced by dependency relations that exist as consequence of a lack of autonomy. Both uncertainty and dependence derive from the assumed constraint that any organization faces; they cannot exist without purchases of resources from external sources and these are not dependable (Crook & Webb, 2007). Together, internal structures, external power distribution, and the characteristics of dependency of the focal organization determine the need to employ appropriate tactics to counteract. The aim of any organization is maximal independence and certainty.

It is suggested that in any situation in which resource acquisition of critical resources is only possible in relations in whom an organization is dependent on the supplier of that resource or other uncertainties exist, measures have to be taken to cope with these constraints (Hillman *et al*., 2009). Regarding this effort, a number of strategies have been discussed in the field of RDT; Board interlocks, Alliances, joint ventures, in-sourcing and mergers and acquisitions (Hillman *et al*., 2009). Recent reviews of RDT confirm its great influence on both strategic management and organizational theory (Hillman *et al*., 2009).

Davis and Cobb (2010) claim, that there is evidence for a rise in interest in RDT. In a comprehensive study on the Rated importance, scientific validity and practical usefulness of organizational behavior theories Miner (2003) found RDT to have a high estimated importance. Furthermore, it is revealed that the general pressures of the environment hypothesized by Crook and Webb, 2007 to influence organizations are basically the same today as they were during the time of the emergence of the theory (Davis & Cobb, 2010). (RDT) characterizes the corporation as an open system, dependent on contingencies of the external environment (Crook & Webb, 2007). According to RDT, firms engage in collaborations with external stakeholders in order to manage their dependency on critical resources. It proposes that organizations that lack certain resources will develop relationships with other organizations with the aim of obtaining those required resources (Ulrich & Barney, 1984).

In summary, RDT explains how dependence on resources external to the organization relates to organizational actions, network exchanges, and outcomes (Aldrich & Pfeffer, 1976; Emerson, 1962; Pfeffer & Salancik, 1978). Central to these actions is the concept of power, i.e. control over vital resources (Ulrich & Barney, 1984). Organizations attempt to reduce others' power over them, often simultaneously trying to increase their own power over others. Although constrained by external factors, managers can still act to reduce environmental uncertainty and dependence (Hillman, Withers, & Collins, 2009).

RDT has been related to big data mainly in the context of SCM. Specifically, within a supply chain framework, RDT has been found very useful across a wide range of applications (Hazen *et al*., 2016). However, several criticisms from scholars have arisen. Most of the propositions and hypotheses of the RDT are based on the research of Pfeffer and Salancik (1978) (Davis & Cobb, 2010; Hillman *et al*., 2009; Nienhüser, 2008). However, some scholar have doubts about the usefulness of the RDT (Casciaro & Piskorski, 2005). Authors claim that the RDT is not a useful theory in order to serve as foundation for testable empirical research and they suggest a reformulation of the theory (Casciaro & Piskorski, 2005). Their criticism includes that there exist several ambiguities in the resource dependency model, especially

with regard to constrained absorption (Casciaro & Piskorski, 2005). Noticing that the organizational motivation to manage external dependency does not necessarily correspond with its ability to do so and refer to the issue that perceptions are often confounded with predictions within the RDT (Casciaro & Piskorski, 2005). They try to solve this issue by extending the concept of interdependency, developed by Pfeffer and Salancik (1978), and distinguish two separate variables influencing interdependency, namely the distinction between power imbalance and mutual dependence (Casciaro & Piskorski, 2005). Power imbalance should serve as an obstacle to constrained absorption and would stand in contrast to the original theory (Casciaro & Piskorski, 2005).

2.2.4 Transaction Cost Theory

Transaction Cost Theory tries to explain the necessity of the firms for which it exists. TCT aims to reduce the costs associated with carrying out a transaction when deciding whether to make-or-buy in the context SCM. Make or buy decision are influenced by three attributes of a firm. They're frequency of transaction, asset specificity and degree of uncertainty associated with a transaction. In general, TCT theory argues that different control and governance mechanisms should be employed to mitigate the risk of opportunistic behavior of supply chain firms when outsourcing. The way of the worldwide business environment seems to be evolving by having a multitude of international Business partnerships and alliances. Because of the developing reliance between purchasers and suppliers the requirement for connection and trade has increased (Andersen, *et al.* 2017).

Transaction Cost Economics (TCE) inspects how business partners who collaborate with each other shield one another from harmful subsidiary with differing relationships. (Klein 1994). It has been the most important new institutional theory which puts the accentuation on the decision on the sourcing predicament, if to outsource or not. The sourcing situation of a firm is likewise described as the make-or-buy decision of a firm (Rindfleisch, 2019). The two primary drivers of Transaction Cost Economics are uncertainty caused by the external environment and costs, which consist of Coordination costs and Transaction costs (Rindfleisch, 2019).

Uncertainty and costs, are influenced by the human agent, an individual distinguished through bounded rationality and opportunism, in order to dissect transaction costs.

People are subject of limited objectivity and may act in favor of themselves rather than the company (Williamson 1981). Either natural or mechanical doubt might be an adverse factor for buyer-supplier relationships. Asset specificity, an attribute influencing transaction costs, alludes to the correlation of relationship-specific machinery (Klein 1995). According to Transaction Cost Economics a firm might as well first choose outsourcing if the aggregate costs, which incorporate everything used on the venture, are lower than the costs to make the same feature in the own firm (Lyons 1995). All things considered there are confinements to the probability to outsource in this new institutional theory which basically keeps tabs on the costs (Lyons, 1995). Transaction cost theory (TCT) has acquired a wonderful deal of interest within the literature on supply chain management (Williamson, 1991).

In a nutshell, TCT specializes in how an employer ought to organize its boundary spanning sports if you want to reduce the sum of its manufacturing and transaction costs. The manufacturing costs of corporations range due to the scale of their operations, getting to know/revel in results, region advantages, and proprietary affects inclusive of patents and trade secrets and techniques. Transaction expenses additionally vary, and consist of costs related to arranging, managing, and monitoring transactions across markets (Halldorsson *et al.*, 2015).

The capacity of a trading associate to show off opportunistic conduct, defined as behavior that is self-fascinated or misleading, drives transaction costs higher. In his early writings, Williamson (1985) recognized markets and hierarchies as the two modes of organizing and later stated the extra function of supply chain relation. It is assumed that the maximum efficient possibility will succeed for any given transaction confronting a company. The purest utility of TCT is the make or buys selection. In a free market, it is typically inexpensive for a corporation to buy a standard product from an organization that is an expert at producing it than it’s to

make the product itself. But, the marketplace fails whilst transaction expenses are prohibitive in the judgment of the key decision-makers in a company.

A marketplace failure forces a firm to internalize an in any other case marketplace alternate. On this context, TCT explains why a corporation may select to internalize the manufacturing of a component part despite the fact that its manufacturing costs are higher than those presented by the specialist firm. A supply chain relationship, which includes a supply chain network form, is an alternative to a market or an organizational hierarchy. The make or buy selection expands to make, buy, or partner. Alternatively, joint ventures, as an example, comprise characteristics that assist keep away from the issues of both markets and hierarchies (Koh & Venkatraman, 1991; Touboulic & Walker2015).

A joint assignment helps corporations keep away from the expenses of opportunism and tracking which might be inherent in marketplace transactions through ownership incentives and will increase the likelihood that the partners will avoid opportunistic conduct within the hobby of maintaining the partnership (Osborn & Baughn, 1990). At the identical time, a joint task can help keep away from the want for a company to internalize a hobby that might not be aligned with its distinct skills or may be tough and highly-priced to control (Harrigan, 1988). Global supply chains are popular for these motives. Corporations regularly enter foreign markets through supply chains with nearby partners.

Regardless of its intuitive attraction, many authors were vital of TCT and its capacity to provide an explanation for the formation of supply chain relationships. TCT is confined to the efficiency and cost-minimizing rationales for alliances (Ghozzi *et al*., 2016). Alliances can be shaped for different reasons, inclusive of mastering and legitimacy. Those motives attain beyond the TCT reason. TCT's recognition on value and performance additionally neglects to consider other crucial criteria for supply chain alliance formation, together with the perceived fairness of an ability alliance associate (Ring & Van de Ven, 1994). In addition, many organizational and people issues are assumed away by the natural TCT framework.

The assumption is that everyone worried in a partnership will get alongside, and that the corporate cultures of the members will meld together smoothly. Human beings regularly do not get along and the company cultures of alliance companions regularly conflict. Perhaps the maximum condemning complaint of TCT is that it is able to no longer remember to real decision makers. In a multiple case look at investigation of alliances, Rindfleisch (2019) carefully explained TCT ideas to executives who had been concerned in forming alliances. None of the executives interviewed indicated that transaction costs had even implicitly encouraged formation of their supply chain alliances.

Supply chain management (SCM) scholars have shown growing interest in using Transaction Cost Theory to research how members within the supply chain manage risks, align incentives and form strategic alliances and relationships (Shook *et al.*, 2009). A lot of literature in supply chain is of the view that supply chain cost and risk sharing alliances can be attained through different approaches like integration operations across different firm along the supply chain (Frohlick & Westbrook, 2001). By creating alliances among supply chain parties through supply chain cost and risk sharing alliances, information sharing and having aligned performance measures priorities, and having similar objectives will ultimately improve performance of the manufacturing firms (Simatupang & Sridharan, 2002). Achieving performance objectives requires the alignment of supply chain partners' incentives (Frohlick & Westbrook, 2001).

Studies conducted in manufacturing industries and especially of strategic alliances among different members of supply chain such as influence of information sharing, decision synchronization and incentive and supply chain cost and risk sharing alliances between supply chain partners have proved a positive relation to supply chain performance in terms of productivity, and supply chain responsiveness (Simatupang & Sridharan 2015). According to Stump & Heide (1996) Transaction Cost Theory takes compensation as key to aligning partner's behaviors with main objectives. Incentive design therefore makes up an important supply chain cost and risk sharing alliances capability. Alignment within a supply chain is an emerging trend and critical issue for survival of firms.

Gattorna (1998) posits that is valuable to have alignment of a firm's objectives and strategies with those of channel members and partners, be they internal or external to the organization. Thus supply chain alignment results in a fit in terms of objectives, structures and processes within and between different functions and members in a supply chain. Transaction Cost Theory views alignment or fit as an important antecedent of firm performance by the major business and management disciplines including strategy literature (Powell, 1992).

The sharing of goals, cost and profits is only part of supply chain cost and risk sharing alliances strategies. At an operational level, focal firms need to jointly solve problems and plan with the customers and suppliers to improve delivery performance (Auramo *et al.,* 2004). Scott and Westbrook (1991) suggested that closer alliances with suppliers and other channel partners' increases supply chain integration and performance. In conclusion Transaction Cost Theory was useful in examining the influence of supply chain cost and risk alliances on performance of manufacturing firms in Kenya.

2.2.5 Goal Approach Theory

The goal approach theory is attributed to Etzioni (1964) and argues that organizational performance is based on achieving organization goals, including goals of sub-units and projects within the organization. The goal approach perceives the identification of organizational goals as critical to organizational performance and how well organizations attain or make progress towards them (Slack & Parent, 2006). 44 The goal approach is considered a primary approach to performance measurement and the accounting-based and behavioral approaches (Kihn, 2005). The same author points out that the goal approach to performance measurement features three main steps which begin with setting the goal to be evaluated, the second step is identifying the different weights to be assigned to each goal, and lastly, setting the standards against which the reported values on goals are to be measured. The goal approach to performance advocates for adopting management perspective in defining organizational goals, which are the basis for decision making and actions taken within the organization (Zammuto, 1982).

This model postulates that performance is positive when the set goal(s) are attained and negative when goal(s) attainment is missed by management. Furthermore, the goal approach relies on self-reporting by respondents who are requested to rate the actual achievement of both financial and nonfinancial goals (Slack & Parent, 2006). However, Kaplan and Norton (1992) report that financial goals come first for every organization, then other goals (non-financial) come second. The goals approach perceives organizations as goal oriented in that organizations agree on their goals as well as their measurement criteria (Love & Skitmore, 1996). However, the fact that organizations serve the interests of different stakeholders, the question of whose goals the organization is pursuing has been a major area of criticism of this approach (Carton & Hofer, 2006). For example, top management might be satisfied with a certain level of performance while other stakeholders like the business owners might not be satisfied. Another criticism of the goal approach is based on the limitation of generalizing findings, which is challenging since different organizations have different goals.

As presented by Carton and Hofer (2006), the diversity in organizational stakeholders necessitates the need for a multidimensional perspective to enable the assessment of the different goals or interests held by the various stakeholders. Zummuto (1982) articulates that organizational performance is judged using diverse approaches dependent on the constituent undertaking the evaluation. However, if the non-financial measures to performance are not linked directly to financial measures, for example, profitability, the resulting analysis might not be helpful for decision making (Kihn, 2005). Since a strategic alliance is initiated to achieve a specific strategic goal, the use of goal approach in supporting the contribution of strategic alliance to organizational performance is deemed relevant.

The goal approach as used in the study of SMEs indicates that SMEs still rely more on traditional measures of performance which mainly constitute financial indicators (Maduekwe & Kamala, 2016). Supply chain strategic alliances is a good approach for improving business performance in a highly competitive market (Narasimhan, Jayaram, 2001). Frohlich & Westbrook (2001) assert that the highest levels of alliances with both suppliers and customers have the highest correlation with high

levels of an organization's performance. The major challenge in forming strategic alliances is to coordinate activities across the supply chain so that the enterprise can improve performance by reducing costs, increasing service levels (Simchi-Levi *et al*., 2009). Chopra & Meindl (2015) argues that supply chain coordination occurs when all the different stages of supply chain work toward the objective of maximizing total supply chain profitability rather than each stage devoting itself to its own profitability.

2.3 Conceptual Framework

Orodho (2012) defines a conceptual framework as a graphical or a diagrammatical model of presentation of the connection between the study variables. It is a road map that the study intends to follow with the aim of looking for answers to the problems raised by the research questions. According to Kothari (2016), a variable is a measurable characteristic that assumes different quantitative values among the subjects. Chakraborty (2017) characterizes a conceptual framework system as a diagrammatical portrayal that demonstrates the connection between independent variables and dependent variable.

Linked to the statement of the problem, conceptual framework creates the base for presentation of the specific research question that steer the analysis being reported (Kothari, 2016). The conceptual framework in this study is made up of dependent variables and independent variable as shown in figure 2.1.

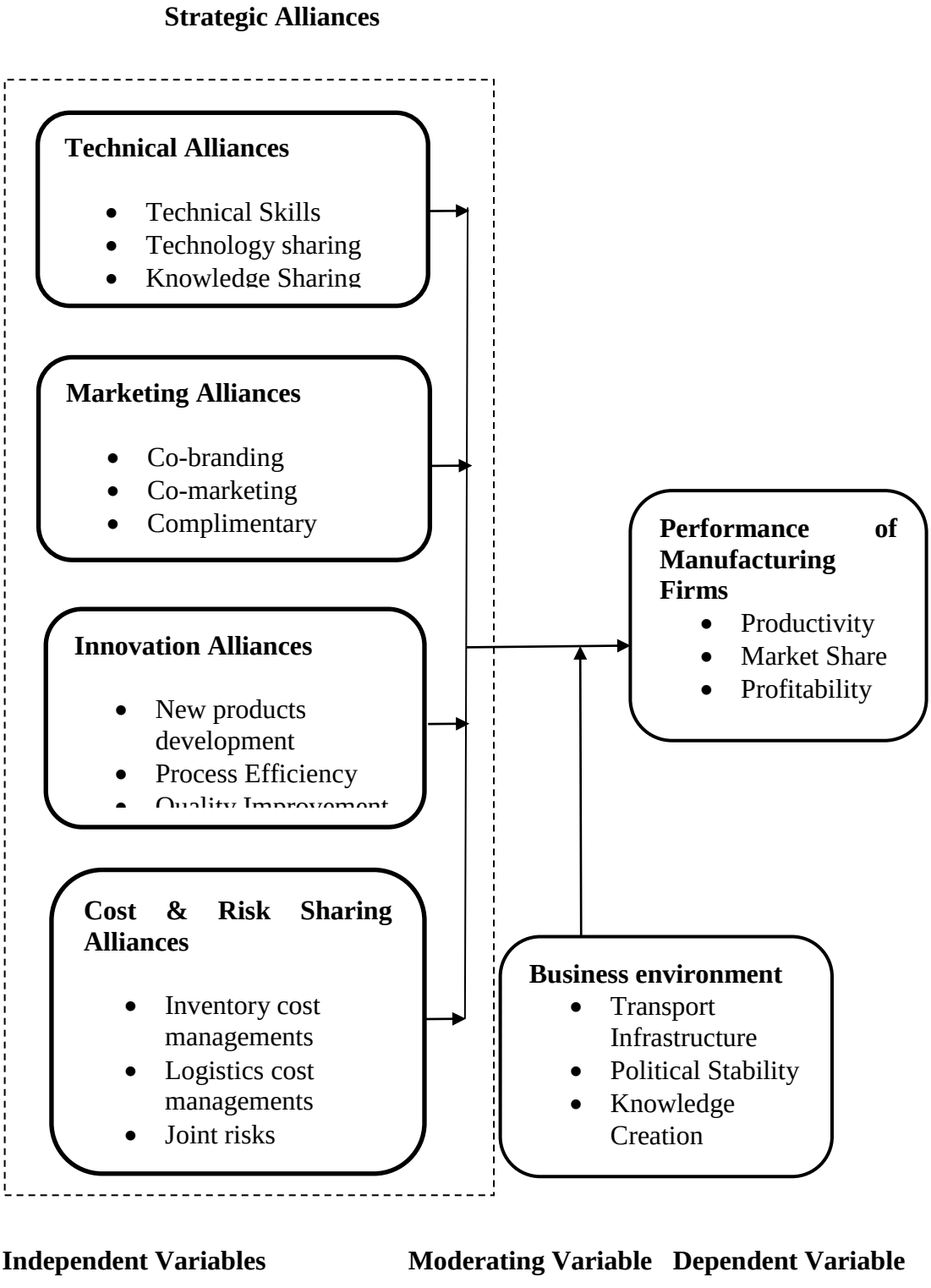

Figure 2.1: Conceptual Framework

2.3.1Technical Alliance

Technical skills are the abilities and knowledge needed to perform specific tasks. They are practical, and often relate to mechanical, information technology, mathematical, or scientific tasks. Some examples include knowledge of programming languages, design programs, mechanical equipment, or tools (Nielsen, 2017). Skills like big data analytics are very important for manufacturing firms who are handling a lot of data about their products performance in the market among other things. Manufacturing companies require technical competencies and skills that are essential in the daily operations of the firms. Skills like applications, certification, coding computing, customer support skills, debugging, design, network architecture, network security, new technologies, operating systems, restoration, solution delivery, system analysis and many other technical support skills are very important for manufacturing firms (Fagundes, Padilha, & Padula, 2014).

Through the extensive operations in the manufacturing sector, technicalities are often the main determinants of the success of the companies. Supply chain strategic alliances, which involves bringing on board the suppliers to collaborate and ensure mutual benefit, upholds the need for technical alliances (Fagundes, Padilha, & Padula, 2014). This is whereby the suppliers and the manufacturing companies collaborate to bridge any technical gaps. According to Nielsen (2017), supply chain technical alliances generates a learning process that, in accelerating invention and innovation creates dynamic economics. Through technical alliances, firms enhance their absorptive capacity. A firm's absorptive capacity is the firm's ability to acquire and value external knowledge (Ali, Kan, & Sarstedt, 2016). Absorptive capacity can further be said to be a set of organizational practices and procedures, by which firms acquire, assimilate, transform and exploit external knowledge that is, when firms partner with other firms to acquire the requisite skills needed in an industry (O'Dwyer & Gilmore, 2018).

Consequently, according to Prashantham and Yip (2019), a firm's technical alliances may influence it capabilities as well as other's opinion of its capabilities. This is what manufacturing firms would require meeting the market needs and ensuring that they

have the adequate technology for continued growth and performance. According to Čirjevskis (2019), for entities to benefit from technical alliances, they ought to extensively collaborate with the suppliers such that they are able to manage the knowledge acquired from the suppliers while still managing their own internal knowledge to equip the employees with the newly acquired knowledge for efficiency and effectiveness.

The manufacturing companies benefit from their collaboration with suppliers through acquisition of the much required technical skills. The suppliers are at time with more advanced technical skills due to long period of experience or specification in a given area. Collaborating with such suppliers ensures that the manufacturing firms learn and acquire the technical skills, thus stirring their operations into success. According to Isik and Tasgin (2017), technical alliances also ensures that the sharing of technology with the suppliers is enhanced, and this puts the manufacturing companies in a better state to compete and excel in the market. The advances in technology keeps on changing, thus through collaboration the manufacturing firms expand their knowledge-base, and this could be best achieved through the suppliers.

Manufacturing firms are in need of problem solving skills that can identify problems quickly and create solutions. Manufacturers are at times faced with a skill gap that often can be met by their suppliers. The COVID-19 pandemic will have had a long–term impact on the availability of digital and technical skills, which were already in short supply across all manufacturing firms that having been trying hard to automate their businesses (O'Dwyer & Gilmore, 2018). Many jobs increasingly require technically savvy employees from web design to medical imaging to software design and IT troubleshooting. Existing staff may need to be trained or reskilled regularly, and today's early career hires have technical proficiencies that will soon be outdated. At the same time, the need for and variety of technology skills are accelerating, while the pipeline of traditional training programs has slowed. This therefore calls for the need for firms to form technical alliances with their trading partners so as to fill the gap (O'Dwyer & Gilmore, 2018).

In most instances, the technical alliances take the form of cross-licensing rather than joint ventures. The organizations come together to research and develop new products or processes to satisfy world markets (Darby et al., 2020). Alliance International (2020) indicates that various firms within different industries such as Volkswagen, Microsoft, Google as well as Amazon combined spent approximately $35 billion on Research and Development (R&D) as per 2015 records. The statistics as per Alliance International indicate that the most recognizable Multinational companies have spent greatly on their R&D. Such level of spending begs the question on why the companies spend billions only on R&D as compared to other activities. The reason is that researching, and application of the knowledge gained from research for the development of new as well as different products, properties, policies and processes helps in the creation of more profitable business opportunities. Research & Development in the automobile industry provides new ideas as well as innovation where applicable (Yuan *et al*, 2019). Currently, the many products used within the global market results from investments in research and development.

2.3.2 Marketing Alliances

Suppliers are essential when it comes to spreading the word regarding the companies they supply. The essence of alliances in supply chain is to have a mutual beneficial collaboration, where both parties have some gain in the long-run. One of the major aspects of supply chain alliances is the marketing alliances. This is the ability of the manufacturing company to combine efforts with the suppliers to market each other products/services (Tewari, Ramanlal, Kumar, & De, 2019). Marketing alliances means combining companies' marketing activities in a given market. A key feature of marketing alliances is that partner firms usually combine their marketing efforts by offering a unified image in the given marketplace (Burgelman, 2020). An alliance allows these companies to create a greater market presence to displace the old technology—and ensures that they get to establish the standards for production of the new technology. Satellite television service DStv Kenya and telecoms operator Telkom Kenya were offering customers a free Orange WiFi router and 30GB free Internet bundle with each DStv high definition decoder for Sh3,800 in a strategic partnership designed to gain market share for both brands.

According to Bamel *et al,* (2021), marketing alliance refers to a functional alliance whereby various associates share many marketing expertise and services. In most instances, the partner brings forth their goods and services to the market in the presence of other parties. The established firm helps the newcomer through promotions, advertisement, and/or distributing its products or services. In this case, the nature of arrangement involves one partner introducing their products or services into a defined market where the other partner already has a presence. In this case, the established partner provides the newcomer with the necessary assistance in exchange for a fee (Bamel *et al*., 2021). Most firms require the implementation of appropriate marketing strategies for the purposes of forming synergistic strategic alliances. Such a strategy helps the firm maintain their competitiveness within their market space.

According to Chung, Kim, and Kang (2019), marketing ability requires complex and rich marketing knowledge and skills that will enable strategic alliances partners to coordinate their marketing resources and improve the overall performance of the alliances. This cooperation, therefore, is used as a shortcut to knowledge that the partners would not be able to create within an acceptable time or at acceptable costs themselves, e.g., the knowledge about foreign markets, distribution channels or consumers (Tewari *et al.,* 2019). For example, the alliance between Pepsi and Starbucks create a bigger distribution network for ready-to-drink beverage, which gives revenue to both organisations without direct competition. Another example can be an alliance by the Japanese company between Sony and Ericsson corporation to sell mobile phones together.

The cooperation between the manufacturing firms and the suppliers could extend outside the field of marketing into research, product development or production. Their cooperation in this case is defined by the need for both of the companies to penetrate into the market operated by the other party, but with a different product/service. In most cases, companies have partnered to ensure that their services are known to a different market niche, through a different company. For instance, a manufacturing company may collaborate with a logistics service provider company to brand the trucks with the manufacturers' brand, thus marketing the company. The manufacturer may agree to have a business with a given supplier with the condition

of having the supplied goods branded the manufacturing company's name. This ensures that the company is partnering with the supplier to market, through a process called supply chain marketing alliances (Woodroof, Deitz, Howie, & Evans, 2019). Cooperation among firms by means of alliances can occur along different links of a production chain, such as: between suppliers and distributors, between competitors and companies that explore the same market niche, but with the main goal of benefiting from the suppliers to enhance the visibility of the products.

According to Sarkar, Chowdhury and Lavu (2019), strategic marketing alliances is essential to organizations in that it enhances production capacity of the manufacturing entities by saving them of time and costs of marketing as well as enabling the firms to enjoy services such as inventory services from the suppliers. The resources from the collaborators are also enhanced, thus strengthening the brand and image of the companies to the customers. Watts and Koput (2019) argue that co-marketing as a result of collaborative supply chain practices helps in increasing the traffic of flow of goods and services and increase the communication with the customers, thus enhancing their satisfaction. Using common distribution points, and sharing/bundling the marketing steps and strategies also are essential aspects of co-marketing alliances that significantly contribute to firm performance (Watts & Koput, 2019).

Co-branding is a strategic marketing and advertising partnership between two brands wherein the success of one brand brings success to its partner brand, too. Co-branding can be an effective way to build business, boost awareness, and break into new markets, and for a partnership to truly work, it has to be a win-win for all players in the game. Example of successful co-branding include uber and spotify. Brand collaborations are an excellent way for companies to cross-promote and reach new audiences. When two brands team up, they each bring their own customer base, social media community and resources to the table. This can help to expand the reach of both brands and introduce customers to new products and services (Watts & Koput, 2019).

1516 Spices is a company in the agro-processing sub-sector of the manufacturing sector. They process spices such as garlic, turmeric, chilies which are sourced from farmers in marginalized areas of the country. The company, based at our co-working space in Karen, has been able to source the raw materials from over 100 farmers. It then locally processes the materials, sells the end products in both local, and international markets. They also help the farmers get quick and reliable access to the market. BIDCO Africa is one of the top manufacturing companies in Kenya producing fast-moving consumer goods. Unlike many companies in Kenya and in the manufacturing sector, BIDCO has also been in the forefront to embrace technology with the company currently embracing platforms such as SAP HANA to help in seamlessly integrating their systems to enable them to make accurate business decisions quickly and at scale. The company has also worked with other tech giants in the country like IBM in the quest to leverage tech and remain at the forefront of competition (Watts & Koput,2019).

2.3.3 Innovation Alliances

Innovation is essential in accelerating organization growth and identifies external opportunities for firms to sustain their performance (Salisu & Bakar, 2018). The innovation capability has been considered a key factor for pre-empting competition and a primary source of organizational renewal. Considering market diversity, fierce competition and reduced product life cycle, an increasing number of enterprises in the manufacturing sector are developing collaborative relationships which are mainly geared towards enhancing innovation and creativity (Drewniak, 2020). This synergy can be described as a type of relationship between organizations where the participants agree to invest resources together and make collaborative decisions to solve problems, achieve goals and share information, social responsibility and returns (Encarnacion, Victor & Rodrigo (2018). As defined by Encarnacion *et al*., innovation alliances is the process by which the manufacturing firms collaborate with the supplies to bring new innovations and improve the operations and processes for mutual benefit. This achieves efficiency and effectiveness in both partners, thus enhancing their continued competitiveness.

According to Amit (2019), collaborative innovation alliances is essential in manufacturing firms in that it enables the firms to reduce opportunity cost and monitoring cost through process integration and mutual trust among supply chain members, so as to improve the sustainable performance. The supply chain process is becoming dynamic day by day, and the best way to have it benefit the company is through collaborating with other key players to have more divergence opportunities, and one of them is innovation. According to Barakat (2020), innovation is a foundation, an inexhaustible motive force, and a winning weapon for enterprises to obtain their sustainable competitive advantages in the fierce market competition. Barakat believes that a dynamic and flexible supply chain alliances can help companies to improve cooperation efficiency and innovation performance. The manufacturing firms collaborate with the suppliers for varied reasons, but innovation should be at the forefront of the collaboration. Suppliers should be at the forefront of bring new ideas and ways of doing things, and the manufacturing firms should be at the forefront of sharing knowledge that would make the mutual interaction innovative and beneficial to both.

Supply chain collaboration innovation is an essential solution for firms to respond to unpredictable changes. It is the main driving force for enhancing supply chain flexibility and sustainable performance (Shan, Li and Shi, 2020), as well as offering new or enhanced products or services. Innovation performance is a collection of innovation outputs and the input-output conversion efficiency (Huang & Hou, 2019). Innovation performance is typically reflected in products, services, processes, markets, strategic innovation, and other aspects

Nairobi is nicknamed Silicon Savannah for its many software startups. Gearbox is hoping to spark a wave of hardware-focused companies, so more Kenyan entrepreneurs can design products entirely in the country. Being among the companies that are at the forefront of driving innovation, Gearbox is proving to be vibrant while adding value into the 4th industrial revolution. Though with a different business model from what we are used to; manufacturing of products, Gearbox runs as an initiative that aims at improving the ecosystem for hardware entrepreneurship by providing flexible working space, shared prototyping facilities, training in

manufacturing, fabrication and design as well as mentorship, investment opportunities and community development. Through Gearbox, clever solutions have been developed including solar-powered irrigation systems, water-saving gadgets and an engine device called a speed governor used on Nairobi buses to keep them from going too fast, (Nairobi Daily, Apr 2023).

2.3.4 Cost and Risk Sharing Alliances

Cost sharing is an agreement between two parties to share the cost of developing an intangible asset or patents. Such an arrangement is used to reduce or avoid taxes on the transfer of assets (Chopra & Meindly, 2018). That's often the basis of an alliances: to reap the synergies of sharing capital and operating costs while tapping a bigger market than either partner could achieve independently. For the growing competition in the modern sophisticated business environment, there is an increasing trend to launch new products or to improve the quality of the end products in order to attract more consumers (Chakraborty, 2017). But the rising costs or uncertainties for this innovation require firms to collaborate with each other. Strategic alliances can be a transaction cost minimizing trading organization, under certain circumstances, while conserving economic rents these specific arrangements generate.

Alliances have played an increasing role in the development of firms' strategies arising as a rational economic solution to market imperfections caused by high ownership costs and information asymmetry. Thus, most of these alternative institutional forms can be assigned characteristics, which are intermediate between those of the market and the hierarchy and can be viewed as vertical or horizontal integration of economic activities, while ownership remains separate, and preserve the flexibility and economic rents these specific arrangements generate (Doz & Gary, 2012). In today’s highly demanding business environment, collaborative inventory management efficiently provides trading partners with real-time business information that would otherwise be unavailable or not available fast enough. It fosters a culture of responsiveness and proactivity.

After processes for data accuracy, shared views, and timeliness are implemented, collaborative inventory management offers a fully streamlined replenishment model

while supporting high service levels. These solutions facilitate communication between companies and their suppliers in real time, and assure that production lines and business relationships are optimized at all time. Inventory collaboration involve automation of a company's replenishment processes as well as the connection of buyer and supplier communities with real-time forecast, inventory on-hand, and shipment information to reduce inventory and eliminate unnecessary expenses (Chakraborty, 2017). While these solutions have been widely adopted in industries such as automotive and general manufacturing where economic factors have driven automation, there are still many industries within developed economies, such as medical device and telecommunication manufacturing, as well as most industries in emerging economies, which have not taken full advantage of these solutions (Chakraborty, 2017).

Many manufacturers now spend excessive time and resources managing orders to their suppliers. Labor-intensive processes of tracking disparate forecast and consumption spreadsheets, emails and faxes result in unreliable parts availability. The resulting mismatch disrupts production, causes inventory levels to rise, and ultimately raises costs for buyers and suppliers. These problems are compounded when suppliers go out of business or are unable to provide the needed product.

Risk sharing involves a process in which the cost of the consequences of a risk is distributed among several participants in an enterprise, such as in syndication (Chang, Lin & Ma, 2015). When a market has just opened up, or when there is much uncertainty and instability in a particular market, sharing risks becomes particularly important. The participating firms share performance risk, spread financial risks and reduce uncertainty in research and development (Das, 2012). Enterprises can make use of the strategic arrangement to reduce their individual enterprise's financial risk. For example, when two firms jointly invested with equal share on a project, the greatest potential that each of them stand to lose is only half of the total project cost in case the venture failed. Performance risk is the probability that the objectives of the alliances may not be achieved, given full inter-partner cooperation. In other words, performance risk is the probability that an alliance may fail even when

partner firms commit themselves fully to the alliances. Perceived performance risk is high when there is a shared R&D component (Jen, Hu, Zheng, & Xiao, 2020).

The outcome of product innovation is always uncertain in terms of resulting market acceptance, especially for firms in technology-intensive and innovative industries (Pan et al., 2019). This may lead to volatility in demands for the innovative products, which is often deemed as a significant source of uncertainty and risk by firms (Chen *et al*., 2019, Zhu *et al*., 2020). The literature has demonstrated the importance of consideration of uncertainty and risk for firms' decisions.

Firms developing new-technology products are likely to cooperate with competitors, by means of technology sharing (Niculescu *et al*., 2018) or other manners (Zhou *et al*., 2020), to benefit from spillover effect (Zhou *et al*., 2020) or network effect (Niculescu *et al*., 2018), and thus to save from innovation expenditure (Bourreau *et al*., 2016). On the other hand, the competition among the firms can be intensified, say, due to a lower degree of (perceived) differentiation between their products, which are all well improved from the cooperation. The tradeoff between cooperation and competition was central to earlier studies on product innovation.

Firms launching new-technology-based products always face uncertainty regarding consumers' acceptance of the products (Biyalogorsky & Koenigsberg, 2014). Take new-energy vehicles as an example. As improvement in technical performance continues, consumers are being attracted to the new-energy vehicles but still wondering when it is the right time to purchase. On the contrary, due to consumption inertia, the public still appetite for fuel vehicles. Realizing the interdependence on each other to collectively create value for consumers, automakers are making efforts to share their technological innovation in vehicle electrification with their competitors, with the objective of developing a wider variety of electric car models on offer to stimulate consumer purchase (Biyalogorsky & Koenigsberg, 2014).

Firms bears the abilities of joining or hiring logistic alliances groups with the aim of empowering the alliance group to establish supply chains, assistances as well in offering firms with advisory services to place them at better performance and competitive level. Emami *et al*., (2022) notes that the demands for logistic alliance is

necessitated by the firms needs of transporting produces services or products to long distance buyers and consumers. Firms opt for logistic alliances since they find difficulties in acquiring resources, vehicles and in performing management activities necessary for establishing an effective supply chain while at the same time managing costs. Therefore, such firms engage logistic providers and form logistic alliances which helps the firms in complementing business functions through simplifying supply chain operations. Strategic logistic alliances serve as means through which the parties involved in the alliance improves their brand awareness and capital without necessarily spending more time or incurring a major financial expenditure (Emami et al., 2022).

Joto (2018) highlights that firms engaged in logistic alliances gain from reduced risks and costs since there is distribution across the involved parties in the alliance. A firm can benefit from higher economies of scale in the alliance since there is a high possibility of increasing volume of production occasioned by a reduction in per unit cost. Additionally, the parties involved in the alliances can jointly utilize their specialization in creating additional value beneficial to the market.

2.3.5 Business Environment

According to Kotler and Keller (2016), business environment consists of factors both internal and external to the firm that directly or indirectly affect performance. Business environment is not static, it continuously keeps changing and many a times the changes are significant or have an impact on the performance on firms (Ribau, *et al.,* 2017). Business environment is essential for a firm survival and performance (Sadeghi & Biancone, 2018). This study measured business environment from three aspect transport infrastructure, political stability and knowledge creation. It is argued that the performance of manufacturing firms in emerging economies depends both on their firm-specific resource endowments and on the business environments within which they operate (Liu & AtuaheneGima, 2018).

Researchers have suggested that managerial decisions may be influenced by the moderating effect of the external business environment (Sung & Weng, 2018). According to Xie and Li (2018) some potential moderators of business environment

include market turbulence, technological turbulence, competitive intensity, market growth, and buyer power. Previous studies have acknowledged that environmental turbulence can moderate the extent to which strategic alliances affects firm performance (Sadeghi & Biancone, 2018).

Ribau *et al*. (2017) asserts that market turbulence refers to the number of customers and the stability of their preferences. Competitive intensity refers to the level of competition faced by an organization (Liu & Atuahene-Gima, 2018), which could be both current as well as potential competition that is typically a result of fading industry boundaries. According to Li *et al*., (2019) technological turbulence refers to the rate of technological change. Technological turbulence causes changes in products and product processes while market turbulence brings about heterogeneity in consumer preferences. Competitor intensity also alters the structure of competition and provides consumers with choices of products or services (Kotler, 2016).

Studies done by Jin, Peng and Song (2019) indicated that macro-level environment (such as economic, political, social and technological forces) that firms face incidentally affect their performance from the external environment. Manufacturing firm performance is affected by internal and external barriers.

Studies have shown that firms will be likely to export when political instability is high, they face more informal competitors, and are able to bypass the regulatory system via bribes. A study conducted by Krammer, Strange and Lashitew (2018) performance of manufacturing firms in emerging economies like Kenya, hypothesized that firm export intensity will depend on access to critical resources such as skilled workforce, managerial talent and product quality. The study tested this conjectures using a dataset of 5,600 manufacturing firms in the four largest emerging market economies (Brazil, Russia, China and India). The results confirm that the business environments affect firm performance through political instability and bribery, whilst the export intensity of firms depends on the availability of skilled workers and adherence to international quality standards. Their findings provided new insights into the performance of emerging market firms.

Recent studies by Xie and Li (2018) imply that manufacturing firms are faced with different challenges, both internal and external. These are observed in the micro, macro-environment and industry level in the operating environment. According to Li *et al.* (2019) firms need a robust strategy to keep afloat because the firm's individual performance is largely a function of how they respond to the environment.

Ribau *et al*. (2014) stated categorically that the capacity of a company to directly respond to the macro-environment is strongly dependent on the relationship between performance and other factors, including entrepreneurial orientation. Jin Peng and Song (2019) agrees further by saying that, the vibrant nature of today's environmental components presents a challenge in choosing which market platform to choose from. In the current study, business environment is being interrogated to establish its moderating role on the relationship between supply chain strategic alliances and performance of manufacturing firms in Kenya.

According to (Ma & Ding, 2018), infrastructure quality has a big impact on all areas of the economy. According to report by (KNBS, 2019), low quality infrastructure and limited transport and trade services can highly increase logistical and transaction costs, rendering otherwise competitive products uncompetitive and limit rural production and people's access to market, this in turn has negative impact on economic activity and poverty reduction. A large number of empirical studies have illustrated the impact of infrastructure on economic performance. Studies by (Zhang, 2017) suggest that Africa's infrastructure gap is an important growth bottleneck with a negative impact on productivity and the overall competitiveness of the region.

Improvements in investment climate conditions in general, and in infrastructure quality in particular, may lead to important gains in productivity and in other economic performance measures like employment, real wages, exporting activities, and foreign direct investment (FDI) inflows (MITC, 2019). Disentangling the ways that infrastructure affects Africa's economic growth poses several difficulties because of the special characteristics of the African region (World Bank, 2019). Improving the quality of transport infrastructure is like smoothing the flow of the economy, facilitating good circulation of goods. Good quality road and traffic

infrastructure system will minimize transportation costs, as well as losses in the process of importing raw materials. It also minimizes the risk of product distribution to the market affecting output costs (Guo *et al.*, 2020).

According to (Imran *et al*., 2020) poor quality transport infrastructure is responsible for underperforming production process, as well as inefficient goods circulation, and thereby affect economic growth. They further assert that, enhancing the quality of infrastructure will boost economic growth, eliminate poverty and reduce inequality. An extensive literature by (Fine, 2018; Dockel & Lighelm, 2015; Hye *et al.*, 2020) suggests that reducing transport costs can promote trade by increasing income and thereby improve welfare, particularly in the developing world. As a result, recent decades have witnessed large scale aid efforts to reduce transport costs through investments in the hard infrastructure of transport networks such as ports, railways and roads (World Bank, 2019).

While the transport agenda has been at the forefront of the development discourse and policy in recent years, there is still limited empirical evidence on the micro-level mechanisms through which certain types of transport investments affect economic activity (Hubbard, 2019). Understanding these micro-links is however critical in guiding governments and donors in prioritizing investments across transport modes, in forecasting demand for transport services and in identifying optimal financing models that can ensure sustained improvements in transport services (Hubbard, 2019).

Decades of under-investment in transport infrastructure, and large distances between centers of production or consumption and trading gateways such as ports, mean that transport bottlenecks have been particularly taxing in Kenya (Kariithi, 2017). Investments in transport infrastructure in recent decades have targeted all transport modes, but some of the costliest and challenging projects undertaken to date involved building railroad networks. Although rail has often been perceived to be the most cost-effective, safe and reliable mode of transport over long distances, the relationship between railway investments and economic activity is however still heavily debated in the literature (Imran, 2018).

Kenya's Standard Gauge Railway has been billed as the single most significant infrastructural undertaking by the country on the international stage. The project has its phase 1 completed and the outcomes are evident. With Kenya having reclaimed its mark as East Africa's largest economy and the 7th Largest economy in Africa. Looking beyond transport, the SGR conveyance has catalyzed development of economic fortunes and corridors creating more opportunities towards the envisaged national metamorphosis, agenda 4 and the wider vision 2030 (KNBS, 2022).

Fine *et al.*, (2018) have described business performance as the effort expended by a business firm in achieving its objectives of customer satisfaction, employee satisfaction, societal satisfaction, and ultimately profitability. Successful performance of manufacturing companies depends to a larger extent on the political environment of the host country (Kariuki, 2015). According to (Baraza, 2017) political environment refers to forces and issues emanating from the political decisions of government, which are capable of altering the expected outcome and value of a given economic action, by changing the probability of achieving business objectives.

KIPPRA (2019) described the political environment as factors arising from changes in government policies and programmes, which affect the ability of industries in achieving their objectives. Essig and Arnold (2016), in their study found that the multinational manufacturing firms in Nigeria operates in a dynamic political environment characterized by risks of multiple taxation, currency devaluation, inflation, repatriation, expropriation, confiscation, campaigns against foreign goods, mandatory labour benefit legislation, kidnapping, terrorism, and civil wars. Actions taken by government such as regulatory, legal framework, and political changes may decrease business income and acts as barriers to foreign investment (Essig & Arnold, 2016).

Fine *et al.* (2018) assert that businesses operate according to forecasts and scenarios about the future that comprise surprises as well as certainties. However, as much as businesses factor in uncertainty, the one thing that wants to avoid at all costs is the instability in the macro environment that results from political gridlock, extremism,

and political dysfunction (Imran, 2018). This is the reason why many emerging markets in Asia and Africa either attract or repel foreign investors. For instance, until recently, African countries were shunned because of the civil war like situation there whereas some Asian countries were similarly avoided by businesses because of the political uncertainty due to frequent regime changes and even coups. businesses flock to regions and states where there is political stability (Fine *et al.,* 2018).

Businesses like to operate in an environment that is not marred by frequent strikes, social unrest, and chaos as their operations would be hit adversely due to these factors (Kamukama, 2017). The reasons for businesses favoring political stability is that once they get the permits and the licenses to operate in regions and states, they invest a lot of money in setting up facilities (Fine *et al.,* 2018). Furthermore, during the process of acquiring land and other assets which are very costly, they need the cooperation of the government to facilitate the same. Moreover, political instability negatively affects firms and their employees may be forced to skip work because of strikes and other protests and which in turn impact the profits of the businesses negatively (Hubbard, 2019).

Manufacturing firms like a region that is friendly and welcoming towards them and not a hostile and unfriendly dispensation (Ma & Ding, 2018). Roja (2017), asserts that political instability affects everything from profits to operations to the working conditions of the employees and hence, businesses avoid it. The other aspect about political instability is that key laws and regulations are often stuck in the legislatures and the parliaments and key approvals are mired in bureaucratic delays (Sathe, 2018).

In Kenya, there is significant impact of the current government policies on businesses operating in Kenya. These implications are found in factors such as taxes and government spending, which in turn affect the country's economy (Kariithi, 2017). The current governments have changed many rules and regulations, and this has had an effect on businesses operating in the country. For instance, the global hotel chains are now opening branches in Kenya (ODI, 2016). The political stability that has been enjoyed in the country after the infamous 2007 elections has spelled

good growth for businesses that operate internationally (Kariithi, 2017). Lack of political stability in any country has an effect on industry operations.

Raul *et al*., (2019) postulates that the political environment is a key component of the external business environment. The election politics and environment in Kenya have often affected the manufacturing sector adversely (KAM, 2018). In the last few years, remarkable changes have been taking place in the ideologies of many countries. There are many opportunities of doing business in Kenya considering it is the most developed country in East Africa with an open economy hence a good candidate for foreign investment (World bank, 2016). Kenya is a member of several trade agreements and it is signatory of a number of agreements aimed at enhancing trade amongst member states (KAM, 2018). Kenya has been a member of the World Trade Organization (WTO) since1995, East African Community(EAC), Common Markets of Eastern and Southern Africa. (COMESA).

Kenya's industrial sector is diverse and open to foreign investment with opportunities exist for processing agricultural produce, including frozen food, cigarettes and brewing. Tourism is also a robust sector, given the country's outstanding natural beauty (World Bank, 2016). The country's economy has steadily recovered since the global financial crisis of 2008, however to achieve its goals of becoming a globally competitive middle income country by 2030, Kenya needs substantial foreign direct investment (FDI)in order to achieve double digit economic growth (UNIDO, 2018).

Manufacturing firms face tremendous pressures to innovate and create knowledge as their products undergo rapid cycles of production and obsolescence (Raul *et al*., 2019). Knowledge management systems (KMS), that support organizational knowledge management, have rapidly become ubiquitous as firms seek new ways to increase productivity, performance, and agility (Moqbel & Nah, 2017; Zhang & Venkatesh, 2017). Many organizations have implemented KMS to codify the knowledge that they contain to build and exploit their competitive advantages (Kamukama, 2017). KMS represent important platforms that allow employees to store, share, locate, retrieve, and use information resources.

Intangible intellectual assets, referred to as knowledge and information, have rapidly replaced physical assets as the most valuable components in firms' productivity in today's knowledge economy (Hye *et al*., 2020). Turning knowledge stock into profitable resource represents a crucial issue that contemporary organizations face. The knowledge management domain often constitutes a crucial responsibility of information systems (IS) (Panahifar, 2018), therefore, research in knowledge management and particularly studies as to whether knowledge management enhances firm performance has grown substantially.

The practice of knowledge management (KM) stems on the premise that firm performance depends on not only tangible assets but also the organization's capabilities to create and use knowledge (Moqbel & Nah, 2017; Zhang & Venkatesh, 2017). This view suggests that the mechanism by which firms convert knowledge into capabilities and competitive advantages represents a fundamental and key research question for knowledge management scholars. Previous literature has indicated that firms cannot simply maintain existing knowledge to implement known practices and to produce predictable results in dynamic, high-velocity markets (Sassen, 2017). Firms must constantly generate broad and useful ideas in order to achieve and sustain their competitive advantage over time (Nel & Beudeker, 2017).

2.3.6 Performance of Manufacturing Firms

Supply chain performance measure and their member firms is critical for identifying underlying problems and keeping end customers satisfied in today's highly competitive and rapidly changing market place (Wieland *et al*., 2017). Measuring performance is a necessary tool to point the organizational objectives were achieved and to provide information necessary to improve various processes and activities within the organization (Gawankar, 2016). Chopra and Meindl (2018) assert that performance measurement is important for organization in ensuring continuous improvement and in determining whether or not an organization is achieving its objectives.

Performance standards when adopted can provide the decision-makers in the supply chain department with unbiased and objective information regarding the performance

of the supply chain function. The evaluation or measurement of supply chain performance has always been a vexing problem for procurement professionals (Chopra & Meindl, 2018). He asserts that traditionally; firms concentrate on analyzing their own internal trends which does not portray the true picture on how they compare well with competitors. Such an approach ignores what the competitors are doing (Wong *et al*, 2017).

Performance is based on interaction along the supply chain and lastly is evaluated from where raw materials are sourced to where final products are consumed (Gawankar, 2016). Performance measures need to determine the gap between actual and targeted performance and determine organization effectiveness and operational efficiency (Wong *et al,* 2017). Ideal measures of performance will lead to the attainment of double benefits. These benefits are an improvement in supply chain activities and improved performance measures (Gawankar, 2016). The performance measure can be grouped in to two; those that concentrate on financial measures such as profit return on investment and productivity. Also, there are those measures that put more emphasis on less tangible and non-financial measures in performance measurements (Wong *et al.*, 2017).

Kenyan manufacturing sector contribute significant to the Gross Domestic Product and it is one of the big four agenda of the government at the moment (Watiri & Kihara, 2017). Food and beverage sub-sector has the biggest proportion of manufacturing sector in Kenya at 22% according to a report by Kenya association of manufactures (KAM, 2017). According to economic survey by Kenya National Bureau of Statistics (KNBS, 2022) Kenyan manufacturing sector growth slowed down in the year 2020 as the real gross value added went down by 0.1% according to economic survey by Kenya National Bureau of Statistics (KNBS, 2022). This presented a significant decline since the sector grew by 2.5% in the year 2019.

According to Kenya Bureau of Statistics (KNBS, 2021), the decline in growth has further been aggravated by COVID 19 pandemic. Kenya's manufacturing sector contributed 10.3% of the total GDP. Manufacturing sector has been experiencing growth that falls below the GDP growth. For instance, the manufacturing sector

growth increased by only 0.3% from year 2015 to 2016; from 3.2% to 3.5%. This growth is not commensurate to the expectations that manufacturing sector could contribute to 10%, 13% and 12.5% increase in GDP, employment and exports respectively over the medium term period 2013-2021 (Mwangi, 2019).

Supply chain management practices allow manufacturing firms to reduce costs, increase operational efficiency, and improved operational performance.

2.4 Empirical Review

Studies have confirmed that firms which possess heterogeneous alliances portfolios tend to be more innovative and generate better performance (Bhawe, & Zahra, 2019; Hagedoorn, Lokshin, & Zobel, 2018). On the other hand, some research has shown that diversity in alliances is yet important because it helps the firms to have a wider scope of alliances as well as access to diverse resources. For instance, Chung, Kim & Kang (2019) note that if alliances cover similar technologies and there is redundancy in the alliances portfolio, performance may be negatively affected, and more cessations observed. In addition, as the complexity of managing a heterogeneous portfolio of alliances increases, coordination among alliances and effective allocation of resources becomes challenging (Das & Teng, 2019; de Man & Luvison, 2019). Management of conflicting demands of multiple and heterogeneous partners as well as monitoring and controlling of the performance of a large-scope portfolio may make alliances activity less effective (Chung, Kim & Kang, 2019). According to O'Dwyer and Gilmore (2018), strategic alliances is a purposive relationship between two or more independent firms that involves the exchange, sharing, or co-development of resources or capabilities to achieve mutually relevant benefits. It involves integrating the firm capabilities with another firm as partners in order to create synergy for better performance (Burgelman, 2020).

2.4.1 Technical Alliances

Nguyen and Tran (2019) analyzed the effect of strategic alliances in logistics companies in Vietnam, and through a correlation research approach, the study established that one of the key fundamentals of strategic alliances is technical

alliances, where companies collaborate to enhance their competences and technical skills. According to the authors, through extensive collaboration with the suppliers and the clients, the logistics companies were able to gain more expertise in other fields, thus strengthening their business and their ability to meet the customer needs. This is supported by Xia, Wang, Lin, Yang, and Li (2018) who argue that technical alliances in logistics and supply chain enable both firms to gain extra knowledge on the other side of business, thus they are able to establish ways to meet the customer expectations and promote efficiency in the entire supply chain process.

A similar study by Jabar, Othman, and Idris (2011) sought to assess the role of technical alliances among the manufacturing firms in Malaysia. Through an empirical review approach, the study revealed that most of the companies that had succeeded in gaining competitiveness and stirring the customer satisfaction were those that had strong ties with their suppliers to the extent to sharing technologies and other technical knowledge. The authors indicated that strong technical collaboration implied that both the manufacturers and the suppliers were committed to meet a common goal, which is to have satisfied customers and continued business. Viewing things in this perspective, Jabar *et al.* (2011) argues that production companies tend to share their knowledge with the suppliers, who on the other hand share theirs for common purpose, and this ensures more success in the business. Zhao, Dong, and Xi (2019) agree with this by indicating that the supply chain process in the modern business market requires extensive collaboration and alliances such that even technical knowledge and skills are shared between the company and the suppliers.

Liu, Yan, Cheng, and Ye (2018) analysed the effect of technological collaboration between the manufacturing entities and suppliers in China. The study adopted a cross-section survey design and surveyed 183 respondents using a structured questionnaire. The findings revealed that the collaboration between the suppliers and the manufacturing companies required adequate technology, and this paved way for technological alliances. Their results reveled that through continued sharing of technology including skills, software and hardware, the manufacturing firms gained more technical competencies and recorded enhanced success in terms of meeting the

market needs and gaining competitiveness. Capelleras, Rialp, and Rialp (2020) agree on this by alluding that technology helps organization to improve their performance by achieving efficiency, effectiveness and reliable flow of operations. Li *et al*. (2021) argue that the best way to have the technology spread in an organization is to use suppliers who embrace the right technology, and engaging them, to have long-term collaboration with knowledge sharing.

2.4.2 Marketing Alliances

In Bangladesh, Babu *et al*. (2020) assessed the impact of supply chain alliances on the performance of processing companies. The study sought to establish the extent to which supply chain marketing alliances influenced the success of the companies in terms of enhancing their market and ability to reach more customers. The study focused on 287 respondents drawn from the companies in the processing industry. The results revealed that extensive collaboration between the processing companies and the suppliers enhanced the market penetration of the companies through availing the market records and data, thus making it easier for the manufacturers to understand and enter such markets. Grieco and Iasevoli (2017) allude that the collaboration is best met to meet each other's needs, but when effectively driven, it can open more opportunities such as gaining knowledge of a different market, through which the company can expand and perform better.

A study by Cacciolatti *et al*. (2020) sought to assess the effect of strategic alliances through marketing alliances in supply chain on the performance of value addition companies in South Africa. Their paper employed a descriptive research approach and had a sample size of 119 respondents. The findings revealed that strategic marketing alliances enable businesses to gain competitive advantage through access to a partner's markets and ways of marketing. They further established that teaming up with others adds complementary services to an organization, thus enabling them to grow and expand more quickly and efficiently. According to Cacciolatti *et al.* (2020), fast-growing companies in particular, rely heavily on alliances to extend their market and operational resources. In the process, they save time and boost productivity by not having to develop their own marketing framework from scratch,

thus free to concentrate on their core business. In addition, many fast growth companies use strategic marketing alliances to benefit from more-established channels of distribution, marketing, or brand reputation of bigger, better-known players. This ensures that they gain access to better markets within a short period of time, and with use of minimal resources.

Ko *et al.* (2020) carried out a research on the effects of strategic alliances emphasis and marketing efficiency on firm value under different technological environments. The research was based on data from 337 alliances from 1994 to 2014. Of these alliances, 177 involved computer equipment companies and 160 involved food companies. The results showed that market efficiency create no value in a high-tech industry and that there exists a negative effect of market efficiency on firm value in low-tech industry. In addition, the type of strategic alliances does not have statistical influence on firm value. Kim (2016) conducted a study on the effect of strategic alliances types such as joint venture, technical alliances, joint technical development and joint marketing on firm productivity in South Korea. The study employed a two - stage-least squares method and found that joint ventures positively affect firm performance and that the formation of international intra-industry alliances has a positive impact on firm performance.

Muange and Ng'etich (2020) analysed the effect of joint marketing alliances on the performance of companies in Kenya. The study used a descriptive research design and assessed strategic alliances through market alliances among other factors. Their findings revealed that market alliances allow firms to radically improve their performance by increasing the marketing and distribution channels that bring customers and suppliers together, thus enabling the ability of the suppliers to meet the needs of the customers. According to Muange and Ng'etich (2020), the image of the product is created by the suppliers' promotional activity in the generating area, thus making the products known to new customers. This on the other hand creates confidence of the supplier to the manufacturing entity, thus prolonging their continued business. While the suppliers would want to have their services known to other customers, they in most cases use previous businesses and supplied customers to market. Through this, the manufacturing companies benefit from marketing by

having their products known to more customers (Jakada, 2014). According to Ma, Meng, Li, and Huang (2021), the manufacturing companies can partner with their suppliers to have joint marketing strategies thus enhancing the success of both businesses while utilizing lesser resources and time. Varelas *et al.* (2019) agree with this by alluding that when firms form alliances with the suppliers and other stakeholders in the supply chain framework, they effectively pool-up resources and improve their market coverage. This also enhances the satisfaction of the customers thus promoting firm performance.

2.4.3 Innovation Alliances

Keith (2020) investigated how to make alliances count through creating innovation for spearheading growth in the company. The results of the study indicated that strategic alliances facilitate the growth of companies though gained access to new innovative ideas which are essential for efficiency and effectiveness. The author further indicated that strategic alliances motivated the innovativeness capabilities of companies such that they are able to access more knowledge and identify gaps in their internal operations. This compares to the findings by Degener, Maurer and Bort (2018) who indicate that strategic alliances create a room for continued innovation and creativity, as a result of continued transfer of knowledge between the partners. They further indicate that the innovation strategic alliances are bound to ensure both firms contribute effectively to bring up new ideas and ways of doing business, and this leads to creation of resources that might rather be difficult to mobilize and develop.

Sudarman, Kartini, Helmi, and Dewi (2021) studied the relationship between strategic alliances and firm competitiveness and found out that enhanced strategic alliances built on innovativeness was essential for firm performance in Indonesia. According to Sudarman *et al.* (2021) the partnership-based supply chain collaboration on commitment and innovation enhanced the operational efficiency of the firms, thus increasing their performance. A study by Tavana, Amoozad Mahdiraji, Beheshti, and Kamardi (2020) revealed that supply chain collaborative innovation alliances improved the sustainable ability and realizing the value of

innovation in the supply chain. For sustainable supply chain collaborative innovation, this means that all stakeholders in the supply chain network innovate and reform in products, processes, markets, technologies, resource allocation and organization to achieve a balance in economic, social and environmental performance.

Enyinnah *et al.* (2020) while assessing the role on supply chain innovation alliances on the performance of medium manufacturing entities in Nigeria revealed that the innovativeness of the manufacturing firms was mainly enhanced by the suppliers. The collaboration between the suppliers and the manufacturing firms implied that the operations were done in a more diverse manner, thus enhancing creativity and differentiation for sustainable competitiveness. Enyinnah *et al.* also believe that enterprises in supply chain need to establish appropriate collaborative innovation to maintain consistency in making decisions, so as to achieve the overall goals of supply chains. According to Gijic, Dimitrijevic, and Bogdanovic (2015), the main goal of supply chain collaborative innovation is to realize the integration of information and other various resources along the supply chain by use of modern technology tools. The goal is to reach the seamless connection and achieve the common goal of both partners.

Okuduba (2016) while assessing the need for supply chain collaboration in innovation revealed that collaborative innovation orientation has a positive impact on supply chain integration, sustainable competitiveness and comprehensive performance. O'Dwyer, and Gilmore (2018) propose that lean production of supply chain collaborative innovation can lead to higher economic organizational performance. Through lean production of supply chain collaborative innovation, manufacturing companies eliminate waste, enhance quality, reduce costs and increase flexibility across the supply chain. The extensive process of supply chain innovation alliances requires commitment from both parties, thus Islam, Hossain, and Mia (2018) proposes continuous engagements and information sharing as a way of ensuring there is adequate spread of knowledge between the manufacturing entity and the suppliers.

2.4.4 Cost and Risk Sharing Alliances

The main goals of SCM include where the involved enterprises commonly seek to reduce inventory risks, accelerate product delivery time and lower manufacturing costs in the hope of expanding and gaining new markets, increasing return on assets, upgrading product quality and enhancing customer service (Jia-qiang, 2021). These different supply chain parties work cooperatively together to tackle uncertain business environment conditions characterized by rapid product obsolescence and fast-evolving customer needs. According to Beuren *et al.* (2019), one way to generate profitability is to cooperate with both upstream and downstream partners through which the entire supply chain is empowered for higher customer responsiveness.

The alliances are also essential for greater flexibility to tackle changing market conditions, better customer service and satisfaction, increased customer retention and more effective marketing (Kassi, Rathnayake, Louembe, & Ding, 2019). However, these supply chain performance goals are still far from being achieved by many enterprises due to different reasons. Among them, imbalanced costs and risk sharing, where some parties incur more costs than the others. According to Shin, Park, and Park (2019), manufacturing companies ought to have defined ways through which risks and costs are shared with the suppliers and this could mainly be achieved through a supply chain cost and risk sharing alliances. This as elaborated by Hong, Zheng, Deng, and Zhou (2019) is whereby the manufacturing entities enter into agreements and strategic coalitions with the suppliers to have any risks and costs incurred during the engagement shared, so as to enhance mutual benefit and responsibility.

Ndulu (2015) examined the influence of cost sharing on performance in Kitui County. The study used stratified sampling and simple random sampling techniques to select the respondents. The study findings showed that through collaboration based on sharing costs, both parties had little to lose and enhanced their participation in the process of stirring the organizations into success. The sharing of costs implies

that both parties have a framework in which they share emerging costs and they are able to adopt ways of reducing the costs in the long-run.

Drewa and Karaseki (2020) analysed the effect of strategic alliances on the performance of large supply chain enterprises in Malawi. The study sought to establish the extent to which the supply chain alliances in cost and risk sharing enhanced the firms' performance. Through descriptive research approach, a sample of 379 respondents was surveyed using a structured questionnaire. The results revealed that the ability of the companies to share risks and costs determined the longevity of the relationship, and this was attributed to increased performance of the firms. According to Yang *et al.* (2015), a mutual agreement between a firm and their supplier to share costs and risks is mainly meant to have both firms take maximum level of responsibility to minimize risks and costs, including the costs of defections and returns due to poor quality supplies and delayed deliveries.

A study by Njoroge and Mbugua (2017) sought to assess the effect of strategic alliances with cost sharing as one of the variables on the performance of firms in Kenya. The study sought to establish how the collaborating between the companies based on the costs ensured that the companies enhance customer satisfaction, gain competitiveness and achieve stronger performance. The authors used a correlational research approach and surveyed respondents using a structured questionnaire. The results revealed that the collaboration between the suppliers and the manufacturing companies was beneficial to both parties in that the costs sharing implied that one party does not bear the costs alone, thus saving on operations costs. Njoroge and Mbugua (2017) further argued that the collaboration based on cost sharing implied that the firms were well-aligned towards managing risks and keeping the interests of the customers ahead, through which costs are reduced and performance enhanced.

2.4.5 Business Environment and Performance of Manufacturing Firms

The manufacturing sector in Kenya grew at 3.5% in 2015 and 3.2% in 2014, contributing 10.3% to gross domestic product (GDP) (KNBS, 2019). On average, however, manufacturing has been growing at a slower rate than the economy, which expanded by 5.6% in 2015 (World Bank, 2016a). This implies that the share of

manufacturing in GDP has been reducing over time. As a result, it can be argued that Kenya is going through premature industrialization in a context where manufacturing and industry are still relatively under-developed (World Bank, 2018b).

Gawankar *et al.* (2016) did a study to investigate how structural factors as well as external environment factors affect the performance relationship in emerging economies. Analysis of samples of manufacturing firms from Ghana and Bosnia and Herzegovina revealed that innovativeness is most beneficial for firms operating in competitive and dynamic export markets; those in less competitive and static markets do not benefit from their innovation activities to the same extent. Using a data of about two thousand manufacturing firms in France in 1999, Bertrand (2016) examined the effects of offshore outsourcing on the performance of firms revealed that offshore outsourcing increases firm performance, the effects being stronger in the export markets where firms import intermediate goods.

A study by Freeman, Styles and Lawley (2017) explored how location – regional vs metropolitan impacts a small to medium sized enterprise (SME)'s access to firm resources and capabilities, and consequently its performance. The study gathered qualitative data from an expert panel of government trade advisors, as well as managers of manufacturing firms in Australian regional and metropolitan areas. The data were used to explore three propositions relating to the impact of location. The findings showed that firms in metropolitan areas have an advantage over those in regional areas. However, the relatively lower level of competition in regional areas did not appear to have a negative impact on the export performance of firms located in these areas as would have been expected.

A study by Sung and Wen (2018) explored how political–economic forces could affect firm performance in the renewable energy technologies market. They conducted panel framework analyses to verify the characteristics of panel data for 19 countries before establishing the panel estimator meant to test the effects of political–economic forces on manufacturing firm performance. The results from the least squares dummy variable-corrected estimation indicate that the major factors promoting the specialization of renewable energy technologies are, in order of

decreasing importance, public pressure, market size, and government demand-pull policy. However, the traditional energy industry has no significant effect on firm performance. Depending on the context in which enterprises exist, the environment can be grouped in the following dimensions; physical, historical, economic, social-cultural and technological (Xie & Li, 2018).

Studies done by Jin, Peng and Song (2019) indicated that macro-level environment (such as economic, political, social and technological forces) that firms face incidentally affect their performance from the external environment. Manufacturing firm performance is affected by internal and external barriers.

According to a study by Ribau *et al*., (2015) business environment which include political, monetary, socio-social, mechanical natural and legitimate powers, all have significant effect on a firm growth. Performance of firms appears to be affected by environmental conditions such as the degree of competitiveness, home nation governments legal and regulatory policies, and the existence of appropriate channels of distribution and communication among other factors. Krammer *et al*. (2018) said that as the organization's external environment alters, its objectives must adhere to those changes, to match this changing environment. Organizations need to pay attention and match their operations to environmental circumstances in order to survive and operate competitively.

According to Sadeghi and Biancone (2018) the environmental structure should be handled as two wide elements, the internal/external and the size. In terms of munificence, complexity and dynamism, the dimensional front of the setting as a building is defined. They elaborate further that because of the impeding threats and possibilities that emerge from the macro-environment of the company, the dangers are a function of the complexity and uncertainty connected with the setting, the company faces different kinds of hazards.

2.5 Critique of Literature Reviewed

Loke Siew- Phaik and Alan Downe, (2013) carried out a study, Strategic alliances with suppliers and clients in a manufacturing firm supply chain. The main purposes

of the study were to test the alliances formed between suppliers and customers and the degree of these alliances. They compared these alliances and what influenced the formation. The study found that the factors influencing alliances formation included opportunities for interdependence. The business environment also had a lot to do with the kind and degree of alliances formation. However, this study was carried out in Malaysia. Secondly not all variables of strategic alliances were studied.

Bodo Steiner and Kevin Lan (2017) in their study, Applying the resource-based view to alliances formation in specialized supply chains, wanted to explore drivers of alliances formation, focusing on firm-specific resources, resources embedded in inter-firm relationships and capabilities under the control of the focal firm. This study found that managers interested in building compatible alliances in specialized single primary input supply chains may benefit from an improved understanding of the differential role of resource characteristics and resource heterogeneity for alliances formation, as these can function as a source of business upper hand. The study however focused on firms' resources as drivers of forming alliances.

Canzaniello (2017), in their study Intra-industry strategic alliances for managing sustainability-related supplier risks: Motivation and outcome, found that that forming/joining an SA concerning sustainability-related supplier risk assessment, results in the reduction of task uncertainty and equivocality as well as the increase of information processing capacities. Based on the implemented sharing routines, a higher overall efficiency can be achieved. Moreover, the members benefit from an enhanced identification of varying stakeholder expectations, a facilitated capability building and a more comprehensive supplier risk assessment. In particular, the joint endeavors result in assessment processes of higher robustness, which provide outcomes of higher quality. This study was however not done in Kenya and did not focus on manufacturing firms. Though it touched on cost and risks, it did not cover the other variables like supply chain marketing alliances.

Dev Dutta and Manpreet Hora (2018), in their study, From Invention Success to Commercialization Success: Technology Ventures and the Benefits of Upstream and Downstream Supply-Chain Alliances, discovered that an entrepreneurial venture's

supply-chain alliances involve upstream alliances (with research universities) and downstream alliances (with large industry incumbents). Even though such alliances bring the venture many benefits, they also come with significant challenges, notably the need to seamlessly combine a technology push philosophy with a market pull one. Utilizing a data set of over both upstream and downstream alliances alliances spanning 603 technology ventures in the biotech industry, interesting results were found with regard to the impact of these two alliances alliances on the venture's invention success and commercialization success. Upstream alliances demonstrate a positive impact on invention success but no significant impact on commercialization success. However, with the moderating role of, and policy maker. This study however was not done in Kenya and did not touch on the variables looked into in this study.

Maurizzio *et al*. (2020), in their study on Achieving competitive advantage through supply chain agility under uncertainty: A novel multi-criteria decision-making structure, asserted that The electronic industry suffers a rapid changing and highly rival environment. Thus, firms have an essential need to strive for acquiring the competitive advantage. Supply chain agility (SCA) is a tool which enable to assist firms to attain the competitive advantage. The empirical results indicated that flexibility significantly impacts by process integration, information integration and strategic alliances for eco-design in supply chain. Then, process integration has the highest influence in developing the competitive advantage of innovation. This study however was mainly on supply chain agility and did not touch on manufacturing firms.

Jie Yang and Kee Hung (2018), in their study, strategic alliances formation and the effects on the performance of manufacturing enterprises from supply chain perspective, examined the antecedents of strategic alliances formation in manufacturing firms in China, the alliances effect on innovation capability and dyadic quality performance, and how these two organisational capabilities are related to the supply chain performance of Chinese manufacturing enterprises in Shanghai. They performed a series of statistical techniques including logistic regression analysis, multivariate analysis of variance (MANOVA) and multiple regression

analysis for assessing the hypothesised relationships. Their findings indicated that relational stability and effective communication are significant antecedent factors influencing strategic alliances formation among Chinese manufacturing enterprises. Such alliances formation is found to benefit innovation capability and dyadic quality performance, which are significant contributors to the supply chain performance of Chinese manufacturers. They provided important theoretical and practical implications on these antecedents and consequences of strategic alliances formation leading to supply chain performance in the Chinese manufacturing context. This study was however done in China, Shanghai among the Chinese manufacturing firms.

Shi Chu Hung and Shiu Wang Hung (2017), in their study, Are alliances a panacea for SMEs? The achievement of competitive priorities and firm performance, aimed to investigate how competitive priorities relate to firm performance. With the inclusion of strategic alliances, its mediating effect was examined for SMEs in Taiwan. The magnitude and significance of these relationships were assessed by the path of an analytic approach. They used surveys of SMEs in high technology electronics industries. There were totally 73 samples collected. The results showed that quality and flexibility priorities can improve firm performance. Cost priority can influence the management of strategic alliances. Strategic alliances directly influence firm performance. Through the full mediating effect of strategic alliances, cost priority enables a positive impact on firm performance. This study empirically demonstrated that the internally developed resources such as quality and flexibility priorities and the synchronised internal and external resources such as cost priority can both simultaneously enhance SMEs marketing position and lead to competitive advantage. The arguable trade-offs concept of manufacturing strategy can be overcome through strategic alliances. This study however focused on SMEs and not manufacturing firms.

Jean Pierre (2016) did a study, the interplay between new technology based firms, strategic alliances and open innovation, within a regional systems of innovation context. The case of the biotechnology cluster in Belgium. He discovered that that new technology based firm (NTBF) survival and growth are connected with strategic

partnering alliances and open innovation within technology clusters. Strategic alliances in the biotechnology industry allow new technology based firms to gain a foothold in this high-cost, high-risk industry. In his study he examined the impact of strategic alliances and open innovation on the success of new biotechnology firms in Belgium by developing multiple case studies of firms in regional biotechnology clusters. A longitudinal follow up of the Belgian biotech startup ecosystem was presented. We find that, despite their small size and relative immaturity, new biotechnology firms are able to adopt innovative business models by providing R&D and services to larger firms and openly cooperating with them through open innovation. This study was however done in Belgium and among biotechnology firms.

Mia Hsiao and Fatima Wang (2018) did a study, unpacking knowledge transfer and learning paradoxes in international strategic alliances: Contextual differences matter. The research unpacked the paradoxes in knowledge transfer and learning processes in international strategic alliances by highlighting the contextual differences between partner firms. Due to knowledge asymmetry, the major source of firm-level difference, partners face paralleling dilemmas in terms of withholding or transferring/applying the knowledge to the other/cooperative context. This research argues that knowledge protection is deterred by the large institutional distance between partners and that the alliances performance cannot be improved because of the decreased absorptive capacity. However, such negative impacts of country- and firm-specific characteristics can be alleviated if relational capital is substantially accumulated by partners to enhance cross-border knowledge transfer and learning processes. This research explored whether frequent interactions, strong mutual trust and reciprocal commitment positively moderate the impact of knowledge protection on absorptive capacity and that of absorptive capacity on alliances performance. This study was however not done on manufacturing firms in Kenya.

Muange and Maru (2015) undertook a study targeting the retail sector and used 47 retail firms. The authors investigated the contribution of different types of strategic alliance (marketing alliance, procurement alliance, joint manufacturing, and technology alliance) on firm performance. By using stratified sampling, the study

identified four key management positions within the targeted retail firms to select the respondents. The study findings established that strategic alliance formed by retail firms influenced their performance and retail firms engaged in multiple forms of strategic alliance simultaneously depending on their corporate strategy and strategic objectives. The study was however limited for exclusively targeting the retail sector.

2.6 Research Gaps

There is limited literature on the position of supply chain strategic alliances, not much has been researched on the supply chain strategic alliances in the past. There is neither adequate literature on future of supply chain strategic alliances as it pertains to the performance of organizations. This calls for research so as to provide direction and insight and fill the literature gap in supply chain strategic alliances and their effect on organizational performance, whether real or simply perceived. This will provide guidance on what form and degree of alliances to make (Ribau *et al*. 2017).

Several studies have been done on strategic alliances and their impact on business or organizational performance; however, none of these studies were done on the influence of supply chain strategic alliances on performance of manufacturing firms in Kenya. Other studies have concentrated on the construction industry and the medical supply chains and the few studies in manufacturing firms have looked into the relationship between supply chain strategic alliances factors and organizational performance or effects of a single variable such as supply chain technical alliances. In addition, only a few studies in supply chain strategic alliances have been carried in Kenya and these studies are inclined more towards effects supply chain management practices on performance of firms. Most of these studies are also either case studies of certain firms or regions.

Lee *et al*. (2015) investigated measurement for strategic alliances and organizational performance of manufacturing firms. The strategic alliances practice they adopted included supplier integration, customer integration and collaborative forecasting. The study concluded that strategic alliances have a positive impact on organizational

performance. However, this study was conducted in Malaysia manufacturing firms and not the Kenyan manufacturing firms.

Chakraborty *et al*. (2018) investigated impact of strategic alliances on value co-creation and firm performance: a healthcare service sector perspective. The study adopted five components in relation to supply chain alliances; incentive alignment, information access, collaborative communication orientation and goal congruence. This study did not discuss all supply chain alliances practices. This research was done on the healthcare sector. A similar study need be done in Kenya and especially on the manufacturing sector.

Hua (2015) investigated formation of alliances and firm performance in the Thai automotive and electronics industries. The study concluded that supply chain collaboration arises from competitive pressure, supplier evaluation and audit. The study also found that a system of rewards for high-performance supplier and long-term relationship causally influence supply chain performance such as on-time delivery, responsiveness to fast procurement, flexibility to customer needs and profit. However, this study was conducted in Thailand automotive and electronics industries. This study did not focus on the supply chain collaboration practices.

Khisa and Kariuki (2022) investigated strategic alliances and performance of firms in the motor vehicle industry in Nairobi county. The study specifically focused on assessing how technological alliances, marketing alliances, production alliances and logistics alliances affect performance of firms in motor vehicle industry in Nairobi County. The results showed that enhancing or increasing each of the variables with their one-unit result to performance increase of the motor vehicle industry. The study recommended that for there to be an enhanced performance amongst motor vehicle industry players in Nairobi County, there is a need for the firms to engage in alliances that contributed to operational effectiveness in areas of technology, marketing, production and logistics. This study however paid focus to only motor vehicle industry. The current study therefore looks at the manufacturing firms holistically and comprehensively.

Mathuki *et al*., (2019) did a study to determine the effect of strategic alliances on the performance of Kenyan manufacturing firms in the East African Community market. The findings indicated that strategic alliances had a strong statistically significant influence on the performance of Kenyan manufacturing firms in the EAC market. This study however concentrated on the EAC market and not solely on the performance of manufacturing firms in Kenya.

Musili and Deya (2023), did a study to establish how strategic alliances influence performance of firms in the tourism sector in Kenya. The study specifically centered on establishing the influence of technology alliances, marketing alliances, financial alliances and distribution alliances on performance of firms in the tourism sector. The results established that strategic alliances account for 55.7% of variations on performance of firms in the tourism sector. Additionally, technology alliances, marketing alliances, financial alliances and distribution alliances bears a positive and significant influence on performance of firms in tourism sector operating in Nairobi County, Kenya. This study however was on the service industry and not on the manufacturing firms which is the focus of the current study.

Muthoka, Muathe and Mulika (2022), did a study to investigate what sustained performance in a strategic alliance and the role of level of collaboration. The finding of the study hypotheses showed a positive and significant effect of strategic alliances on firm performance, while the level of collaboration showed a significant partial mediating effect on the relationship between strategic alliance and firm performance. The study concluded that collaboration is relevant in strategic alliances formed by manufacturing SMEs in Kenya since the strength of the relationship between strategic alliance and firm performance depends on the level of collaboration. This study was done with focus on the SMEs in Kenya though it brings to light the positive effects of strategic alliances on firm performance.

This research was intended to fill the gap of inadequate information and understanding that exists in relation to the supply chain strategic alliances and performance of manufacturing firms in Kenya. As reflected by the presented theoretical and empirical literature there is an inadequacy of research done on

strategic alliances and performance of manufacturing firms. This proposed study was unique in that it adopted an integrative approach that captured not only manufacturing firms in Kenya but also the core four factors in successful implementation of strategic alliances, that is, Supply chain technical alliances, Supply chain marketing alliances, Supply chain innovation alliances and supply chain cost and risk sharing alliances. It is therefore a more comprehensive and integrative study that has not been the focus of researchers.

2.7 Summary of Literature Reviewed

This chapter has examined the existing literature and research issues associated with supply chain strategic alliances and performance of manufacturing firms in Kenya. The literature review can be an efficient approach to identify potential performance interventions. Supply chain strategic alliances studies in Kenya are not too many compared to other countries and adding value creation makes the studies even fewer. Previous studies are based on other countries. Even the few in Kenya have not covered the manufacturing firms covered in this current study.

The literature review looked at a number of areas that were deemed to add value to the current study. Accordingly, all the theories perceived to be necessary were keenly reviewed. Conceptual framework was developed with the elements of Supply chain technical alliances, Supply chain marketing alliances, Supply Chain innovation alliances and Supply chain cost and risk sharing alliances as independent variables and performance of manufacturing companies in Kenya as dependent variable. These discussions helped in shedding some light on the influence of in supply chain strategic alliances and performance of firms.

Literature reviewed show that there is a positive relationship between supply chain strategic alliances and firm's performance. Similarly, business environment influences the performance of firms. The study also identifies that much of the supply chain strategic alliances and firm performance has been done in developed countries with little research being done in developing countries and more so Kenya. This forms a research gap which the study will seek to fill. On other hand, studies on

supply chain strategic alliances, firm’s performance and business environment jointly are at nascent stage globally as supported by literature review.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design and data collection method that was employed in the study. The chapter is organized in sections. The first section looked at the design to be used the second looked at the population and third at the sampling frame. Sample and sampling technique was dealt with in fourth section while section five operationalized the variables. Section six dealt with data collection instruments and seven tackled data collection procedure further, section eight looked at validity and reliability testing while the last section concluded with data processing and analysis. This research was premised on a positivist research philosophy, since it is deductive rather than inductive. Also, research hypotheses developed from literature tested the relationship between variables using quantitative data.

3.2 Research Philosophy

According to Chakraboty (2017), a research philosophy is a belief about the way in which data about a phenomenon should be gathered, analyzed and used. There are three research philosophies that dominate the business and management research field. They include the paradigms of positivism, realism and interpretivism (Awino, 2016). A research philosophy is a perspective about research held by a community of researchers that is based on a set of shared perceptions, concepts, values, and practices, (Bryman, 2017). It is an approach to thinking about and doing research. The general approach to research philosophy is known as the research paradigm as cited by Grant (2016) who proposed the concept of the paradigm as the overarching set of beliefs a social scientist takes (Bryman, 2017).

A paradigm is the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria (Bryman, 2017). There has been ongoing debate in the literature as to the available number of paradigms. Two broad overarching research paradigms or philosophies are proposed,

positivism (quantitative) and interpretivist (qualitative). Qualitative researchers have emphasized the need to understand processes at the organizational level and have argued that survey-based methods are unable to probe these processes effectively (Wang *et al*, 2016). Joppe (2017) further articulate four paradigms that inform qualitative research, post-positivism, social constructivism, advocacy/participatory pragmatism.

This study adopted the positivism philosophy. Positivism adheres to the view that only factual knowledge gained through observation, including measurement is trust worthy (Hair *et al*., 2016). According to Collins (2017), as a philosophy, positivism is in accordance with the empiricists view that knowledge stems from human experience. Quantitative research is affected by the empiricist worldview, which implies that it is worried about circumstances and end results of social marvels and uses the information which depends on exact perception and their basic elucidation. This study adopted Positivism paradigm since it predominates in science and assumes that science quantitatively measures independent facts about a single apprehensible reality without bias and is closely associated with objectivity (Healy *et al*., 2018).

Positivism research philosophy which reflects the belief that reality is stable. This reality can be observed and described from an objective viewpoint without necessarily interfering with the phenomenon itself (Awino, 2016). Positivists' belief that hypothesis developed from existing theories can be tested by measuring observable social realities, thus positivism is derived from natural sciences. Based on previously observed, explained realities and their interrelationships, it is then possible under positivism research philosophy to make predictions. Sekaran (2016) asserts that positivism research philosophy can be used to investigate what truly happens in organizations through scientific measurement of people and system behaviors hence this research philosophy can be used to investigate the influence of supply chain strategic alliances and performance of manufacturing firms in Kenya. The positivism philosophy supported this study to scientifically establish the existing causal links and relationships between strategic alliance and performance of manufacturing firms.

3.2.1 Research Design

This study adopted a mix of descriptive design and explanatory research design. Descriptive was used because it sets out to describe weather supply chain strategic alliances is related to performance of manufacturing firms in Kenya. Kothari (2014) argues that a descriptive research design is a systematic research method for collecting data from a representative sample of individuals using instruments composed of closed-ended and/or open-ended questions. Orodho (2014) describes a descriptive survey design as a design that seeks to portray accurately the characteristics of a particular individual, situation or a group. According to Wisker (2010) in a descriptive study, researchers observe, count, delineate, and classify. This design is one of the most widely used non-experimental research designs across disciplines to collect large amounts of survey data from a representative sample of individuals from the targeted population. The study adopted the design as it helps describe the situation as it exists. Earlier, related studies had also utilized descriptive research design such as those by Muthoka *et al*. (2022) in their study on the influence of strategic alliance and performances of SMEs in Kenya.

Explanatory research design was used to establish and expound the relationship between the independent variables and the dependent variable. According to Chopra (2018), an explanatory research design expounds on an unknown or less known research area by explaining the relationship between variables using the available data. The design can also go further and obtain data that can intensively explain the research phenomenon to bring a more understanding of the research area. An explanatory research design helps to estimate prevalence of the research problem within the population under study, it helps to learn about characteristics the population and the attitude and practices of individuals in a population (Wang & Cheng, 2020). Through the explanatory research design, a study can bring more inference on the findings from descriptive data collected through the questionnaire. The design was used contemporaneously with the descriptive research design in order to adequately answer the research questions and test the research hypotheses.

3.3 Target Population

According to Kotler (2016), a population is a well-defined set of people, services, elements, event, and group of things or households that are being investigated. According to Nassiuma (2018) population exist within space and time and researchers unequivocally specify population in terms of category and the geographical space. A population is also viewed as the total collection of elements about which the study wishes to make some inferences (Mugenda & Mugenda, 2013). Target population characterizes those units for which the discoveries of the investigation are implied to be generalized from, as cited by Nassiuma (2018).

The KAM (2021) directory has listing of members (firms) by sectors which contains a register of 14 sectors in manufacturing firms spread all over the country (KAM, 2021). The population of the manufacturing firms registered members as per the directory is 596 manufacturing firms. The 2021 KAM directory has listing of members (firms) by sectors which contains a register of 14 sub-sectors manufacturing firms spread all over the country (KAM, 2021). KAM membership comprises of small, medium and large enterprises. The size is measured by their total assets. Large sized firms are the firms with total assets of above Kshs100 Million, medium-sized have between Kshs40 Million and Kshs100 Million by total assets; whereas small firms have assets under Kshs40 Million. The unit of analysis was the individual manufacturing firms while the unit of observation which defines the independent elements in a population was the heads of procurement within each of the selected manufacturing firms. The unit of observation is selected because they are the ones involved in execution of the firms' supply chain management practice and thus stands high chances of providing reliable information on influence of supply chain strategic alliances on performance of manufacturing firms in Kenya.

Table 3.1: Target Population

	Sector	Population
1	Automotive	21
2	Building, Mining and Construction	70
3	Chemical & Allied	17
4	Agriculture Sector/Agro-processing	20
5	Energy, Electrical and Electronics	27
6	Food and Beverages	71
7	Leather and Footwear	34
8	Metal and Allied	66
9	Paper	7
10	Pharmaceutical and Medical Equipment	68
11	Plastics and Rubber	20
12	Textile and Apparels Sector	35
13	Timber	63
14	Services and Consultants	77
	Total	**596**

3.4 Sampling Frame

This frame defines a researcher's population of interest. A sampling frame is a list of all items where a representative sample is drawn for the purpose of research (Nassiuma, 2018). A sampling frame is the source material or gadget from which a representative is drawn, (Kothari, 2014). It is a rundown of all those within a population who can be sampled, and may include individuals, households or institutions, (Joppe *et al*. 2017*).* Kothari (2014) argues that a sampling frame is a physical representation of all the elements in the population from which the sample is drawn, (Grant, 2017). To ensure adequate coverage of the population of the manufacturers in Kenya and ease of access, the sample frame consisted of all the 14 sectors. The list is available from the KAM directory (2021).

3.5 Sampling Technique and Sample Size

Sampling refers to the procedure a researcher uses to gather people, places or things to study (Cooper & Schindler 2018). Lee *et al*. (2014) argue that if the purpose of the research is to draw conclusions or make predictions affecting the whole population, sampling is appropriate. Cooper & Schindler (2018) assert that a sample is a subset of a population. Stratified sampling was used to identify the firms that were studied. The firms were stratified according to categories (sub sectors) which are 14. Using proportional allocation, the proportion of each category which were studied was worked. Simple random sampling was then employed to identify the firms to be studied. The above process is seen by Bryman (2017) as being efficient, representative, reliable and flexible and takes care of systematic bias that may result from non-respondents.

The study used Fisher's formula to sample 234 manufacturing firms from the total population. Fisher's formula is a useful tool for estimating sample size in analytic cross-sectional studies with a known population. The formula assumes a normal distribution, which is generally reasonable for many analytic cross-sectional studies, particularly if the sample size is large. However, the formula assumes that the population standard deviation is known, which may not always be the case in practice. If the population standard deviation is unknown, researchers can use an estimate based on prior research or pilot data, but this introduces some uncertainty in the sample size calculation.

According to Gujarati (2012), a sample is deemed suitable if it captures the characteristics of the population sufficiently.

$$No = z^2p\ (1\text{-}P)/\ e^2$$

Where:

N_o is the required sample size.

Z is the confidence level at 95% (standard value of 1.96)

p is estimated rate of adoption of strategic alliances by manufacturing firms and

e is the margin of error at 5% (standard value of 0.05).

The study estimates that 50% of manufacturing firms use strategic alliances in their operations.

$No= z^2p\ (1-p)/e^2 =1.96^2*0.5*(1-0.5)/0.05^2= 384.16\ (384)$

$n_1=n_o/\ \{1+n_o/population\}$

$n_1=384/\ \{1+384/596\} = 234.00$

Where;

N_1 is the corrected sample size and n_0 the >5% sample calculated above. This gave a sample of 234.

Table 3.2: Sample Table

	Sector	**Population**	**Sample Size**
1	Automotive	21	8
2	Building, Mining and Construction	70	27
3	Chemical & Allied	17	7
4	Agriculture Sector/Agro-processing	20	8
5	Energy, Electrical and Electronics	27	11
6	Food and Beverages	71	28
7	Leather and Footwear	34	13
8	Metal and Allied	66	26
9	Paper	7	3
10	Pharmaceutical and Medical Equipment	68	27
11	Plastics and Rubber	20	8
12	Textile and Apparels Sector	35	14
13	Timber	63	25
14	Services and Consultants	77	30
	Total	**596**	**234**

3.6 Data Collection Instruments

Primary data is reliable since its free from bias, (Creswel, 2017). A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents (Wang *et al*, 2017). This research utilized a structured questionnaire to collect data. The questionnaire was divided into five sections, each focused on a single research objective. Mugenda and Mugenda (2013) state that a questionnaire is a form or document with a set of questions deliberately designed to elicit responses from respondents or research informants for the purpose of collecting data or information. Structured questionnaires are those in which some control or guidance is given for the answer (Kothari, 2014).

3.7 Data Collection Procedures

Kumar and Zantoni (2015), states that data collection procedures specify the process of data collection. Data can be classified into primary and secondary data. Primary data is information that is collected directly from the field specifically for the purpose of a research project (Gujarati, 2013). Secondary data is the data that has been already collected by and readily available from other sources (Awino, 2016). In relation to the data collection procedure the study developed a timetable for data collection and scheduled appointments with the respondents, specifying in detail the date, time and place where the data was collected. The unit of analysis in this study is the manufacturing firm. This study is majorly based on the influence of supply chain strategic alliances on performance of manufacturing firms, the unit of observation were organizational managers or their equivalent in the sampled organization.

3.8 Pilot Study

The term pilot study is used in two different ways in social science research. It can refer to so-called feasibility studies which are small scale versions, or trial runs, done in preparation for the major study (Mugenda & Mugenda, 2013). However, a pilot study can also be the pre testing or trying out of a particular research instrument (Gujarati, 2013). Attainability contemplate is vital for testing the dependability and legitimacy of information gathering instruments, (Sekeran, 2016).

A pilot study might give advance warning about where the main research project could fail, where research protocols may not be followed, or whether proposed methods or instruments are inappropriate or too complicated (Nassiuma, 2018). The questionnaire was pilot tested on 10% of the members of the sampling frame who do not comprise the final sample. These were 23 firms. This translated to 10% of the total population under study and according to Nassiuma, (2018), extant literature suggest that a pilot study sample should be 10% of the sample projected for the larger parent study. Wang *et al.* (2015) suggested 10-35 participants for pilot in survey research. Joppe (2017) clarifies unwavering quality of research instruments as deciding if the exploration instruments really measure what it was planned to quantify or how honest the examination results are. Pilot study was in this manner directed to identify shortcoming in structure and instrumentation and to give precise information to determination of an example (Cooper & Schindler, 2018).

The questionnaire was pilot tested on 10% of the members of the sampling frame who did not comprise the final sample. These were 23 firms. The responses obtained from this pilot study was used to determine the discrimination, validity, reliability and multicollinearity of the questionnaire after which the relevant amendments was made to the questionnaire. According to Kothari (2014), discrimination of a questionnaire means that people with different scores on a questionnaire, should differ in the construct of interest to the study.

3.8.1 Reliability of Research Instruments

According to Orodho (2012) reliability is the ability of the questionnaire to produce the same results under the same conditions. To be reliable the questionnaire must first be valid. The most commonly used measure of scale reliability was developed by Cronbach and Meele(1951) who suggested that the data should be split into two in every conceivable way and correlation coefficient computed for each spilt. The average of these values is known as Cronbach's Alpha, which is the most common measure of scale reliability. A value of 0.7 and above is seen as an acceptable value for Cronbach's Alpha; values substantially lower indicate an unreliable scale (Kothari, 2014).

Reliability refers to the consistence, stability, or dependability of the data, (Joppe, 2017). A reliable measurement is one that if repeated a second time gives the same results as it did the first time. If the results are different, then the measurement is unreliable (Bryman, 2017). To measure the reliability of the data collection instruments an inward consistency system utilizing Cronbach's alpha was connected (Bryman, 2017). Cronbach's alpha is a coefficient of unwavering quality that gives a fair-minded gauge of information generalizability, (Kotler, 2016). An alpha coefficient of 0.70 or higher demonstrates that the accumulated information is dependable as it has a moderately high inward consistency and can be summed up to reflect conclusions of all respondents in the objective populace (Kotler, 2016).

After piloting, the results were given an alpha coefficient. An alpha coefficient of 0.7 or higher indicates that the gathered data is reliable as it has a relatively high internal consistency and can be generalized to reflect opinions of all respondents in the target population (Kotler, 2016). Chopra *et al* (2018) identify three types of reliability referred to in quantitative research, which relates to the degree to which a measurement, given repeatedly, remains the same the stability of a measurement over time, and the similarity of measurements within a given time period.

Grant (2017) adheres to the notions that consistency with which questionnaire items are answered or individual scores remain relatively the same can be determined through the test-retest method at two different times. This attribute of the instrument is actually referred to as stability. If we are dealing with a stable measure, then the results should be similar. A high degree of stability indicates a high degree of reliability, which means the results are repeatable. A commonly accepted rule of thumb for describing internal consistency using Cronbach's alpha is as follows.

Table 3.3: Internal Consistency Using Cronbach's Alpha

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent (High-Stakes testing)
$0.7 \leq \alpha < 0.9$	Good (Low-Stakes testing)
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

3.8.2 Validity of Research Instruments

Validity alludes to the degree to which an instrument estimates what it should measure. Information requires not exclusively to be dependable yet in addition genuine and precise. On the off chance that an estimation is legitimate, it is likewise solid (Joppe, 2017). According to Nassiuma (2018), validity is a difficult thing to assess and it can take three basic forms: content validity items on a questionnaire must relate to the construct being measured; criterion validity this is basically whether the questionnaire is measuring what it claims to measure and thirdly; factorial validity- this validity basically refers to whether the factor structure of the questionnaire makes intuitive sense. Validity is a necessary but not sufficient condition of a questionnaire (Bryman, 2017).

The variables in this study was validated using principal component analysis (PCA) with varimax rotation from exploratory factor analysis. Before performing the analysis, the suitability of the data was assessed through two tests, Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and Bartlett's Test of Sphericity. The KMO has to be more than 0.50 and Bartlett's Test of Sphericity has to be significant (Kothari, 2014). From factor analyses, it was suggested that items which had a factor loading lower than 0.50 was eliminated, (Hair *et al*., 2016).

3.9 Data Analysis and Presentation

According to Creswel (2017), regression analysis is used to show the relationship between the dependent variable and the independent variables. Data analysis is the computation of certain measures along with searching for patterns of relationships that exist. Collis and Hussey (2015), states that data analysis can refer to a variety of specific procedures and methods. Data analysis involves goals; relationships; decision making; and ideas, in addition to working with the actual data itself. Simply put, data analysis includes ways of working with data to support the goals and plans of the study.

Data analysis can be categorized into descriptive (describes a set of data); exploratory (analyzing data sets to find previously unknown relationships);

inferential (use a relatively small sample of data to say something about a bigger population); predictive (analyze current and historical facts to make predictions about future events); causal (to find out what happens to one variable when you change another); mechanistic (understand the exact changes in variables that lead to changes in other variables for individual objects).

Descriptive data analysis was adopted for this study because descriptive analysis is used to describe the basic features of the data in a study. It provides simple summaries about the sample and the measures (Kothari, 2014). Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data (Bryman, 2017). According to Cooper and Schindler (2018), a descriptive study is concerned with finding out the what, where and how of a phenomenon. Descriptive statistics was chosen because it enabled the researcher to generalize the findings to a larger population.

The study used quantitative data which prior to analysis, was sorted to ensure completeness. Quantitative data involved descriptive and inferential statistics. Descriptive statistics analysis was conducted to provide an overview of the sample through demographic details of the participating respondents including measure of central tendencies, standard deviation, range, variance among others. Inferential statistics facilitate inferences and involved both correlation and regression analysis to show the relationship between the dependent variable and the independent variables. The study used SPSS version 25.0 to code, process and analyze the data. The regression models took the form of:

$$Y= B_0+B_1X_1 +e \text{ ……..……}$$

Where:

Y = Performance of Manufacturing Firms

B_0 is the y-intercept or model coefficient;

β_1 = the coefficient of the independent variable;

X_1 = Supply chain technical alliances

$Y = B_0 + B_2X_2 + e$ ……..……

Where:

β_2= the coefficient of the independent variable;

X_2= Supply chain marketing alliances

$Y = B_0 + B_3X_3 + e$ ……..……

Where:

B_3= the coefficient of the independent variable;

X_3= Supply chain innovation alliances

$Y = B_0 + B_4X_4 + e$ ……..……

Where:

B_4= the coefficient of the independent variable;

X_4= Supply chain cost and risk sharing alliances

$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$……...V

Where:

Y = Performance of Manufacturing Firms

α is the y-intercept or model coefficient;

$\beta_1 - \beta_4$ = the coefficients of the independent variables;

X_1 = Technical alliances

X_2 = Marketing alliances

X_3 = Innovation alliances

X_4 = Cost and risk sharing alliances

ε is the error term established from heteroscedasticity test;

To aid in testing for moderation, model VI was used:

$$Y = \alpha + \beta_1 A + \beta_2 M + \beta_2 (A^* M) + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ VI}$$

Where:

A = A computed independent variable from all the four independent variables

M = Moderating Variable (Business environment)

3.9.1 Factor Analysis

The Factor Analysis is an explorative examination. Much like the bunch examination gathering comparable cases, the factor investigation gatherings comparative factors into measurements. This procedure is additionally called distinguishing dormant factors. Factor Analysis lessens the data in a model by decreasing the measurements of the perceptions, (Chakraboty *et al*., 2017). This examination applied factor investigation to disentangle the information, for instance by diminishing the quantity of factors in prescient relapse models. In the event that factor investigation is utilized for these reasons, regularly factors are pivoted after extraction. Factor investigation has a few distinctive turn strategies some of them guarantee that the variables are symmetrical. At that point the relationship coefficient between two elements is zero, which kills issues of in regression analysis, (Lee, 2016).

Many empirical, studies carried out in this area have utilized this technique to illustrate the strengths of each factor to the dependent variable. This method seeks values of the loading that bring the estimate of the total communality as close as possible to the total of the observed variances. Qualitative data was drawn from

open-ended questions. This was analyzed through summarizing the set of observations drawn from the respondents. Common set of observation was assigned numerical value and entered into the SPSS version 25 computer system. The analyzed findings were then presented in form of frequency tables, pie charts and bar charts.

Many empirical, studies carried out in this area have utilized this technique to illustrate the strengths of each factor to the dependent variable. This method seeks values of the loading that bring the estimate of the total communality as close as possible to the total of the observed variances. Qualitative data was drawn from open-ended questions. This was analyzed through summarizing the set of observations drawn from the respondents. Common set of observation was assigned numerical value and entered into the SPSS version 25 computer system. The analyzed findings were then presented in form of frequency tables, pie charts and bar charts.

3.9.2 Descriptive Statistics

To gather information for any measurable examination, a populace should initially be characterized, Population shows a gathering that has been assigned for get-together information from, (Kumar & Zantoni, 2015). The information was data gathered from the populace. Illustrative insights give data that depicts the information in some way, (Wang *et al.*, 2016). Some different estimations in elucidating measurements answer the inquiries, for example, how broadly scattered is this data? Are there many qualities? Or on the other hand are a large number of the qualities the same? What esteem is amidst this this data?

3.9.3 Statistical Modelling

Inferential measurements makes derivations about populaces utilizing information from the populace as opposed to utilizing the whole populace to accumulate the information, the analyst gathers an example or tests from the a huge number of occupants and make inductions about the whole populace utilizing the example, (Chakraboty, 2017).The test is an arrangement of information taken from the

populace to speak to the populace, (Creswell, 2015).Correlation examination, relapse investigation and ANOVA investigation all fall under the class of inferential statistics.Correlation Analysis is the statistical tool used to study the closeness of the relationship between two or more variables, it is denoted by a small r, (Chakraborty, 2017). The variables are said to be correlated when the movement of one variable is accompanied by the movement of another variable, (Grant, 2017).

The correlation analysis was used to determine the possible association between the variables. In the correlation analysis, there are two types of variables, dependent and independent. The purpose of such analysis is to find out if any change in the independent variable results in the change in the dependent variable or not, (Joppe,2017). Regression is a statistical measure used in finance, investment and other disciplines that attempt to determine the strength of the relationship between one dependent variable (usually denoted by Y) and a series of other changing variables known as independent variables, (Kotler,2016).

The regression is described by a capital R^2 statistics (coefficient of determination). The two basic types of regression are linear regression and multiple linear regressions. Linear regression uses one independent variable to explain or predict the outcome of the dependent variable Y, while multiple regression uses two or more independent variables to predict this. Regression analysis is a statistical approach to forecasting change in a dependent variable, (Lee *et al*., 2014). Analysis of variance (ANOVA) can determine whether the means of three or more groups are different, (Grant, 2017). ANOVA uses F-tests to statistically test the equality of means. The reason why analysis of variance is used is to determine whether means are different, also it shows how variances provide information about means.

3.10 Test of Assumptions/Diagnostic Tests

In this study most of the statistical tests that was performed was based on a set of assumptions. All parametric tests assumed some certain characteristic about the data, also known as assumptions. When the assumptions are disregarded the after effects of the investigation can be misdirecting or totally wrong and this would change the finish of the examination and understanding of the outcomes. In this manner all

exploration, regardless of whether for a diary article, theory, or thesis, must pursue these presumptions for precise translation relying upon the parametric investigation and the assumption, (Joppe,2017).

3.10.1 Normality Test

Normalization is essential so as to ascertain whether the data provided by the dependent variable is normally distributed. The normality tests are supplementary to the graphical assessment of normality (Elliott & Woodward, 2007). The main tests for the assessment of normality are the K-S is a much-used test (Thode, 2002) and the K-S and Shapiro-Wilk tests can be conducted in the SPSS. Skewness and Kurtosis. To test the supposition of ordinary conveyance, Skewness ought to be inside the range ±2. Kurtosis esteems ought to be inside scope of ±7 (Elliott & Woodward, 2007). The null hypothesis (H_O) is that sample distribution is normal. Therefore, the current study used the K-S and Shapiro-Wilk tests and the graphical presentation to test for normality.

3.10.2 Linearity

Grant, (2017) states that linearity is the connection among dependent and independent variables that is the point at which the normal estimation of dependent variable is a straight line capacity of every independent variable, holding the others constant. What's more, the incline of that line does not rely upon the estimations of interchange factors. Accordingly, the effects of different self-governing variable on the typical estimation of the independent variable on the normal estimation of the dependent variable are addictive, (Cooper & Schindler, 2018). Statistical freedom of the errors, (in specific, no connection between back to back blunders if there should be an occurrence of time arrangement data). Homoscedasticity, (constant variance) of the mistakes versus time in instance of time arrangement information, versus the forecasts and versus any independent variable.

Normality of the error distribution may happen. In the event that any of these assumptions is violated (i.e., if there are nonlinear connections among dependent and independent variables or the blunders show relationship, heteroscedasticity, or non-

typicality), at that point the figures, confidence interval, forecasts and logical bits of knowledge yielded by a regression model might be wasteful or genuinely one-sided or misdirecting, (Creswell,2017). In an ideal world, factual programming consequently gives diagrams and insights that test whether these presumptions are fulfilled for any given model. To check for normality of this study, the normality was tested using the Shapiro-Wilk and Kolmogorov-Smirnov tests for defining Skewness and Kurtosis to check for peakedness of the distribution. The values for asymmetry and kurtosis between -2 and +2 are considered acceptable in order to prove normal univariate distribution (Orodho, 2012).

3.10.3 Multicollinearity

In statistics, multicollinearity is a wonder in which one indicator variable in a different relapse model can be straightly anticipated from the others with a considerable level of precision, (Chakraboty, 2018). In this circumstance the coefficient appraisals of the different relapses may change inconsistently in light of little changes in the model or the information. Multicollinearity does not decrease the prescient power or unwavering quality of the model all in all, at any rate inside the example informational index, it just influences counts with respect to singular indicators, (Grant, 2016). That is, a different relapse show with collinear indicators can demonstrate how well the whole heap of indicators predicts the result variable.

On account of flawless multicollinearity (in which one free factor is a correct straight blend of the others) the plan grid has not exactly full rank, and in this way the minute framework cannot be reversed. Under these conditions, for a general straight model, the normal minimum squares estimator does not exist. Note that n articulations of the presumptions hidden relapse examinations, for example, customary slightest squares. The state of no multicollinearity is at times used to mean the non-attendance of impeccable multicollinearity, which is a correct (non-stochastic) straight connection among the repressor, (Sekaran, 2016). Collinearity is a direct relationship between two logical factors. Two factors are splendidly collinear if there is a correct direct connection between them. For instance, the variable is splendidly collinear if there exist parameters and with the end goal that, for all observations.

Multicollinearity test is an evaluation of the level of correlation of the independent variables. In the present study, the Variance Inflation Factor (VIF) was used. Where VIF= 1/ (1-R^2); R^2= Coefficient of Determination. If any of the VIF is greater than 10, as a rule of thumb, Multicollinearity is significantly large and consequently they are poorly estimated. Hence the variable will be dropped from the model. If 5<VIF<10, then Multicollinearity is moderate, if 5<VIF, then Multicollinearity is insignificant.

3.10.4 Heteroscedasticity

The word heteroscedasticity originates from the Greek, and actually implies information with an alternate (hetero) scattering (skedasis), (Sekeran, 2016). In straightforward terms, heteroscedasticity is any arrangement of information that is not homoscedastic. All the more actually, it alludes to information with unequal variability (scatter) over an arrangement of second, indicator factors. Heteroscedastic information has a tendency to pursue a cone shape on a dissipate chart. A lingering plot can propose heteroscedasticity. Lingering plots are made by ascertaining the square leftover.

One of the key assumptions of regression is that the variance of the errors is constant across observations, (Chopra *et al*., 2017). If the errors have constant variance, the errors are called homoscedastic. Typically, in this study all residuals were plotted to assess this assumption. Standard estimation methods are inefficient when the errors are heteroscedastic or have non-constant variance.

Homoscedasticity assumes that there is constant variance of the errors. Heteroscedasticity, which is a violation of homoscedasticity makes it problematic to measure the true forecast errors, standard deviation, and too narrow or too wide are usually the result. A plot of residuals versus predicted values was used to check for the convergence.

3.11 Operationalization of Study Variables

The concepts that formed the independent variable in this study are supply chain strategic alliances concepts. According to Bryman (2017), concepts are mental images or perceptions and therefore, their meaning varies from person to person. To be useful in the study, concepts were converted into variables which can be measured. The variables in this study were operationalized to enable quantitative measurement. The variables were operationalized in line with the objectives of the study. As illustrated in Table 3.4.

Table 3.4: Operationalization of Variables

Variable	How Variable was Measured	Statistical Model	Main Tools of Analysis/ Hypotheses Testing	Data Collection Tools
To determine the influence SC technical alliances on performance of Manufacturing firms in Kenya.	a)Technical skills b)Technology sharing c)Knowledge sharing	$Y=\beta_0+\beta_1X_1 + \varepsilon$ Where: Y= Performance of Manufacturing Firms β_0 = Constant β_1 = Coefficient of X_1 X_1=Supply chain technical alliances ε =Error term	Regression and Correlation Analysis; If P value is ≤ 0.05 research hypothesis is true	Questionnaire
To establish the influence of SC marketing alliances on performance of manufacturing firms in Kenya.	a)Co-branding b)Co-marketing c)Market sharing	$Y = \alpha + \beta_2X_2 + \varepsilon$ Where: Y= Performance of Manufacturing Firms β_0 = constant β_2= Coefficient of X_2 X_2 =Supply chain marketing alliances ε =Error term	Regression and Correlation Analysis; If P value is ≤ 0.05 research hypothesis is true	Questionnaire
To determine the influence of supply chain Innovation alliances on performance of manufacturing firms in Kenya.	a)New product development b)Process efficiency c)Quality improvement	$Y = \alpha + \beta_3X_3 + \varepsilon$ Where: Y= Performance of Manufacturing Firms β_0 = constant β_3= Coefficient of X_3 X_3 =Supply chain innovation alliances ε =Error term	Regression and Correlation Analysis; If P value is ≤ 0.05 research hypothesis is true	Questionnaire
To establish the influence of cost & risk sharing alliances on performance of manufacturing firms in Kenya.	a)Inventory cost management b)Logistics cost management c)Joint risk managements	$Y = \alpha + \beta_4X_4 + \varepsilon$ Where: Y= Performance of Manufacturing Firms β_0 = constant β_4= Coefficient of X_4 X_4 =Supply chain cost and risk sharing alliances ε =Error term	Regression and Correlation Analysis; If P value is ≤ 0.05 research hypothesis is true	Questionnaire
To determine the moderating effect of business environment on the relationship between supply chain strategic alliances and performance of manufacturing firms	a)Transport infrastructure b)Political stability c)Knowledge creation	$Y = \alpha+\beta_1X+\beta_2(X*M) + \varepsilon$ Where: Y= Performance of Manufacturing Firms β_0 = Constant β = Beta Coefficients of X and M X = supply chain strategic alliances M = business environment ε =Error term	Regression and Correlation Analysis	Questionnaire

3.12 Ethical Considerations

Ethics gives reference to the researcher's conduct in observing the entitlements of subjects during research work (Saunder et al., 2009). Ethics have been viewed as ways of handling research that define normal and improper conduct during research. Ethical research ensures no harm to research subjects by ensuring that they do not suffer physical or psychological harm, stress, anxiety, and discomfort. This study observed ethical conduct by adhering to the university research ethics. The study was also registered and received a research permit from the National Council for Science, Technology, and Innovation before commencement of field work. During data 100 collection, the researcher offered clear explanation to respondents on the objective of the study and its relevance, and reassured respondents of confidentiality.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents the findings of the study on the relationship between supply chain strategic alliances and the performance of manufacturing firms in Kenya. The chapter covers the response rate of the study, the results from the pilot test and the demographic data. The main findings of the study are captured in two main sub-sections which are the descriptive analysis sand the inferential analysis. The findings are systematically captured based on the specific objectives of the study which were to assess the influence of supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances, supply chain cost and risk sharing alliances and the moderating effect of business environment on the performance of manufacturing firms in Kenya. Diagnostics tests which focuses on testing the assumptions of the regression model are also captured in this chapter.

4.2 Response Rate

A total of 234 questionnaires were issued from which 180 were properly filled and returned. This represents a response rate of 76.92%. The response rate of over 70 percent is ideal for statistical analysis according to Mugenda and Mugenda (2013). Chopra *et al*., (2018) opines that a return rate of 50% is acceptable to analyze and publish, 60% is good and above 70% is rated very good. The 76.92% response rate in this study was therefore considered very good and suitable for further analysis. The results are given in table 4.1 as shown below.

Table 4.1: Response Rate

Response	Frequency	Percent (%)
Returned	180	76.92
Unreturned	54	23.08
Total	**234**	**100**

4.3 Pilot Study Results

Pilot testing was conducted on 10% of the sample size. The respondents that were piloted were not included in the main study. According to Morgan (2017), a pilot study can be done using 5% to 10% of the sample size. According to Kothari (2004), 10% of study population is appropriate for pilot test in an academic social science research. The study therefore, used 10% of the sample size to carry out the pilot test. This gave a sample size of 23 respondents and helped to identify any ambiguous and unclear questions. Feedback received was used to fine tune the questionnaire before embarking on the actual data collection. Research experts were also consulted to review the instrument to ascertain content validity.

4.3.1 Validity

Validity is the ability of the research instrument to measure what it is supposed to measure (Gujarati, 2013). There are several types of validity tests that can be conducted on an instrument namely construct, content, face and criterion validity (Hair, 2018). Content validity can be determined by pre-testing the questionnaire by use of subject matter experts and peer review. Face validity was estimated by use of correlations between the objective and subjective items utilized in the scales.

Content validity was assessed through review and verification of the extant literature for the items contained in the questionnaire. Construct validity was assessed from the correlations of items. Positive and significant correlations are expected for convergent validity while for divergent validity, items are expected to positively and significantly correlate with one another, but not with items from other dimensions (Hair, 2018). The questionnaire was pilot tested in selected respondents to establish if the respondents can answer the questions without difficulty. The feedback received was used to fine tune the questionnaire before embarking on the actual data collection.

The study adopted Kaiser-Meyer Olkin (KMO) to test for construct validity. The corresponding significance values of the KMO values were significant since they fell under the 0.05 threshold for testing significance (p-value < 0.05). A Chi-Square

coefficient ranging from 16.403 to 84.892 and a p-value of less than 0.05 imply that the coefficients were significant. The results imply the statements regarding Supply chain technical alliances, Supply chain marketing alliances, Supply chain innovation alliances, Supply chain cost and risk sharing alliances, Business environment and organization performance of the firms are fit to produce valid results as shown in Table 4.4 below.

Table 4.2: Factorial Test Results for Construct Validity

Variables	KMO	Bartlett's Test of Sphericity Approx. Chi-Square	df	Sig.	Validity
Supply chain technical alliances	0.594	39.625	36	0.011	Valid
Supply chain marketing alliances	0.638	75.29	36	0.000	Valid
Supply chain innovation alliances	0.502	77.442	36	0.000	Valid
Supply chain cost and risk sharing alliances	0.574	84.892	36	0.000	Valid
Business environment	0.720	58.087	36	0.011	Valid
Performance	0.666	56.403	32	0.001	Valid

4.3.2 Reliability

According to Mugenda and Mugenda (1999), reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials. An instrument is reliable when it can measure a variable accurately and obtain the same results over a period of time. Reliability is the extent to which data collection techniques or analysis procedures would yield consistent findings (accuracy and precision of a measurement procedure) (Creswell, 2014). It establishes if the measure is able to yield the same results on other occasions, similar observations are reached by other observers and transparency in the raw data. Reliability was used to check the internal consistency of the data measuring instrument. Cronbach's Alpha (α) was used to test for the instrument reliability. This is a test of reliability proposed by Cronbach (1951).

Cronbach (α) is the measure of the extent to which all the variables in the scale are positively related to each other (Ravi & Shankar, 2015). According to Cronbach

(1951), the general assumption of the coefficient alpha is that the correlation between all the items under consideration in the study ought to be positive since they are measuring the same thing. This is to mean that if a correlation coefficient is negative, then the item is not reliable hence it has to be deleted/omitted from the research instrument. This further illustrates that a reliable coefficient should be between 0.00 and 1.00. A coefficient of 0.00 means the measurement is not consistency while a coefficient of 1.00 means the instrument is perfectly consistent.

Reliability analysis was done to evaluate survey construct using Cronbach's alpha. The results as shown in Table 4.3 revealed that the first variable under supply chain strategic alliances; Supply chain technical alliances had a Cronbach's alpha coefficient of 0.768. This was out of the 9 items under the variable. This implied that the items met the threshold hence they were adopted for the main study. For the second variable; Supply chain market alliances, the Cronbach's alpha coefficient was 0.782 out of 9 items. This being higher than the standard Cronbach's alpha coefficient of 0.70, the questions were concluded to have passed the reliability test hence adopted for the main data collection.

Supply chain innovation alliances and Supply chain cost and risk sharing alliances were the third and fourth independent variables respectively. The variables had Cronbach's alpha coefficients of 0.728 and 0.736 with 9 items respectively. Business environment as the moderating variable had a Cronbach's alpha coefficient of 0.772 with 9 items. To this end, they were all concluded to have met the threshold hence adopted for the main study. The dependent variable; performance of the manufacturing firms had a Cronbach's alpha coefficient of 0.788 with 7 items. This also had met the threshold hence all the 7 items were adopted for the main data collection. These findings are in line with Sekaran and Bougie (2016) who stated that coefficient greater than or equal to 0.7 is acceptable for basic research. Sekeran (2016) explains that reliability can be seen from two sides: reliability (the extent of accuracy) and unreliability (the extent of inaccuracy). He says that a 0.70 or higher alpha coefficient means that data are accurate and generalizable.

Table 4.3: Reliability Results

Variables	Cronbach's Alpha	Number of Items	Conclusion
Supply chain technical alliances	0.768	9	Reliable
Supply chain marketing alliances	0.782	9	Reliable
Supply chain innovation alliances	0.728	9	Reliable
Supply chain cost and risk sharing alliances	0.736	9	Reliable
Business Environment	0.772	9	Reliable
Performance	0.788	7	Reliable

4.3.3 Factor Analysis (Communalities)

According to Gujarati (2013), factor-loading values that are greater than 0.4 should be accepted and values below 0.4 should lead to collection of more data to help researcher to determine the values to include. Values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good and values between 0.8 and 0.9 are great, and values above 0.9 are superb. Factor analysis was conducted on statements regarding the variables. All the variables on the research tool were accepted to aid in collection of adequate and objective data to be used in the provide solution for the research problem. The communalities were computed and displayed in appendices III

4.4 Descriptive Analysis of the Study

This subsection covers the findings on analysis of the descriptive statistics. The study focused on the main variables of the study which are discussed systematically. The variables are the independent variables which are supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances and supply chain cost and risk sharing alliances, the moderating variable (business environment) and the dependent variable which is performance of the manufacturing firms in Kenya. The main descriptive statistics captured include standard deviation, mean, and percentages. Results were presented in tables and graphs.

4.4.1 Technical Alliances

The first objective of the study was to assess the relationship between supply chain technical alliances and performance of manufacturing firms in Kenya. The study sought to evaluate the influence of technical skills, technology sharing and knowledge sharing on the performance of manufacturing firms in Kenya. First, the respondents were asked to rate the degree of preference of the SC technical alliances indicators that they believe would improve performance of an organization. Secondly the respondents were asked to indicate the effectiveness of supply chain technical alliances system implementation in improving performance of an organisation. Thirdly, the respondents were asked to indicate their level of agreement on specific statements drawn from these aspects. The respondents were asked to indicate their level of agreement with specific statements on supply chain technical alliances based on a 5-points Likert's scale where 1 was strongly disagree, 2 was disagree, 3 uncertain (neutral), 4 was agree and 5 was strongly agree.

4.4.2 Technical Alliances Indicators in Order of Preference in Improving Performance

Respondents were required to rank the supply chain technical alliances indicators in order of preference. The ranking was based on a 5-point Likert scale as Least Preferred =1, Moderately Preferred =2, Neutral =3, Preferred =4 and strongly Preferred =5, SD = Standard deviation. The results were analyzed and displayed in Table 4.8. From the table 66% of the respondents ranked technical skills for supply chain technical alliances with (mean=3.64≈4, SD=1.240), this indicates that majority of the respondents rated the indicator as preferred for supply chain technical alliances. On technology sharing, the results indicated that 51% of the respondents rated the indicator as preferred for supply chain technical alliances (mean=3. 52≈4, SD=1.235). On knowledge sharing, the results indicated that 68% of the respondents rated the indicator as preferred for supply chain technical alliances (mean=3.89≈4, SD=1.133). Knowledge sharing was the most preferred in improving performance at 68%. This results agree with the study by Nielsen (2017), who stated that supply chain technical alliances generate a learning process that, in accelerating invention

and innovation creates dynamic economics. Through technical alliances, firms enhance their absorptive capacity. A firm's absorptive capacity is the firm's ability to acquire and value external knowledge (Ali, Kan, & Sarstedt, 2016). Absorptive capacity can further be said to be a set of organizational practices and procedures, by which firms acquire, assimilate, transform and exploit external knowledge that is, when firms partner with other firms to acquire the requisite skills needed in an industry (O'Dwyer & Gilmore, 2018).

Consequently, according to Prashantham and Yip (2019), a firm's technical alliances may influence it capabilities as well as other's opinion of its capabilities. This is what manufacturing firms would require meeting the market needs and ensuring that they have the adequate technology for continued growth and performance. According to Čirjevskis (2019), for entities to benefit from supply chain technical alliances, they ought to extensively collaborate with the suppliers such that they are able to manage the knowledge acquired from the suppliers while still managing their own internal knowledge to equip the employees with the newly acquired knowledge for efficiency and effectiveness.

The manufacturing companies benefit from their collaboration with suppliers through acquisition of the much required technical skills. The suppliers are at time with more advanced technical skills due to long period of experience or specialization in a given area. Collaborating with such suppliers ensures that the manufacturing firms learn and acquire the technical skills, thus stirring their operations into success. According to Isik and Tasgin (2017), technical alliances also ensures that the sharing of technology with the suppliers is enhanced, and this puts the manufacturing companies in a better state to compete and excel in the market. The advances in technology keeps on changing, thus through collaboration the manufacturing firms expand their knowledge-base, and this could be best achieved through the suppliers.

Table 4.4: Technical Alliances Indicators

Indicators	1	2	3	4	5	Mean	S D
Technical skills	6%	18%	9%	38%	28%	3.64	1.24
Technology sharing	2%	26%	21%	20%	31%	3.52	1.23
Knowledge sharing	2%	13%	17%	29%	39%	3.89	1.13
Average						**3.68**	**1.20**

4.4.3 Technical Alliances in Improving Performance of an Organization

Respondents were asked to state how effective supply chain technical alliances system is in improving performance of an organization and they respondent as shown in figure 4.3. The ranking was based on 5- point Likert scale. From figure 4.3, majority of the respondents about 54% indicated that the implementation of supply chain technical alliances system is effective, 27% indicated that implementation was somehow effective, 16% indicates that it was very effective and only 3% indicated that the implementation of supply chain technical alliances system was ineffective in improving performance of a firm.

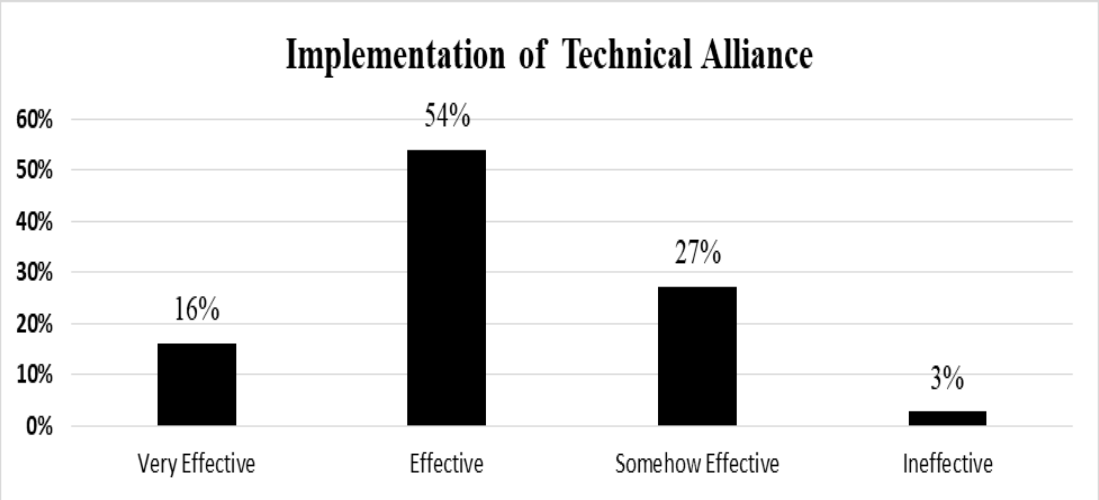

Figure 4.1: Implementation of Technical Alliances

4.4.4 Extent of Agreement on Technical Alliances Aspects

The respondents were asked to indicate their level of agreement with specific statements on supply chain technical alliances on their performance based on a 5-points Likert's scale as 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree. The conclusions on the Likert responses were made by combining 1 and 2 to imply disagreement, 3 to imply neutral decision and 4 and 5 to imply agreement. The results were analyzed and displayed in table 4.6. From table 4.6, 63% respondents agreed that they shared information with their suppliers so as to enhance their level of collaboration (mean=3.59≈4, SD=1.30). 82% of the respondents agreed the supply chain partners were effectively involved in making key decisions regarding the supply chain process (mean=4.16≈4, SD=0.78). Likewise, 76% of the respondents agreed that transfer or training in new technology as a result of the alliances enhanced capacity of manufacturing firms (mean=3.93≈4, SD=1.15).

The findings also indicate that 80% of the respondents agreed that there was talent enhancement as a result of the technological alliances in their firm (mean=3.96≈4, SD=1.207). The findings indicate that 82% of the respondents agreed that knowledge and expertise in the production alliances improved efficiency of their firm's production processes (mean=3.93≈4, SD=1.153). The findings indicate that 75% of the respondents agreed that they acquired new technical knowledge from their supply chain partners (mean=3.96≈4, SD=1.21). The findings also indicate that 77% of the respondents agreed that they can solve any practical problems based on knowledge gain from supply chain partners (mean=4.02≈4, SD=1.20). The findings indicate that 64% of the respondents indicated that they often do communicate industry development trends with supply chain partners (mean=3.863≈4, SD=1.35), whereas 62% of the respondents indicated that they share knowledge with supply chain partners to improve on the business performance level (mean=3.79≈4, SD=1.35). In conclusion, the average mean of the responses was 3.97 when viewed on a scale of five points presenting a standard deviation of 1.17. This means that the majority of the respondents agreed that supply chain technical alliances implementation leads to an improvement in the performance of the manufacturing firms in Kenya.

This is in line with Čirjevskis (2019), who found that for entities to benefit from supply chain technical alliances, they ought to extensively collaborate with the suppliers such that they are able to manage the knowledge acquired from the suppliers while still managing their own internal knowledge to equip the employees with the newly acquired knowledge for efficiency and effectiveness.

The manufacturing companies benefit from their collaboration with suppliers through acquisition of the much required technical skills. The suppliers are at time with more advanced technical skills due to long period of experience or specification in a given area. Collaborating with such suppliers ensures that the manufacturing firms learn and acquire the technical skills, thus stirring their operations into success. According to Isik and Tasgin (2017), technical alliances also ensures that the sharing of technology with the suppliers is enhanced, and this puts the manufacturing companies in a better state to compete and excel in the market. The advances in technology keeps on changing, thus through collaboration the manufacturing firms expand their knowledge-base, and this could be best achieved through the suppliers.

Table 4.5: Technical Alliances

Indicators	**1**	**2**	**3**	**4**	**5**	**Mean**	**S D**
Adequate and appropriate information is shared with suppliers to enhance continued collaboration.	11 %	11 %	15 %	35 %	28 %	3.59	1.30
Partners identified are effectively involved in making key decisions regarding the supply chain process.	0 %	3 %	16 %	45 %	37 %	4.16	0.78
Transfer/training in new technology as a result of alliances enhances capacity of our firm	6 %	8 %	10 %	39 %	37 %	3.93	1.15
There is talent enhancement as a result of technological alliances.	5 %	7 %	8 %	32 %	48 %	4.11	1.13
Shared knowledge and expertise in production alliances improves efficiency in the firms production processes.	5 %	5 %	8 %	36 %	46 %	4.13	1.09
We can acquire new technical knowledge from supply chain partners.	7 %	7 %	11 %	33 %	42 %	3.96	1.21
We can solve practical problems based on knowledge gain from supply chain partners.	7 %	7 %	10 %	31 %	46 %	4.02	1.20
We often communicate industry development trends with supply chain partners.	9 %	9 %	18 %	16 %	48 %	3.86	1.35
We share our knowledge with supply chain partners to improve the business performance level.	9 %	11 %	18 %	18 %	44 %	3.79	1.35
Average						**3.95**	**1.17**

4.4.5 Marketing Alliances

The second objective of the study was to assess the relationship between marketing alliances and performance of manufacturing firms in Kenya. The study sought to assess the influence of Co-branding, Co-marketing and sharing market on the performance of manufacturing firms in Kenya. The respondents were further asked to indicate their level of agreement or disagreement with specific statements on supply chain marketing alliances. Respondents were required to rank the supply chain marketing alliances indicators in order of preference by ranking the performance of the indicator as Least important =1, Moderately Important=2, Neutral =3, Important =4 and very Important =5. The results were analyzed and presented in subsections below.

4.4.6 Marketing Alliances Indicators in Order of Preference in Improving Performance

Respondents were required to rank the supply chain marketing alliances indicators in order of preference in improving performance. The 5- point Likert scale ratings were as follows: Least Preferred =1, Moderately Preferred =2, Neutral =3, Preferred =4 and strongly Preferred =5, S D = Standard deviation. The results were analyzed and displayed in table 4.7. From table 80% of the respondents rated Co-branding practices as preferred in improving performance (mean=4.19≈4, SD=0.94). Likewise, 66% of the respondents indicated that Co-marketing was the preferred strategy in improving performance (mean=3.89≈4, SD=1.02). In addition, 61% of the respondents indicated that sharing market are preferred in improving performance (mean=3.76≈4, SD=1.17). Based on the results, majority of the respondents indicated that Co-branding was highly rated in improving performance in manufacturing firms at 80%. This results agree with study by (Sanchez *et al.*,2020) who assert that the linkage and communication between an organization and its suppliers is valuable to customers. Co-branding adds value by making the right product available to customers at the right time, by ensuring the right supplies are provided at the right price and quantity to the firm. It also leads to seamless flow

of information between the organization and its suppliers and in the end its customers (Raul *et al*. 2019).

Table 4.6: Marketing Alliances Indicators in Order of Importance

Indicators	1	2	3	4	5	Mean	S D
Co-branding practices	0%	8%	12%	33%	47%	4.19	0.94
Co-marketing	0%	12%	22%	31%	35%	3.89	1.02
Complimentary products	0%	22%	17%	24%	37%	3.76	1.17
Average						**3.95**	**1.04**

4.4.7 Extent of Agreement on Marketing Alliances

Respondents were required to disagree or agree on the marketing alliances indicators in order of importance. The responses were based on a 5-point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The conclusions on the Likert responses were made by combining 1 and 2 to imply disagreement, 3 to imply neutral decision and 4 and 5 to imply agreement. The results were analyzed and displayed in table 4.11. The Table indicates that 68% of the respondents agreed that their firm engages in joint marketing and promotion of products with other firms (mean=3.89≈4, SD=1.0). The results also indicate that 69% of the respondents agreed that their firm engages in joint marketing alliances with firms that have well established customer relationships (mean=3.88≈4, SD=1.22). The results also indicate that 75% of the respondents agreed that the alliances of their firms are based on fast and cost effective ways to build market awareness and sales interest (mean=4.01≈4, SD=1.11).

The results indicate that 82% of the respondents agreed that their firm demonstrate similar values with their supply chain partners (mean=4.15≈4, SD=1.13). The results indicate that 77% of the respondents agreed that promotions as a result of strategic alliances improves market operations of their firm (mean=4.04≈4, SD=1.14). The results further indicate that 77% of the respondents agreed that strategic marketing

alliances result into efficient market distribution system that enhances the operations of their firm (mean=4.06≈4, SD=1.09).

The results indicate 79% of the respondents agreed that the branding system resulting from marketing alliances increases the ability of their firm to penetrate the market (mean=3.15≈4, SD=1.03). The results indicate 77% of the respondents agreed that strategic marketing alliances help improve timely delivery, product availability and product returns in the market for their firm (mean=4.01≈4, SD=1.12). The results indicate 71% marketing alliances enhance the capability of the firm of extending the market share (mean=3.95≈4, SD=1.15). In conclusion, the average mean of the responses was 4.02 when viewed on a scale of five points presenting a standard deviation of 1.12. This means that the majority of the respondents agreed that the supply chain marketing alliances implementation leads to an improvement in the performance of the manufacturing firms in Kenya.

This results agree with the study by Chung, Kim, and Kang (2019), who state that marketing ability requires complex and rich marketing knowledge and skills that will enable strategic alliances partners to coordinate their marketing resources and improve the overall performance of the alliances. This cooperation, therefore, is used as a shortcut to knowledge that the partners would not be able to create within an acceptable time or at acceptable costs themselves, e.g. the knowledge about foreign markets, distribution channels or consumers (Tewari et al., 2019). According to Sarkar, Chowdhury and Lavu (2019), strategic marketing alliances is essential to organizations in that it enhances production capacity of the manufacturing entities by saving them of time and costs of marketing as well as enabling the firms to enjoy services such as inventory services from the suppliers. The resources from the collaborators are also enhanced, thus strengthening the brand and image of the companies to the customers. Watts and Koput (2019) argue that co-marketing as a result of collaborative supply chain practices helps in increasing the traffic of flow of goods and services and increase the communication with the customers, thus enhancing their satisfaction. Using common distribution points, and sharing/bundling the marketing steps and strategies also are essential aspects of co-marketing alliances that significantly contribute to firm performance.

Table 4.7: Marketing Alliances Indicators in Order of Importance

Indicators	1	2	3	4	5	Mean	S D
Our firm engages in joint marketing/promotion alliances with other firms.	2%	12%	18%	31%	37%	3.89	1.10
Our firm engages in joint marketing alliances with firms that have well established customer relationships.	6%	11%	14%	28%	41%	3.88	1.22
Our alliances are best on fast and cost effective ways to build market awareness and sales interest.	4%	8%	13%	33%	42%	4.01	1.11
Our firm jointly demonstrates similar values with its supply chain partners	7%	3%	8%	33%	49%	4.15	1.13
Promotion resulting from strategic alliances improves market operation of our firm.	4%	10%	9%	33%	44%	4.04	1.14
Strategic marketing alliances result into efficient market distribution systems that enhance our firms operations.	3%	8%	13%	32%	44%	4.06	1.09
The branding system resulting from marketing alliances increases the ability of our firm to penetrate the market.	2%	7%	12%	31%	48%	4.15	1.03
Strategic marketing alliances help improve timely delivery, product availability and product returns for our firm.	5%	7%	12%	36%	41%	4.01	1.12
Marketing alliances enhances the capability of the firm of extending market share	5%	7%	17%	30%	41%	3.95	1.15
Average						**4.02**	**1.12**

4.4.8 Innovation Alliances

The third objective of the study was to assess the relationship between supply chain innovation alliances and performance of manufacturing firms in Kenya. The main aspects of Supply chain innovation alliances focused on the study were: New product development, Process efficiency, and Quality improvement. The respondents were asked to indicate their level of agreement with specific statements on Supply chain innovation alliances. This was based on a five-points Likert's scale where 1 was strongly disagree, 2 was disagree, 3 was neutral, 4 was agree and 5 was strongly agree.

4.4.9 Innovation Alliances Indicators in Order of Importance

Respondents were required to grade the innovation alliances in order of importance by using not important =1, least important=2, undecided=3, important =4 and very important =5. The results were analyzed and presented in table 4.9. From table 4.9, 51% of the respondents indicated that quality improvement is an important component for supply chain innovation alliances (mean=3.34≈4, SD=1.13). With regard to Process efficiency 80% of the respondents indicate that Process efficiency are important component for Supply chain innovation alliances (mean=4.19≈4, SD = 0.94). The remaining 70% of the respondents indicated that New product development is important for manufacturing firm (mean=4.11≈4, SD = 0.95). This results imply that all the indicators were rated as very important in improving performance of manufacturing firms. Process efficiency were rated as the most important in improving performance of firms at 80%.

This results are in line with study by Salisu and Bakar, (2018), who stated that Innovation is essential in accelerating organization growth and identifies external opportunities for firms to sustain their performance. Drewniak, (2020) study also points out that the innovation capability has been considered a key factor for pre-empting competition and a primary source of organizational renewal. Considering market diversity, fierce competition and reduced product life cycle, an increasing number of enterprises in the manufacturing sector are developing collaborative relationships which are mainly geared towards enhancing innovation and creativity. This synergy can be described as a type of relationship between organizations where the participants agree to invest resources together and make collaborative decisions to solve problems, achieve goals and share information, social responsibility and returns (Encarnacion, Victor & Rodrigo 2018). As defined by Encarnacion *et al*., supply chain innovation alliances is the process by which the manufacturing firms collaborate with the supplies to bring new innovations and improve the operations and processes for mutual benefit. This achieves efficiency and effectiveness in both partners, thus enhancing their continued competitiveness.

According to Burkhardt (2018), supply chain collaborative innovation alliances is essential in manufacturing firms in that it enables the firms to reduce opportunity cost and monitoring cost through process integration and mutual trust among supply chain members, so as to improve the sustainable performance. The supply chain process is becoming dynamic day by day, and the best way to have it benefit the company is through collaborating with other key players to have more divergence opportunities, and one of them is innovation. According to Mwangi (2019), innovation is a foundation, an inexhaustible motive force, and a winning weapon for enterprises to obtain their sustainable competitive advantages in the fierce market competition. Mwangi (2019) believe that a dynamic and flexible supply chain alliances can help companies to improve cooperation efficiency and innovation performance.

Table 4.8: Innovation Alliances

Indicators	**1**	**2**	**3**	**4**	**5**	**Mean**	**S D**
New product development	0%	5%	25%	24%	46%	4.11	0.95
Process efficiency	0%	8%	12%	33%	47%	4.19	0.94
Quality improvement	1%	34%	14%	34%	17%	3.34	1.13
Average						**3.88**	**1.01**

4.4.10 Innovation Alliances Implementation in Improving Firm Performance

Respondents were asked rate the effectiveness of supply chain innovation alliances they believe would improve performance of an organization on a scale of Very effective =1, effective=2, somehow effective=3 and ineffective=4.The results were displayed in figure 4.4. From figure below, majority about 61% rated the Supply chain innovation alliances as effective, 21% rated it somehow effective, 17% rated it very effective and only 1% rated it ineffective.

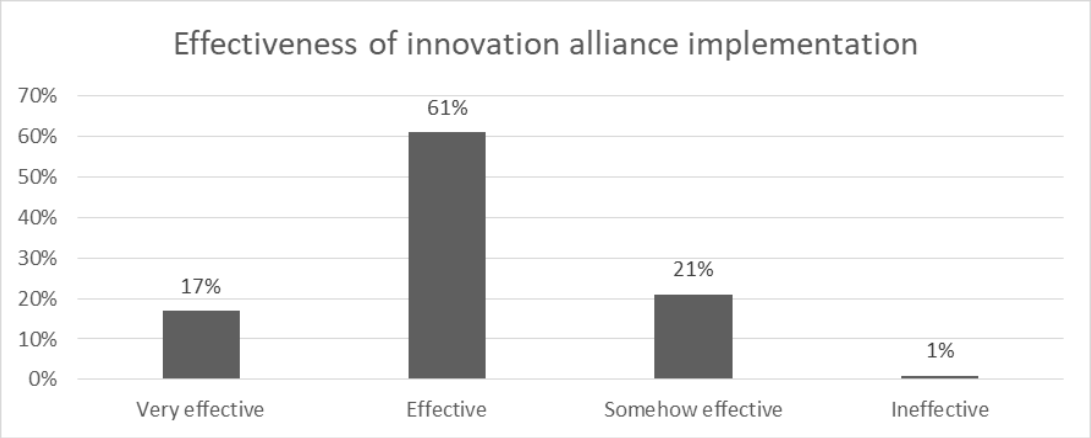

Figure 4.2: Effectiveness of Innovation Alliances Implementation

4.4.11 Innovation Alliances

The respondents required to agree or disagree with the statements on Supply chain innovation alliances implementation using 5-Point Likert Scale. The rated-on scale of 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree. The conclusions on the Likert responses were made by combining 1 and 2 to imply disagreement, 3 to imply neutral decision and 4 and 5 to imply agreement. The results were analyzed and displayed in table 4.10.

Table 4.10 indicates that 78% of the respondents agreed that their suppliers were adequately involved in designing and enhancing effectiveness of key supply chain processes (mean=4.08≈4, SD=0.96). The results also indicate that 78% of the respondents agreed that the process and operations in their firm are organized with consideration of their chain partners (mean=4.03≈4, SD=1.03). The results also indicate indicates that 80% of the respondents agreed that entering an alliance enhances the level of innovativeness of a manufacturing firm (mean=4.11≈4, SD=1.02). The results indicate that 80% of the respondents agreed that alliances in R&D enhances the level of quality in their production (mean=4.17≈4, SD=0.96). The results indicate that 63% of the respondents agreed that there was enhance quality of goods produced by their firm (mean=4.16≈4, SD=1.02). The results indicate that 77% of the respondents agreed that enhancing quality assurance capabilities reduces

the level of manufacturing defects in their firms (mean=3.92≈4, SD=1.15). The results indicate 77% of the respondents agreed that the number of patents had increased in their after entering into supply chain partnerships (mean=4.26≈4, SD=1.08). The results indicate 73% of the respondents agreed that the number of self-developed products had increased as result of going into supply chain partnerships (mean=4.11≈4, SD=1.24). The results further indicate 73% of the respondents agreed that product development had accelerated after going into supply chain partnerships (mean=4.11≈4, SD=1.17).

In conclusion, the average mean of the responses was 4.11 when viewed on a scale of five points presenting a standard deviation of 1.07. This means that the majority of the respondents agreed that the Supply chain innovation alliances implementation leads to an improvement in the performance of the manufacturing firms in Kenya.

As defined by Encarnacion *et al., (*2018) supply chain innovation alliances is the process by which the manufacturing firms collaborate with the supplies to bring new innovations and improve the operations and processes for mutual benefit. This achieves efficiency and effectiveness in both partners, thus enhancing their continued competitiveness.

According to Burkhardt (2018), supply chain collaborative innovation alliances is essential in manufacturing firms in that it enables the firms to reduce opportunity cost and monitoring cost through process integration and mutual trust among supply chain members, so as to improve the sustainable performance. The supply chain process is becoming dynamic day by day, and the best way to have it benefit the company is through collaborating with other key players to have more divergence opportunities, and one of them is innovation. According to Macharia (2018), innovation is a foundation, an inexhaustible motive force, and a winning weapon for enterprises to obtain their sustainable competitive advantages in the fierce market competition. Macharia believe that a dynamic and flexible supply chain alliances can help companies to improve cooperation efficiency and innovation performance.

Table 4.9: Innovation Alliances Implementation

Indicators	1	2	3	4	5	Mean	S D
Supplier are adequately involved in designing and enhancing effectiveness of key supply chain process in our firm	0%	10%	12%	38%	40%	4.08	0.96
The processes and operation in our firm are organized with consideration of our supply chain partners	2%	11%	9%	40%	38%	4.03	1.03
Entering an alliance enhances the level of innovativeness of a manufacturing firm	2%	8%	10%	37%	43%	4.11	1.02
Alliances in R&D enhance the level of quality in production	2%	7%	9%	39%	44%	4.17	0.96
There is enhanced quality of goods that our firm produces	2%	8%	10%	32%	48%	4.16	1.02
Enhancing the quality assurance capabilities reduces the level of manufacturing defect in our firm	3%	8%	26%	19%	44%	3.92	1.15
The number of patents has increased after we built supply chain partnerships	2%	7%	14%	16%	61%	4.26	1.08
The number of self-developed products has increased after we built supply chain partnerships	5%	10%	12%	15%	58%	4.11	1.24
Product development has accelerated after we built supply chain partnerships	2%	12%	13%	18%	54%	4.11	1.17
Average						**4.11**	**1.07**

4.4.12 Cost and Risk Sharing Alliances

The fourth objective of the study was to establish the relationship between cost and risk sharing alliances and performance of manufacturing firms in Kenya. The respondents were asked to comment on statements regarding supply chain cost and risk sharing alliances indicators which include inventory cost management, logistics cost management and joint risk management. The responses were rated on a Likert's scale ranging from; 1 = strongly disagree to 5 = strongly agree.

4.4.13 Cost and Risk Sharing Alliances Indicators in Order of Preference

The cost and risk sharing alliances indicators were ranked in order of their importance in improving performance of manufacturing firms on a scale of 1= Least important (LI), 2= moderately Important (IP), 3= Undecided, 4= Important (I) and 5=

Very Important (VI). The results of ranking were presented in table 4.14. From the table, 76% of the respondents indicated that inventory cost management are an important component for supply chain innovation alliances in improving performance (mean=4.04≈4, SD = 1.10). With regard to logistic cost management 73% of the respondents indicate that logistics cost management is important component for Supply chain cost and risk alliances (mean=4.02≈4, SD = 1.16). Besides, 75% of the respondents indicated that joint risk management is important in Supply chain innovation alliances in improving performance of manufacturing firms (mean=4.03≈4, SD = 1.10).

Table 4.10: Cost and Risk Sharing Alliances Indicators

Indicators	**1**	**2**	**3**	**4**	**5**	**Mean**	**S D**
Inventory cost management	0%	17%	6%	32%	44%	4.04	1.10
Logistics cost management	1%	17%	9%	26%	47%	4.02	1.16
Joint risk management	0%	17%	7%	31%	44%	4.03	1.10
Average						**4.03**	**1.12**

4.4.14 Risk Sharing Alliances in the Organization

Respondents were asked to grade the supply chain cost and risk sharing alliances strategies in improving performance of manufacturing firms on a 5-Point Likert scale as unsuccessful =1, moderately successful=2, successful=3 and very successfully =4. The results were displayed in figure 4.5. From the table, 76% of the respondents indicated that inventory cost management sharing were successful in improving performance of an organizations (mean=4.04≈4, SD = 1.10). Again,73% of the respondents indicate that logistics cost management sharing was a successful strategy in improving performance of an organization (mean=4.02≈4, SD = 1.16). In addition, 75% of the respondents indicated that joint risk management was a very successful strategy in improving performance of an organization (mean=4.03≈4, SD = 1.10).

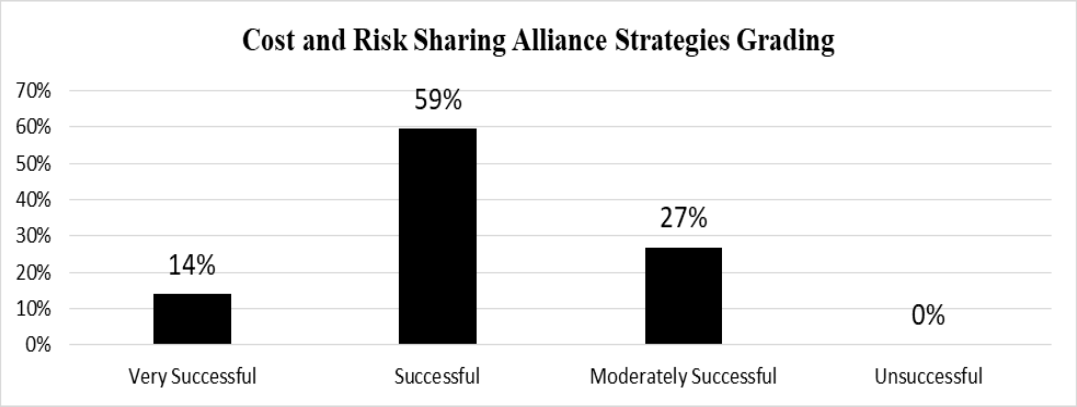

Figure 4.3: Cost and Risk Sharing Alliances Strategies Grading

4.4.15 Cost and Risk Sharing Alliances Indicators

Respondents were asked to agree or disagree with statements on cost and risk sharing alliances indicators in an organization based on a 5-Point Likert scale as 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree. The conclusions on the Likert responses were made by combining 1 and 2 to imply disagreement, 3 to imply neutral decision and 4 and 5 to imply agreement. The results were displayed in table 4.12.

Table 4.12 indicates that 87% of the respondents agreed that their firm production costs has been reducing owing to their supply chain practices (mean=4.24≈4, SD=0.73). The results also indicate that 70% of the respondents agreed that their inventory levels have reduced leading to a reduction in the inventory costs and minimal stock outs (mean=3.84≈4, SD=1.13). The results also indicate indicates that 84% of the respondents agreed cost sharing had enabled their firm to invest more on other productive areas (mean=4.18≈4, SD=0.93).

The results indicate that 78% of the respondents agreed that the aspect of sharing the cost of production enhances the performance of manufacturing firms within the alliances (mean=4.06≈4, SD=1.06). The results indicate that 79% of the respondents agreed that their firm achieves storage benefits from their logistic partners (mean=4.12≈4, SD=0.97). The results indicate that 82% of the respondents agreed

that their firm achieves transport objectives from their logistic partners (mean=4.15≈4, SD=0.95).

The results indicate 78% of the respondents agreed that their firm achieves procurement objectives from their logistic partners (mean=4.09≈4, SD=1.02). The results indicate 71% of the respondents agreed that logistic alliances enable their firm to save om storage and transport expenses (mean=3.87≈4, SD=1.11). The results indicate 78% of the respondents agreed there was enhanced procurement practices in their firm (mean=4.09≈4, SD=1.03). In conclusion, the average mean of the responses was 4.07 when viewed on a scale of five points presenting a standard deviation of 0.99. This means that the majority of the respondents agreed that the supply chain cost and risk sharing alliances strategies lead to an improvement in the performance of the manufacturing firms in Kenya.

This agrees with study by Dyreng *et al*. (2015) that views cost sharing as an agreement between two parties to share the cost of developing an intangible asset or patents. Such an arrangement is used to reduce or avoid taxes on the transfer of assets (Dyreng *et al*. 2015). That's often the basis of an alliances: to reap the synergies of sharing capital and operating costs while tapping a bigger market than either partner could achieve independently. Strategic alliances can be a transaction cost minimizing trading organization, under certain circumstances, while conserving economic rents these specific arrangements generate. Alliances have played an increasing role in the development of firms' strategies arising as a rational economic solution to market imperfections caused by high ownership costs and information asymmetry. Thus, most of these alternative institutional forms can be assigned characteristics, which are intermediate between those of the market and the hierarchy and can be viewed as vertical or horizontal integration of economic activities, while ownership remains separate, and preserve the flexibility and economic rents these specific arrangements generate (Doz & Gary, 2012).

Risk sharing involves a process in which the cost of the consequences of a risk is distributed among several participants in an enterprise, such as in syndication (Chang, Lin & Ma, 2015). When a market has just opened up, or when there is much

uncertainty and instability in a particular market, sharing risks becomes particularly important.

Firms bears the abilities of joining or hiring logistic alliances groups with the aim of empowering the alliance group to establish supply chains assistances as well in offering firms with advisory services to place them at better performance and competitive level. Emami *et al.,* (2022) notes that the demands for logistic alliance is necessitated by the firms needs of transporting produces services or products to long distance buyers and consumers. Firms opt for logistic alliances since they find difficulties in acquiring resources, vehicles and in performing management activities necessary for establishing an effective supply chain while at the same time managing costs. Therefore, such firms engage logistic providers and form logistic alliances which helps the firms in complementing business functions through simplifying supply chain operations. Strategic logistic alliances serve as means through which the parties involved in the alliance improves their brand awareness and capital without necessarily spending more time or incurring a major financial expenditure (Emami *et al.,* 2022).

Joto (2018) highlights that firms engaged in logistic alliances gain from reduced risks and costs since there is distribution across the involved parties in the alliance. A firm can benefit from higher economies of scale in the alliance since there is a high possibility of increasing volume of production occasioned by a reduction in per unit cost. Additionally, the parties involved in the alliances can jointly utilize their specialization in creating additional value beneficial to the market.

Table 4.11: Cost and Risk Sharing Alliances Strategies

Indicators	1	2	3	4	5	Mean	S D
Our firm production costs have been reducing arising from our supply chain alliances	1%	1%	11%	49%	38%	4.24	0.73
Our inventory levels have reduced thus leading to reduced inventory costs and minimal stock outs due to alliances	4%	11%	14%	37%	33%	3.84	1.13
Cost sharing enables the firm to invest more in other productive areas	1%	7%	7%	41%	43%	4.18	0.93
The aspect of sharing cost of production enhances the performance of manufacturing firms within the alliances	2%	10%	10%	35%	43%	4.06	1.06
Our firm achieves storage benefits from our logistic partners	1%	9%	12%	36%	43%	4.12	0.97
We achieve transport objectives from our logistic partners	1%	7%	10%	39%	43%	4.15	0.95
We achieve procurement objectives from our logistic partners	2%	7%	13%	34%	43%	4.09	1.02
Logistic alliances enable the firm to save on storage and transport expenses	3%	13%	14%	36%	35%	3.87	1.11
There is enhanced procurement practices in our firm	2%	8%	12%	34%	43%	4.09	1.03
Average						**4.07**	**0.99**

4.4.16 Business Environment

The study sought to establish the moderating role of business environment and performance of manufacturing firms in Kenya. The study sought to investigate the influence of transport infrastructure, political stability and knowledge creation on performance of manufacturing firms in Kenya. The respondents were asked to indicate their level of agreement or disagreement on specific statements regarding influence of quality control and certifications on the performance of manufacturing

firms in Kenya. The responses were rated on a 5-point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree.

4.4.17 Effectiveness of Business Environment in Improving Performance

The study further sought to establish the respondents rating of the influence of business environment on the performance of manufacturing firms in Kenya. The results as shown in Table 4.13 indicated that 47.22% of the respondents claimed that improvement in business environment is very important in improving performance of an organization. Further 33.33% of the respondents rated business environment to be important in improving performance of the organization. However, 7.78% of the respondent rate business environment to be least important in influencing performance whereas 11.67% rated it as somehow important for the organization performance.

Table 4.12: Rating the Effectiveness of Business Environment

Category	Frequency	Percentage
Very Important	85	47.22%
Important	60	33.33%
Somehow Important	21	11.67%
Not Important	14	7.78%
Total	180	100%

4.4.18 Significance of Business Environment Aspects in Performance of Firms

Secondly the respondents were asked to rank business environment aspects of transport infrastructure, political stability and knowledge creation based on their significant in affecting performance of their firms. Table 4.14 shows that results by respondents on ranking business environment in order of preference. Tabulated results indicated that 15.6% of the respondents found transport infrastructure to be moderately significant in improving performance of their firm. However, 48.8 % of

the respondent found the same to be significant whereas 26.2% of the respondents ranked indicated that they valued strongly transport infrastructure. Only 0.9% of the respondents agreed that transport infrastructure was insignificant. Further results indicated that 20.5% regarded preferred political stability as moderately significant whereas 58.3% found it to be significant in affecting performance of their firm. 13.4 % of the respondents ranked indicated that they valued strongly political stability and only 0.9% of the respondents rated it as insignificant to their performance. The results also show that 33.1% of the respondents found rated knowledge creation to be highly significant in their operations while 42.5% of the respondents rated it as significant. Only 0.9% found it to be insignificant.

Table 4.13: Rating the Aspects of Business Environment

	Transport Infrastructure	**Political Stability**	**Knowledge Creation**
Insignificant	0.9%	0.9%	0.9%
Least Significant	8.8%	7.2%	2.3%
Moderately significant	15.6%	20.5%	21.3%
Significant	48.8%	58.3%	42.5%
Highly Significant	26.2%	13.4%	33.1%
Total	100%	100%	100%

4.4.19 Extent of Agreement on Business Environment Aspects

Lastly respondents were required to state the extent to which they agree or disagree with the following statements on business environment based on a 5-point Likert on a scale of 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree. The conclusions on the Likert responses were made by combining 1 and 2 to imply disagreement, 3 to imply neutral decision and 4 and 5 to imply agreement. The results were displayed as shown in table 4.15.

Table 4.16 indicates that 81% of the respondents indicated that transport infrastructure improves productivity (mean=4.14≈4, SD=0.80). The results also indicate that 87% of the respondents indicated political stability improved productivity (mean=4.25≈4, SD=0.69). The results also indicate indicates that 70% of the respondents indicated knowledge creation improved productivity (mean=3.86≈4, SD=1.09).

The results indicate that 77% of the respondents indicated that transport infrastructure improves performance (mean=4.03≈4, SD=1.17). The results indicate that 51% of the respondents indicated that political stability improves performance (mean=3.50≈4, SD=0.96). The results indicate that 54% of the respondents indicated that knowledge creation improved performance (mean=2.39≈2, SD=1.33).

The results indicate 82% of the respondents indicated that transport infrastructure increases gaining new markets (mean=4.41≈4, SD=0.98). The results show that 39% of the respondents indicated that political stability increased gaining new markets (mean=3.10≈3, SD=1.35). The results indicate 42% of the respondents indicated that knowledge creation increased gaining new markets (mean = 2.86≈3, SD=1.57).

In conclusion, the average mean of the responses was 3.62 when viewed on a scale of five points presenting a standard deviation of 1.10. This means that the majority of the respondents agreed that the business environment improved performance of the manufacturing firms. These results conquer with the findings of a study by (Ma & Ding, 2018), that infrastructure quality has a big impact on all areas of the economy. According to report by (KNBS, 2019), low quality infrastructure and limited transport and trade services can highly increase logistical and transaction costs, rendering otherwise competitive products uncompetitive and limit rural production and people's access to market, this in turn has negative impact on economic activity and poverty reduction. A large number of empirical studies have illustrated the impact of infrastructure on economic performance. Studies by (Zhang, 2017) suggest that Africa's infrastructure gap is an important growth bottleneck with a negative impact on productivity and the overall competitiveness of the region.

Manufacturing firms face tremendous pressures to innovate and create knowledge as their products undergo rapid cycles of production and obsolescence (Raul *et al.*, 2019). Knowledge management systems (KMS), that support organizational knowledge management, have rapidly become ubiquitous as firms seek new ways to increase productivity, performance, and agility (Moqbel & Nah, 2017; Zhang & Venkatesh, 2017). Many organizations have implemented KMS to codify the knowledge that they contain to build and exploit their competitive advantages (Kamukama, 2017). KMS represent important platforms that allow employees to store, share, locate, retrieve, and use information resources. Intangible intellectual assets, referred to as knowledge and information, have rapidly replaced physical assets as the most valuable components in firms' productivity in today's knowledge economy (Hye *et al*., 2020).

Table 4.14: Business environment

Indicators	**1**	**2**	**3**	**4**	**5**	**Mean**	**S D**
Transport Infrastructure improves productivity	0%	3%	16%	44%	37%	4.14	0.80
Political Stability in operating environment improves productivity	0%	1%	11%	49%	38%	4.25	0.69
Knowledge Creation improves firm performance	3%	11%	16%	38%	32%	3.86	1.09
Transport infrastructure increases firm performance	6%	8%	10%	31%	46%	4.03	1.17
Political Stability improves performance	3%	9%	37%	37%	14%	3.50	0.96
Knowledge Creation improves performance	36%	18%	27%	9%	10%	2.39	1.33
Transport Infrastructure increase gaining new markets	2%	3%	12%	16%	66%	4.41	0.98
Political Stability increases gaining new markets	16%	13%	39%	8%	24%	3.10	1.35
Knowledge Creation increases gaining new markets	31%	13%	18%	14%	24%	2.86	1.57
Average						**3.62**	**1.10**

4.4.20 Performance of Manufacturing Firms

Three measures of performance were used, productivity, market share and profitability. Firstly, the respondents were asked to state their agreement or disagreement with the statements on performance of the firm using a five level likert scale (1- strongly disagree, 2-disagree, 3-neutral, 4- agree, and 5- strongly agree). The outcomes are indicated in Table 4.16. 108 The results reveal that majority of the respondents agreed with the statement that there has been an increase in the volume of units produced by the company in the last five years (56.7.3%), they have enough raw materials in stock in time of production (65.4%), that materials for production arrive consistently on time for production (77.6%), and that their production is always on time (57.3%). Further, 62.7 % of the respondents cited that their firm is able to accurately and adequately predict and respond to market changes and demand, whereas 72% noted that alliances have enabled them to stream line their manufacturing operations, thereby minimizing delays and reduced the production costs. In addition, 77.7% % of the respondents agreed that their company had been meeting the quantity of productions needed in the market for the past five years. The aggregate mean of 3.62 revealed that majority of the respondents agreed with most of the statements about performance of the firm. This means that the manufacturing firms have been experience growth in performance based on the level of productivity. Furthermore, the overall standard deviation of 1.1 implied that the data was distributed around the mean. This denoted that majority of the respondents' shared similar views in regard to most of the statements on firm performance.

Table 4.15: Productivity

Statement	SD	D	N	A	SA	Mean	SD
There has been an increase in the volume of units produced by the company for the past five years	8.7%	26.8%	7.9%	30.7%	26%	2.61	1.35
We have enough raw materials in stock at the time of production.	15.7%	11.8%	7.1%	27.6%	37.8%	2.46	1.35
Material for production arrive consistently	17.6%	17.5%	10.2%	37.7%	39.9%	2.51	1.28
Our production is always on schedule	18.1%	13.4%	11.2%	21.6%	35.7%	2.39	1.47
Our firm is able to accurately predict and respond to market changes and demand.	13.4%	17.1%	6.8%	34.8%	27.9%	2.41	1.46
Alliance have enabled us to stream line our manufacturing operations, thereby minimizing delays and reduced the production costs	3.4%	8.1%	16.5%	37.8%	34.2%	3.21	1.27
The company has been meeting the quantity of productions needed in the market for the past five years	7.9%	13.4%	7.1%	33.1%	38.6%	2.18	1.29

4.4.21 Profitability

Secondly the participants were further asked to indicate the rate at which revenue/income has increased in their firm over the last 5 years. The findings in Table 4.17 reveal that 26.7% of the respondents noted that in 2018, their firms' revenue increased by 41- 60%. In 2019, 52% noted that the revenue grew by 0-20%. In 2020, the revenue according to 60.3% of the respondents increased by 0-20%. In 2021, the productivity levels increased between 0-20% according to 36.4% of the respondents as compared to 2022 where 33.1% of the respondents cited an increase of between 21-40%

Table 4.16: Revenue

Year	0-20%	21-40%	41-60%	61-80%	81-100%
2018	16.3%	17.3%	33.7%	26.7%	2.0%
2019	52.0%	26.7%	6.4%	10.4%	4.5%
2020	60.3%	18.0%	10.0%	10.4%	1.3%
2021	36.4%	23.4%	20.7%	15.8%	3.7%
2022	27.6%	33.1%	15.9%	16.8%	6.6%

4.4.22 Market Share

Lastly, the respondents were asked to indicate the rate of average growth in market share of their firm in the last five years. The results in Table 4.19 reveal that 44.7% of the respondents cited that in 2018, their firms' market share grew by 11-15%. In 2019, 44.8% noted that the market share grew by 11-15%. In 2020, the market share according to 59% of the respondents grew by 0-5%. The results also show that in 2021, 35.7% of the respondents cited their market share has increased by 11-15% as compared to 2022 where 34.9% of respondents cited 11-15% increase.

Table 4.17: Market Share

Year	0-5%	6-10%	11-15%	16-20%	21-25%
2018	15.2%	23.3%	44.7%	10.9%	5.9%
2019	11.7%	27.7%	44.8%	10.4%	5.4%
2020	59.0%	24.9%	10.4%	3.4%	2.3%
2021	11.7%	30.4%	35.7%	17.4%	4.8%
2022	12.2%	30.1%	34.9%	16.8%	6.0%

4.4.23 Other Factors Affecting Performance of Manufacturing Firms

The respondents were asked to suggest other factors that affect performance of their firm. Based on the responses, the following factors were identified as highlighted in the table below. From table 4.20, it was noted the most considered predictor of performance was prevailing competition given by 21.11%. The second most

considered factor on performance was employment of lean supply chain strategies by 16.67% which is followed by government policies at 15.56%. The least considered predictor of performance was the adoption of green supply chain practices at 7.21%

Table 4.18: Factors affecting performance of firms

Factors	Frequency	Percentage
Adoption of green supply chain practices	13	7.21
Supply chain quality management	20	11.11
Government policies	28	15.56
Employing lean supply chain strategies	30	16.67
Prevailing competition	38	21.11
Supportive organizational climate	23	12.78
Employing agile supply chain practices	28	15.56
Total	**180**	**100**

These findings agree with Nteere, Namusonge, and Mukulu, (2012) that performance measurement is important for organization in ensuring continuous improvement and in determining whether or not an organization is achieving its objectives. Performance standards when adopted can provide the decision-makers in the supply chain department with unbiased and objective information regarding the performance of the supply chain function. The evaluation or measurement of supply chain performance has always been a vexing problem for procurement professionals (Chopra & Meindl, 2018). He asserts that traditionally; firms concentrate on analyzing their own internal trends which does not portray the true picture on how they compare well with competitors. Such an approach ignores what the competitors are doing (Olendo & Kavale, 2014). Performance is based on interaction along the supply chain and is evaluated from where raw materials are sourced to where final products are consumed (Gawankar, 2016).

4.5 Hypotheses Testing

The acceptance/rejection format was that, if the p value is less than 0.05, the H_0 is rejected but if it's more than 0.05, the H_0 fails to be rejected. The null hypothesis **H_0**: was that the effect of supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances and supply chain cost and risk sharing alliances on performance of manufacturing firms in Kenya is not statistically significant. Likewise, the moderating effect of business environment on performance of manufacturing firms in Kenya is not statistically significant.

Based on the multiple regression findings, null hypotheses were rejected since the P values were less than 0.05 and thus, the effect of supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances and supply chain cost and risk sharing alliances on performance of manufacturing firms in Kenya is statistically significant. The null hypothesis was also rejected as the moderating the effect of business environment on supply chain strategic alliances and performance of manufacturing firms in Kenya is statistically significant.

The first null hypothesis (H01) predicted that supply chain technical alliance has no effect on the performance of manufacturing firms in Kenya.

Hypothesis 1: H_0: Technical alliances do not improve performance of manufacturing firms in Kenya.

The computed F statistic was 130.695 where the value was greater than the F critical value at 3.909 and 0.000 significance level, which is lower than the conventional 0.05. This implies there is goodness of fit in the model. To this end we thereby reject the null hypothesis that supply chain technical alliances does not improve performance of manufacturing firms.

$$\mathbf{F_{statistic} = 130.695 > F_{critical} = 3.909\ (1, 178).}$$

The second null hypothesis (H02) predicted that supply chain marketing alliances has no effect on the performance of manufacturing firms in Kenya.

Hypothesis 2: H_0: Supply chain marketing alliances does not improve performance of manufacturing firms in Kenya.

The computed F statistic of 153.463 where the value was greater than the F critical value of 3.909 at 0.000 significance level which is below the 0.05 threshold. Therefore, we reject the null hypothesis that supply chain marketing alliances does not improve performance of manufacturing firms in Kenya.

$$\mathbf{F_{statistic} = 153.463 > F_{critical} = 3.909\ (1, 178).}$$

The third null hypothesis (H03) predicted that supply chain innovation alliances has no effect on the performance of manufacturing firms in Kenya.

Hypothesis 3: H_0: Innovation alliances does not improve performance of manufacturing firms in Kenya.

The calculated F statistic of 106.347 where the value was greater than the F critical value of 3.909 at 0.000 significance level which is lower than the conventional 0.05. This implies that we reject the null hypothesis that states that Supply chain innovation alliances does not improve performance of manufacturing firms in Kenya.

$$\mathbf{F_{statistic} = 106.347 > F_{critical} = 3.909\ (1, 178).}$$

The fourth null hypothesis (H04) predicted that supply chain risk and cost sharing alliances has no effect on the performance of manufacturing firms in Kenya.

Hypothesis 4: H_0: Supply chain cost and risk sharing alliances does improve performance of manufacturing firms in Kenya.

The calculated F statistic of 151.472 where the value was greater than the critical value of 3.909 at 0.000 significance level which is lower than the conventional 0.05. To this end, we reject the null hypothesis that states that supply chain cost and risk sharing alliances does not improve performance of manufacturing firms in Kenya.

$$\mathbf{F_{statistic} = 151.472 > F_{critical} = 3.909\ (1, 178).}$$

The fifth null hypothesis (H05) predicted that business environment have no effect on the effect of supply chain strategic alliances on the performance of manufacturing firms in Kenya.

Hypothesis 5: H_0: Business environment has no significant moderating effect on the relationship between supply chain strategic alliances and performance of manufacturing firms in Kenya.

The F statistic of 169.52 where the value was greater than the F critical value of 2.669 at 0.002 significance level which is lower than the standard 0.05. Therefore, we reject the null hypothesis that states business environment has no significant moderating effect on the relationship between supply chain strategic alliances and performance of manufacturing firms in Kenya.

$$\mathbf{F_{statistic} = 169.52 > F_{critical} = 2.669\ (3, 176).}$$

Table 4.19: Hypotheses Test Results

Research objective	Hypothesis	Rule	P-value	Results of the hypothesis
To determine the influence of supply chain technical alliances on performance of manufacturing firms in Kenya	**H_0**: Supply chain technical alliances has no effect on performance of manufacturing firms in Kenya.	When p value is less than 0.05, reject the null hypothesis	0.000	Rejected
To establish the influence of supply chain marketing alliances on performance of manufacturing firms in Kenya.	**H_0**: Supply chain marketing alliances has no effect performance of manufacturing firms in Kenya.	When p value is less than 0.05, reject the null hypothesis	0.000	Rejected
To determine the influence of supply chain innovation alliances on performance of manufacturing firms in Kenya.	**H_0**: Supply chain innovation alliances has no effect on performance of manufacturing firms in Kenya.	When p value is less than 0.05, reject the null hypothesis	0.000	Rejected
To establish the influence of supply chain cost and risk sharing alliances on performance of manufacturing firms in Kenya.	**H_0**: Supply chain cost and risk sharing alliances has no effect on performance of manufacturing firms in Kenya.	When p value is less than 0.05, reject the null hypothesis	0.000	Rejected
To determine the moderating role of business environment on the influence of supply chain strategic alliances and performance of manufacturing firms in Kenya.	**H_0**: Business environment does not moderate the relationship of supply chain strategic alliances and performance of manufacturing firms in Kenya.	When p value is less than 0.05, reject the null hypothesis	0.002	Rejected

4.6 Diagnostic Testing

Diagnostics sought to identify the possibility of bias that may occur in research. These tests include the normality test, linearity test, multicollinearity test, test for heteroscedasticity and test for autocorrelation as discussed below. The diagnostic tests were carried out on all the independent variables (supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances and supply chain cost and risk sharing alliances), dependent variable (performance of manufacturing firms in Kenya) and on the moderating variable (business environment)

4.6.1 Normality Test

The Shapiro–Wilk test is more suitable for limited data (50 observations), but it can also be used on significantly bigger survey dimensions, whereas the Kolmogorov–Smirnov test is used for 50 observations. The null hypothesis states that the data are drawn from a normally distributed population (Mishra wet al., 2019). Because the sample size was greater than 50, the Shapiro-Wilk and Kolmogorov–Smirnov tests were used to determine data normality. The significance value, as well as the skewness and kurtosis, were calculated in this case. For the data to be normally distributed, the probability value (sig) must be greater than 0.05 (Altman & Bland, 1995; Ghasemi & Zahediasl, 2012).

The results in Table 4.21 indicate that all the variables indicated absence of abnormal data observation points. This is because of the respective corresponding p-values to be greater than the accepted threshold of 0.05 (see Figure 4.6 for graphical presentation). Thus, the null hypothesis was accepted as the data is normally distributed. The results are likewise supported by a histogram plotting the normality results as shown in figure 4.6.

The null hypothesis states that the data is normally distributed. From the study it was noted that there were values that indicated the absence of abnormality of data points due to the p- values that were greater than 0.05. Given that there was higher response rate and that the problem of abnormality could not be a challenge, normality was

assumed. Thus, the null hypothesis was accepted and the data be normally distributed.

Table 4.20: Normality Results

Tests of Normality	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Technical alliances	0.097	180	0.085	0.979	180	0.094
Marketing alliances	0.126	180	0.272	0.967	180	0.281
Innovation alliances	0.102	180	0.096	0.976	180	0.105
Cost and risk sharing alliances	0.116	180	0.110	0.978	180	0.119
Business environment	0.129	180	0.049	0.921	180	0.058
Performance of Manufacturing Firms	0.156	180	0.056	0.944	180	0.065

a Lilliefors Significance Correction

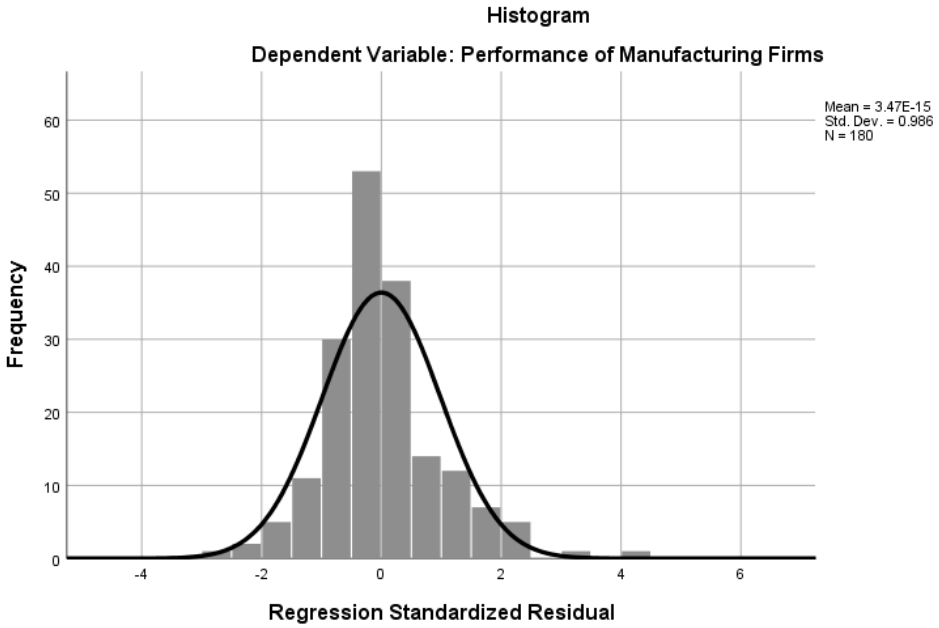

Figure 4.4: Normality Plot

4.6.2 Linearity Test

Linearity test was conducted to explore the conditions that guide the modeling and interpretation of the data sets to conduct regression analysis which was set to establish the influence of supply chain strategic alliances and performance manufacturing firms in Kenya. Good research in regression model is that there should be linear relationship between the independent and dependent variable. Decision is reached based on a scatter graph which indicates that if majority of the points form a linear pattern from bottom left to top right, then the two variables are linear (Gujarati 2013). The results in Figure 4.7 to Figure 4.10 indicated that the relationship between the independent and dependent variable were linear. This was evidenced by an illustration of fit regression line in each of the plots. The tests were conducted in SPSS Version 25 as follows;

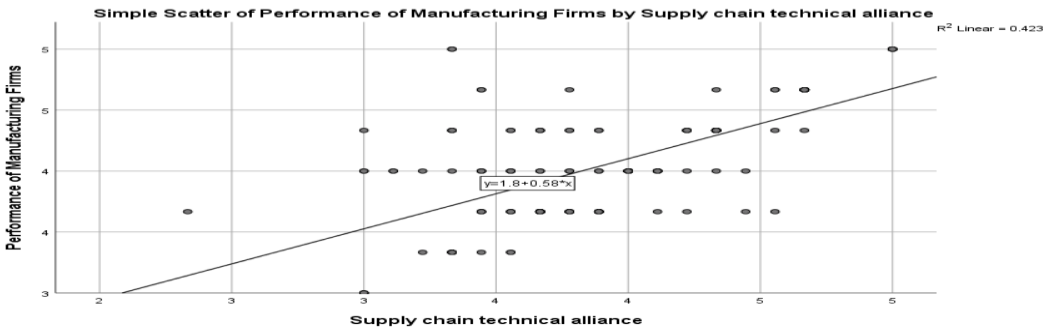

Figure 4.5: Linearity Test of Technical Alliance

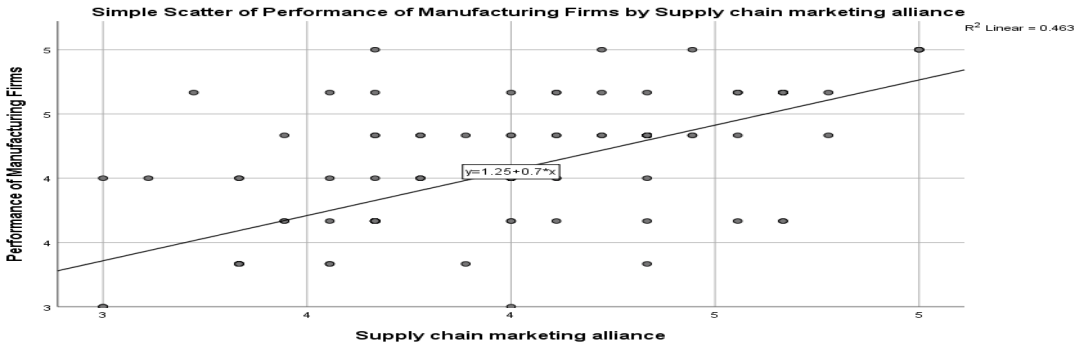

Figure 4.6: Linearity Test of Marketing Alliance

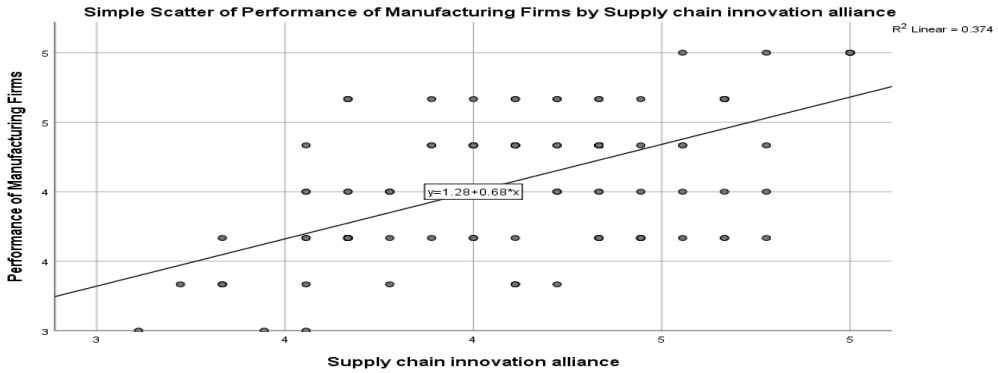

Figure 4.7: Linearity Test of Innovation Alliance

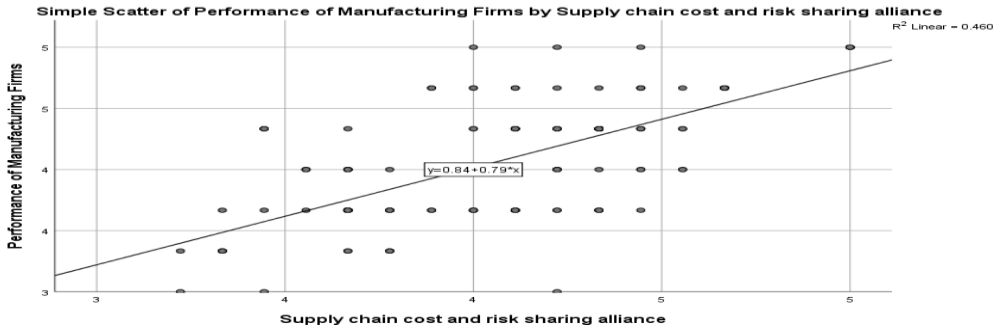

Figure 4.8: Linearity Test of Cost and Risk Sharing Alliance

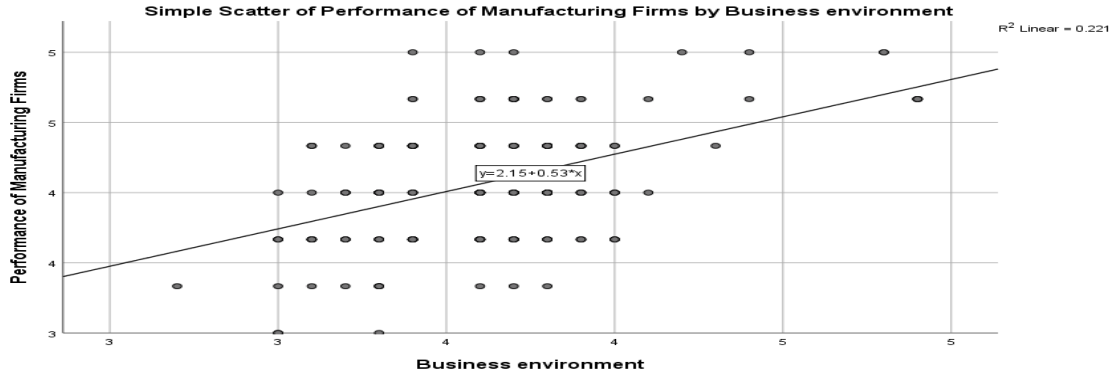

Figure 4.9: Linearity Test of Business Environment

4.6.3 Multicollinearity Test

Multicollinearity analysis helps in determining the strength of a linear relationship between two variables. In perfect positive correlation, the two variables are positively related. A value of negative 1 represents a perfect negative correlation and that when the values of one variable increase, the value of the other variable decreases (Chopra *et al*, 2018). Multicollinearity was assessed in this study using the variance inflation factors (VIF). According to Chakraboty (2017) VIF values in excess of 10 and tolerance values of less than 0.2 is an indication of the presence of Multicollinearity.

Multicollinearity of variables was tested by using the tolerance value with tolerance level of more than 0.2 and variance inflation factor (VIF) with a tolerance level of less than 10 (De Boer, 2016). Table 4.22 presents the results of the variance inflation factors which were all found to be less than 10 while the tolerance values were all more than 0.2 indicating no presence of multicollinearity of the independent variables. Thus, according to (Bryman, 2017), the problem of Multicollinearity was minimized.

Table 4.21: Collinearity Statistics

Variable	Tolerance	VIF
Supply chain technical alliances	0.649	1.541
Supply chain marketing alliances	0.603	1.658
Supply chain innovation alliances	0.638	1.567
Supply chain cost and risk sharing alliances	0.658	1.519
Business environment	0.826	1.210
Average	**0.6748**	**1.499**

4.6.4 Heteroscedasticity Test

The null hypothesis of this study indicates that the error variance is homoscedastic, thus the null hypothesis is rejected if the error term is found to be varying. If the error variance is not constant, then there is heteroscedasticity in the data. Running a regression model without accounting for heteroscedasticity the error variance would lead to biased parameter estimates in the model estimate. To test for

heteroscedasticity, the graphical p-p and scatter plots method were used. Since, the null hypothesis of this study indicates that the error variance is homoscedastic, the results indicate that there is the no presence of heteroscedasticity in the use of the ordinary least squares (OLS) regression. This is evidenced by the graphical scatter plots which oscillate along the standardized residual regression line.

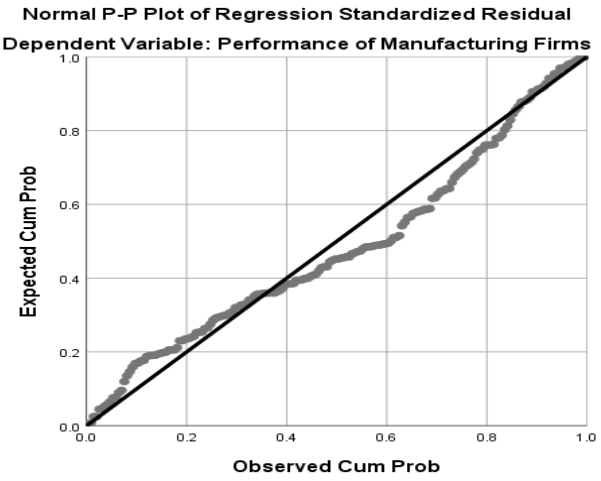

Figure 4.10: Graphical P-P Plots

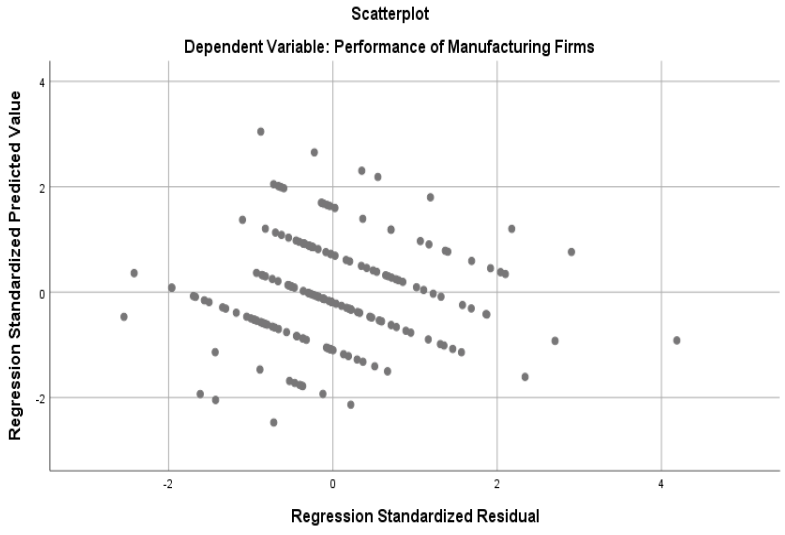

Figure 4.11: Error Variance of the Residuals

4.6.5 Test of Autocorrelation

Serial/Auto correlation occurs when the effect of one independent variable on another independent variable travels across time intervals affecting the future levels of the other independent variable. The null hypothesis is that there is no first-order autocorrelation. One of the basic assumptions in linear regression model is that the random error components or disturbances are identically and independently distributed. This is what is called autocorrelation. In a regression model, therefore, it is assumed that the correlation between the successive disturbances is zero. In this study, the DW statistic was used to test for autocorrelation where Ordinary Least Square (OLS) residuals with values ranging from 0 to 4 were adopted. If the DW value is 4 then there is negative autocorrelation, 2 means no autocorrelation and 0 means positive autocorrelation. In the event of autocorrelation, there is need to transform the model so that the error term is serially independent, then apply OLS to the transformed model to give the usual Best Linear Unbiased Estimator (BLUE). The findings as shown in Table 4.23 reveal, the DW value for the model was 1.959 which is close to 2.0 hence there was no autocorrelation in the model.

Table 4.22: Test of Autocorrelation

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.858a	0.735	0.729	0.223	1.959

4.7 Statistical Modelling/ Inferential Statistics

4.7.1 Correlation Analysis

Correlation analysis was used to determine both the significance and degree of association and direction of the study variables. The Pearson correlation coefficient was used to determine the association between the variables which is denoted by **r**. Correlation coefficients (**r**) range from -1 to 1. A *0* signifies that the factor is not associated to one another, but a value of *±1* indicates a strong positive relation, that

the two parameters are in perfect association. The link between the two variables will get weaker, as the value of the **r** goes to *0*. A + sign indicates a strong positive relationship and a – sign shows a strong negative link. The direction of the association is represented by the sign of the **r**. (Creswell, 2017).

The results in the table 4.24 revealed that there is a positive and significant association between supply chain technical alliances and performance of manufacturing firms in Kenya (r=0.651**, p=0.000). The r value of 0.651 indicates a value of greater than 0 which implies that supply chain technical alliances as a linear variable has a positive association with performance of manufacturing firms in Kenya. The findings agree with Nielsen (2017), who found that supply chain technical alliances generate a learning process that, in accelerating invention and innovation creates dynamic economics. Through technical alliances, firms enhance their absorptive capacity. A firm's absorptive capacity is the firm's ability to acquire and value external knowledge (Ali, Kan, & Sarstedt, 2016). Absorptive capacity can further be said to be a set of organizational practices and procedures, by which firms acquire, assimilate, transform and exploit external knowledge that is, when firms partner with other firms to acquire the requisite skills needed in an industry (O'Dwyer & Gilmore, 2018).

The results further show that supply chain marketing alliances and performance of manufacturing firms in Kenya have a positive and significant relationship (r=0.680**, p=0.003). The r value of 0.680 indicates a value of greater than 0 which implies that supply chain marketing alliances as a linear variable has a strong positive association with performance of manufacturing firms in Kenya. The findings are consistent with Chowdhury and Lavu (2019), who assert that strategic marketing alliances is essential to organizations in that it enhances production capacity of the manufacturing entities by saving them of time and costs of marketing as well as enabling the firms to enjoy services such as inventory services from the suppliers. The resources from the collaborators are also enhanced, thus strengthening the brand and image of the companies to the customers. Watts and Koput (2019) argue that co-marketing as a result of collaborative supply chain practices helps in increasing the traffic of flow of goods and services and increase the communication with the

customers, thus enhancing their satisfaction. Using common distribution points, and sharing/bundling the marketing steps and strategies also are essential aspects of co-marketing alliances that significantly contribute to firm performance.

The findings also indicated that there is a positive and significant association between supply chain innovation alliances and performance of manufacturing firms in Kenya (r=0.612**, p=0.021). The positive r value of 0.612 indicates a value of greater than 0 which implies that supply chain innovation alliances as a linear variable has a strong positive association with performance of manufacturing firms in Kenya. These findings are consistent with Salisu and Bakar, (2018), who stated that innovation is essential in accelerating organization growth and identifies external opportunities for firms to sustain their performance. Drewniak, (2020) study also points out that the innovation capability has been considered a key factor for pre-empting competition and a primary source of organizational renewal. Considering market diversity, fierce competition and reduced product life cycle, an increasing number of enterprises in the manufacturing sector are developing collaborative relationships which are mainly geared towards enhancing innovation and creativity. This synergy can be described as a type of relationship between organizations where the participants agree to invest resources together and make collaborative decisions to solve problems, achieve goals and share information, social responsibility and returns (Encarnacion, Victor & Rodrigo, 2018). As defined by Encarnacion *et al*., (2018) supply chain innovation alliances is the process by which the manufacturing firms collaborate with the supplies to bring new innovations and improve the operations and processes for mutual benefit. This achieves efficiency and effectiveness in both partners, thus enhancing their continued competitiveness.

The results also show a strong positive and a significant association between supply chain cost and risk sharing alliances and performance of manufacturing firms in Kenya (r=0.628**p=0.000). The positive r value of 0.628 indicates a value of greater than 0 which implies that an increase in supply chain cost and risk sharing alliances leads to an increase in performance of manufacturing firms in Kenya. The findings are consistent with Dyreng *et al*. (2015) that views cost sharing as an agreement between two parties to share the cost of developing an intangible asset or patents.

Such an arrangement is used to reduce or avoid taxes on the transfer of assets (Dyreng *et al*., 2015). That's often the basis of an alliances: to reap the synergies of sharing capital and operating costs while tapping a bigger market than either partner could achieve independently. Strategic alliances can be a transaction cost minimizing trading organization, under certain circumstances, while conserving economic rents these specific arrangements generate. Alliances have played an increasing role in the development of firms' strategies arising as a rational economic solution to market imperfections caused by high ownership costs and information asymmetry. Thus, most of these alternative institutional forms can be assigned characteristics, which are intermediate between those of the market and the hierarchy and can be viewed as vertical or horizontal integration of economic activities, while ownership remains separate, and preserve the flexibility and economic rents these specific arrangements generate (Doz & Gary, 2012).

Likewise, there is a positive and significant relationship between business environment and performance of manufacturing firms in Kenya (r= 0.470**, p=0.000). The results imply that an increase in business environment factors leads to an increased influence in the performance of manufacturing firms in Kenya. This implies that majority of the firms are affected by operating enviroment as well as the industry standards. This results concur with study by (Guo *et al*,2020) who stated that improving the quality of transport infrastructure is like smoothing the flow of the economy, facilitating good circulation of goods. Good quality road and traffic infrastructure system will minimize transportation costs, as well as losses in the process of importing raw materials. It also minimizes the risk of product distribution to the market affecting output costs (Guo *et al*, 2020). Studies done by Jin, Peng and Song (2019) indicated that macro-level environment (such as economic, political, social and technological forces) that firms face incidentally affect their performance from the external environment. The political stability that has been enjoyed in the country after the infamous 2007 elections has spelled good growth for businesses that operate internationally (Kariithi, 2017). Lack of political stability in any country has a negative effect on industry operations.

Improvements in investment climate conditions in general, and in infrastructure quality in particular, may lead to important gains in productivity and in other economic performance measures like employment, real wages, exporting activities, and foreign direct investment (FDI) inflows (MITC, 2019). Improving the quality of transport infrastructure is like smoothing the flow of the economy, facilitating good circulation of goods. Good quality road and traffic infrastructure system will minimize transportation costs, as well as losses in the process of importing raw materials. It also minimizes the risk of product distribution to the market affecting output costs (Guo *et al.*, 2020).

According to (Imran *et al.*, 2020) poor quality transport infrastructure is responsible for underperforming production process, as well as inefficient goods circulation, and thereby affect firm performance. They further assert that, enhancing the quality of infrastructure will boost economic growth, eliminate poverty and reduce inequality. An extensive literature by (Fine, 2018; Dockel & Lighelm, 2015; Hye *et al.*, 2020) suggests that reducing transport costs can promote trade by increasing income and thereby improve welfare, particularly in the developing world. As a result, recent decades have witnessed large scale aid efforts to reduce transport costs through investments in the hard infrastructure of transport networks such as ports, railways and roads (World Bank, 2019).

Table 4.23: Correlation Matrix

Correlations		Performance of Manufacturing Firms	Supply chain technical alliances	Supply chain marketing alliances	Supply chain innovation alliances	SC cost and risk sharing alliances	Business environment
Performance of Manufacturing Firms	Pearson Correlation	1					
	Sig. (2-tailed)						
Supply chain technical alliances	Pearson Correlation	.651**	1				
	Sig. (2-tailed)	0.000					
Supply chain marketing alliances	Pearson Correlation	.680**	.532**	1			
	Sig. (2-tailed)	0.003	0.009				
Supply chain innovation alliances	Pearson Correlation	.612**	.360**	.444**	1		
	Sig. (2-tailed)	0.021	0.001	0.000			
Supply chain cost and risk sharing alliances	Pearson Correlation	.678**	.393**	.457**	.506**	1	
	Sig. (2-tailed)	0.000	0.001	0.001	0.000		
Business environment	Pearson Correlation	.470**	.374**	.356**	.320**	.296**	1
	Sig. (2-tailed)	0.000	0.000	0.068	0.000	0.001	

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

4.7.2 Univariate Regression Analysis

The study also sought to investigate the causal effect of the independent variables (supply chain technical alliances, supply chain marketing alliances, Supply chain innovation alliances and supply chain cost and risk sharing alliances) on the dependent variable (performance of manufacturing firms in Kenya). The findings represent the model of fitness, ANOVA tests and the regression of coefficients.

4.7.3 Technical Alliances on Performance of Manufacturing Firms

The first objective of this study was to establish the influence of supply chain technical alliances on performance of manufacturing firms in Kenya. This was established based on the coefficients of the linear regression model between supply chain technical alliances and on performance of manufacturing firms in Kenya.

The results in Table 4.25, presents the fitness of regression used in explaining the study phenomena. Supply chain technical alliances is essential on the performance of manufacturing firms in Kenya. This is evident, as shown by the R square value of 0.423. This implies that 42.3% change in dependent variable (performance of manufacturing firms in Kenya) can be accounted for by supply chain technical alliances. The other 57.7% change can be explained by the other variables used in the study.

Regression of the coefficients results, revealed that supply chain technical alliances and performance of manufacturing firms in Kenya have a positive and significant relationship ($\boldsymbol{\beta}$=0.575, p=0.000). This implies that a unit change in aspects related to supply chain technical alliances result to a 0.575 unit change in performance of manufacturing firms in Kenya.

$$\mathbf{Y= B_0+B_1X_1 +e} \text{ (Performance of manufacturing firms } = 1.800 + 0.575 * \text{ Supply chain technical alliances)}$$

This implies that as level of Supply chain technical alliances increases also level performance increases in manufacturing firms. This finding was in line with the study by Nielsen (2017), who stated that supply chain technical alliances generate a learning process that, in accelerating invention and innovation creates dynamic economics. Through technical alliances, firms enhance their absorptive capacity. A firm's absorptive capacity is the firm's ability to acquire and value external knowledge (Ali, Kan, & Sarstedt, 2016). Absorptive capacity can further be said to be a set of organizational practices and procedures, by which firms acquire, assimilate, transform and exploit external knowledge that is, when firms partner with other firms to acquire the requisite skills needed in an industry (O'Dwyer & Gilmore, 2018).

Consequently, according to Prashantham and Yip (2019), assert that a firm's technical alliances may influence it capabilities as well as other's opinion of its capabilities. This is what manufacturing firms would require meeting the market needs and ensuring that they have the adequate technology for continued growth and performance. According to Čirjevskis (2019), for entities to benefit from supply

chain technical alliances, they ought to extensively collaborate with the suppliers such that they are able to manage the knowledge acquired from the suppliers while still managing their own internal knowledge to equip the employees with the newly acquired knowledge for efficiency and effectiveness.

In most instances, the technical alliances take the form of cross-licensing rather than joint ventures. The organizations come together to research and develop new products or processes to satisfy world markets (Darby et al., 2020). Alliance International (2020) indicates that various firms within different industries such as Volkswagen, Microsoft, Google as well as Amazon combined spent approximately $35 billion on Research and Development (R&D) as per 2015 records. The statistics as per Alliance International indicate that the most recognizable Multinational companies have spent greatly on their R&D. Such level of spending begs the question on why the companies spend billions only on R&D as compared to other activities. The reason is that researching, and application of the knowledge gained from research for the development of new as well as different products, properties, policies and processes helps in the creation of more profitable business opportunities. Research & Development in the automobile industry provides new ideas as well as innovation where applicable (Yuan *et al*, 2019). Currently, the many products used within the global market results from investments in research and development.

Table 4.24: Regression Analysis for Technical Alliances

Model of fitness					
R	R Square	Adjusted R Square	Std. Error of the Estimate		
.651a	0.423	0.42	0.327		
ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	13.95	1	13.95	130.695	.000b
Residual	19	178	0.107		
Total	32.95	179			
Regression of Coefficients					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
Constant	1.8	0.2		8.992	0.000
Supply chain technical alliances	0.575	0.05	0.651	11.432	0.000

a Dependent Variable: Performance of Manufacturing Firms

b Predictors: (Constant), Supply chain technical alliances

4.7.4 Influence of Marketing Alliances on Performance of Manufacturing Firms.

The objective was to establish the influence of marketing alliances on performance of manufacturing firms in Kenya. This was established based on the coefficients of the linear regression model between supply chain marketing alliances and performance of manufacturing firms in Kenya.

The results in Table 4.26, presents the fitness of regression used in explaining the study phenomena. Supply chain marketing alliances is essential in the performance of manufacturing firms in Kenya. This is evident, as shown by the R square value of 0.463. This implies that 46.3% change in dependent variable can be accounted for by supply chain marketing alliances, and the other 53.7% is explained by the other variables.

Regression of the coefficients results, revealed that supply chain marketing alliances and performance of manufacturing firms in Kenya have a positive and significant relationship (β=0.703, p=0.000). This implies that a unit change in the aspects related to supply chain marketing alliances leads to a 0.703-unit change performance of manufacturing firms in Kenya.

$$\mathbf{Y = B_0 + B_2X_2 + e}$$ (Performance of manufacturing firms =1.248 + 0.703* supply chain marketing alliances)

These results imply that supply chain marketing alliances has a positive effect on performance as it improves performance of manufacturing firms. The findings are consistent with Chung, Kim, and Kang (2019), who state that marketing ability requires complex and rich marketing knowledge and skills that will enable strategic alliances partners to coordinate their marketing resources and improve the overall performance of the alliances. This cooperation, therefore, is used as a shortcut to knowledge that the partners would not be able to create within an acceptable time or at acceptable costs themselves, e.g., the knowledge about foreign markets, distribution channels or consumers (Tewari et al., 2019).

According to Sarkar, Chowdhury and Lavu (2019), strategic marketing alliances is essential to organizations in that it enhances production capacity of the manufacturing entities by saving them of time and costs of marketing as well as enabling the firms to enjoy services such as inventory services from the suppliers. The resources from the collaborators are also enhanced, thus strengthening the brand and image of the companies to the customers.

Watts and Koput (2019) argue that co-marketing as a result of collaborative supply chain practices helps in increasing the traffic of flow of goods and services and increase the communication with the customers, thus enhancing their satisfaction. Using common distribution points, and sharing/bundling the marketing steps and strategies also are essential aspects of co-marketing alliances that significantly contribute to firm performance.

According to Bamel *et al,* (2021), marketing alliance refers to a functional alliance whereby various associates share many marketing expertise and services. In most instances, the partner brings forth their goods and services to the market in the presence of other parties. The established firm helps the newcomer through promotions, advertisement, and/or distributing its products or services. In this case, the nature of arrangement involves one partner introducing their products or services into a defined market where the other partner already has a presence. In this case, the established partner provides the newcomer with the necessary assistance in exchange for a fee (Bamel *et al*., 2021). Most firms require the implementation of appropriate marketing strategies for the purposes of forming synergistic strategic alliances. Such a strategy helps the firm maintain their competitiveness within their market space.

Table 4.25: Marketing Alliances

Model of fitness					
R	R Square	Adjusted R Square	Std. Error of the Estimate		
.680a	0.463	0.460	0.315		
ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	15.255	1	15.255	153.463	.000b
Residual	17.695	178	0.099		
Total	32.95	179			
Regression of Coefficients					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
Constant	1.248	0.229		5.444	0.000
Supply chain marketing alliances	0.703	0.057	0.68	12.388	0.000

a Dependent Variable: Performance of Manufacturing Firms

b Predictors: (Constant), Supply chain marketing alliances

4.7.5 Influence of Innovation Alliances on Performance of Manufacturing Firms.

The third objective of this study was to determine the influence of innovation alliances on performance of manufacturing firms in Kenya. This was established based on the coefficients of the linear regression model between supply chain innovation alliances on performance of manufacturing firms.

The results in Table 4.27, presents the fitness of regression used in explaining the study phenomena. Supply chain innovation alliances is essential in the performance of manufacturing firms in Kenya. This is evident, as shown by the R square value which is 0.374. This implies that 37.4% change in dependent variable can be explained by supply chain innovation alliances. The other 62.6% can be explained by the other variables done by the study.

Regression of the coefficients results, revealed that supply chain innovation alliances and performance of manufacturing firms in Kenya have a positive and significant relationship (**β**=0.68, p=0.000). This implies that a unit change in aspects related to supply chain innovation alliances leads to 0.68 change in performance of manufacturing firms in Kenya. These findings are consistent with Salisu & Bakar, (2018), who stated that Innovation is essential in accelerating organization growth and identifies external opportunities for firms to sustain their performance. This results imply that supply chain innovation alliances improve performance of manufacturing firms.

This results align with a study by Wagner and Zidorn (2017) who investigated the effect of strategic alliance diversity on innovation targeting biotechnology firm in the USA and the study was 50 undertaken from 1980 to 2008 and covered 20 large biotechnology firms. The dependent variable for the study was innovation which was measured using patents as an indicator for innovation whereas the independent variable was strategic alliances. The study findings indicated that young firms with more diverse strategic alliances benefit more through innovations when compared to older firms. The study also indicated the more strategic alliances a young firm forms, the more the benefits due to the ability to access resource that improve the innovation of such firms, as result of their flexibility and organizational structures that are loosely instituted.

Drewniak, (2020) study also points out that the innovation capability has been considered a key factor for pre-empting competition and a primary source of organizational renewal. Considering market diversity, fierce competition and reduced product life cycle, an increasing number of enterprises in the manufacturing sector are developing collaborative relationships which are mainly geared towards enhancing innovation and creativity.

This synergy can be described as a type of relationship between organizations where the participants agree to invest resources together and make collaborative decisions to solve problems, achieve goals and share information, social responsibility and returns (Encarnacion, Victor & Rodrigo, 2018). As defined by Encarnacion *et al*.

(2018) supply chain innovation alliances is the process by which the manufacturing firms collaborate with the supplies to bring new innovations and improve the operations and processes for mutual benefit. This achieves efficiency and effectiveness in both partners, thus enhancing their continued competitiveness.

Supply chain collaboration innovation is an essential solution for firms to respond to unpredictable changes. It is the main driving force for enhancing supply chain flexibility and sustainable performance (Shan, Li and Shi, 2020), as well as offering new or enhanced products or services. Innovation performance is a collection of innovation outputs and the input-output conversion efficiency (Huang & Hou, 2019). Innovation performance is typically reflected in products, services, processes, markets, strategic innovation, and other aspects. Knowledge is the most dynamic and essential factor, as well as the core element of innovative activities for manufacturing companies (Li, Liu & Yue, 2019).

Y= B0+ B3X3+e (Performance of manufacturing firms =1.28 + 0.68* supply chain innovation alliances).

Table 4.26: Regression Analysis for Innovation Alliances

Model of fitness					
R	R Square	Adjusted R Square	Std. Error of the Estimate		
.612a	0.374	0.37	0.34		
ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	12.323	1	12.323	106.347	.000b
Residual	20.627	178	0.116		
Total	32.95	179			
Regression of Coefficients					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	1.28	0.272		4.707	0.000
Supply chain innovation alliances	0.68	0.066	0.612	10.312	0.000

a Dependent Variable: Performance of Manufacturing Firms
b Predictors: (Constant), Supply chain innovation alliances

4.7.6 Influence of Cost and Risk Sharing Alliances on Performance of Firms.

The fourth objective of this study was to establish the influence of cost and risk sharing alliances on performance of manufacturing firms in Kenya. This was established based on the coefficients of the linear regression model between supply chain cost and risk sharing alliances on performance of manufacturing firms in Kenya.

The results in Table 4.28, presents the fitness of regression used in explaining the study phenomena. Supply chain cost and risk sharing alliances is essential in the performance of manufacturing firms in Kenya. This is evident, as shown by the R square value of 0.46. This implies that 46% change in dependent variable can be explained by supply chain cost and risk sharing alliances, the other 54% can be explained by the other variables in the study.

Regression of the coefficients results, revealed that supply chain cost and risk sharing alliances and performance of manufacturing firms in Kenya have a positive and significant relationship (**β**=0.794, p=0.000). This implies that a unit change in aspects related to supply chain cost and risk sharing alliances lead to a 0.794 change in performance of manufacturing firms in Kenya.

Performance of manufacturing firms =0.840 + 0.794* supply chain cost and risk sharing alliances

The results imply that supply chain cost and risk sharing alliances leads to improved performance of manufacturing firms. These findings conquer with the results of study conducted by Dyreng *et al.* (2015) that views cost sharing as an agreement between two parties to share the cost of developing an intangible asset or patents. Such an arrangement is used to reduce or avoid taxes on the transfer of assets (Dyreng *et al*. 2015). That's often the basis of an alliances: to reap the synergies of sharing capital and operating costs while tapping a bigger market than either partner could achieve independently. Strategic alliances can be a transaction cost minimizing trading organization, under certain circumstances, while conserving economic rents these specific arrangements generate.

Alliances have played an increasing role in the development of firms' strategies arising as a rational economic solution to market imperfections caused by high ownership costs and information asymmetry. Thus, most of these alternative institutional forms can be assigned characteristics, which are intermediate between those of the market and the hierarchy and can be viewed as vertical or horizontal integration of economic activities, while ownership remains separate, and preserve the flexibility and economic rents these specific arrangements generate (Doz & Gary, 2012).

The study results also align with a study by Mwangi (2019), that inventory controls, supplier management, and procurement cost optimization, supply chain automation influenced the performance of manufacturing firms. Musau *et al*. (2017) found that supply chain information systems, inventory management, buyer-supplier relationship, transport management, and warehouse management positively and significantly affected organizational performance of textile manufacturing firms.

Table 4.27: Regression Analysis for Cost and Risk Sharing Alliances

Model of fitness					
R	R Square	Adjusted R Square	Std. Error of the Estimate		
.678a	0.46	0.457	0.316		
ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	15.149	1	15.149	151.472	.000b
Residual	17.801	178	0.1		
Total	32.95	179			
Regression of Coefficients					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.84	0.264		3.187	0.002
Supply chain cost and risk sharing alliances	0.794	0.064	0.678	12.307	0.000

a Dependent Variable: Performance of Manufacturing Firms
b Predictors: (Constant), Supply chain cost and risk sharing alliances

4.7.7 Multiple Regression Model of all the Four Variables before Moderation

Table 4.29 presents the fitness of regression model used in explaining the study phenomena. Supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances, supply chain cost and risk sharing alliances are good predictors of the performance of manufacturing firms in Kenya. This is evident, as shown by the R square value of 0.735. This implies that all the four variables explain more than 73.5% of performance of manufacturing firms in Kenya. The remaining 26.5% of variations in the performance of manufacturing firms can be attributed to factors not included in this study model.

The model was also statistically significant implying that the four variables affect performance of manufacturing firms in Kenya. This is further supported by the F statistic 121.574 where the value was greater than the F critical of 2.436 at 0.000 significance level which is lower than the conventional 0.05.

$$F_{statistic} = 121.574 > F_{critical} = 2.436\ (4, 175).$$

Regression of the coefficients results, revealed that supply chain technical alliances and performance of manufacturing firms in Kenya have a positive and significant relationship (**β**=0.263, p=0.000). This implies that improvement in 1 unit of the aspects related to supply chain technical alliances improves performance of manufacturing firms in Kenya by 0.263 units. This finding was in line with the study by Nielsen (2017), supply chain technical alliances generates a learning process that, in accelerating invention and innovation creates dynamic economics. Through technical alliances, firms enhance their absorptive capacity. A firm's absorptive capacity is the firm's ability to acquire and value external knowledge (Ali, Kan, & Sarstedt, 2016). Absorptive capacity can further be said to be a set of organizational practices and procedures, by which firms acquire, assimilate, transform and exploit external knowledge that is, when firms partner with other firms to acquire the requisite skills needed in an industry (O'Dwyer & Gilmore, 2018).

Consequently, according to Prashantham and Yip (2019), a firm's technical alliances may influence it capabilities as well as other's opinion of its capabilities. This is what manufacturing firms would require meeting the market needs and ensuring that they have the adequate technology for continued growth and performance. According to Čirjevskis (2019), for entities to benefit from supply chain technical alliances, they ought to extensively collaborate with the suppliers such that they are able to manage the knowledge acquired from the suppliers while still managing their own internal knowledge to equip the employees with the newly acquired knowledge for efficiency and effectiveness.

Regression of the coefficients results, revealed that supply chain marketing alliances and performance of manufacturing firms in Kenya have a positive and significant relationship (**β**=0.287, p=0.000). This implies that improvement in 1 unit of the aspects related to supply chain marketing alliances improves performance of manufacturing firms in Kenya by 0.287units. The findings are consistent Chung, Kim, and Kang (2019), who state that marketing ability requires complex and rich marketing knowledge and skills that will enable strategic alliances partners to coordinate their marketing resources and improve the overall performance of the alliances.

This cooperation, therefore, is used as a shortcut to knowledge that the partners would not be able to create within an acceptable time or at acceptable costs themselves, e.g. the knowledge about foreign markets, distribution channels or consumers (Tewari et al., 2019). According to Sarkar, Chowdhury and Lavu (2019), strategic marketing alliances is essential to organizations in that it enhances production capacity of the manufacturing entities by saving them of time and costs of marketing as well as enabling the firms to enjoy services such as inventory services from the suppliers.

The resources from the collaborators are also enhanced, thus strengthening the brand and image of the companies to the customers. Watts and Koput (2019) argue that co-marketing as a result of collaborative supply chain practices helps in increasing the traffic of flow of goods and services and increase the communication with the

customers, thus enhancing their satisfaction. Using common distribution points, and sharing/bundling the marketing steps and strategies also are essential aspects of co-marketing alliances that significantly contribute to firm performance.

Regression of the coefficients results, revealed that supply chain innovation alliances and performance of manufacturing firms in Kenya have a positive and significant relationship (**β**=0.241, p=0.000). This implies that improvement in 1 unit of the aspects related to supply chain innovation alliances improve performance of manufacturing firms in Kenya by 0.241 units. These findings are consistent with Hameed et al., (2018) and Panahifar *et al*. (2018) who indicate that supply chain innovation alliances play the role of instigating change within organizations leading to increased responsiveness while decreasing overheads in the supply chain. Strategic alliances through supply chain innovation alliances such as adopting new product development and process efficiency has provided benefits to trading partners from different aspects such as improvement of forecasting accuracy, enhanced customer service quality and stronger relationship between partners. This results are in line with study by Salisu and Bakar, (2018), who stated that Innovation is essential in accelerating organization growth and identifies external opportunities for firms to sustain their performance.

Drewniak, (2020) study also points out that the innovation capability has been considered a key factor for pre-empting competition and a primary source of organizational renewal. Considering market diversity, fierce competition and reduced product life cycle, an increasing number of enterprises in the manufacturing sector are developing collaborative relationships which are mainly geared towards enhancing innovation and creativity. This synergy can be described as a type of relationship between organizations where the participants agree to invest resources together and make collaborative decisions to solve problems, achieve goals and share information, social responsibility and returns (Encarnacion, Victor & Rodrigo (2018).

Regression of the coefficients results, revealed that supply chain cost and risk sharing alliances and performance of manufacturing firms in Kenya have a positive and significant relationship (**β**=0.380, p=0.000). This implies that improvement in 1 unit of the aspects related to supply chain cost and risk sharing alliances improves performance of manufacturing firms in Kenya by 0.380 units. This agrees with study by Dyreng, Lindsey, Markle & Shackelford, (2015) that views cost sharing as an agreement between two parties to share the cost of developing an intangible asset or patents. Such an arrangement is used to reduce or avoid taxes on the transfer of assets (Dyreng, Lindsey, Markle & Shackelford, 2015). That's often the basis of an alliances: to reap the synergies of sharing capital and operating costs while tapping a bigger market than either partner could achieve independently.

Strategic alliances can be a transaction cost minimizing trading organization, under certain circumstances, while conserving economic rents these specific arrangements generate. Alliances have played an increasing role in the development of firms' strategies arising as a rational economic solution to market imperfections caused by high ownership costs and information asymmetry. Thus, most of these alternative institutional forms can be assigned characteristics, which are intermediate between those of the market and the hierarchy and can be viewed as vertical or horizontal integration of economic activities, while ownership remains separate, and preserve the flexibility and economic rents these specific arrangements generate (Doz & Gary, 2012).

Table 4.28: Multivariate Regression Analysis before Moderation

Model of fitness					
R	R Square	Adjusted R Square	Std. Error of the Estimate		
.858a	0.735	0.729	0.223		
ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	24.23	4	6.058	121.574	.000b
Residual	8.72	175	0.050		
Total	32.95	179			
Regression of Coefficients					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.658	0.221		-2.982	0.003
Technical alliances	0.263	0.042	0.297	6.319	0.000
Marketing alliances	0.287	0.051	0.278	5.599	0.000
Innovation alliances	0.241	0.052	0.217	4.604	0.000
Cost & risk sharing alliances	0.380	0.056	0.325	6.794	0.000

a Predictors: (Constant), Supply chain technical alliances, Supply chain marketing alliances, Supply chain innovation alliances, Supply chain cost and risk sharing alliances

b Dependent Variable: Performance of Manufacturing Firms

Therefore, the multivariate regression model can be presented as follows:

$$Y= -0.658+ 0.263X_1 + 0.287X_2 + 0.241X_3 + 0.380X_4 + e$$

Where:

Y = Performance of manufacturing firms

α = model constant;

$\beta_1 – \beta_4$ = the coefficients of the independent variables;

X_1 = technical alliances

X_2 = marketing alliances

X_3 = innovation alliances

X_4 = cost and risk sharing alliances

ε is the error term established from heteroscedasticity test

4.7.8 The Moderating Role of Business Environment

The fifth objective of this study was to determine the moderating role of business environment on the influence of supply chain strategic alliances and performance of manufacturing firms in Kenya. This was established based on the coefficients of the multiple linear regression model between business environment and relationship between supply chain strategic alliances on performance of manufacturing firms.

The results in Table 4.30, presents the fitness of regression used in explaining the study phenomena. Supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances, supply chain cost and risk sharing alliances and business environment are essential in the performance of manufacturing firms in Kenya. This is evident, as shown by the R square value of 0.773. This implies that 77.3% of change in performance of manufacturing firms in Kenya can be explained by the five variables. The other 22.7% can be explained by variables not covered in this study.

Regression of the coefficients results, revealed that business environment and performance of manufacturing firms in Kenya have a positive and statistically significant relationship (**β**= 0.629, p=0.002). All the four variables on an average have a positive and significant effect on the performance of manufacturing firms in Kenya (**β** = 1.523, p=0.000). Upon, interaction of the moderator with all the variables, the findings indicated that there is a positive and statistically significant moderating (interaction) effect of business environment on the performance of manufacturing firms in Kenya (**β** = 0.120, p=0.002). This implies that an interaction

of business environment in the linear model results in an improvement in the overall performance of manufacturing firms in Kenya by 0.120 units.

These results conquer with the findings of a study by (Boso, *et al*., 2016) which investigated how structural factors as well as external environment factors affect the performance of firms in emerging economies. Analysis of samples of manufacturing firms from Ghana and Bosnia and Herzegovina revealed that innovativeness through knowledge creation is most beneficial for firms operating in competitive and dynamic export markets; those in less competitive and static markets do not benefit from their innovation activities to the same extent. Using a data of about two thousand manufacturing firms in France, Bertrand (2011) examined the effects of transport infrastructure on the performance of firms revealed that transport infrastructure development increases firm performance.

A study by Freeman, Styles and Lawley (2012) explored how location – regional vs metropolitan impacts a small to medium sized enterprise (SME)'s access to firm resources and capabilities, and consequently its performance. The study gathered qualitative data from an expert panel of government trade advisors, as well as managers of manufacturing firms in Australian regional and metropolitan areas. The data were used to explore three propositions relating to the impact of location. The findings showed that firms in metropolitan areas have an advantage over those in regional areas. However, the relatively lower level of competition in regional areas did not appear to have a negative impact on the export performance of firms located in these areas as would have been expected.

A study by Sung and Wen (2018) explored how political–economic forces could affect firm performance in the renewable energy technologies market. They conducted panel framework analyses to verify the characteristics of panel data for 19 countries before establishing the panel estimator meant to test the effects of political–economic forces on manufacturing firm performance. The results from the least squares dummy variable-corrected estimation indicate that the major factors promoting the specialization of renewable energy technologies are, in order of decreasing importance, public pressure, market size, and government demand-pull

policy. However, the traditional energy industry has no significant effect on firm performance. Depending on the context in which enterprises exist, the environment can be grouped in the following dimensions; physical, historical, economic, social-cultural and technological (Kibera, 1996).

Studies done by Jin, Peng and Song (2019) indicated that macro-level environment (such as economic, political, social and technological forces) that firms face incidentally affect their performance from the external environment. Manufacturing firm performance is affected by internal and external barriers. According to a study by Li *et al*., (2019) business environment which include political, monetary, socio-social, mechanical natural and legitimate powers, all have significant effect on a firm growth. Performance of firms appears to be affected by environmental conditions such as the degree of knowledge creation, home nation governments legal and regulatory policies, and the existence of appropriate channels of distribution and communication among other factors. Xie and Li (2018) said that as the organization's external environment alters, its objectives must adhere to those changes, to match this changing environment. Organizations need to pay attention and match their operations to environmental circumstances in order to survive and operate competitively.

A study by Lawrence (2020) on the relationship of government infrastructure development expenditure on the performance of manufacturing in Kenya recommended that government should concentrate more on the development of transport infrastructures such as roads, railway lines, expansion of airports and sea ports for faster movement of goods and other products to boost the performance of manufacturing sector hence increasing its share in GDP. For the sustainability of growth and performance of the manufacturing sector in Kenya, the ministry of transport should come up with policies and frameworks that bring the private sector, non-governmental organizations, and even the county governments as the units of development to guide the growth and development of the manufacturing sector.

Table 4.29: Moderating Role of Business Environment

Model of fitness					
R	R Square	Adjusted R Square	Std. Error of the Estimate		
.862a	0.773	0.771	0.219		
ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	24.479	3	8.16	169.52	.000b
Residual	8.471	176	0.048		
Total	32.95	179			
Regression of Coefficients					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.592	1.646		-1.574	0.001
Business environment	0.629	0.457	0.555	1.377	0.000
Composite (Average)	1.523	0.396	1.124	3.845	0.000
Interaction term	0.120	0.109	0.651	1.103	0.002

a Dependent Variable: Performance of Manufacturing Firms

b Predictors: (Constant), Interaction term, Average of the 4 variables, business environment

The moderating regression model can therefore, be presented as follows:

$$Y= -2.592X_1 + 0.629M + 1.523A + 0.120A.M + e$$

Where:

Y = Performance of manufacturing firms

α = model constant;

$\beta_1 - \beta_4$ = the coefficients of the independent variables;

M = Moderating variable (business environment)

A= Average of the four variables $\{(X_1+X_2+X_3+X_4)/4\}$

A.M = Interaction term (based on the Baron and Kenny, (1986) approach)

ε is the error term established from heteroscedasticity test

4.8 Optimal Model

The purpose of an optimal model is to show the direction that a study takes and the finale decision made by the researcher out of an analysis of a regression model particularly after running the moderating effect analysis. While the R^2 for the overall model before the moderator was 0.735, after the introduction of business environment as the moderator, the R^2 increased to 0773. This is an indication that through the moderation effect of business environment, the variation of organizational performance as a result of supply chain strategic alliances aspects is increased from 73.5% to 77.5%. Moreover, the P-value for the ANOVA is after the moderation is still significant at 0.000 an indication that the model is statistically significant.

The study first had an unmoderated regression model which was structured as shown:

$$\mathbf{Y= \beta 0 + \beta 1X1+ \beta 2X2+ \beta 3X3+ \beta 4X4 + e}$$

From the regression coefficients on Table 4.23, the following model is obtained:

$$\mathbf{Y= -0.658 + 0.380X_1 + 0.287X_2 + 0.263X_3 + 0.241X_4 + e}$$

Where:

Y = Performance of manufacturing firms

α = model constant;

$\beta_1 - \beta_4$ = the coefficients of the independent variables;

X_1 = cost and risk sharing alliances

X_2 = marketing alliances

X_3 = technical alliances

X_4 = innovation alliances

ε is the error term established from heteroscedasticity test

From the regression coefficients on Table 4.24, the following model was obtained. The model shows that business environment has a direct influence on performance of manufacturing firms in Kenya.

$$\mathbf{Y = -2.592X_1 + 0.629M + 1.523A + 0.120A.M + e}$$

Based on the models drawn above, it can be deduced that business environment has a significant moderating effect on the relationship between supply chain strategic alliances aspects and performance of manufacturing firms in Kenya. From the results, an optimal model is derived, where the model with the moderator is adopted as the final model for the study. The revised conceptual framework as shown in Figure 4.10 is drawn to show the flow and relationship of the variables as derived from the optimal model.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter deals with the summary of the findings, the conclusions made after the findings and the necessary recommendations made as a result of the findings. From other studies carried out in other countries, it has been established that supply chain strategic alliances have influence on performance manufacturing firms in Kenya. The summary was done in line with the objectives of the study based on the output of the descriptive and inferential statistical analysis guided to test the research hypotheses of the study. The influence of supply chain strategic alliances on performance manufacturing firms in Kenya cannot be taken for granted since it has a direct bearing on performance of manufacturing firms in Kenya as shown in the summary findings.

5.2 Summary of Findings

The main objective of the study was to study the influence of supply chain strategic alliances and the performance of manufacturing firms in Kenya. The study specifically determined the influence of technical alliance on the performance of manufacturing firms in Kenya, the influence of marketing alliances on the performance of manufacturing firms in Kenya, the influence of innovation alliances on the performance of manufacturing firms in Kenya, the influence of cost and risk sharing alliances on the performance of manufacturing firms in Kenya. The study also examined the moderating effect of business environment on the relationship between supply chain strategic alliances and the performance of manufacturing firms in Kenya. The study established that there is a significant effect on the strategic alliances and the performance of manufacturing firms in Kenya.

5.2.1 Technical Alliances

The first objective of the study was to determine the relationship between supply chain technical alliances and performance of manufacturing firms in Kenya. The findings indicated that majority of the firms believed implementation of supply chain technical alliances systems in firms was effective in improving performance. Technical skills improve performance and lack of technical skills decreased performance. The study findings also indicated that the nature of the technology sharing in majority of firms is proficient in improving performance. Proficient technology sharing improves performance while inefficient technology sharing decreases performance. The findings further revealed that majority of firms believed knowledge sharing improves performance.

On the relationship between supply chain technical alliances and productivity, the study findings revealed that technical skills had a positive and significant relationship with the odds of improving productivity. The odds of observing increased productivity were higher for those firms with technical skills in their supply chain technical alliances systems as compared to those without. This implies that technical skills result to improved productivity.

The study findings revealed that technology sharing had a positive and significant relationship with increasing productivity. Improvement in productivity were higher for those firms with technology sharing in their supply chain technical alliances systems as compared to those without. This implies that technology sharing results in improved productivity.

The study findings revealed that technology sharing had a positive and significant relationship with productivity. Improved productivity was higher for those firms that applied technology sharing in their supply chain technical alliances strategy as compared to those without. This implies that technology sharing result to high-cost reduction.

The findings of the study also revealed that technical skills were positively and significantly related to gaining new markets. Observing larger or new markets were higher for those firms which had technical skills as compared to those firms which do not have technical skills. This implies that technical skills result to larger or gaining new markets.

The results also revealed that technology sharing was positively and significantly related to gaining new markets. The odds of observing increase in gaining new markets was higher for those firms which had embraced technology sharing compared to those without technology sharing systems. This implies that technology sharing results to bigger gaining new markets.

The results further reveal that knowledge sharing had a positive and significant relationship with gaining new markets. The odds of observing bigger or gaining new markets were higher for firms which had employed knowledge sharing as a strategy. This implies that knowledge sharing result to larger or gaining new markets.

On the relationship between supply chain technical alliances and profitability. Increased profitability was higher for those firms with proficient supply chain technical alliances systems compared to those firms without. The results also revealed that technical skills were positively and significantly related to profitability. The odds of observing higher profitability were higher for those firms with technical skills as compared to those firms without technical skills implying that proficient technical skills results to a better profitability.

Further, the results also showed that knowledge sharing were positively and significantly related to profitability. Observing high profitability were higher for those firms with proficient knowledge sharing as compared to those firms without. This implies that knowledge sharing result to a higher profitability.

The correlation findings revealed that there is a positive and significant association between supply chain technical alliances and performance of manufacturing firms in Kenya. The regression results, revealed that supply chain technical alliances and performance of manufacturing firms in Kenya have a positive and significant

relationship. This implies that improvement in 1 unit of the aspects related to customer relationship improves performance of manufacturing firms in Kenya.

5.2.2 Marketing Alliances.

The second objective of the study was to establish the relationship between supply chain marketing alliances and performance of manufacturing firms in Kenya. The findings of the study revealed that majority of the firms believed co-branding practices, good co-marketing in firms and also having complimentary products would improve performance significantly. Having co-branding practices, good co-marketing in firms and complimentary products marketing improves performance.

The findings of the study also revealed that co-branding was positively and significantly related to productivity. The odds of observing improved productivity were higher for those firms with co-branding as compared to those without co-branding. This implies that having co-branding results to high productivity. The results also revealed that co-marketing had a positive and significant relationship with productivity. The possibility of observing increased productivity were higher for firms with good co-marketing compared to those with low adoption. This implies that co-marketing strategies result to high productivity.

The results further indicated that having complimentary products had a positive and significant relationship increased productivity. The possibility of observing increase in productivity were higher for those firms where they had complimentary products existed. This implies that having complimentary products result to increased performance. The results further revealed that co-branding was positively and significantly related to increase in market share. Improvement in market share was higher for those firms with good co-branding system as compared to those firms which did not have any. This implies that having co-branding results to larger or improved market share.

The results also revealed that co-marketing had a positive and significant relationship with gaining new markets. The odds of observing increase in market share was higher for those firms with good co-marketing strategies compared to those with low

adoption. This implies that good co-marketing results to larger market share. The results also revealed that having complimentary products had a positive and significant relationship with market share. The odds of gaining new markets were higher for those firms with complementary products. This implies that complimentary products result in gaining new markets.

On the relationship between supply chain marketing alliances and profitability the findings of the study revealed that co-branding was positively and significantly related to profitability. The odds of observing higher profitability were higher for those firms with better co-branding as compared to those firms that did not employ co-branding strategies. This implies that co-branding result to high profitability.

The findings of the study revealed that co-marketing was positively and significantly related to profitability. The chances of observing high profitability were higher for those firms with better co-marketing as compared to those firms that did not employ co-marketing strategies. This implies that having good co-marketing strategies with other firms result in high profitability. Further, the results reveal that sharing market had a positive and significant relationship with profitability. The odds of observing high profitability were higher for those firms where complimentary products with their competitors was employed. This implies that having or marketing complimentary products with other firms or competitors result to higher profitability.

The correlation findings further show that supply chain marketing alliances and performance of manufacturing firms in Kenya have a positive and significant relationship.The regression results revealed that supply chain marketing alliances and performance of manufacturing firms in Kenya have a positive and significant relationship. This implies that improvement in 1 unit of the aspects related to supply chain marketing alliances improves performance of manufacturing firms in Kenya. This results agree with the study by Chung, Kim, and Kang (2019), who state that marketing ability

5.2.3 Innovation Alliances.

The third objective of the study was to determine the relationship between supply chain innovation alliances and performance of manufacturing firms in Kenya. The findings of the study revealed that majority of the firms believed implementation of supply chain innovation alliances through investing in new product development, process efficiency and quality improvement improve performance of a firm. The findings show that there is a positive and significant relationship between supply chain innovation alliances and performance of manufacturing firms, this implies that adoption of supply chain innovation alliances leads to improvement in performance of manufacturing firms.

The results indicated that alliances in new product development were positively and significantly related to productivity. The odds of observing high productivity were higher for firms which collaborated with other in new product development compared to those that did not. This implies that collaborating in new product development results to high productivity. The results also show that collaborating with other firm to improve on process efficiency and productivity were positively and significantly related. The odds of observing high productivity were higher for firms which collaborated with others to improve on their process efficiency compared to those that did not.

The results further revealed that collaborating with other firms in quality improvement and productivity had a positive and significant relationship. The chances of observing high productivity were higher for those firms which collaborated with others in quality improvement. This implies that collaborating in quality improvement results to high productivity. The findings of the study also revealed that new product development is positively and significantly related to market share. The possibility of gaining new markets were higher for firms that invested with others in new product development compared to those who did not. This implies that new product development result increased market share.

The findings of the study also revealed that process efficiency is positively and significantly related to improvement in market share. Market share improved were for firms which collaborated to improve on process efficiency compared to those who did not. This implies that investing in process efficiency led to improvement in performance of the firm. The findings of the study further revealed that investing in new product development are positively and significantly related to profitability. Profitability were higher for firms which invested in new product development compared to those who did not. This implies that new product development had a positive and significant relationship with profitability.

The correlation findings indicated that there is a positive and significant association between supply chain innovation alliances and performance of manufacturing firms in Kenya. The regression results revealed that supply chain innovation alliances and performance of manufacturing firms in Kenya have a positive and significant relationship. This implies that improvement in 1 unit of the aspects related to supply chain innovation alliances improve performance of manufacturing firms in Kenya.

5.2.4 Cost and Risk Sharing Alliances

The fourth objective of the study was to assess the relationship between supply chain cost and risk sharing alliances and performance of manufacturing firms in Kenya. The findings of the study revealed that majority of the manufacturing firms in Kenya believed that having inventory cost management systems, applying logistics cost management and having in place joint risk managements would lead to better performance. The findings also indicated that supply chain cost and risk sharing alliances improve performance.

On the relationship between inventory cost management and productivity, the study findings indicated that the relationship is positive. The study also revealed that the relationship between logistics cost management and productivity is positive. The results revealed that joint risk management is positively and significantly related to improved performance. The odds of observing high performance were higher for those firms whose leaders have implemented joint risk management as compared to

those firms without. This implies that having a joint risk management system leads to improved performance.

The results further indicated that the relationship between inventory cost management and improved performance is positive. Further, logistics cost management are significantly related to performance. There was better performance for those firms with logistics cost management as compared to those firms without. This implies that having joint risk management systems leads to improvement in performance.

The findings further revealed that inventory cost management, logistics cost management and joint risk management are positively related to profitability. The relationship between inventory cost management and profitability is significant. The odds of observing high profitability were higher for those firms with inventory cost management system compared to those firms without such systems. The results also revealed that the odds of observing a high profitability were higher for those firms that practices logistics cost management along the supply chain compared to those firms that do not. This implies that inventory cost management leads to a high profitability. The results also revealed that the odds of observing a high profitability were higher for those firms with joint risk management systems compared to those firms that did not. This implies that having joint risk management systems leads to a high profitability.

Correlation results show a positive and a significant association between supply chain cost and risk sharing alliances and performance of manufacturing firms in Kenya. The regression results revealed that supply chain cost and risk sharing alliances and performance of manufacturing firms in Kenya have a positive and significant relationship. This implies that improvement in 1 unit of the aspects related to supply chain cost and risk sharing alliances improves performance of manufacturing firms in Kenya.

5.2.5 Business Environment

The fifth objective of the study was to explore the moderating effect of business environment on the relationship between supply chain strategic alliances and performance of manufacturing firms in Kenya. The findings also revealed that having good transport infrastructure, political stability and knowledge creation improves performance. The findings also indicated that good transport infrastructure is positively and significantly related to productivity. Similarly, transport infrastructure is positively and significantly related to productivity. The chances of observing high productivity were higher for those firms that are in areas with political stability as compared to those firms which don't. The results also revealed that the chances of observing high productivity were higher for those firms with effective knowledge creation mechanism as compared to those firms that do not.

On the relationship between transport infrastructure and market share, the study findings indicated that transport infrastructure is positively and significantly related to gaining new markets. The chances of observing increase in market were higher for those firms which have good transport infrastructure as compared to those firms which do not. This implies that transport infrastructure makes it easier to gain new markets. On the relationship between political stability and gaining new markets, the study findings indicated that political stability is positively and significantly related to gaining new markets. The odds of increase in market share were higher for those firms which have political stability as compared to those firms which do not.

Furthermore, the findings of the study revealed that effective transport infrastructure are positively and significantly related to profitability. Similarly, political stability is positively and significantly related to profitability. The odds of observing high profitability were higher for those firms with political stability as compared to those firms without. The results also revealed that the odds of observing increased profitability were higher for those firms which have knowledge creation systems as compared to those firms which do not. This implies that knowledge improves performance of firms.

The findings further indicated that the interaction between the independent variables and moderating variable was statistically significant and implying that business environment does moderate the influence of supply chain strategic alliances on firm's performance. The correlation findings indicate that there is a positive and significant relationship between business environment and performance of manufacturing firms in Kenya. The findings indicated that there is a positive and significant moderating (interaction) effect of business environment on the performance of manufacturing firms in Kenya. This implies that an interaction of business environment in the linear model results in an increase in the overall performance of manufacturing firms in Kenya. The results imply that an increase in business environment factors leads to an increase in the performance of manufacturing firms in Kenya. This implies that majority of the firms' performance is affected by the business environment they operate in.

5.3 Conclusions

Based on the findings, the study concluded that supply chain technical alliances influence performance. Supply chain technical alliances has positive and significant relationship with performance of manufacturing firms in Kenya. The sub-constructs of supply chain technical alliances that is technical skills, technology sharing and knowledge sharing influences performance positively. The study also concluded that supply chain marketing alliances has significant relationship with performance of manufacturing firms in Kenya. The sub-constructs of supply chain marketing alliances that is Co-branding practices, Co-marketing and sharing market influence performance positively. The study also concluded that supply chain innovation alliances has a positive and significant relationship with performance of manufacturing firms in Kenya. The sub-constructs of supply chain innovation alliances namely new product development, process efficiency and quality improvement influence performance positively.

Another conclusion made by the study was that supply chain cost and risk sharing alliances has a significant relationship with performance of manufacturing firms in Kenya. The sub-constructs of supply chain cost and risk sharing alliances that

include inventory cost management, logistics cost management and incentive influence performance of manufacturing firms in Kenya positively. The study finally concluded that business environment has a moderating influence on the relationship between supply chain strategic alliances and performance of manufacturing firms in Kenya. The study concluded that business environment has positive and significant influence on performance of manufacturing firms in Kenya.

5.4 Recommendations

This study aimed at assessing the influence of supply chain strategic alliances on performance of manufacturing firms in Kenya. The study has also proved that indeed strategic alliances influence performance in these organizations. The study recommendations are in line with the objectives, findings and conclusions of the study.

The study recommended that the management of manufacturing firms in Kenya should consider having supply chain technical alliances strategies in place as it leads to high performance. The firms should ensure they collaborate with other firms on technical skills, sharing technology and acquired knowledge. The study also recommends that future scholars and researchers should aim to test the relationship between supply chain technical alliances and performance using different sub constructs apart from technical skills, technology sharing and knowledge sharing.

It is recommended that manufacturing firms in Kenya should have an improved supply chain marketing alliances with other firms if they don't already as it leads to high performance. The firms should have co-branding, co-marketing and complimentary products practices. The study also recommends that future scholars and researchers should aim to test the relationship between supply chain marketing alliances and performance using different sub constructs apart from co-branding, co-market and complimentary products. This can bring rigour and offer platforms for comparison of findings.

The study also recommended that manufacturing firms should form alliances and invest in innovation of new products, process efficiency and quality improvement since it influences performance positively. Future scholars can seek to explore other measures of innovation alliances other than in new product development, process efficiency and improvement of quality.

With regards to supply chain cost and risk sharing alliances, the study recommended that manufacturing firms should put in place strategies to have costs and risks widely spread as it has a positive effect on performance. The firms should encourage and put in place measures that promote inventory cost management, logistic cost management and joint risk management as they influence performance positively.

Supply chain managers in the manufacturing sector should be the champions of supply chain strategic alliances formation, owing to its role in enhancing the seamless operation of the supply chain network. The supply chain managers should uphold best practices that can ease the ability of the manufacturing entities to form alliances in their supply chain networks for a more visible, traceable and organized supply chain process. Through supply chain alliances in the supply chain network, the manufacturing sector stands a chance to increase their profits and revenue, reduce costs, improve on quality of products, access new markets and thus become more competitive. Through managing the relationship with the supply chain partners as well as integrating the operations and processes, the manufacturing firms gain more control of their supply chain processes, and this would result to effectiveness in internal and external operations thus enhancing their performance.

In the study the majority of the respondents 53.17% indicated that the business environment is volatile. This is significant in that it was also found out that it had a significant moderating effect on strategic alliances which affects performance. Thus, this study recommends the government to create policies that aim to stabilize the business environment. Reduce unfair competition, and offer support to starting businesses and those affected by political and other micro environmental factors.

Strategic alliances have significant effects on organization performance and this requires that to improve on quality production and profitability, then its recommended that these organizations must also improve their supply chain technical alliances, supply chain marketing alliances, supply chain innovation alliances, and supply chain cost and risk alliances. Further, as organizations begin to restart their operations post pandemic they have an opportunity to reimagine a future with digitized, resilient operations. Early successes have shown that companies can start on their industry journey in a small way and then scale quickly if they commit to transformation in line with their business environment and their strategic objectives. The COVID-19 pandemic should inspire us to strongly consider and hasten our strategic alliances and include the business environment challenges and the dynamism of environment.

The quality of the products has not significantly improved for the last 5 years and hence more strategies must be put in place to incorporate technology which will aid to improve the quality and also maintain required profitability in these organizations. This calls for the policy makers to scale up the applicability of favorable policies to the manufacturing firms. Besides, formulation of equitable tax policies as well as tax exemption policies could go a long way in encouraging investments by eliminating such instances of double taxation for example that over-burden the firms.

5.5 Contribution of the Study to Existing Knowledge, Policy and Theory

From the findings reported in chapter four and the conclusions made from the hypothesis, the study makes the following contribution to knowledge, the first contribution arises from the findings on the influence of strategic alliances on performance. The findings in Ho1-Ho4 provide explanation on the influence of supply chain technical alliance, supply chain marketing alliance, supply chain innovation alliance and supply chain cost and risk sharing alliances on performance of manufacturing firms. These findings generate knowledge on how these strategic alliance formations contribute towards performance of manufacturing firms in the Kenyan context, which expands the conceptual scope of the set of studies done on strategic alliances. While previous studies focused on the types of strategic alliances,

risks associated with strategic alliances, a comparison between the effect of strategic alliance on firms with strategic alliances and those without, and the benefits of strategic alliances to firms. The current study focused on the influence of supply chain strategic alliances and performance of manufacturing firms in Kenya.

The study developed a conceptual framework to lay a solid foundation to support future research work on the influence of supply chain strategic alliances on performance of manufacturing firms in Kenya. The study successfully tested hypothesis related to the original conceptual framework developed in chapter two. The policy makers hold a major role in determining how key sectors such as the manufacturing sector are run. The regulators and the legislators formulate policies and guidelines that guide on how manufacturing firms should carry out their operations including supply chain processes. Policy makers can utilize key findings as pointed out in this study to come up with policies and legislations that cover the concept of supply chain strategic alliance, as an essential driver to the success of the manufacturing sector in the country. Through the findings, it is possible for the policy makers to streamline the supply chain operations, advice on the best strategies to improve the performance of the manufacturing sector.

Based on research findings, future conceptual frameworks should focus on all the supply chain strategic alliances factors as well the moderating influence of business environment. The study also made a contribution regarding prioritizations of supply chain strategic alliances factors. The study noted that supply chain marketing alliances is very key factor as it explains the highest change in performance. The study also noted that supply chain cost and risk sharing alliances is also vital in explaining the change in performance.

The findings of the study can be linked to Network Theory. This theory describes the relationships between companies located in the same supply chain and the benefits that can be drawn from such relationships. The findings of the study can also be linked to the Transaction Cost Theory. This theory deals with explaining and resolving issues between business entities. The model discusses the problem that surface in the firms due to different business interests and involve coming up with

solutions arising like how to share risks and benefits. The Knowledge based View Theory depicts the buyer and supplier along the chain as partners with a common interest which is customer satisfaction. Strategic alliance is a relationship based on mutual trust, openness, shared risks and rewards that enables an organisation gain competitive advantage leading in the company achieving a performance that's far much greater than the firm would have achieved when operating as single entities.

Transaction Cost Theory further indicates that it is valuable to have alignment of a firm's objectives and strategies with those of channel members and partners, be they internal or external to the organization. Thus supply chain alignment results in a fit in terms of objectives, structures and processes within and between different functions and members in a supply chain. Transaction Cost Theory views alignment or fit as an important antecedent of firm performance. Knowledge Based View model increases company efficiency through way of cooperation, that way all parties obtain cost reduction which leads to price reduction and therefore increasing the gaining new markets and profit margin as well. This leads to a company gaining a competitive edge and efficiency.

The study findings can also be linked to the Resource Dependency Theory. The resource dependence model points out that organizations are not self-sufficient but depend on a network of relationships as a response to the uncertainty in acquiring resources adequately and in timely manner. An organization may increase its safety stock of a strategic natural resource following a buffering strategy and it could establish collaboration with a supplier of this scarce natural resource.

Firms survive or succeed if they can exploit their dependence on other firms or other firm's dependence on them to attain necessary resources. Forming chain alliances and collaborations with suppliers, customers and in some cases even competitors to co-create solutions to problems has become increasingly important to a firm business strategy and basis of competitive advantage. It is clear then that Resource Dependency model is important for an organization survival in the ever changing business environment.

5.6 Areas of Further Study

This study was based on manufacturing firms in Kenya, other State Corporations would also need to be subjected to the same rigorous investigations to see whether they will produce the same findings. This is an area that can be further interrogated by other researches having been given a lead by this study. Other researches and scholars may want to build on this study and explore other areas of interest that were not covered in this work, such as the influence of business environment on performance of manufacturing organizations and the influence of business environment on supply chain technical alliances, supplier relationship management, information system and channel management for manufacturing firms in Kenya could be explored. Other moderating effects like firm location, firm size, economic factors and their influence on organizational performance could be looked into.

Further studies can be done to establish the influence of supply chain strategic alliances on performance of firms in individual sectors like energy sector other than manufacturing firms as a whole in Kenya. A study can also be done to establish other factors that influence performance of manufacturing firms other than strategic alliances in supply factors. The results indicated that supply chain strategic alliances explains 73.5% of the changes in performance of manufacturing firms in Kenya. This implies that the remaining 26.5% of the change in performance of manufacturing firms is explained by other factors not investigated in the current study. A study can be conducted in future to establish the other factors. A replication of study in a longitudinal approach while using path analysis or structural equation models and consideration of other sectors, firm characteristics and resource constraints can be done.

REFERENCES

Achuka V. (2016). Bribes you have to pay 'to survive' in Kenya. *Africa Review, March 20.*

Adekola, A. & Sergi, B. S. (2016). *Global business management: A cross-cultural perspective.* London: Routledge.

AfDB (African Development Bank) (2014) *Eastern Africa's manufacturing sector: Promoting technology, innovation, productivity and linkages*. Tunis: AfDB.

AfDB (African Development Bank) (2016) Eastern Africa's manufacturing sector: Promoting technology, innovation, productivity and linkages. Tunis: AfDB

Akhavan, P. & Jafari, M. (2015). *Critical Success Factors of Knowledge Management Systems: A multi-case analysis.* Chicago*:* Emerald Group Publishing Limited.

Akinyele, S. T. (2016). Strategic Marketing and Firms Performance: A Study of Nigerian Oil and Gas Industry. *Business Intelligence Journal, 4(*2), 303-311.

Aldag, R. & Kuzuhara, L. (2015). *Creating high performance teams: Applied strategies and tools for managers and team members.* London: Routledge.

Ali, M, Seny, K, Konan, A. & Sarstedt, M, (2016), Direct and configurational paths of absorptive capacity and organizational innovation to successful organizational performance, *Journal of Business Research, 69,* (11), 5317-5323

Aliouat, B. (2016). *The effects of strategic alliances on competition in supply management.* Montreal: The international conference of strategic management.

Amit, R. &Schoemaker, P.J.H. (2019). Strategic assets and organizational rent. *Strategic Management Journal, 14*(1), 33-46.

Ammi, C. (2018). *Global consumer behavior*. New Jersey: John Wiley & Sons.

Andae, G. (2015). 'Mumias Sugar hires 8 managers to drive turnaround', *Business Daily, 29 June.*

Anderson, S.W., Dekker, H. C., & Van den Abbeele, A. 2017. Costly control: An examination of the trade-off between control investments and residual risk in interfirm transactions. Management Science, 63(7), 2163–2180.

Association of Chartered Certified Accountants. (2017). *China and sustainability: Risks and opportunities.* Nairobi: Summary of ACCA and CSR Asia Breakfast Briefing, 14 March.

Auramo, J., Kauremaa, J. & Tanskanen, K. (2005), Benefits of IT in supply chain management – an explorative study of progressive companies, *International Journal of Physical Distribution & Logistics Management, 35*(2), 82-100.

Awino, Z. B. (2016). Strategic management: an empirical investigation of selected strategy variables on firm's performance*: a study of supply chain management in large private manufacturing firms in Kenya.* Unpublished PhD dissertation, Nairobi: University of Nairobi.

Bamel, N., Pereira, V., Bamel, U., & Cappiello, G. (2021). Knowledge management within a strategic alliances context: past, present and future. *Journal of Knowledge Management*. *25*(7), 1782-1810.

Barakat, M., Alam, M. M., Chowdhury, Y., Miraz, M., & Habib, M. M. (2020). Integration of Supply Chain & ICT. *International Supply Chain Technology Journal*, *6*(5).

Baraza, D. (2017). *Effects of competitive strategies on performance of manufacturing firms in Kenya; a case study of East Africa Breweries Limited*. Unpublished PhD dissertation, Nairobi: University of Nairobi.

Barnett, M. L. (2015). Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of management review*, *32*(3), 794-816.

Barney, J. B. (2014). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, *7*(9), 99-127.

Bengtsson, J. & Kock, H. (2019). Corporate Capital Structure Decisions: Evidence from leveraged buyouts. *Financial Management*, *2*(4), 76-87.

Benn, S., Edwards, M. & Williams, T. (2014). *Organizational change for corporate sustainability*. London: Routledge.

Berg, A., Hedrich, S., & Russo, B. (2015). East Africa: The next hub for apparel sourcing. Nairobi: McKinsey & Company.

Boonstra, J. J. (2016). *Cultural change and leadership in organizations: a practical guide to successful organizational change*. New Jersey: John Wiley & Sons.

Boyd, B. (1990). Corporate Linkages and Organizational Environment: A Test of the Resource Dependence Model." *Strategic Management Journal 11*(6), 419–430.

Bryman, A. (2017). *The SAGE handbook of leadership*. Thousand Oaks: Sage Publications.

Bryson, J. M. (2018). *Strategic planning for public and nonprofit organizations: A guide to strengthening and sustaining organizational achievement*. New Jersey: John Wiley & Sons.

Cacciolatti, L., Rosli, A., Ruiz-Alba, J. L., & Chang, J. (2020). Strategic alliances and firm performance in startups with a social mission. *Journal of Business Research*, *106*, 106-117.

Cameron, K. S. & Quinn, R. E. (2015). *Diagnosing and changing organizational culture: Based on the competing values framework*. New Jersey: John Wiley & Sons.

Cao, Zhi & Lumineau, Fabrice. (2016). Revisiting the Interplay between Contractual and Relational Governance: A Qualitative and Meta-Analytic Investigation. *Journal of Operations Management.* 33-34.

Carter, C. R., Rogers, D. S., & Choi, T. Y. (2015). Toward the theory of the supply chain. *Journal of supply chain management*, *51*(2), 89-97.

Casciaro, T., & Piskorski, M. J. (2005). Power Imbalance, Mutual Dependence, and Constraint Absorption: A Closer Look at Resource Dependence Theory. *Administrative Science Quarterly*, *50*(2), 167- 199.

Chakraborty, D. (2017). *Research Methodology* (1st Ed). New Delhi: Saurabh Publishing House.

Chang, C.-W., Chiang, D. M., & Pai, F.-Y. (2012). Cooperative strategy in supply chain networks. *Industrial Marketing Management*, *41*(7), 1114-1124.

Chechet, I. L. & Olayiwola, A. B. (2014). Capital structure and profitability of Nigerian quoted firms: The agency cost theory perspective. *American International Journal of Social Science*, *3*(1), 139-158.

Chen, I. J., & Paulraj, A. (2004). Towards a theory of supply chain management: the constructs and measurements. *Journal of Operations Management*, *22*(2), 119-150.

Chen, S. J. (2016). High-performance work systems in foreign subsidiaries of American multinationals: An institutional model. *Journal of International Business Studies*, *42*(2), 202-223.

Chopra, Sunil & Meindl, Peter. (2018). Supply Chain Management. Strategy, Planning & Operation. Retrieved from https://link.springer.com/chapter/10.1007/978-3-8349-9320-5_22

Cichosz, M., Goldsby, T. J., Knemeyer, A., & Taylor, D. F. (2017a). Innovation in logistics outsourcing relationship–in the search of customer satisfaction. *LogForum*, 13(2).

Čirjevskis, A. (2019). The role of dynamic capabilities as drivers of business model innovation in mergers and acquisitions of technology-advanced firms. *Journal of Open Innovation: Technology, Market, and Complexity*, *5*(1), 12.

Collis, J. & Hussey, R. (2015*). Business research: A practical guide for undergraduate and postgraduate students*. Nairobi: Macmillan International Higher Education.

Cooper, D. R. & Schindler, P.S. (2018). *Business Research Methods*, (10thEd). New York: McGraw-Hill Publishing, Company Limited.

Crainic, T. G., & Laporte, G. (2016). Transportation in supply chain management: recent advances and research prospects. *International Journal of Production Research*, *54*(2), 403-404.

Creswell, J. W. & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks: Sage publications.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16,* 297–334.

Cui, V., Yang, H., & Vertinsky, I. (2018). Attacking your partners: Strategic alliances and competition between partners in product markets. *Strategic Management Journal*, *39*(12), 3116-3139.

Daft, R. L. (2015). *Organization theory and design.* German: Cengage learning.

Daft, R. L., Murphy, J. & Willmott, H. (2016). *Organization theory and design*. German: Cengage learning EMEA.

Danese, P. & Romano P. (2017). A Systematic Literature Review on Recent Lean Research: State-of-the-art and Future Directions. *International Journal of Management Reviews*. *20*, 10.

Darby, J. L., Ketchen Jr, D. J., Williams, B. D., & Tokar, T. (2020). The implications of firm-specific policy risk, policy uncertainty, and industry factors for inventory: *Journal of Supply Chain Management*, *56*(4), 3- 24.

David, F. R. (2017) *Strategic Management: concepts and cases.* 13th ed. New Jersey: Prentice Hall.

Davis, G. F. & Cobb, J.A. (2010) Resource dependence theory: Past and future. Stanford's organization theory on the Marketization of the Nonprofit Sector: Civil Society at Risk?" *Public Administration Review, 64*(2), 132-140.

Davis, G. F., & Cobb, J. A. (2010). Resource Dependence Theory: Past and future. *Research in the Sociology of Organizations*, *28*(1), 21-42.

Döckel, J.A., & Ligthelm, A.A. (2015). Factors responsible for the growth of small business. South *African Journal of Economic and Management Sciences*, *8*(1), 54-62

Doppelt, B. (2017). *Leading change toward sustainability: A change-management guide for business, government and civil society*. London: Routledge.

Drazin, R. & Van de Ven, A. H. (1985). Alternative forms of fit in contingency theory. *Administrative science quarterly, 34*(27), 514-539.

Durkheim, E. (1890). *The rules of sociological method: And selected texts on sociology and its method.* USA: Palgrave Macmillan.

Emami, A., Welsh, D., Davari, A., & Rezazadeh, A. (2022). Examining the relationship between strategic logistic alliances and the performance of small

entrepreneurial firms in telecommunications. *International Entrepreneurship and Management Journal*, 2(4), 78-86.

Emerson, R. M. (1962). Power-Dependence Relations. *American Sociological Review*, *27*(1), 31- 41.

Eroglu, C. & Hofer, C. (2015). Lean, leaner, too lean? The inventory-performance link revisited. *Journal of Operations Management, 29*(4), 356-369.

Essig, Michael & Arnold, Ulli. (2016). Electronic Procurement in Supply Chain Management: An Information Economics-Based Analysis of Electronic Markets. *Journal of Supply Chain Management. 37*. 43 - 49.

Ethiopia Economic Association (EEA), (2017). The state of Ethiopian Economy. Ethiopian Economics Association (EEA) *proceedings of the seventh annual conference on the eastern Ethiopia economic development*

Field, A. (2000). *Discovering Statistics using SPSS for Windows*. London: Sage publications.

Fine, B. (2018). *The political economy of South Africa: From minerals-energy complex to industrialization*. London: Routledge.

Flynn, B. B., Huo, B., & Zhao, X. (2016). The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of operations management, 28*(1), 58-71.

Frohlich, M.T. & Westbrook, R. (2001). Arcs of Integration: An International Study of Supply Chain Strategies. *Journal of Operations Management, 19,* 185-200.

Fullan, M. (2014). *Leading in a culture of change personal action guide and workbook.* New Jersey: John Wiley & Sons.

Galbraith, J. R. (2016). *Designing the customer-centric organization: A guide to strategy, structure, and process*. New Jersey: John Wiley & Sons.

Gattorna, J. (Ed.). (1998). Strategic Supply Chain Alignment: Best Practice in Supply Chain Management (1st ed.). London: Routledge.

Gawankar, S., Kamble, S. and Raut, R. (2016), Development, measurement and validation of supply chain performance measurement (SCPM) scale in Indian retail sector, Benchmarking: *An International Journal*, *23*(1), 25-60.

Ghozzi, H., Soregaroli, C., Boccaletti, S , & Sauvée, L., (2016). Impacts of non-GMO standards on poultry supply chain governance: transaction cost approach vs resource-based view. Supply Chain Management: *An International Journal*, *21*(6), 743-758.

Glynn, M. A. & DeJordy, R. (2016). *Leadership through an organization behavior lens*. Handbook of leadership theory and practice. Thousand Oaks: Sage Publications.

Gorard, S. (2016). *Research design: Creating robust approaches for the social sciences.* Thousand Oaks: Sage publications.

Grant, R. M. (2017). *Contemporary strategy analysis: Text and cases edition*. New Jersey: John Wiley & Sons.

Gregory, G. D., Ngo, L. V., & Karavdic, M. (2019). Developing Quality improvement marketing capabilities and efficiencies for enhanced performance in business-to-business export ventures. *Industrial Marketing Management, 78*, 146-157. 13.

Grint, K. (2016). A history of leadership. *The SAGE handbook of leadership*. Thousand Oaks: Sage Publications.

Gujarati, D., Dawn, P., & Sangeetha, G. (2013). Basic Econometrics, New Delhi, Tata McGrawHill Education. *Pvt Ltd*.

Gunday, G., Ulusoy, G. & Alpkan, L. (2015). Effects of innovation types on firm performance. *International Journal of production economics*, *133*(2), 662-676.

Guo, F., Zou, B., Zhang, X., Bo, Q., & Li, K. (2020). Financial slack and firm performance of SMMEs in China: Moderating effects of government subsidies and market-supporting institutions. *International Journal of Production Economics*, 223

Hair, F. & Bryan, L (2018). *Marketing research*. Australia: McGraw-Hill Education

Hajipour, B., Talari, M. & Shahin, A. (2017). An investigation of the relationships among industry structure, strategy type, organizational characteristics and organizational performance: A case study of the food and chemical industries of Iran. *African Journal of Business Management*, 5(16), 7085.

Håkansson, H., & Ford, D. (2002). How should companies interact in business networks? *Journal of business research*, *55*(2), 133- 139.

Håkansson, H., & Snehota, I. (1989). No business is an island: the network concept of business strategy. *Scandinavian journal of management*, *5*(3), 187-200.

Halldorsson, A., Kotzab, H., Mikkola, J.H., Skjøtt-Larsen, T., 2007. Complementary theories to supply chain management. Supply Chain Management: *An International Journal*, *12*(4), 284- 296.

Hameed, W. U., Nadeem, S., Azeem, M., Aljumah, A. I., & Adeyemi, R. A. (2018). Determinants of E-Logistic Customer Satisfaction: A Mediating Role of Information and Communication Technology (ICT). *International Journal of Supply Chain Management, 7*(1), 105-111.

Harland, C. M. (1996). Supply chain management: relationships, chains and networks. *British Journal of management, 7*(s1), S63-S80.

Harrigan, K. R., (1988). Strategic alliances and partner asymmetries. In F. Contractor & P. Lorange (Eds.), *Cooperative Strategies in International Business* (pp. 205–226). Lexington, MA: Lexington Books.

Hersey, P. & Blanchard, K. H. (1969). An introduction to situational leadership. *Training and Development Journal*, *23*(5), 26-34.

Hillman, A. J., Withers, M. C., & Collins, B. J. (2009). Resource Ddependence Theory: A Review. *Journal of Management*, *35*(6), 1404-1427.

Hogan, S. J. & Coote, L. V. (2016). Organizational culture, innovation, and performance: A test of Schein's model. *Journal of Business Research*, *67*(8), 1609-1621.

Hope, K. (2018) Informal economic activity in Kenya: Benefits and drawbacks, *African Geographical Review*, *33*(1), 67–80.

Hua, W., & Jing, Z. (2015). An Empirical Study on Quality improvement Logistics Service Quality and Customer Satisfaction *WHICEB Proceeding*, 269-275.

Huang and Hou, 2019, Innovation, research and development, and firm profitability in Taiwan: Causality and determinants. *International Review of Economics & Finance*, *59* (2019), 385-394

Hubbard, D. W. (2019). The failure of Risk Management*: Why It's Broken and How to Fix It*. New Jersey: John wiley & sons.

Hye, A.K.M., Miraz, M.H., Hassan, M.G., & Sharif, K.I.M (2020). Factors Affecting on E-Logistic: Mediating Role of ICT & Technology Integration in Retail Supply Chain in Malaysia, *Test Engineering & Management*, *82*(3234- 3243),

ICJ (International Commission of Jurists) (2016) *Handbook on devolution.* Nairobi: ICJ Kenya. Kenya Association of Manufacturers. (2016) Sectors

Imran, M., Hamid, S., & Aziz, A. (2018b). The influence of TQM on export performance of SMEs: Empirical evidence from manufacturing sector in Malaysia using PLS-SEM. *Management Science Letters*, *8*(5), 483-496.

Imran, M., Jian, Z., Urbański, M., & Nair, S. L. S. (2018). Determinants of firm's export performance in China's automobile industry. *Sustainability*, *10*(11), 4078. 16.

Industrial Development Report (2018). https://www.unido.org/resources-publications-flagship-publicationsindustrial-development-report-series/industrial-development-report.

International Labour Organisation. (2018) *Transitioning from the informal to the formal economy*. Geneva, ILO.

Isik, Ozcan & Tasgin, Umit. (2017). Profitability and Its Determinants in Turkish Manufacturing Industry: Evidence from a Dynamic Panel Model. *International Journal of Economics and Finance*. *9*, 66-75.

Jajja, Muhammad Shakeel Sadiq & Kannan, Vijay & Brah, Shaukat & Hassan, Syed. (2017). Linkages between firm innovation strategy, suppliers, product innovation, and business performance: Insights from resource dependence theory. *International Journal of Operations & Production Management*. *37*. 1054-1074.

Jin, P., Peng, C., & Song, M. (2019). *Macroeconomic uncertainty, high-level innovation, and urban green development performance in China. China Economic Review*, *55*, 1-18. 17.

Job Wafula Khisa & Paul Kariuki, (2022). Strategic Alliances and Performance of Firms in the Motor Vehicle Industry in Nairobi County. *Journal of International Business and Management*, *5*(2), 01-18.

Joppe, G. (2017). A simulation optimization methodology for supplier selection problem. *Journal of Supply Chain Management*, *3*, 2-9.

Joto, B. (2018). *Effect of Logistics Outsourcing on the Performance Of Dairy Processing Firms In Kenya,* Unpublished MSc, Nairobi: University of Nairobi.

Jüttner, Uta & Maklan, Stan. (2015). Supply chain resilience in the global financial crisis: An empirical study. Supply Chain Management: *An International Journal*. *16*, 246-259.

Kadochnikov, S. M., & Fedyunina, A. A. (2017). The impact of financial and human resources on the export performance of Russian firms. *Economic Systems*, *41*(1), 41-51.

Kamaku, D. K. & Waari, D. N. (2016). Firm Level Determinants of Manufacturing Firms' Growth in Kenya: 2000-2011. *International Journal of Economics, Commerce and Management United Kingdom*, *4*(2), 162-197.

Kamau, M. (2020). *Strategic Alliance Practices and Organization Performance of Selected Companies In The Energy Sector In Kenya*, Unpublished MSc Nairobi: Kenyatta University.

Kamukama, N., Ahiauzu, A. & Ntayi, J. M. (2017). Competitive advantage: mediator of intellectual capital and performance. *Journal of intellectual capital*, *12*(1), 152-164.

Karabag, S. F. & Berggren, C. (2016). *Back to the Merton ideals? Corporate fraud, scientific dishonesty, and the need to reform academic institutions and identity*. In 35th DRUID Celebration Conference 2013, Barcelona, Spain, June 17-19, 2013. Druid Web.

Kariithi, J. N. (2017). Factors affecting performance of manufacturing firms in Kenya: a case of pharmaceutical firms in Nairobi county. *Strategic Journal of Business & Change Management*, *4*(2), 234-257.

Kariuki, M. P. (2015). *Firm Level Factors, Industry Environment, Competitive Strategy and Performance of Large Manufacturing Firms in Kenya.* Unpublished PhD dissertation Nairobi: University of Nairobi.

Kavale, & Olendo, Joan. (2016). Effects of Supply chain marketing alliances on Supply Chain Performance at Bamburi Cement Mombasa, Kenya. *The International Journal of Business & Management. 4*. 435-452.

Kenya Association of Manufacturers (KAM), (022) *report*. Nairobi: Government Printers.

Kenya Association of Manufacturers (KAM), (2021) *report.* Nairobi: Government Printers.

Kenya Association of Manufacturers. (2018). *Manufacturing in Kenya under the 'Big 4 Agenda. Retrieved from* http://kam.co.ke/kam/wpcontent/uploads /2018/10/KAM-Manufacturing-Deep-Dive-Report-2018.

Kenya Economic Report (2020), *Creating an Enabling Environment for Inclusive Growth in Kenya*. Nairobi: Government Printers.

Kenya Economic Update (2018) *In Search of Fiscal Space. October 2018, Edition No. 18,* Nairobi: Government Printers.

Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2018). *Kenya Economic Report 2018. Kenya Economic Report 2018 (pp. 1–198). Nairobi, Kenya:* Kenya Institute for Public Policy Research and Analysis (KIPPRA). Nairobi: KIPPRA.

Kenya National Bureau of Statistics (2019) *Economic Survey 2019.* Nairobi: KNBS.

Kenya National Bureau of Statistics (KNBS) (2016). *Economic Survey 2011*. Nairobi: Government Printer

Kenya Vision 2030. (2019). *Ministry of State for Planning, National Development & Vision.* Nairobi: Government Printers.

Kessio, H. K. (2017). *Strategic Agility and Performance of Small and Medium Enterprises in Nairobi Central Business District, Kenya.* Unpublished masters dissertation Nairobi: University of Nairobi.

Kihara, N. S. A. (2016). *Influence of Strategic Contingency Factors on Performance of Large Manufacturing Firms in Kenya,* Unpublished PhD dissertation. Juja: JKUAT.

Kim, Y., Choi, T. Y., Yan, T., & Dooley, K. (2011). Structural investigation of supply networks: A social network analysis approach. *Journal of Operations Management, 29*(3), 194-211.

Kimeto, C. I. (2012). *Strategic issue management practices among manufacturing firms in Nairobi, Kenya.* Unpublished PhD dissertation Nairobi: University of Nairobi.

Kinyanjui, M. (2016) *Social relations and associations in the informal sector in Kenya*. Geneva: UNRISD.

Kiruja, M. M. (2011). *Strategic management practices in small and medium enterprises at Kariobangi light industries, Nairobi.* Unpublished PhD dissertation Nairobi: University of Nairobi.

Kiveu, M. N., Namusonge, M., & Muathe, S. (2019). Effect of innovation on firm competitiveness: the case of manufacturing SMEs in Nairobi County, Kenya. *International Journal of Business Innovation and Research, 18*(3), 307-327

Klein, P. & Shelanski, H. 1994. Empirical research in transaction cost economics: *A survey and assessment, Business and Public Policy Working Paper 60*, Haas School of Business, University of California, Berkerley. Knowledge. Oxford: Oxford University Press.

Klus, M. F., Lohwasser, T. S., Holotiuk, F., & Moormann, J. (2019). Strategic alliances between banks and fintechs for digital innovation: Motives to

collaborate and types of interaction. *The Journal of Entrepreneurial Finance, 21*(1).

KNBS (2021). *Kenya National Bureau of Statistics Report of the year 2021.* Nairobi: KNBS.

Koh, J., Venkatraman, N., 1991. Joint venture formations and stock market reactions: An assessment in the information technology sector. *Academy of Management Journal, 34,* 869–892.

Kollberg Thomassen, Maria & Dreyer, Heidi. (2014). Exploring The Impact of ICT On Integration In Supply Chain Control*: A Research Model.*

Kothari, C.R. (2012). *Research Methodology, Methods and Techniques*. (2nd Ed). Gupta New Delhi: New *Age International Publishing Limited.*

Kothari, C.R. (2014). Research Methodology, Methods and Techniques. (2nd Ed)., New Delhi: New Age International Publishing Limited.

Kothari, C.R. (2016). *Research Methodology and techniques*. (1st Ed). New Delhi: New Age International Publishing Limited.

Kotler, P., & Keller, K. L. (2016). Marketing management 15th global edition (Global). *Harlow: Pearson Education Limited*.

Krammer, S. M., Strange, R., & Lashitew, A. (2018). The export performance of emerging economy firms: The influence of firm capabilities and institutional environments. *International Business Review, 27*(1), 218-230.

Kumar, Praveen & Zattoni, Alessandro. (2015). In Search of a Greater Pluralism of Theories and Methods in Governance Research. Corporate Governance: *An International Review*. *23.*

Kuria, G. M. (2010). *Strategic management best practices in small and medium size private hospitals in Nairobi.* Unpublished Master dissertation. Nairobi: University of Nairobi.

Lall, S. (2013). Reinventing Industrial Strategy: The Role of Government Policy in Building Industrial Competitiveness. *Annals of Economics & Finance*, *14*(2), 57-103.

Lawrence, L. K. (2020). *Effect of Government Infrastructure Development Expenditure on Performance of Manufacturing in Kenya*, Unpublished PhD Dissertation, Nairobi: Kenyatta University

Lawrence, P. R. &Lorsch, J. W. (1967). *Managing differentiation and integration. Organization and environment*, *2*(2), 267-274.

Lee, K. H., & Wu, Y. (2014). Integrating sustainability performance measurement into logistics and supply networks: A multi-methodological approach. *The British Accounting Review*, *46*(4), 361-378.

Levy, P. S. & Lemeshow, S. (2016). *Sampling of populations: methods and applications*. New Jersey: John Wiley & Sons.

Lewis, S. (2015). Qualitative inquiry and research design: Choosing among five approaches. *Health promotion practice*, *16*(4), 473-475.

Li, G., Ji, P., Sun, L. Y., & Lee, W. B. (2009). Modeling and simulation of supply network evolution based on complex adaptive system and fitness landscape. *Computers & Industrial Engineering*, *56*(3), 839-853

Li, J., Liu, B., & Qian, G. (2019). The belt and road initiative, cultural friction and ethnicity: Their effects on the export performance of SMEs in China. *Journal of World Business*, *54*(4), 350-359. 26.

Lioukas, C. S., & Reuer, J. J. (2020). Choosing between safeguards: Scope and governance decisions in R&D alliances. *Journal of Management*, *46*(3), 359-384.

Liu, W., & Atuahene-Gima, K. (2018). Enhancing product innovation performance in a dysfunctional competitive environment: The roles of competitive

strategies and market-based assets. *Industrial Marketing Management, 73*, 7-20.

Loke, Siew-Phaik & Downe, Alan & Sambasivan, Murali. (2013). Strategic alliances with suppliers and customers in a manufacturing supply chain: From a manufacturer's perspective. *Asia-Pacific Journal of Business Administration*. *5*,. 192-214.

Lönnqvist, A. & Kujansivu, P. (2016). *The Value and Efficiency of Intellectual Capital in Finnish Companies.*

Lorsch, J. (2017). *A contingency theory of leadership. Handbook of leadership theory and practice*, Thousand Oaks: Sage Publications.

Lotfi, Zahra & Sahran, Shahnorbanun & Mukhtar, Muriati. (2016). A Product Quality-Supply Chain Integration Framework. *Journal of Applied Sciences. 13*. 36-48.

Lunenburg, F. C. (2017). *Organizational culture-performance relationships: Views of excellence and theory. In National forum of educational administration and supervision journal, 29*(4), 1-10.

Luu, T., Kim, S., Cao, H. & Park, Y. (2018). Performance measurement of construction firms in developing countries, *Journal of Construction Management and Economics*, 26(4), 373-386.

Mani, V., Gunasekaran, A., & Delgado, C. (2018). Enhancing supply chain performance through supplier social sustainability: An emerging economy perspective. *International Journal of Production Economics*, *195*, 259-272.

Manzoor, Q. A. (2018). Impact of employees' motivation on organizational effectiveness. *Business management and strategy*, *3*(1), 1-13.

Mathuki, M. P., Ogutu, M., & Pokhariyal, P. (2019). The link between strategic alliances and performance of kenyan manufacturing firms in the east african

community market. *International Journal of Contemporary Applied Researches*, *6*(6), 67-91.

Matyusz, Z. (2016). *The effect of contingencies on manufacturing practices and operations performance.* Unpublished PhD Thesis, Budapest: Corvinus University of Budapest.

Meyers, L. S., Gamst, G. & Guarino, A. J. (2016). *Applied multivariate research: Design and interpretation.* Thousand Oaks: Sage publications.

Michir, M. (2019) '*Mumias Sugar sinks deeper into trouble, posts Sh6.3 billion loss'*, The Standard, 12 November.

Miles, R. E., & Snow, C. C. (2007). Organization theory and supply chain management: An evolving research perspective. *Journal of Operations Management*, *25*(2), 459-463.

Min, S., Zacharia, Z. G., & Smith, C. D. (2019). Defining supply chain management: in the past, present, and future. *Journal of business logistics*, *40*(1), 44-55.

Miner, J. B. (2015). *Organizational behavior 1: Essential theories of motivation and leadership*. London: Routledge.

Ministry of Industrialization. (2018). *National industrialization Policy*. Retrieved from http://www.industrialization.go.ke/images/downloads/policies/the-national-industrialization-policy.

Ministry of Industry, Trade and Cooperatives. (2019) *Kenya's Industrial Transformation Programme.* Retrieved from http://www.industrialization.go.ke/index.php/downloads/282-kenya-s-industrial-transformationprogramme

Ministry of Industry, Trade and Cooperatives. (2019). *Kenya's Industrial Transformation Programme.* Nairobi: Ministry of Industry, Trade and Cooperatives

Ministry of Trade and Industry. (2020*).* Master Plan for Kenya's Industrial development. *http://open_jicareport.jica.go.jp/pdf/11873684_01.pdf*

Miraz, M.H., Hassan, M.G., & Sharif, K.I. M. (2019s). Blockchain Technology Implementation in Malaysian Retail Market. *Journal of Advanced Research in Dynamical and Control Systems. 11*(5), 991-994.

Miraz, M.H., Molla, M.S., Habib, M., & Majumder, I. (2016). Supply Chain Management and ICT on Automotive Industry in Bangladesh. *IETI Transactions on Business and Management Sciences, 2016, 1*(2), 56-66,

Misore, E. O. (2017). *The Impact of Financial Factors on Profitability of Manufacturing Firms Listed on the Nairobi Securities Exchange*. Unpublished PhD dissertation, Nairobi: United States International University-Africa.

Mohammad E. (2017). Knowledge integration with customers in collaborative product development project. *Journal of Business & Industrial Marketing*, *31*(7), 889-900.

Monideepa, T., & Sufian, Q. (2017). Agile supply chain strategy and supply chain performance: complementary roles of supply chain practices and information systems capability for agility. *International Journal Production*. *55*(4), 925-938.

Moqbel, M., & Nah, F. F. H. (2017). Enterprise social media use and impact on performance: The role of workplace integration and positive emotions. *AIS Transactions on Human-Computer Interaction, 9*(4), 261-280.

Morduch, J. (2017). The Microfinance Schism, *World Development, 17*(28), 617-629.

Mosbah, A., Serief, S. R., & Wahab, K. A. (2017). Performance of family business in Malaysia. *International Journal of Social Sciences Perspectives, 1*(1), 20-26.

Muange, R., & Kiptoo, N. (2020). Moderating Effect of Firm Size on the Relationship between Joint Marketing Alliances and Firm Performance of Retail Firms in Nairobi County, Kenya. *International Journal of Research and Innovation in Social Science, 4*(8), 273-284.

Muange, R., & Maru, L. C. (2015). Strategic alliances on performance of retail firms in Nairobi County, Kenya, *The TQM Journal*, *27*(6), 732-740.

Mugenda, O.M. & Mugenda, A. G. (2003). *Research Methods: Quantitative and Qualitative approaches.* Nairobi: African Centre for Technology Studies.

Munyi, G. M., & Deya, J. (2019). Effect of Strategic Value Chain Positioning on Firm's Performance: A Case of Pharmaceutical Supply Chain Firms in Kenya. *European Journal of Business and Strategic Management*, *4*(3), 58-76.

Musau, E. G., Namusonge, G., Makokha, E. N., & Ngeno, J. (2017). The effect of inventory management on organizational performance among textile manufacturing firms in Kenya. *International Journal of Academic Research in Business and Social Sciences*, 7(11), 1032-1046.

Musili, M. N., & Deya, J. (2023). Influence of Strategic Alliances on Performance of Firms in the Tourism Sector in Nairobi County, Kenya. *Journal of Business and Strategic Management*, *8*(5), 1-24.

Muthoka, R., Kilika, J., & Muathe, S. (2022). What sustains performance in a strategic alliance? The role of level of collaboration. *Journal of Business and Management Sciences*, *10*(3), 113-123.

Muturi, W. & Maroa, J. G. (2015). Influence of strategic management practices on performance of floriculture firms in Kenya a survey of Kiambu County, Kenya. *International Journal of Economics, Commerce and Management 3*(7), 23-48.

Mwangangi, P. W. (2016). *Influence of logistics management on performance of manufacturing firms in Kenya*. Unpublished PhD dissertation, Juja: JKUAT.

Mwangi, N. W. (2019). *Influence of Supply Chain Optimization on the Performance of Manufacturing Firms in Kenya,* Unpublished PhD dissertation, Juja: JKUAT.

Nagurney, A., Cruz, J., Dong, J., & Zhang, D. (2005). Supply chain networks, electronic commerce, and supply side and demand side risk. *European Journal of Operational Research, 164*(1), 120-142.

Nassiuma, D. K. (2018). Survey sampling. *Theory and methods*. New Jersey: John Wiley & Sons.

Ndambuki, N. R. (2010). *Strategic management practices and challenges among small and medium enterprises in westlands division, Nairobi.* Unpublished PhD dissertation. Nairobi: University of Nairobi.

Nel, C. &Beudeker, N. (2019). *(R) evolution: How to Create a High Performance Organisation*. Village of Leaders Products. Thousand Oaks: Sage Publications.

Newman, M., & Gough, D. (2020). Systematic reviews in educational research: Methodology, perspectives and application. *Systematic reviews in educational research: Methodology, perspectives and application*, 3-22.

Nganga, M. U. (2013). *Strategic Leadership and Performance of Manufacturing Firms in Kenya.* Unpublished PhD dissertation. Nairobi: University of Nairobi.

Njeri, I. M. (2013). *Strategic management practices and performance of large pharmaceutical firms in Kenya.* Unpublished PhD dissertation. Nairobi: University of Nairobi.

Northouse, P. G. (2018). *Leadership: Theory and practice*. Thousand Oaks: Sage publications.

Ntinyari, M. B. (2015). *Strategic change management practices and performance of large supermarkets in Nairobi County, Kenya.* Unpublished PhD dissertation. Nairobi: University of Nairobi.

Nyamao, O. L. (2016). *Effect of Strategic Leadership on Performance of Small and Medium Enterprises in Kenya. A case of manufacturing firms in Kenya*. Unpublished PhD dissertation. Nairobi: University of Nairobi.

Nyamasege, O & Oteki, E. (2015). Effect of Supply chain marketing alliances on the Effectiveness of Supply Chain Management in the Kenya Public Sector. *International Journal of Managing Value and Supply Chains*. *6*, 25-32.

Obi, C. E. (2017). Impact of External Financing on Firm Performance: Evidence from Nigeria Quoted Manufacturing Firms, 1999-2012. *Serbian Journal of management, 5*(9), 213-247.

Ochieng, O. V. (2016). *Influence of Organisational Structure on Project Performance: A Case of Taylor Nelson Sofres Nairobi, Kenya*. Unpublished PhD dissertation. Nairobi: University of Nairobi.

Odhiambo, Nicholas. (2015). Government Expenditure and Economic Growth in South Africa: An Empirical investigation. *Atlantic Economic Journal*. *43,* 10.1007/s11293-015-9466-2.

Oduol, M.S. (2015). *Effects of Organizational Culture on Performance of Subsidiaries of Selected Regional Commercial Banks Headquartered in Kenya*. Unpublished PhD dissertation. Nairobi: University of Nairobi.

Okello, B. & Kanyora, S. N. (2015). Influence of strategic management practices on performance of construction firms in Kenya, a Case of reliable concrete works limited, Kenya. *International Journal of Economics, Commerce and Management, 3*(6), 53-87.

Oluwagbemiga, E. O. (2016). The use of voluntary disclosure in determining the quality of financial statements: Evidence from the Nigeria listed companies. *Serbian Journal of management*, *9*(2), 263-280.

Ondieki, N. & Oteki, E. (2015). Effect of Supply chain marketing alliances on the Effectiveness of Supply Chain Management in the Kenya Public Sector. *International Journal of Managing Value and Supply Chains*. *6*, 25-32.

Orodho, C.R. (2012). *Elements of Education and Social Science Research Methods*. (2nded). New Delhi: Kaneza Publishers.

Osborn, R. N., & Baughn, C. C., 1990. Forms of interorganizational governance for multinational alliances. *Academy of Management Journal*, *33*, 503–519.

Otuki, N. (2016*), World Bank says Kenyans less productive at work than Ethiopians, Ugandans,* The East African, Retrieved from. http://www.theeastafrican. co.ke/business/World-Bank-says-Kenyans-lessproductive-at-work-than-Ugandans/2560-3270950-30kh7mz/index.html

Overseas Development Institute. (2016). *Developing Export-Based Manufacturing in Sub-Saharan Africa*. London: ODI Transparency International.

Panahifar, F., Byrne, P. J., Salam, M. A., & Heavey, C. (2018). Supply chain collaboration and firm's performance: the critical role of information sharing and trust. *Journal of Enterprise Information Management*, *31*(3), 358-379.

Pfeffer, J. (1982). Organizations and Organization Theory. Marshfield, MA, Pitman.

Pfeffer, J., & Salancik, G. R. (1978). The External Control of Organizations: A Resource Dependence Perspective. New York: Haper & Row

Powell, W. & DiMaggio, P. J. (Eds.). (2016). *The new institutionalism in organizational analysis*. Chicago: University of Chicago Press.

Prajogo, D., Oke, A., & Olhager, J. (2016). Supply chain processes: Linking supply logistics integration, supply performance, lean processes and competitive

performance. *International Journal of Operations & Production Management*, *36*(2), 220-238.

Pratheepan, T. (2017). *A Panel Data Analysis of Profitability Determinants: Empirical Results from Sri Lankan Manufacturing Companies*. Thousand Oaks: Sage Publications.

Pulic, A. (2016). Intellectual capital – does it create or destroy value*? Measuring Business, 6*(7), 32-45.

Qingmin, K., Helmut, N. & Juergen, D. (2015). Managing beyond the factory walls: Effects of four types of strategic integration on manufacturing plant performance. *Journal of Operations Management*, *24*(7), 148-164.

Rainey, H. G. (2019). *Understanding and managing public organizations*. New Jersey: John Wiley & Sons.

Raul, S., Isabel, A., & Marta, F. O. (2019). Networks and export performance of agri-food firms: New evidence linking micro and macro determinants. *Agricultural Economics, 62*(10), 459-470.

Ribau, C. P., Moreira, A. C., & Raposo, M. (2017). Export performance and the internationalisation of SMEs. *International Journal of Entrepreneurship and Small Business, 30*(2), 214-240.

Rindfleisch, A. (2020). Transaction cost theory: past, present and future. *AMS Review*, *10*(1), 85-97.

Ring, P. S., & Van de Ven, A. H. (1994). Developmental processes of cooperative interorganizational relationships. *The Academy of Management Review, 19*(1), 90–118

Ritchie, J., Lewis, J. & Elam, R. G. (2017). *Selecting samples. Qualitative research practice: A guide for social science students and researchers, 71*(9), 111-131.

Roya, R. (2017). Supply chain technical alliances (people, process and technology) and organisational culture in hotels: Which traits matter? *International Journal of Contemporary Hospitality Management*. 29.

Sadeghi, V. J., & Biancone, P. P. (2018*). How micro, small and medium-sized enterprises are driven outward the superior international trade performance? A multidimensional study on Italian food sector*. *Research in International Business and Finance, 45*, 597-606.

Saeidi, S. P., Sofian, S., &Saaeidi, S. A. (2015). How does corporate social responsibility contribute to firm financial performance? The mediating role of competitive advantage, reputation, and customer satisfaction. *Journal of Business Research, 68*(2), 341-350.

Sánchez-Flores, R. B., Cruz-Sotelo, S. E., Ojeda-Benitez, S., & Navarro-Gonzalez, C. R. (2020). Sustainable procurement to enhance organizational performance in supply chain management: Current research and practices. *Handbook of Research on Industrial Applications for Improved Supply Chain Performance*, 1-26.

Sasaka, P. S., Namusonge, G. S. & Sakwa, M. M. (2014). Effects of strategic management practices on corporate social responsibility performance of parastatals in Kenya. *European Journal of Business and Innovation Research, 2*(1), 106-128.

Sassen, S. (2017). *Cities in a world economy*. Thousand Oaks: Sage Publications.

Schein, E. H. (2018). *Organizational culture and leadership*. New Jersey: John Wiley & Sons.

Scott, C., & Westbrook, R. (1991). New strategic tools for supply chain management. *International journal of physical distribution & logistics management*, *21*(1), 23-33.

Scott, W. R. & Davis, G. F. (2015). *Organizations and organizing: Rational, natural and open systems perspectives*. London: Routledge.

Scott, W. R. (2003). Organizations: Rational, Natural and Open Systems (5th edition), New York: Prentice Hall.

Sekaran, U. &Bougie, R. (2016). *Research methods for business: A skill building approach*. New Jersey: John Wiley & Sons.

Shan, H., Li, Y., & Shi, J. (2020). Influence of supply chain collaborative innovation on sustainable development of supply chain: a Study on Chinese Enterprises. *Sustainability*, *12*(7), 2978.

Sharif, S. P. & Yeoh, K. K. (2014). Independent Directors' Resource Provision Capability in Publicly-listed Companies in Malaysia. *Corporate Ownership and Control* 11(3): 113–121.

Sheng, S., Zhou, K. Z. & Li, J. J. (2015). The effects of business and political ties on firm performance: Evidence from China. *Journal of Marketing*, *75*(1), 1-15.

Sheth, J. N. (2016). Impact of emerging markets on marketing: Rethinking existing perspectives and practices. *Journal of Marketing*, *75*(4), 166-182.

Shook, C. L., Adams, G. L., Ketchen Jr, D. J., & Craighead, C. W. (2009). Towards a "theoretical toolbox" for strategic sourcing. Supply Chain Management: *An International Journal*, *14*(1), 3-10.

Simatupang, T.M. & Sridharan, R. (2005). An integrative framework for supply chain collaboration, *The International Journal of Logistics Management, 16*(2), 257-274.

Singh, J., Singh, S., & Kumari, M. (2020). Role of ICT in supply chain management. *Journal of Interdisciplinary Cycle Research*, *12*(10), 992-1007.

Snow, C., & Miles, R. (1992). Causes for Failure in Network Organizations. *California management review*, *34*(1), 53-57.

Soita, N. (2015). Factors affecting supply chain collaboration in government ministries in Kenya. *International Journal of Production Research*, *54*(2), 403-404.

Song, S., Coit, D. W., Feng, Q. & Peng, H. (2019). Reliability analysis for multi-component systems subject to multiple dependent competing failure processes. *IEEE Transactions on Reliability*, *63*(1), 331-345

Steiner, B., Lan, K., Unterschultz, J., & Boxall, P. (2017). Applying the resource-based view to alliance formation in specialized supply chains. *Journal of Strategy and Management*, *10*(3), 262-292.

Stewart, B. P. (2017). *Strategies for cultural change*. London: Routledge.

Stump, R. L., & Heide, J. B. (1996). Controlling Supplier Opportunism in Industrial Relationships. *Journal of Marketing Research, 33*, 431-441.

Sung, B., & Wen, C. (2018). *Causal Dynamic Relationships between Political–Economic Factors and Export Performance in the Renewable Energy Technologies Market. Energies*, *11*(4),

Tavitiyaman, P., Qiu Zhang, H. & Qu, H. (2016). The effect of competitive strategies and organizational structure on hotel performance. *International Journal of Contemporary Hospitality Management*, *24*(1), 140-159.

Thorelli, H. B. (1986). Networks: between markets and hierarchies. *Strategic management journal*, *7*(1), 37-51.

Thrulogachantar, P. & Zailani, S. (2016). The influence of purchasing strategies on manufacturing performance: An empirical study in Malaysia. *Journal of Manufacturing Technology Management*, *22*(5), 641-663.

Touboulic, A., & Walker, H., (2015). Theories in sustainable supply chain management: a structured literature review. *International Journal of Physical Distribution & Logistics Management*, *45*(1/2), 16-42.

Trompenaars, F. & Hampden-Turner, C. (2017). *Riding the waves of culture: Understanding diversity in global business*. German: Nicholas Brealey Publishing.

UNIDO (2018). Industrial Development Report 2018. Retrieved from *industrial-development-report-series/industrial-development-report* 2018

Vahlne, J. E. &Johanson, J. (2017). *The internationalization process of the firm a model of knowledge development and increasing foreign market commitments. In International Business* (pp. 145-154). London: Routledge.

Vanpoucke, E., Vereecke, A., & Muylle, S. (2017). Leveraging the impact of supply chain integration through information technology. *International Journal of Operations & Production Management*, *37*(4), 510-530.

Vickery, S.K. & Droge, C. & Setia, Pankaj & Sambamurthy, V. (2017). Supply Chain Information Technologies and Organisational Initiatives: Complementary versus Independent Effects on Agility and Firm Performance. *International Journal of Production Research - INT J PROD RES*. *48*, 7025-7042.

Wacker, J.G., Yang, C., & Sheu, C. (2016), A Resourse Dependency theorymodel for estimating performance effectiveness of relational and contractual governance: Theory and statistical results, *International Journal of Operations & Production Management*, *36*, 1551-1575

Wagner, M., & Zidorn, W. (2017). Effects of extent and diversity of alliancing on innovation: the moderating role of firm newness. *Small Business Economics*, *49*, 919-936.

Waiganjo, C. W. (2018). *Effect of mobile banking investment on financial profitability-A Case of Tier one banks in Kenya,* Unpublished PhD dissertation, Nairobi: Strathmore University.

Wambugu, N.V. (2014). *Influence of competitive strategies on performance of large supermarket chains in Nairobi city County, Kenya.* Unpublished PhD dissertation. Nairobi: University of Nairobi.

Wang, B., Childerhouse, P., Kang, Y., Huo, B., & Mathrani, S. (2016). Enablers of supply chain integration: Interpersonal and interorganizational relationship perspectives. *Industrial Management & Data Systems*, *116*(4), 838-855.

Wang, B., Kang, Y., Childerhouse, P., & Huo, B. (2018). Service supply chain integration: the role of interpersonal relationships. *Industrial Management & Data Systems*, *118*(4), 828-849.

Wang, K. T. (2015). *Research design in counseling*. Chicago: Nelson Education.

Wang, X., & Cheng, Z. (2020). Cross-Sectional Studies: Strengths, Weaknesses, and Recommendations. *Chest*, *158*(1S), S65–S71.

Watts, J. K., & Koput, K. W. (2019). The downside of prominence in a network of marketing alliances. *Journal of Business Research*, *104*, 196-205.

Wieland, A. & Wallenburg, C.M. (2018). Dealing with supply chain risks: Linking risk management practices and strategies to *performance. International Journal of Physical Distribution & Logistics Management*. *42*. 887-905.

Williamson, O. (1981). The economics of organization: The transaction cost approach. *American Journal of Sociology*, *87*(3), 548-577.

Williamson, O. (1985). *The economic institutions of capitalism: Firms, markets, relational contracting.* New York: Free Press.

Williamson, O. (1991). Comparative economic organization: The analysis of discrete structural alternatives. *Administrative Science Quarterly*, *36*, 269-296

Wong, H., Page, D., Abello, R. & Pang, P. (2017). *Explorations of Innovation and Business Performance using linked firm-level data*. Research paper Cat.no.1351.0.55.020. Canberra: Australian Bureau of Statistics.

World Bank (2016a). *Kenya Economic Update.* Washington, DC: World Bank

World Bank (2016b). *'Informal enterprises in Kenya'*. Nairobi: World Bank.

World Bank (2016c). '*Kazi ni kazi: Informal should not be normal'*. Nairobi: World Bank.

World Bank (2019). *World Development Report*. Washington, DC: World Bank

Wu, Y., Chen, B., & Evans, M. (2020). Block chain and supply chain management: a new paradigm for supply chain integration and collaboration. *Operations and Supply Chain Management: An International Journal*, *14*(1), 111-122.

Wuthnow, R. & Witten, M. (1988). *New directions in the study of culture*. *Annual Review of Sociology, 14*(1), 49-67.

Xiaoxue Weng. 2015. The rural informal economy: *Understanding drivers and livelihood impacts in agriculture, timber and mining*. IIED Working Paper. IIED, London.

Xie, Z., & Li, J. (2018). Exporting and innovating among emerging market firms: The moderating role of institutional development. *Journal of International Business Studies*, 49(2), 222- 245

Yin, R. K. (2017). *Case study research and applications: Design and methods*. Thousand Oaks: Sage publications.

Yukl, G. (2018). *Contingency theories of effective leadership*. The SAGE handbook of leadership. Thousand Oaks: Sage Publications.

Yukl, G. A. (2017). *Leadership in organizations*. India: Pearson Education.

Zhang, X., & Venkatesh, V. (2017). A nomological network of Knowledge management system use: Antecedents and consequences. *MIS Quarterly, 41*(4), 1275-1306.

Zheng, W., Yang, B. & McLean, G. N. (2018). Linking organizational culture, structure, strategy, and organizational effectiveness: Mediating role of knowledge management. *Journal of Business research*, *63*(7), 763-771.

Zimmermann, P., Rajal, M., Buchholz, J., Plinval, PL., & Geissmann, M. (2015). Supply relationship management: *Redefining the value of strategic supplier collaboration, Germany,* Germany: Delloitte Consulting GmbH.

APPENDICES

Appendix I: Introductory Letter to the Respondents

Fatuma Ali Rajab

P.O. Box 3846 Code 00100

Nairobi, Kenya.

Dear Respondent,

RE: PhD PROPOSAL FOR FATUMA ALI

This is to introduce to you **FATUMA ALI** who is a doctoral candidate at the Jomo Kenyatta University of Agriculture and Technology, School of Human Resource Development. As part of her academic program, he is conducting a study on **'influence of supply chain strategic alliances on performance of manufacturing firms in Kenya'.**

You have been identified as a potential respondent in this research. Please respond to all questions, using your best estimates. Your participation in answering these questions is very much appreciated. Your responses will be completely confidential. If you have any questions or comments about this survey, you may contact Fatuma Ali, Tel: 0720 577 504; email: alifatuma6@gmail.com.

Thanking you in advance for your co-operation.

Yours Faithfully,

Fatuma Ali Rajab

Appendix II: Questionnaire

The purpose of this questionnaire is to establish ***the relationship between supply chain strategic alliances and performance of manufacturing companies in Kenya***. 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.

SECTION 1: SUPPLY CHAIN TECHNICAL ALLIANCES

1) Please rank the following supply chain technical alliances indicators in order of preference
(Please Tick 1 for Least Preferred (LP), 2 for Moderately Preferred (MP), 3 for Neutral (N), 4 for Preferred (P) and 5 for Strongly Preferred (SP).

		1	2	3	4	5
a)	Technical skills					
b)	Technology sharing					
c)	Knowledge sharing					

2) How would you rate the supply chain technical alliances system implemented in your organization in improving performance

a) Very Effective

b) Effective

c) Somehow Effective

d) Ineffective

3) Please show by ticking the degree to which you agree or disagree with the following statements. (Please Tick 1 for Strongly Disagree (SD), 2 for Disagree (D), 3 for Neutral (N), 4 for Agree (A) and 5 for Strongly Agree (SA).

	Statement	1	2	3	4	5
a.	Adequate and appropriate information is share with our suppliers to enhance continued collaboration					
b.	The stakeholders identified are effectively involved in making key decision regarding supply chain process					
c.	Transfer/training in new technology as a result of alliances enhances capacity of our firm					
d.	There is talent enhancement as a result of technological alliances in our firm					
e.	Share knowledge and expertise in production alliances improves efficiency in our firms production process					
f.	We acquire new technical knowledge from our supply chain partners					
g.	We can solve practical problems based on knowledge gain from supply chain partners					
h.	We often communicate industry development trends with supply chain partners					
i.	We share our knowledge with our partners to improve the business performance level					

SECTION 2: SUPPLY CHAIN MARKETING ALLIANCES

1) Kindly position the mentioned supply chain marketing alliances indicators in order of importance

(Please Tick 1 for Least Important (LI), 2 for Moderately Important, 3 for Neutral (N), 4 for Important (I) and 5 for Very Important (VI)).

		1	**2**	**3**	**4**	**5**
a)	Co-branding practices					
b)	Co-marketing					
c)	Sharing market					

2) Kindly point out the degree to which you agree with the following pointers.

(Please Tick 1= Strongly Agree (SA), 2= Agree (A), 3= Undecided (U), 4= Disagree and 5= strongly Disagree (SD)

		1	2	3	4	5
a.	Our firm engages in joint marketing and promotion alliances of products with others					
b.	Our firms engages in joint marketing alliances with firms that have well establishedcustomer relationships					
c.	Our alliances are based on fast and cost effective ways to build market awareness and sales interest					
d.	Our firms demonstrate similar values with their partners					
e.	Promotions resulting from marketing alliances improves market operations of our firm					
f.	Marketing alliances result into efficient market distribution systems that enhance our firms operations					
g.	The branding system resulting from market alliances increases the ability of our firm to penetrate the market					
h.	Marketing alliances help improve timely delivery, product availability and products return in the market for our firm					
i.	Strategic alliances in marketing enhance the capability of the firm of extending market share					

SECTION 3: SUPPLY CHAIN INNOVATION ALLIANCES

1) Please grade the mentioned supply chain innovation alliances in order of importance

Please Tick 1= Not important, 2= Least important, 3= Undecided, 4= Important 5= Very Important

		1	**2**	**3**	**4**	**5**
a)	New product development					
b)	Process efficiency					
c)	Quality improvement					

2) How would you rate the Supply chain innovation alliances if implemented in an organization in improving performance?

a) Very Effective

b) Effective

c) Somehow Effective

d) Ineffective

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

	Statement	**1**	**2**	**3**	**4**	**5**
a.	Supplier are adequately involved in designing and enhancing effectiveness of key supply chain processes in our firm					
b.	The process and operations in the organization are organized with consideration of our supply chain partners					

c.	Entering into alliances has enhanced the level of innovativeness of our firm					
d.	Alliances in Research and development has enhanced the level of quality in our production					
e.	There is enhanced quality of goods and our firm produces					
f.	Enhancing the quality assurance capabilities of our partners has reduced the level of manufacturing defects					
g.	The number of patents have increased after we built supply chain alliances					
h.	The number of self-developed products has increased after building supply chain alliances					
i.	Product development has accelerated after building supply chain partnerships					

SECTION 4: SUPPLY CHAIN COST AND RISK SHARING ALLIANCES

1) Please rank the following supply chain cost and risk sharing alliances indicators in order of preference to improve performance.

(Please Tick 1= Least Preferred (LP), 2= moderately preferred (MP), 3= Undecided, 4= Proffered (P) and 5= Strongly Proffered (SP).

		1	**2**	**3**	**4**	**5**
a)	Inventory cost management					
b)	Logistics cost management					
c)	Joint risk management					

2) Kindly grade supply chain risk and cost sharing strategies in improving performance of your organization.

a) Very Successful

b) Successful

c) Moderately Successful

d) Unsuccessful

3) Kindly state to what extent you are in agreement with the statement below (Please Tick 1= strongly Agree (SA), 2= Agree (A), 3= Undecided (U), 4= Disagree and 5= Strongly Disagree).

		1	**2**	**3**	**4**	**5**
a.	Our firms production costs have been reducing arising from our supply chain alliances					
b.	Our inventory levels have reduced thus leading to reduced inventory costs and minimal stock outs after alliances					
c.	Cost sharing with supply chain partners enables the firm to invest more on other productive areas					
d.	The aspect of sharing cost of production enhances the performance of manufacturing firms within the alliance					
e.	Our firms achieves storage benefits from its logistic partners					
f.	We achieve transport objectives from our logistic partners					
g.	We achieve procurement objectives from our alliance partners					
h.	Logistic alliances have enabled our firm to save on storage and transport expenses					
i.	There is enhanced procurement practices in our firm					

SECTION 5: BUSINESS ENVIRONMENT

1) How do you rate improvement in the business environment especially in transport infrastructure. political stability and knowledge creation in improving performance of your firm.

a) Very Important

b) Important

c) Somehow Important

d) Least important

2) Rank the following aspects of business environment in order of significance in improving performance of your organization

(Please Tick 1 (Highly Significant = HS, Significant = S, Moderately Significant = MS, Least Significant = LS, Insignificant = I

		HS	**S**	**MS**	**LS**	**I**
a)	Transport Infrastructure					
b)	Political stability					
c)	Knowledge creation					

3) The following statements describe the influence of Business environment on performance of your organization. In a scale of 1-5 indicate the extent to which these statements apply to your organization (Where 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 =Agree, 5 = Strongly agree). Tick one as appropriate

	Statements	**1**	**2**	**3**	**4**	**5**
	Transport Infrastructure					
a)	Transport infrastructure leads to improvement in					

	productivity					
b)	Transport infrastructure has enabled the firm to acquire new markets					
c)	There is a strong relationship between customer loyalty, satisfaction and improved road network					
	Political Instability	**1**	**2**	**3**	**4**	**5**
a)	Political stability lead to proper functioning of markets					
b)	Political stability has a positive effect on the productivity of our firm					
c)	Political stability facilitates investment and collaboration with other firms					
	Knowledge Creation	**1**	**2**	**3**	**4**	**5**
a)	Knowledge enables creation of new products to meets our customer needs					
b)	We address the problem of pure business planning through effective knowledge implementation					
c)	Our supply chain partnership has a panel of experts in implementing knowledge management practices					

SECTION 6: PERFORMANCE OF MANUFACTURING FIRMS

Productivity

Kindly indicate the extent to which you agree with the following statements concerning productivity in your firm. Where SA= Strongly Agree, A=Agree, UD= Undecided, D =Disagree, SD= Strongly Disagree. Tick and write appropriately in the spaces provided

Statement	SA	A	UD	D	SD
a) There has been an increase in the volume of units produced by the company for the past five years					
b) We have enough raw materials in stock at the time of production.					
c) Material for production arrive consistently on schedule					
d) Our production is always on schedule					
e) Our firm is able to accurately and adequately predict and respond to					

market changes and demand.					
f) Alliance have enabled us to stream line our manufacturing operations, thereby minimizing delays and reduced the production costs					
g) The company has been meeting the quantity of productions needed in the market for the past five years					
g) Our products are highly competitive in the market					

Profitability

Kindly indicate the rate at which revenue/income has increased in your firm over the last five years.

Indicator	0-20%	21- 40%	41- 60%	61- 80%	81- 100%
2018					
2019					
2020					
2021					
2022					

Market share

Kindly indicate the extent to which you agree with the following statements concerning market share in your firm. Where SA= Strongly Agree, A=Agree, UD= Undecided, D =Disagree, SD= Strongly Disagree. Tick and write appropriately in the spaces provided

Statement	SA	A	UD	D
a) Our products are available in the market				
b) Distributors are ordering more items				
c) Our products are highly competitive in the market				
d) The reduction in lead time has seen an increase in the number of customers in our company				
e) There are fewer returns/rejections by our customers than it was in the past				

What other factors affect performance of your firm? Tick where appropriate

Factors	Tick
1) Adoption of green supply chain practices	
2) Supply chain quality management practices	

3) Government policies	
4) Employing lean supply chain strategies	
5) Prevailing competition	
6) Supportive organization climate	
7) Employing agile supply chain practices	

END OF QUESTIONNAIRE

Thank you for taking your time to fill it.

Appendix III: Factor Analysis (Communalities)

According to Kaiser (1974), factor-loading values that are greater than 0.4 should be accepted and values below 0.5 should lead to collection of more data to help researcher to determine the values to include. Values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good and values between 0.8 and 0.9 are great, and values above 0.9 are superb. Factor analysis was conducted on statements regarding the variables.

Variable	Statements	Initial	Extraction	Cut-off	Conclusion
Supply chain technical alliances	supply chain technical alliances_1	1.000	0.699	0.4	Accepted
	supply chain technical alliances_2	1.000	0.500	0.4	Accepted
	supply chain technical alliances_3	1.000	0.633	0.4	Accepted
	supply chain technical alliances_4	1.000	0.851	0.4	Accepted
	supply chain technical alliances_5	1.000	0.766	0.4	Accepted
	supply chain technical alliances_6	1.000	0.870	0.4	Accepted
	supply chain technical alliances_7	1.000	0.726	0.4	Accepted
	supply chain technical alliances_8	1.000	0.876	0.4	Accepted
	supply chain technical alliances_9	1.000	0.696	0.4	Accepted
Supply chain marketing alliances	supply chain marketing alliances_1	1.000	0.648	0.4	Accepted
	supply chain marketing alliances_2	1.000	0.799	0.4	Accepted
	supply chain marketing alliances_3	1.000	0.778	0.4	Accepted
	supply chain marketing alliances_4	1.000	0.499	0.4	Accepted
	supply chain marketing	1.000	0.888	0.4	Accepted

	alliances_5				
	supply chain marketing alliances_6	1.000	0.785	0.4	Accepted
	supply chain marketing alliances_7	1.000	0.879	0.4	Accepted
	supply chain marketing alliances_8	1.000	0.746	0.4	Accepted
	supply chain marketing alliances_9	1.000	0.755	0.4	Accepted
Supply chain innovation alliances	SCIA_1	1.000	0.857	0.4	Accepted
	SCIA_2	1.000	0.723	0.4	Accepted
	SCIA_3	1.000	0.703	0.4	Accepted
	SCIA_4	1.000	0.832	0.4	Accepted
	SCIA_5	1.000	0.774	0.4	Accepted
	SCIA_6	1.000	0.925	0.4	Accepted
	SCIA_7	1.000	0.838	0.4	Accepted
	SCIA_8	1.000	0.822	0.4	Accepted
	SCIA_9	1.000	0.749	0.4	Accepted
Supply chain cost and risk sharing alliances	SC cost & risk sharing alliances_1	1.000	0.915	0.4	Accepted
	Supply chain cost and risk sharing alliances_2	1.000	0.876	0.4	Accepted
	Supply chain cost and risk sharing alliances_3	1.000	0.805	0.4	Accepted
	Supply chain cost and risk sharing alliances_4	1.000	0.725	0.4	Accepted
	Supply chain cost and risk sharing alliances_5	1.000	0.626	0.4	Accepted
	Supply chain cost and risk sharing alliances_6	1.000	0.798	0.4	Accepted
	Supply chain cost and risk sharing alliances_7	1.000	0.833	0.4	Accepted
	Supply chain cost and risk sharing alliances_8	1.000	0.737	0.4	Accepted
	Supply chain	1.000	0.800	0.4	Accepted

	cost and risk sharing alliances_9				
	business environment _1	1.000	0.599	0.4	Accepted
	business environment _2	1.000	0.754	0.4	Accepted
	business environment _3	1.000	0.778	0.4	Accepted
	business environment _4	1.000	0.680	0.4	Accepted
	business environment _5	1.000	0.701	0.4	Accepted
	business environment _6	1.000	0.751	0.4	Accepted
	business environment _7	1.000	0.819	0.4	Accepted
	business environment _8	1.000	0.832	0.4	Accepted
business environment	business environment _9	1.000	0.816	0.4	Accepted
	performance _1	1.000	0.770	0.4	Accepted
Organization performance	performance _2	1.000	0.677	0.4	Accepted
	performance _3	1.000	0.666	0.4	Accepted

Appendix IV: Descriptive Statistics

Variable	Statement	Mean	Standard Deviation
Supply chain technical alliances	supply chain technical alliances_1	4.06	1.30
	supply chain technical alliances_2	3.76	1.30
	supply chain technical alliances_3	3.94	1.20
	supply chain technical alliances_4	4.06	1.20
	supply chain technical alliances_5	3.35	1.37
	supply chain technical alliances_6	3.82	1.24
	supply chain technical alliances_7	3.41	1.33
	supply chain technical alliances_8	3.65	1.46
	supply chain technical alliances_9	4.00	0.87
	average	**3.78**	**1.25**
Supply chain marketing alliances	supply chain marketing alliances_1	4.12	1.17
	supply chain marketing alliances_2	4.24	1.20
	supply chain marketing alliances_3	3.65	1.41
	supply chain marketing alliances_4	4.24	1.09
	supply chain marketing alliances_5	4.35	1.06
	supply chain marketing alliances_6	4.06	0.97
	supply chain marketing alliances_7	4.53	0.80
	supply chain marketing alliances_8	4.00	1.22
	supply chain marketing alliances_9	3.71	1.31
	Average	**4.10**	**1.14**
Supply chain innovation alliances	SCIS_1	3.71	1.36
	SCIS_2	3.88	1.27
	SCIS_3	3.65	1.41
	SCIS_4	4.12	1.27
	SCIS_5	4.18	1.19
	SCIS_6	4.00	1.27
	SCIS_7	3.82	1.29
	SCIS_8	3.94	1.25
	SCIS_9	3.65	1.46
	Average	**3.88**	**1.31**
Supply chain cost and risk	Supply chain cost and risk sharing alliances_1	3.47	1.33

sharing alliances	Supply chain cost and risk sharing alliances_2	3.65	1.46
	Supply chain cost and risk sharing alliances_3	2.94	1.52
	Supply chain cost and risk sharing alliances_4	4.12	1.22
	Supply chain cost and risk sharing alliances_5	3.76	1.39
	Supply chain cost and risk sharing alliances_6	3.59	1.37
	Supply chain cost and risk sharing alliances_7	3.41	1.42
	Supply chain cost and risk sharing alliances_8	4.06	1.43
	Supply chain cost and risk sharing alliances_9	3.65	1.00
	Average	**3.63**	**1.35**
Business environment	Business environment _1	3.35	1.27
	Business environment _2	3.06	1.30
	Business environment _3	4.65	0.61
	Business environment _4	3.47	1.28
	Business environment _5	3.41	1.23
	Business environment _6	2.88	1.41
	Business environment _7	3.24	1.39
	Business environment _8	3.35	1.22
	Business environment _9	3.41	1.28
	Average	**3.42**	**1.22**
Organization Performance	performance_1	3.35	1.27
	performance_2	3.12	1.17
	performance_3	3.94	1.03
	Average	**3.47**	**1.16**

Appendix V: Item Statistics

		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Supply chain technical alliances	supply chain technical alliances_1	30	32.625	0.717	0.728	0.702
	supply chain technical alliances_2	30.29	38.721	0.279	0.367	0.772
	supply chain technical alliances_3	30.12	34.735	0.621	0.517	0.721
	supply chain technical alliances_4	30	34.625	0.63	0.73	0.719
	supply chain technical alliances_5	30.71	38.096	0.295	0.565	0.771
	supply chain technical alliances_6	30.24	38.941	0.289	0.652	0.769
	supply chain technical alliances_7	30.65	33.743	0.613	0.673	0.719
	supply chain technical alliances_8	30.41	38.507	0.239	0.67	0.782
	supply chain technical alliances_9	30.06	38.809	0.498	0.655	0.745
Supply chain marketing alliances	supply chain marketing alliances_1	32.76	29.566	0.635	0.726	0.736
	supply chain marketing alliances_2	32.65	29.243	0.639	0.722	0.734
	supply chain marketing alliances_3	33.24	34.441	0.154	0.672	0.814
	supply chain marketing alliances_4	32.65	33.618	0.33	0.382	0.779
	supply chain marketing alliances_5	32.53	29.64	0.715	0.857	0.727
	supply chain marketing alliances_6	32.82	33.779	0.38	0.453	0.772
	supply chain marketing alliances_7	32.35	32.368	0.657	0.847	0.745
	supply chain marketing alliances_8	32.88	31.61	0.427	0.665	0.767

	supply chain marketing alliances_9	33.18	30.529	0.465	0.5	0.762
Supply chain innovation alliances	SCIS_1	31.24	49.191	-0.386	0.414	0.828
	SCIS_2	31.06	35.684	0.421	0.544	0.701
	SCIS_3	31.29	31.471	0.645	0.684	0.655
	SCIS_4	30.82	32.404	0.669	0.74	0.656
	SCIS_5	30.76	41.441	0.055	0.593	0.756
	SCIS_6	30.94	30.934	0.785	0.882	0.633
	SCIS_7	31.12	30.61	0.802	0.751	0.629
	SCIS_8	31	32.75	0.656	0.7	0.659
	SCIS_9	31.29	36.721	0.275	0.502	0.729
Supply chain cost and risk sharing alliances	Supply chain cost and risk sharing alliances_1	29.18	35.654	0.659	0.941	0.669
	Supply chain cost and risk sharing alliances_2	29	36.25	0.542	0.917	0.688
	Supply chain cost and risk sharing alliances_3	29.71	33.596	0.679	0.936	0.658
	Supply chain cost and risk sharing alliances_4	28.53	37.89	0.566	0.678	0.688
	Supply chain cost and risk sharing alliances_5	28.88	47.11	-0.062	0.739	0.788
	Supply chain cost and risk sharing alliances_6	29.06	34.934	0.681	0.828	0.663
	Supply chain cost and risk sharing alliances_7	29.24	39.691	0.346	0.617	0.724
	Supply chain cost and risk sharing alliances_8	28.59	42.757	0.163	0.682	0.755
	Supply chain cost and risk sharing alliances_9	29	43.75	0.237	0.661	0.736
Business environment	Business environment 1	27.47	40.015	0.157	0.197	0.793
	Business environment_2	27.76	32.566	0.669	0.689	0.715
	Business	26.18	46.154	-0.287	0.301	0.809

	environment_3					
	Business environment_4	27.35	40.868	0.101	0.367	0.801
	Business environment_5	27.41	32.632	0.714	0.624	0.71
	Business environment_6	27.94	30.309	0.764	0.648	0.695
	Business environment_7	27.59	31.132	0.713	0.773	0.705
	Business environment_8	27.47	37.015	0.38	0.64	0.761
	Business environment_9	27.41	32.257	0.707	0.734	0.709
	performance_1	7.0588	3.559	0.694	0.482	0.64
organization performance	performance_2	7.2941	4.221	0.611	0.385	0.732
	performance_3	6.4706	4.765	0.597	0.37	0.75

Appendix VI: Total Variance Explained

Varimax rotation tries to maximize the variance of each of the trust and transparency factors, so the total amount of variance accounted for was redistributed over the three extracted factors.

Total Variance Explained for Supply chain technical alliances

The results of the varimax rotation mean that the three extracted factors out of 9 components explained 73.503% of the total variations. This implies that the 9 statements can be regrouped into 3 factors.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.454	38.383	38.383	3.454	38.383	38.383	2.478	27.532	27.532
2	1.889	20.986	59.369	1.889	20.986	59.369	2.13	23.666	51.198
3	1.272	14.134	73.503	1.272	14.134	73.503	2.007	22.305	73.503
4	0.87	9.666	83.169						
5	0.611	6.786	89.955						
6	0.362	4.022	93.977						
7	0.256	2.849	96.826						
8	0.156	1.735	98.561						
9	0.13	1.439	100						

Total Variance Explained for Supply chain marketing alliances

The results of the varimax rotation mean that the three extracted factors out of 9 components explained 75.293% of the total variations. This implies that the 9 statements can be regrouped into 3 factors.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.867	42.965	42.965	3.867	42.965	42.965	3.284	36.487	36.487
2	1.789	19.877	62.842	1.789	19.877	62.842	1.842	20.468	56.955
3	1.121	12.451	75.293	1.121	12.451	75.293	1.65	18.338	75.293
4	0.78	8.664	83.957						
5	0.537	5.968	89.924						
6	0.514	5.709	95.634						
7	0.188	2.093	97.727						
8	0.12	1.33	99.057						
9	0.085	0.943	100						

Total Variance Explained for Supply chain innovation alliances

The results of the varimax rotation mean that the three extracted factors out of 9 components explained 80.250% of the total variations. This implies that the 9 statements can be regrouped into 3 factors.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.197	46.637	46.637	4.197	46.637	46.637	3.386	37.626	37.626
2	2.009	22.322	68.959	2.009	22.322	68.959	2.138	23.757	61.384
3	1.016	11.29	80.25	1.016	11.29	80.25	1.698	18.866	80.250
4	0.525	5.83	86.08						
5	0.406	4.512	90.592						
6	0.362	4.02	94.612						
7	0.241	2.678	97.29						
8	0.16	1.783	99.073						
9	0.083	0.927	100						

Total Variance Explained for Supply chain cost and risk sharing alliances

The results of the varimax rotation mean that the three extracted factors out of 9 components explained 79.052% of the total variations. This implies that the 9 statements can be regrouped into 3 factors

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.577	39.748	39.748	3.577	39.748	39.748	3.32	36.886	36.886
2	1.892	21.025	60.773	1.892	21.025	60.773	2.007	22.296	59.183
3	1.645	18.279	79.052	1.645	18.279	79.052	1.788	19.869	79.052
4	0.902	10.026	89.078						
5	0.349	3.873	92.951						
6	0.269	2.993	95.944						
7	0.257	2.854	98.799						
8	0.084	0.933	99.731						
9	0.024	0.269	100						

Total Variance Explained for business environment

The results of the varimax rotation mean that the three extracted factors out of 9 components explained 74.766% of the total variations. This implies that the 9 statements can be regrouped into 3 factors.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.932	43.684	43.684	3.932	43.684	43.684	3.303	36.699	36.699
2	1.7	18.893	62.578	1.7	18.893	62.578	2.073	23.037	59.736
3	1.097	12.188	74.766	1.097	12.188	74.766	1.353	15.03	74.766
4	0.708	7.869	82.635						
5	0.536	5.953	88.588						
6	0.403	4.473	93.06						
7	0.272	3.025	96.085						
8	0.234	2.599	98.685						
9	0.118	1.315	100						

Total Variance Explained for organization performance

The results of the varimax rotation mean that the three extracted factors out of 3 components explained 70.441% of the total variations. This implies that the 3 statements can be regrouped into 1 factor.

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	2.113	70.441	70.441	2.113	70.441	70.441
2	0.525	17.515	87.956			
3	0.361	12.044	100			

Appendix VII: List of Manufacturing Firms in Kenya

Energy Sector		
A.I Records (Kenya) Ltd	Modulec Engineering Systems Ltd	Kenwestfal Works Ltd
Amedo Centre Kenya Ltd	Mustek East Africa	Kenya Power & Lighting Co.
AssaAbloy East Africa Ltd	Nationwide Electrical Industriesfn	Kenya Scale Co. Ltd/ Avery Kenya Ltd
Aucma Digital Technology Africa Ltd	Nationwide Electrical Industries Ltd	Kenya Shell Ltd
Avery (East Africa) Ltd	Optimum Lubricants Ltd	Libya Oil Kenya Limited
Baumann Engineering Limited	PCTL Automation Ltd	Power Technics Ltd
Centurion Systems Limited	Pentagon Agencies	Reliable Electricals Engineers Ltd
Digitech East Africa Limited	Power Engineering International Ltd	Sanyo Armo (Kenya) Ltd
Manufacturers & Suppliers (K) Limited	Eveready East Africa Limited	Socabelec East Africa
Marshall Fowler (Engineers) Ltd	Frigorex East Africa Ltd	Sollatek Electronics (Kenya) Limited
Mecer East Africa Ltd	Holman Brothers (E.A.) Limited	Specialised Power Systems Ltd
Metlex Industries Ltd	IberaAfrica Power (EA) Limited	Synergy-Pro
Metsec Ltd	International Energy Technik Ltd	Tea Vac Machinery Limited
East African Cables Ltd	Kenwest Cables Ltd	Virtual City Ltd
Chemical Sector		
Anffi Kenya Ltd	Maroo Polymers Ltd	Imaging Solutions (K) Ltd
Basco Product (K) Ltd	Match Masters Ltd	Interconsumer Products Ltd
Bayer East Africa Ltd	United Chemical Industry Ltd	Odex Chemicals Ltd
Continental Products Ltd	Oasis Ltd	Osho Chemicals Industries Ltd
Cooper K- Brands Ltd	Rumorth EA Ltd	PolyChem East Africa Ltd

Cooper Kenya Limited	Rumorth East Africa Ltd	Procter & Gamble East Africa Ltd
Beiersdorf East Africa td	Sadolin Paints (E.A.) Ltd	PZ Cussons Ltd
Blue Ring Products Ltd	Sara Lee Kenya Limited	Rayal Trading Co. Ltd
BOC Kenya Limited	Saroc Ltd	Reckitt Benckiser (E.A) Ltd
Buyline Industries Limited	Super Foam Ltd	Revolution Stores Co. Ltd
Carbacid (CO2) Limited	Crown Berger Kenya Ltd	Soilex Chemical Ltd
Chemicals & Solvents E.A. Ltd	Crown Gases Ltd	Strategic Industries Limited
Chemicals and Solvents E.A. Ltd	Decase Chemical (Ltd)	SupaBrite Ltd
Coates Brothers (E.A.) Limited	Deluxe Inks Ltd	Unilever Kenya Ltd
Coil Products (K) Limited	Desbro Kenya Limited	Murphy Chemical E.A Ltd
Colgate Palmolive (E.A) Ltd	E. Africa Heavy Chemicals (1999) Ltd	Syngenta East Africa Ltd
Johnson Diversity East Africa Limited	Elex Products Ltd	Synresins Ltd
Kel Chemicals Limited	European Perfumes & Cosmetics Ltd	Tri-Clover Industries (K) Ltd
Kemia International Ltd	Galaxy Paints & Coating Co. Ltd	Twiga Chemical Industries Limited
Ken Nat Ink & Chemical Ltd	Grand Paints Ltd	Vitafoam Products Limited
Magadi Soda Company Ltd	Henkel Kenya Ltd	
Food Sector		
Africa Spirits Ltd	Annum Trading Company Limited	Premier Flour Mills Ltd
Agriner Agricultural	Aquamist Ltd	Premier Food Industries Limited
Belfast Millers Ltd	Brookside Dairy Ltd	Proctor & Allan (E.A.) Ltd
Bidco Oil Refineries Ltd	Candy Kenya Ltd	Promasidor (Kenya) Ltd
Bio Foods Products Limited	Capwelll Industries Ltd	Trufoods Ltd

Breakfast Cereal Company(K) Limited	Carlton Products (EA) Ltd	UDV Kenya Ltd
British American Tobacco Kenya Ltd	Chirag Kenya Limited	Unga Group Ltd
Broadway Bakery Ltd	E & A Industries Ltd	Usafi Services Ltd
C. Czarnikow Sugar (EA) Ltd	Kakuzi Ltd	Uzuri foods Ltd
Cadbury Kenya Ltd	Erdemann Co. (K) Ltd	ValuePak Foods Ltd
Centrofood Industries Ltd	Excel Chemical Ltd	W.E. Tilley (Muthaiga) Ltd
Coca cola East Africa Ltd	Kenya Wine Agency Limited	Kevian Kenya Ltd
Confec Industries (E.A) Ltd	Highlands Canner Ltd	Koba Waters Ltd
Corn Products Kenya Ltd	Super Bakery Ltd	Kwality Candies & Sweets Ltd
Crown Foods Ltd	Sunny Processor Ltd	Lari Dairies Alliances Ltd
Cut Tobacco (K) Ltd	Spin Knit Dairy Ltd	London Distillers (K) Ltd
Deepa Industries Ltd	Highlands Mineral Water Co. Ltd	Mafuko Industries Ltd
Del Monte Kenya Ltd	Homeoil	Manji Food Industries Ltd
East African Breweries Ltd	Insta Products (EPZ) Ltd	Melvin Marsh International
East African Sea Food Ltd	Jambo Biscuits (K) Ltd	Kenya Tea Development Agency
Eastern Produce Kenya Ltd	Jetlak Foods Ltd	Mini Bakeries (Nbi) Ltd
Farmers Choice Ltd	Karirana Estate Ltd	Miritini Kenya Ltd
Frigoken Ltd	Kenafric Industries Limited	Mount Kenya Bottlers Ltd
Giloil Company Limited	Kenblest Limited	Nairobi Bottlers ltd
Pembe flour mills Ltd	Pearl Industries Ltd	Nairobi Flour Mills Ltd
Nicola Farms Ltd	Global alliaed Industries	Glacier Products ltd
Gonas Best Limited	Nestle Kenya	Resuns Spices limited

Kenya Sweets Limited	Kenya nut Company	Rafiki Millers limited
Softa Bottling company	Spice World limited	Smash Industries Limited
Razco Limited	Nas Airport Services	Nairobi Flour millers ltd
Wrigley company ltd	Nestle Kenya ltd	Palmhouse diaries limited
Global Alliances limited ltd	Global beverages limited	Al- Mahra industries ltd
Hail &cotton Distillers ltd	Alliances one Tobacco Ke	Alpha Fine Foods
Alpine coolers limited	Global Fresh limited	Kenya Breweries limited
Plastics and Rubber		
Betatrad (K) Ltd	Prestige Packaging Ltd	Haco Industries Kenya Ltd
Blowplast Ltd	Prosel Ltd	Hi-Plast Ltd
Bobmil Industries Ltd	Qplast Industries	Jamlam Industries Ltd
Complast Industries Limited	Sumaria Industries Ltd	Kamba Manufacturing (1986) Ltd
Kenpoly Manufacturers Ltd	Super Manufacturers Ltd	Keci Rubber Industries
Kentainers Ltd	Techpak Industries Ltd	Nairobi Plastics Industries
King Plastic Industries Ltd	TreadsettersTyres Ltd	Nav Plastics Limited
KingwayTyres&Automart Ltd	Uni-Plastcis Ltd	Ombi Rubber
L.G. Harris & Co. Ltd	Wonderpac Industries Ltd	Packaging Masters Limited
Laneeb Plastics Industries Ltd	ACME Containers Ltd	Plastic Electricons
Metro Plastics Kenya Limited	Afro Plastics (K) Ltd	Raffia Bags (K) Ltd
Ombi Rubber Rollers Ltd	Alankar Industries Ltd	Rubber Products Ltd
Packaging Industries Ltd	Dune Packaging Ltd	Safepak Limited
Plastics & Rubber Industries Ltd	Elgitread (Kenya) Ltd	Sameer Africa Ltd
Polyblend Limited	Elgon Kenya Ltd	Sanpac Africa Ltd
Polyflex Industries Ltd	Eslon Plastics of Kenya Ltd	Silpack Industries Limited

Polythene Industries Ltd	Five Star Industries Ltd	Solvochem East Africa Ltd
Premier Industries Ltd	General Plastics Limited	Springbox Kenya Ltd
Building sector		
Central Glass Industries Ltd	Kenbro Industries Ltd	Manson Hart Kenya Ltd
KarsanMurji& Company Ltd	Kenya Builders & Concrete Ltd	Mombasa Cement Ltd
Paper Sector		
Ajit Clothing Factory Ltd	Paper House of Kenya Ltd	General Printers Limited
Associated Papers & Stationery Ltd	Paperbags Limited	Graphics & Allied Ltd
Autolitho Ltd	Primex Printers Ltd	Guaca Stationers Ltd
Bag and Envelope Converters Ltd	Print Exchange Ltd	Icons Printers Ltd
Bags & Balers Manufacturers(K) Ltd	Printpak Multi Packaging Ltd	Interlabels Africa Ltd
Brand Printers	Printwell Industries Ltd	Jomo Kenyatta Foundation
Business Forms & Systems Ltd	Prudential Printers Ltd	Kartasi Industries Ltd
Carton Manufacturers Ltd	Punchlines Ltd	Kenafric Diaries Manufacturers Ltd
Cempack Ltd	Conventual Franciscan Friers-Kolbe Press	Kitabu Industries Ltd
Chandaria Industries Limited	Creative Print House	Kul Graphics Ltd
Colour Labels Ltd	D.L. Patel Press (Kenya) Limited	Label Converters
Colour Packaging Ltd	Dodhia Packaging Limited	Modern Lithographic (K) Ltd
Colour Print Ltd	East Africa Packaging Industries Ltd	Pan African Paper Mills (EA) Limited
Kenya Stationers Ltd	Elite Offset Ltd	Ramco Printing Works Ltd
Kim-Fay East Africa Ltd	Ellams Products Ltd	Regal Press Kenya Ltd
Paper Converters (Kenya) Ltd	English Press Limited	SIG CombiblocObeikanKenya
Textile Sector		

Africa Apparels EPZ Ltd	Kenya Trading EPZ Ltd	Spinners & Spinners Ltd
FulchandManek& Bros Ltd	Kikoy Co. Ltd	Storm Apparel Manufacturers Co. Ltd
Image Apparels Ltd	Le-Stud Limited	Straightline Enterprises Ltd
Alltex EPZ Ltd	Metro Impex Ltd	Sunflag Textile & Knitwear
Alpha Knits Limited	Midco Textiles (EA) Ltd	Tarpo Industries Limited
Apex Appaels (EPZ) Ltd	Mirage Fashionwear EPZ Ltd	Teita Estate Ltd
Baraka Apparels (EPZ) Ltd	MRC Nairobi (EPZ) Ltd	Thika Cloth Mills Ltd
Bhupco Textile Mills Limited	Ngecha Industries Ltd	United Aryan (EPZ) Ltd
Blue Plus Limited	Premier Knitwear Ltd	UpanWasana (EPZ) Ltd
Bogani Industries Ltd	ProtexKenya (EPZ) Ltd	Vaja Manufacturers Limited
Brother Shirts Factory Ltd	Riziki Manufacturers Ltd	Yoohan Kenya EPZ Company
Embalishments Ltd	Rolex Garments EPZ Ltd	YU-UN Kenya EPZ Company
J.A.R Kenya (EPZ) Ltd	Silver Star Manufacturers	
Timber Sector		
Economic Housing Group Ltd	Transpaper Kenya Ltd	Wood Makers Kenya Ltd
Eldema (Kenya) Limited	Twiga Stationers & Printers Ltd	Woodtex Kenya Ltd
Fine Wood Works Ltd	Uchumi Quick Suppliers Ltd	United Bags Manufacturers Ltd
Furniture International Limited	Rosewood Office Systems Ltd	Statpack IndustriesLtd
Hwan Sung Industries (K) Ltd	Shah Timber Mart Ltd	Taws Limited
Kenya Wood Ltd	Shamco Industries Ltd	Tetra Pak Ltd
Newline Ltd	Slumberland Kenya Ltd	Timsales Ltd
PG Bison Ltd		
Motor Vehicle Assembly and Accessories		
Auto Ancillaries Ltd	General Motor East Africa	Megh Cushion industries Ltd

	Limited	
VarsaniBrakelining Ltd	Impala Glass Industries Ltd	Mutsimoto Motor Company Ltd
Bhachu Industries Ltd	Kenya Grange Vehicle Industries Ltd	Pipe Manufacturers Ltd
Chui Auto Spring Industries Ltd	Kenya Vehicle Manufacturers Limited	Sohansons Ltd
Toyota East Africa Ltd	Labh Singh Harnam Singh Ltd	Theevan Enterprises Ltd
Unifilters Kenya Ltd	Mann Manufacturing Co.	
Metal and Allied		
Allied Metal Services Ltd	Morris & Co. Limited	KhetshiDharamshi& Co. Ltd
Alloy Street Castings Ltd	Nails & Steel Products Ltd	Nampak Kenya Ltd
Apex Street Ltd Rolling Mill Division	Orbit Engineering Ltd	Napro Industries Limited
ASL Ltd	Rolmil Kenya Ltd	Specialized Engineer Co. (EA) Ltd
ASP Company Ltd	Sandvik Kenya Ltd	Steel Structures Limited
East Africa Foundry Works (K) Ltd	Sheffield Steel Systems Ltd	Steelmakers Ltd
Elite Tools Ltd	Booth Extrusions Limited	Steelwool (Africa) Ltd
Friendship Container Manufacturers	City Engineering Works Ltd	Tononoka Steel Ltd
General Aluminum Fabricators Ltd	Crystal Industries Ltd	Welding Alloys Ltd
Gopitech (Kenya) Ltd	Davis &Shirtliff Ltd	Wire Products Limited
Heavy Engineering Ltd	Devki Steel Mills Ltd	Viking Industries Ltd
Insteel Limited	East Africa Spectre Ltd	Warren Enterprises Ltd
Metal Crown Limited	Kens Metal Industries Ltd	
Pharmaceutical and Medical Equipment		
Alpha Medical Manufacturers	Madivet Products Ltd	KAM Industries Ltd
Beta Healthcare International Ltd	Novelty Manufacturing Ltd	KAM Pharmacy Limited
Biodeal Laboratories Ltd	Oss. Chemie (K)	Pharmaceutical Manufacturing

Bulks Medical Ltd	Dawa Limited	Regals Pharmaceuticals
Cosmos Limited	Elys Chemical Industries	Universal Corporation Limited
Laboratory & Allied Limited	Gesto Pharmaceutical Ltd	Pharm Access Africa Ltd
Manhar Brothers (K) Ltd	GlaxoSmithkline Kenya	Dogbones Ltd
Alpharama Ltd	C & P Shoe Industries Ltd	East Africa Tanners (K) Ltd
Bata Shoe Co. (K) Ltd	CP Shoes	Leather Industries of Kenya Ltd
New Market Leather Factory Ltd		

Source: KAM 2022