

**EFFECT OF MANUFACTURED EXPORTS, FINANCIAL DEVELOPMENT
AND FOREIGN DIRECT INVESTMENT ON SERVICE EXPORTS IN
KENYA**

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DECLARATION

Declaration by Candidate

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DEDICATION

I dedicate this work to my family, lecturers and friends.

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My gratitude goes to the Almighty God for this level I have reached. Special thanks to Dr. Winrose Chepng'eno, Dr Ernest Saina and other lecturers and my colleagues who through their comments and critiques, raised the quality of this work.

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ABSTRACT

Trade in services has been found to be the new engine at driving economic growth based on its ever increasing contribution towards the GDP and employment in many economies. It has also been found that trade in services is least affected by economic shocks as compared to trade in goods. With Kenya's global service exports having dropped by 11.3 percent, the main objective of this study therefore was to determine the factors that affect Kenya's service exports. The specific objectives of the study were to evaluate the effect of manufacturing exports, financial development and foreign direct investment on Kenya's service exports. Heckscher-Ohlin theory of international trade guided the study. World Development Indicators (WDI) and United Nations Conference on Trade and Development (UNCTAD) were the main sources of the time series data set. The data spans for period of thirty eight years from 1980 to 2017. The dependent variable of the study was Kenya service exports while the independent variables were manufacturing exports, financial development and foreign direct investment. This study applied explanatory research design in examining the effect of manufactured exports, financial development and foreign direct investment on Kenyan service exports to the global world. The STATA statistical software version 14 was used for the data analysis. The data was first transformed to log-linear before stationarity was tested using Augmented Dickey-Fuller test and Philips Perron test. The Likelihood Ratio (LR), the Akaike Information Criterion (AIC), the Hannan Quinn Information Criterion (HQIC) and the Swartz Bayesian Information Criterion (SBIC) were used to determine the optimal number of lags for each variable prior to testing for stationarity. The Auto-Regressive Distributed Lagged (ARDL) model approach to cointegration was used to test the null hypotheses. Cointegration results ($F=14.465 > I(0)=6.119, I(1)=7.666$) revealed existence of a significant long run relationship between the dependent variable (Kenya service exports) and independent variables (manufactured exports, financial development and foreign direct investment). The ARDL analysis results revealed that services exports are significantly affected by manufactured exports ($\beta_1=1.668, p=0.000 < .01$) and financial development ($\beta_2=1.235, p=0.006 < .01$). The Error Correction Model revealed a speed of 57.5 percent (-0.575) adjustment to equilibrium with significance ($p=0.000$) affirming the existence of long run relationship between the dependent variable (Kenya service exports) and the independent variables (Manufactured exports, financial development and foreign direct investment). The study found that manufactured exports and financial development have a positive and significant effect on Kenya service exports in the long run. The study recommended: first; since an increase in manufacturing exports leads to an increase in demand for services such as communication, travelling and business related services, the government should enact policies that are friendly for the easier establishment of more export manufacturing firms and provide more business related incentives like easy access to foreign markets to enable further expansion of these export manufacturing firms. Secondly, since access to finance is important in enabling service firms in meeting their capital needs, the government should enact policies that encourage financial institutions offer cheap, inclusive and flexible financial assistance to service sector firms that can enable them expand and increase their service exports globally.

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ABBREVIATIONS AND ACRONYMS

AGOA	Africa Growth Opportunity Act
ARDL	Autoregressive Distributed Lag Model
BPO	Business Process Outsourcing
COMESA	Common Market for Eastern and Southern Africa
CUTS	Consumer Unity & Trust Society
EAC	East African Community
EPA	Economic Partnership Agreements
EU	European Union
FDI	Foreign Direct Investment
FTA	Free Trade Area
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
ICT	Information Communication Technology
IGC	International Growth Centre
IMF	International Monetary Fund
JKIA	Jomo Kenyatta International Airport
KCB	Kenya Commercial Bank
KNBS	Kenya National Bureau of Statistics
LDCs	Least Developed Countries
R&D	Research and Development
SADC	South African Development Corperation
UNCTAD	United Nations Conference on Trade and Development
WDI	World Development Indicators
WTO	World Trade Organisation

OPERATIONAL DEFINATION OF TERMS

Absolute advantage - absolute advantage exists between nations when they differ in their ability to produce goods. More specifically, absolute advantage exists when one country is good at producing one item, while another country is good at producing another item (Salvatore, 1998)

Developed economies- are the economies that enjoy certain high standards. Such countries generally have a good infrastructure, stable economy with very high per capita income. Standard criteria for evaluating a country's level of development are income per capita or per capita gross domestic product, the level of industrialization, the general standard of living, and the amount of technological infrastructure. The degree of development, industrialization and general standard of living for its citizens is very high (Carbaugh, 2005)

Developing economies - are economies with an underdeveloped industrial base, and a low Human Development Index (HDI) relative to other countries (Carbaugh, 2005).

Economic growth - is an increase in the production of economic goods and services, compared from one period of time to another. It can be measured in nominal or real (adjusted for inflation) terms (Salvatore, 1998).

Exports - goods and services that are produced domestically and sold abroad (Salvatore, 1998).

Financial development- the financial development look on financial institutions and markets along the dimensions of financial depth, (size and liquidity of markets), access (ability of individuals and companies to access financial services), and efficiency (ability of financial institutions to provide financial services at low cost and with sustainable revenues, and at the level of activity of capital markets) (Svirydzenka, 2016)

Foreign direct investment - Foreign direct investment (FDI) generally refers to an investment made to acquire a lasting management interest (normally 10% of voting stock) in a business enterprise in a country other than that of the investor defined according to residency (Salvatore,1998).

Human capital - the accumulation of investments in people, such as education and on-the-job training (Salvatore, 1998)

Manufactured exports – Manufacturing exports is the shipping of value added goods and services out of the jurisdiction of a country (Salvatore, 1998)

Service exports - total number of services flowing out of a country to other countries or regions (Salvatore, 1998).

Services - is defined as the change in the condition of an economic agent (including a person) or in the condition of a good or an asset (wealth) belonging to an economic agent, as a result of some activity of a second economic agent, carried out with the prior agreement of the first agent(Mattoo and Stern,2007).

CHAPTER ONE

INTRODUCTION

1.0 Overview

This section provides the background of the study and service exports in Kenya, the statement of the problem, the research objectives and their respective hypotheses, the significance of the study, scope of the study and finally the limitations of the study.

1.1 Background of the Study

Foreign trade takes place when a country exchanges goods and services with other countries within a legal framework. International trade comes about because no country can be completely self-sufficient (Salvatore, 1998). Countries differ in terms of labour, technology, climatic conditions, land resources, business language, financial and infrastructure development. International trade enables a country to increase its production capacity, meet its domestic demand, generate foreign exchange, and improve the living standards of citizens, not to forget boosting economic growth. Carbaugh (2005) summarizes it well by saying that all economic aspects of a nation, including its industries, service sector, employment, levels of income and living standards are linked with other partners.

According to United Nations Conference on Trade and Development (UNCTAD) (2018), service sector has emerged as the largest segment of most national economies, contributing a growing share to Gross Domestic Product (GDP), trade and employment, and becoming a major driving force of the world economy. It is no longer possible to conceive sustainable economic growth and development without taking into account service sector developments. Though services trade has stronger presence in developed economies, among developing countries, the service sector has

a stronger presence in Latin America and the Caribbean, where the sector's share in national income has increased to 63 percent (UNCTAD, 2018).

Moreover, the service sector has been the main economic activity and source of employment in the world economy for decades. In 2015 it accounted for around two-thirds of the world's output and about 55.5 percent of global employment (UNCTAD, 2018). Statistics from the (UNCTAD, 2018) report indicates that the sector's global output reached \$4.9 trillion and it provided employment for 1.8 billion people around the world. The sector's contribution to national economic activities, however, is not the same across all economies. While its share is about 75 percent in developed countries, it is only about 53 percent in developing countries (UNCTAD, 2018). This is because services trade is a new frontier for most developing countries, and there is still lack of supply capacity and competitiveness, as well as insufficient regulatory and institutional capacities, which constitutes a binding constraint on their growth potential.

This is further supported by statistics from the World Trade Organization (WTO) (2014) that reveal trade in services is taking a more pronounced role in global trade and is increasingly embodied in the production of manufactured goods. In fact world trade flow figures shows that, unlike trade in goods, trade in services has been growing at an average of 7.9 percent annually since 1980(WTO, 2010). Further, since 1995, world trade in services has recorded a negative annual growth only once (-9 % in 2009), in the wake of the global financial crisis (WTO, 2015). In 2010, services trade resumed its pre-crisis level and has continued to expand steadily despite sluggish economic growth. Moreover, global exports of services increased by 5 percent in 2014, compared with 0.5 percent for goods (WTO, 2015).Some of the leading service exporters in Africa in 2016 are as shown in Table 1.1.

Table1.1: Leading Service Exporters in Africa 2016

Exporter (ranked by value)	Value (Billions Of Us \$)	Share In World Total (Percentage)	Annual Growth Rate (Percentage)
Morocco	15	0.32	4.8
South Africa	14	0.29	-4.6
Egypt	14	0.29	-22.8
Ghana	6	0.12	-0.9
Kenya	4	0.08	-11.3
Developing Africa	96	1.96	-5.6

Source: UNCTAD, 2016

By 2015, services accounted for two-thirds of the world Gross Domestic Product (GDP) and contributed to more than half of total employment in industrialized economies (WTO, 2015). This implies that improvement in the performance of service sector is crucial for growth and poverty reduction in many developing countries. However, trade in goods rather than in services, has long been at the center of attention of both policy makers and the academia. Therefore with little research on services trade, there is little empirical understanding of determinants of trade in services globally. This has been the case thanks to scarcity of data and the intangible nature of services.

Services in earlier times have often been produced and consumed in the same time and space, which implied that for trade in services to take place, either the service provider had to move to the premises of the customer or the other way round. However, with the development of information and communication technological tools, the international trade in services has greatly increased and more available (Covaci and Moldovan, 2015).

Though there is no international consensus on the definition of services as a result of its heterogeneous nature, the United Nations defines services as the change in the condition of an economic agent (including a person) or in the condition of a good or an asset (wealth) belonging to an economical agent, as a result of some activity of a second economic agent, carried out with the prior agreement of the first agent.

As a result of intangible nature of services trade, services were not treated as trade, leading to their non-inclusion in the initial negotiation of the 1947 General Agreement on Trade and Tariffs (GATT). However, in the mid-1980s, services gained recognition as a subject of trade and were included for the first time in the WTO's Uruguay round of trade negotiations, held between 1986 and 1993. Under the General Agreement on Trade in Services (GATS), services trade was classified into four modes of supply (Mattoo and Stern, 2007):

Mode 1 (cross-border supply): only the service crosses the border. The delivery of the service can take place, for example, through telecommunications (telephone, fax, television, Internet), or through sending of documents, disks, tapes.

Mode 2 (consumption abroad): this occurs when consumers consume services while outside their country. Visits to museums in a foreign country as well as medical treatment and language courses taken abroad are typical examples.

Mode 3 (commercial presence): the service supplier establishes its commercial presence in another country through branches or subsidiaries. Examples are medical services provided by a foreign-owned hospital, and banking services supplied by a subsidiary of a foreign bank.

Mode 4 (presence of natural persons): occurs when an individual (Services supplier) has moved temporarily into the territory of the consumer in the context of the service

supply, whether self-employed or as an employee of a foreign supplier. For instance, architects moving abroad to supervise construction work are providing services under this mode of supply. Further GATS classification of services is in Appendix 1.

Moreover, Services have unique characteristics that affect their tradability. These include; first is intangibility, which makes international transactions in services often difficult to monitor, measure and tax. Second is nonstorability, where production and consumption often must occur at the same time. The third one is differentiation, whereby services are often tailored to the specific needs of customers. Lastly is joint product, whereby both the producer and consumer of the product must participate in the production process (Hockman and Mattoo, 2008).

According to United Nations Conference on Trade and Development (UNCTAD, 2017), global aggregate service export in 2016 reached \$ 4.9 trillion. Most of the service exports came mainly from developed economies which accounted for two thirds of the total service exports. However, top five Asian developing countries (China, India, Singapore, Hong Kong SAR and Republic of Korea) captured almost 15 percent of the world market share, the same share as other developing economies combined. The report further points out that many economies in Africa and South America, where service exports had already been low, recorded a further decrease in 2016. In Africa, services sector holds tremendous economic promise. It contributes to almost half of the continent output and a number of African countries have emerged as services-oriented economies (UNCTAD, 2015).

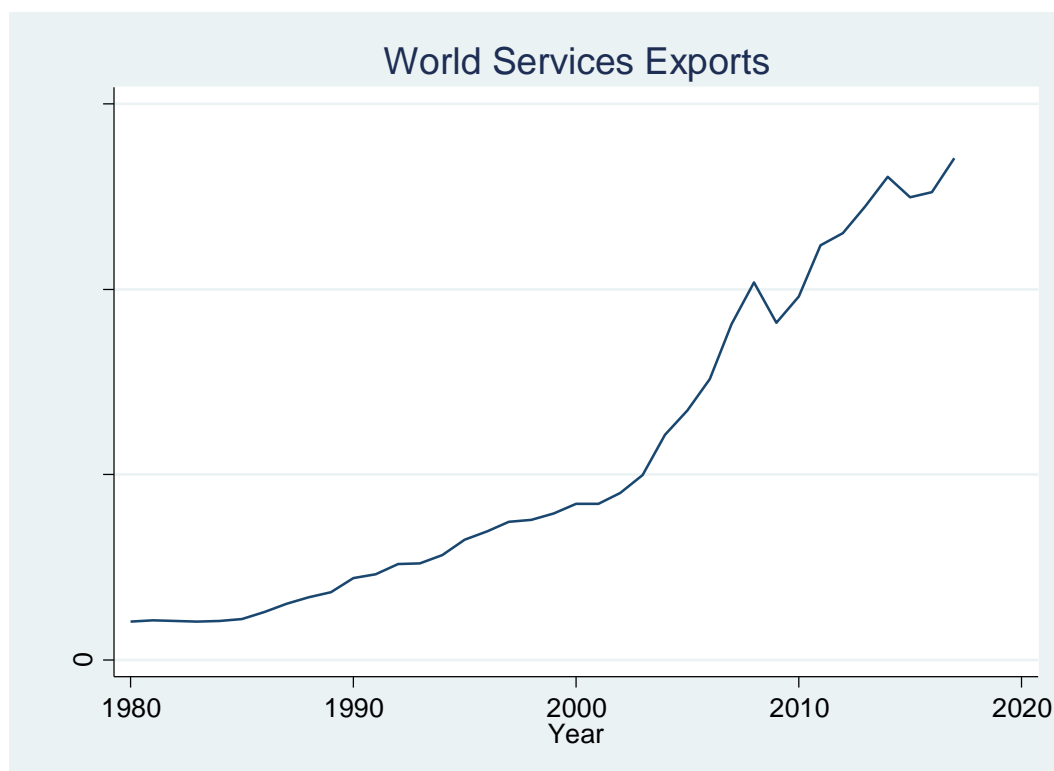


Figure 1.1: World Service Exports (in trillion US dollars)
Source: Author, 2019

According to the WTO 2015, travel exports are an important source of revenue for Least Developed Countries (LDCs), representing 1.6 percent of their GDP in 2014, up from 1.2 percent in 1995. Travellers expenditure has greatly influenced the tourism value chain in industries such as accommodation, food and beverages, transport, retail, recreation and cultural activities creating employment in rural areas. Just as in the other LDCs, the service sector has been an important source of income and employment in Africa and in particular Kenya. However, services trade in Africa lags behind that of developed countries as a result of several factors that include poor records for trade in services (scarce data), poor institutional quality, low technological advancement, poor infrastructure and financial development and slow economic integration in the global markets. In this regard, Kenya is not an exception to these challenges facing the African Continent. It is important to note that with the

increasing importance of service sector to economic growth and employment in many countries in Africa, little research has been done on individual countries determinants of service exports. In addition, the studies carried do not address individual county's needs since the African continent has several heterogeneous characteristics ranging from poor infrastructure connectivity, varying GDP among the economies, poor financial services, reducing manufactured exports, low institutional quality and political conflicts. For instance, the northern African countries are to a big extent different from those in the South of Sahara in terms of technological advancement, regional blocks, national (business) languages, implying that a general study on trade in services on Africa does not provide the appropriate tools for analysis and policy formulation for the individual countries.

1.2 Service Exports in Kenya

UNCTAD (2017) report indicates that Kenya recorded an annual global decrease of 11.3 percent in services trade. However, Kenya is notably among the eleven African countries (Cape Verde, Djibouti, Egypt, Eritrea, Kenya, Mauritius, Morocco, Namibia, Seychelles, Tunisia and Tanzania) that have consistently been net service exporters since 2005 (UNCTAD, 2015). World Bank (2016), further adds that service exports in Kenya have fared much better than its peers with travel services taking the largest share, followed by transport. Trade in services in Kenya is increasingly becoming a key component of the economy and an important element towards achieving the vision 2030. The tourism and travel related services are the leading services sub-sector, followed by transport and logistics, telecommunications then banking and insurance services (CUTS-Consumer unity and trust society- Africa, 2014).



Figure 1.2: Kenya Service Exports

Source: Author, 2019

In the region, Kenya dominates the service sector; since the coming into force of the EAC Common market protocol in July 2010, Kenya has registered an increasing presence in the regional markets, especially in the financial sector. The service sector has registered a consistent upward trend over the years with the export of services increasing from \$ 577 million in 1980 to \$4,845 million in 2012 (UNCTAD, 2014). There was also a significant increase in the values of service exports from the year 2010 which may be attributed to the coming into force of the EAC Common Market protocol that increased investment opportunities as shown in figure 1.2. Kenya major services sector has been tourism and travel related services due to its beautiful beaches at the Coast, blended with the Arab culture and the vast wild life parks across the country. With the four international airports in Mombasa, Eldoret, Kisumu and JKIA in Nairobi, the tourism sector has gone hand in hand with transport

sector thanks to the dominance of Nairobi as the East and Central Africa entry point in addition to its direct flights to North America.

Dihel (2011) asserts that Kenya is in a unique position to export business services such as accounting, architectural, legal services, business process outsourcing (BPO), information communication technology (ICT) and more to the rest of the world. However, despite Dihel (2011) assertions on Kenya service exports, the World Bank's 2010 report on Kenya Economic Update describe Kenya's exports as a "weak engine". The study implies that increasing exports of services especially high value added business services offers an opportunity to drive economic growth in Kenya. Moreover, while most of the developing countries tend to export basic business services like back office tasks or low value offshoring, Kenya has several world class firms that provide and export higher value offshoring services such as product development, research and development, business ventures and transformational sourcing (Dihel ,2011)

International trade plays a crucial role in Kenya's economy with trade in services leading with a significant contribution of 60 percent to the country's GDP (Republic of Kenya, 2015).The need for smart policies arises due to the existing huge balance of payment deficit that has put pressure on Kenyan shilling due to limited foreign exchange from the country's exports. From CUTS (2008) report, Kenya trade objectives includes moving towards a more open regime that involves strengthening and increasing overseas market access for Kenyans services and a further integration into the world economy that can be pursued through unilateral liberalization and regional and bilateral trade negotiations through its participation in the multilateral trading system at the WTO. As per the WTO framework, Kenya has membership in East African Community (EAC), Common Market for Eastern and Southern Africa

(COMESA), Tripartite Free Trade Area (COMESA, EAC and South African Development Corporation [SADC]), Africa Growth Opportunity Act (Agoa) and EAC-European Union Economic Partnership Agreement (EPA). These trade agreements are aimed at making the country to be a competitively export led economy with a thriving domestic market.

To achieve better policies that can expand the Kenyan export market and in particular the service exports, this research was done in exploring the determinants of service exports as has been the trend in most advanced nations that control trade in services globally. By exploring the determinants of service exports, Kenya will have a better platform to begin on, in formulating better policies to expand its service exports globally.

1.3 Statement of the Problem

WTO (2010) points out that while global services trade has been expanding in last fifteen years, Kenya service sector has not increased its global share. Further, UNCTAD (2017) report that Kenya global service exports dropped by 11.3 percent in 2016, after the description of Kenya's exports by the World Bank's 2010 report as "weak engine" raises questions on Kenya's service exports potential and factors determining Kenya's service exports. This point out that Kenya has not fully exploited its potential in service exports that could enable it improve its global exports potential. Therefore seeking answers on determinants of service exports in Kenya can lay a good foundation for better policy framework that can increase its service exports and make them competitive, which will help in stimulating the economic growth and in achieving the goals of vision 2030.

Moreover, studies on the determinants of aggregate service exports have been carried out mostly in developed countries and a few in Africa. These include; Grundfeld and Moxnes (2003), Kimura and Lee (2006) and Head, Mayer and Ries (2009), while disaggregated analysis done by Walsh, (2006), Kandilov and Grennes, (2010) and Covaci and Moldovan (2015). In Kenya, most studies on services trade has been done under the umbrella body of the EAC that include, Shephard (2010), Dihel (2011), Mbithi and Chekwoti (2014) and Martin (2016) which focused on secondary school enrolment as a determinant of Kenya service exports.

Since services sector is a major contributor to both the GDP and country's employment creation that are the key factors that determines the economic growth of any given country (World Bank, 2016), then finding empirical answers to whether manufactured exports, financial development and foreign direct investment affects service exports in Kenya is what necessitated this research.

1.4 Research Objectives

The general and specific objectives of this study were as enumerated below:

1.4.1 General Objective

The main purpose of this research was to empirically investigate the effect of manufactured exports, financial development and foreign direct investment on service exports in Kenya.

1.4.2 Specific Objectives

In order to achieve the stated objective, the following specific objectives are identified and listed as follows;

- (i) To determine the effect of manufactured exports on Kenya's service exports.
- (ii) To establish the effect of financial development on Kenya's service exports.

- (iii) To investigate the effect of foreign direct investment on Kenya's service exports

1.5 Hypotheses

In line with the objectives of the study, the following hypotheses were tested:

H₀₁: Manufactured exports have no significant influence on Kenya's service exports.

H₀₂: Financial development in Kenya has no significant effect on Kenya's service exports.

H₀₃: Kenyan foreign direct investment has no significant impact on its service's exports.

1.6 Significance of the Study

In today's globalized world, international trade composition has significantly shifted towards services trade, thanks to the continuous evolution of information and communication and technological tools that has made many opportunities available across the globe. With globalization at hand, factors affecting international trade are ever changing, not forgetting lack of consensus on key research findings in relation to the determinants of services trade flow for various regions and specific countries. For instance, distance is found to be more significant determinant for services trade than goods by Kimura and Lee (2006) while Lejour and Verheijden (2004) hold converse relationship. Also, Grunfeld and Moxnes (2003) found that FTAs impacts negatively to trade which is a converse of Kimura and Lee (2004) finding.

This study contributes to applied international trade literature on service exports by filling the knowledge gap in the case of Kenya through modeling the determinants of Kenya' service exports within the framework of ARDL model by looking at Kenya's individual characteristics in terms of manufactured exports, financial development

and foreign direct investment. The findings from this research will assist in formulating policy framework that will assist to expand Kenya's service exports globally and accelerate economic growth, all geared towards the achievement of the goals of vision 2030.

1.7 Scope of the Study

Because of difficulty of accessing data on trade in services, this research was confined to analyzing the determinants of service exports in Kenya on a sample period of thirty eight years (1980-2017) that was compiled from IMF, UNCTAD database and World Development Indicators from World Bank.

1.8 Limitation of the Study

With trade in services gaining growth in global arena, the problem of limited data has become an impediment to research in this area especially in developing African economies, Kenya included. This study relied on data from World development indicators and International Monetary Fund as there was limited comprehensive data on variables like Kenya institutional quality and infrastructure development on the period of study undertaken.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter highlights the concepts of manufacture exports, financial development and foreign direct investment, theoretical foundations of service exports, empirical literature on service trade and determinants of service trade; manufactured exports, financial development and foreign direct investment. Then it finalizes with the research gap and conceptual framework.

2.1.1 Manufactured Exports

Manufacturing exports is the shipping of value added goods and services out of the jurisdiction of a country (Salvatore, 1998). A decade into the 21st century, the role of manufacturing in the global economy continues to evolve (UNCTAD, 2015). 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, 2016). Services and manufacturing are closely intertwined. Manufacturers use services as inputs into their production process. Between 2010 and 2015, manufactured exports were worth US\$ 1.85 billion, or around 37.4% of total exports (KNBS, 2016). The regional EAC and COMESA markets continue to absorb a large share (69%) of Kenya's manufactured exports, with Uganda (24%) and the United Republic of Tanzania (17%) being the biggest importers. (World Bank, 2016)

2.1.2 Financial Development

Financial development includes the expansion of financial services and the growth of financial institutions as well as an increase in per capital amount of financial services and institutions or an increase in the ratio of financial assets to income (Ahmed and Ansari, 1998). Financial institutions and markets being part of service sector, has had

some linkages with other services sectors on both financing and advisory. According to Kagochi (2019), Kenya's formal banking sector serves 22.6% of the country's adult population, while nonbank financial institutions, including microfinance institutions, savings and credit cooperatives, and mobile phone service providers, serve another 17.9% of the population, bringing the total served by formal financial services to 40.5%. Another 26.8% of Kenyans rely on the informal financial sector, including non-governmental organizations, self-help groups, and individual unlicensed moneylenders, while 32.7% of the population does not use any form of financial services (Kagochi, 2019).

In addition to traditional forms of financial services, mobile banking has rapidly expanded access to financial services in Kenya since Safaricom, the Kenyan affiliate of global mobile telecommunications provider Vodafone launched its M-PESA service in March 2007. M-PESA allows customers to access an electronic payment and store value system through their mobile phones and offers cash deposit and withdrawal access at 16,900 Safaricom outlets throughout Kenya, nearly half of which are located outside of urban centers (Kagochi, 2019). This has had a profound impact on financial deepening in Kenya, as more than 20 million Kenyans are mobile phone users. In 2010, almost 12 million users, more than half of Kenya's adult population, were using M-PESA financial services per month with over two million transactions carried out daily (Kagochi, 2019).

2.1.3 Foreign Direct Investment

Foreign direct investment (FDI) generally refers to an investment made to acquire a lasting management interest (normally 10% of voting stock) in a business enterprise in a country other than that of the investor defined according to residency (World Bank, 1996). Most developing countries such as Kenya are interested in FDI a source

of capital for industrialization and services trade. This is because FDI involves a long term commitment to the host country and contributes significantly to the gross fixed capital formation. It has been suggested in numerous papers that foreign firms are able to positively affect the levels of productivity and growth rates in the industries they enter and to also promote skill upgrading, increase employment and increased innovation (UNCTAD, 2005).

However, foreign investments in Kenya remain relatively weak considering the size of its economy and its level of development. Nevertheless, Kenya is one of the largest recipients of FDI in Africa, with FDI inflows significantly increasing since 2010. According to the figures from (UNCTAD,2020) flows in Kenya decreased by 18% to USD 1,3 billion in 2019 (compared to USD 1,6 billion in 2018), despite several new projects in information technology and health care. The total stock of FDI stood at USD 15,7 billion in 2019. In recent years, the ICT sector has attracted the most FDI, thanks to the arrival of fibre optics in 2009-2010. The other sectors targeted by FDI are banking, tourism, infrastructure and extractive industries. The United Kingdom, the Netherlands, Belgium, China and South Africa are the main investors in Kenya (UNCTAD, 2020).

2.2 International Trade Theories

Over the decades, many theories have sought to answer the question of why countries and business enterprises engage in international trade. In line with these theoretical developments, many empirical studies have been published, addressing various aspects of international trade especially for goods.

However, when it comes to services, scholars have held the view that the standard concepts of comparative advantage and product specialization could be applied to services trade to determine the patterns of trade in services (Deardorff, 1985).

Accordingly, in the absence of a developed theory of trade in services, theories that are used to explain trade in goods are often applied to services trade as well (Deardorff, 1985). However, Melvin (1989) argues that when the principle of comparative advantage and the Hecksher-Ohlin (H-O) theorem are applied to services, they must be interpreted differently. Despite the debates on the relevance of new and classical trade theory in explaining the determinants of patterns in the trade of services and of service exports, empirical studies have applied conventional international trade theories as argued by (Deardorff, 1985).

International trade theories started with mercantilism, whereby international trade was believed to be in government control and in trade surplus (Salvatore, 1998). Mercantilists claimed that the world contained a fixed amount of wealth and that to increase a country's wealth; one country had to take some wealth from another, by exporting more and importing less (Salvatore, 1998).

2.2.1 Theory of Absolute Advantage

The mercantilists were followed by the classical economists Adam Smith and David Ricardo who provided other reasons for trade between countries. Adam Smith came up with the theory of absolute advantage after the mercantilist policies became an obstacle for economic progress. Adam Smith criticized the mercantilist theory by arguing that such policies increased inflation and lowered the population's standard of living and therefore advocated for free international trade. Adam Smith believed that trade between countries is based on absolute advantage that arises from technological differences between two countries (Salvatore, 1998). Further, Adam Smith points out that a country should export goods in which it has more production (absolute advantage) than other countries and import those goods in which it has less production (has little absolute advantage). Adam Smith believed that trade between

countries would rise as a result of division of labour and specialization under free trade. However, Adam Smith theory does not explain why countries which are more efficient in production of all goods still trade with partners who do not have absolute advantage in their production process (Salvatore, 1998).

2.2.2 Theory of Comparative Advantage

David Ricardo came up with basic model used in international trade theory to explain trade patterns based on the comparative advantage of countries in producing different goods and services. David Ricardo argued that comparative advantage can be primarily due to differences in technologies or factor supplies (Salvatore, 1998). The theoretical arguments of comparative advantage can be equally applied to trade in goods and services though services may require their specific features to be accounted for in the theoretical modeling. A country that has an absolute advantage in both goods gains by specializing in the production of the good in which its relative advantage is greater. Therefore, Ricardian model demonstrates that it is the difference in technology between the nations that give comparative advantage to some countries in the production of certain goods over others and motivates advantageous international trade. This model has been criticized for its inability to explain the reason for the differences in labour productivity across countries and also the effect of international trade on factor earnings (Salvatore, 1998).

2.2.3 Heckscher-Ohlin Theory

Eli Heckscher (1919) and Berlin Ohlin (1933) via their Heckscher-Ohlin model (H-O) introduced capital as an extension of the Ricardian model. The two believed that comparative advantage arises from differences in factor endowments of countries; that is, the more abundant a factor is, the lower the cost of the factor (Feenstra,2008). By assuming that different commodities require that factor inputs be used with varying

intensities in their production, the H-O model postulates that countries will export goods that make intensive use of those factors that are locally abundant, and import goods that make intensive use of factors that are locally scarce. The model therefore posits that capital abundant countries (developed countries) should export capital intensive products and import labour intensive products from labour abundant countries or developing countries (Salvatore, 1998).

An example is whereby, large emerging countries, like China and India, have witnessed a significant increase in the enrollment rates in engineering and Information Technology (IT) education. Therefore, these countries have the potential for the export of tradable services if advanced IT and communications infrastructure is in place (Feenstra 2008). Further, countries like India and Philippines that have call centers and software companies have abundant skills in information technology and engineering, hence they provide their services across borders to US firms. These exports are driven by labor costs and utilize abundant resources of English speaking and computer literate graduates in these countries (Feenstra, 2008).

2.2.4 New Trade Theory

Paul Krugman developed a new trade theory in 1983 in response to the failure of the classical models to explain why regions with similar productivity trade extensively. The New Trade Theory proposed by Paul Krugman (1983) states that changes in trade are based on the fact that products or services are imperfect and there exist intermediary markets. Krugman (2009) puts that countries trade because they take advantage of specialization which then permits them to reap large-scale productions. The theory proposes that comparative advantage is not only based on differences in natural resources or geography but also economies of scale and networks between key industries (Carbaugh, 2006).

2.2.5 Justification of Choice of Heckscher-Ohlin Theory

When it comes to Kenya service exports, this study adopts Heckscher-Ohlin (H-O) theorem that postulates a country will export more services that makes use of intensive factors of production it is endowed with in plenty. Countries which are well endowed with human capital as a result of high level of tertiary education and have well developed information technology (IT) and communication services tend to export more services. Further, these countries have well developed financial institutions, organized manufacturing and infrastructure development and to some extent well blessed with attractive sceneries and have large economies. The Heckscher-Ohlin theory assumes that countries export goods that make intensive use of locally abundant resources and this trend can be seen in the composition of Kenya's service exports which are dominated by insurance and financial services, ICT, tourism and travel, health, legal and business services.

Further, as a result of widespread adoption of International Financial Reporting Standards (IFRS) across developed and developing countries, the demand for accountants proficient in IFRS has been growing. Kenya was among the first countries to adopt IFRS and thus has a supply of accountants who are proficient and experienced in IFRS (Dihel, 2013). Therefore, Kenya has been able to capitalize on this by exporting high-end accounting and auditing services through mode 4: Kenyan accountants often travel to provide services in countries that have recently adopted IFRS and that have a deficit in skilled and experienced IFRS professionals (Dihel, 2013).

Kenya has also developed a reputation and specialist expertise in the market niche of marine and underwater consulting engineering services. As such, Kenya has been able

to target export markets that need such specialized skill but lack domestic professionals who can provide it (Dihel, 2013).

2.3 Empirical Literature

Given the limitation of trade statistics on services trade, most studies focus on the developed and the emerging economies, while a few have been done on developing economies. Therefore little research has been done on Africa and specifically Kenya.

Barcenilla and Molero (2003) applies cointegration techniques to estimate the determinants of service export in the European Union (15 countries) by estimating the demand function for the period 1970-2000. The study found that the effect of rising foreign income on the volume of exports was positive for all countries. Furthermore, the values for income elasticity were large for several countries with different patterns of service trade. They also found that price and exchange rate elasticity were significant in explaining the patterns of service export in most of the countries concerned.

A study by Wong *et al.* (2009) explored empirically the relationship between FDI and service trade for Malaysia and Singapore. The study examined the causal linkages between inward FDI and the country's engagement in service trade, using bivariate and trivariate (Vector Autoregressive) VAR frameworks. The empirical findings for Singapore showed evidence of bidirectional causality between inward FDI and the total trade volume in services as well as between FDI and service import.

Sandeep (2011) examined the potential of the US services sector for export to Asian trading partners (Japan, China, India, Singapore, South Korea and Hong Kong), using a panel data analysis based on the gravity model for the period 2000-2008. The study revealed that the US had export potential in services to India and Japan. Additionally,

it was found that the US exports converged with those of Hong Kong, India and Korea and diverged from those of Japan, China and Singapore. The findings also indicated that there was a large scope for export expansion to Hong Kong, India and Korea.

Ahmadzadeh *et al.* (2012) examined the competitiveness of service export and its determinants among the Organisation of Islamic Cooperation (OIC) member countries for the period 1996–2010, using the Revealed Comparative Advantage (RCA) and the panel data method. The findings from the RCA analysis showed that the comparative advantage of exporting travel and transportation services amongst the OIC member countries had increased and that the percentage of countries for which the RCA index is less than one had decreased. The number of countries that had no comparative advantage in the export of other commercial services had increased. The study further found that GDP per capita, real effective exchange rates, foreign investment inflow and communication infrastructure had significant and positive effects on service export. The variables of inflation and institutional index reduced service export. Furthermore, the membership of these countries in the regional blocks increased the service export.

Saleena (2013) applied econometric tools to study the impact of FDI on service exports from India. The study finds that FDI positively affects service exports as it results in increase in productive capital stock, technological growth, and facilitates transfer of managerial skills, besides improving global market access. The study further found trade in services to have grown more rapidly than merchandise trade and that Information technology and business process outsourcing to be among the fastest growing sectors in terms of service export.

Sahoo *et al.* (2013) analyzed the factors affecting India performance in service exports using ARDL (autoregressive distributed lag model). The results revealed that India aggregate service exports were determined by world demand, exchange rate, manufactured exports and endowment factors (human capital, physical infrastructure and financial development). For modern services, factors such as institution regulation, FDI and financial development had significant effect on their exports while traditional service exports were significantly depended on world demand, exchange rate, manufactured exports and infrastructure development.

Covaci and Moldovan (2015) study investigated the determinants of aggregate service exports and the determinants of seven service subcategories (transport, travel, communication, computer and information, financial, construction and other business services) of Lithuania using gravity model and panel dataset over the period 2003-2012. The results showed that GDP of the destination country and a common spoken language exert a positive effect on trade in services. Time zone differences, EU membership and relative human capital were found to have a heterogeneous effect across service subcategories. Also, the significance of physical distance between Lithuania and its partners varied in dependence of the type of service. Remoteness of the destination country was found to be insignificant for the majority of service subcategories, except transport services, other business services, and computer & information services.

Martin (2016) study applied OLS estimation technique to identify the factors that affect service exports in Kenya using time series secondary data over the period 1970-2015. The results showed that merchandized goods, real exchange rate were positively related to export of services and were significant while GDP, trade liberalization and trade openness were negatively related to the export of services.

Ahmad, Kaliappan and Ismail (2017) study empirically examined the determinants of service export in selected developing Asian countries (China, Hong Kong, South Korea, India, Iran, Indonesia, Malaysia, Philippines, Singapore, Thailand, Kuwait, Saudi Arabia and Turkey). The study conducted a static linear panel data analysis on annual data covering the period of 1985-2012. The main finding indicated that exchange rate, foreign income, foreign direct investment (FDI), the value added by services and communication facilities influenced service exports in the selected developing Asian countries.

2.3.1 Manufactured Exports and Service Exports

Hoekman and Mattoo (2008) links the use of knowledge intensive business, transport, financial and communication services in manufacturing productivity to be positively correlated and the source of comparative advantage in international trade. This is supported by Eichengreen and Gupta (2012) study on India service exports that found that an increase in manufactured exports has a positive and significant effect on service exports as services such as transport, communication, travelling and business services are used as input in the manufacturing process.

Lodefalk (2012) study also found that export of services are linked with exports of goods as services like transport travelling communication and business services are used as inputs . Sahoo, Dash and Mishra (2013) in their application of Autoregressive Distributed Lag (ARDL) model in analyzing India's service exports, also found manufactured exports to have a positive and significant effect on service exports. Federico and Tosti (2017) utilized a dataset with 3,000 exporters in Italy and found that 30% of service exports are produced by manufacturing firms.

2.3.2 Financial Development and Service Exports

Aghion and Griffith, (2005) opined that when firms access financial services at reasonable cost, it becomes easier for them to finance their capital needs and therefore invest in technical upgrading and new innovative activities that can enable them to export more. This is supported by Rajan and Zingales (1998) study that found financial development helps firms avoid moral hazard and adverse selection problems and enhance export growth by using external financing.

Beck (2002) study found a possible link between financial development and international trade. In the theoretical part of the paper, the author first builds a model in which countries endowed with a well-developed financial system tend to specialize in sectors with increasing returns to scale. This study empirical test builds on the assumption that the production of manufactured goods exhibits higher scale economies than the production of agricultural goods or the provision of services. Using both cross-country and panel estimations in a sample of 65 countries, he tests the hypothesis that countries with a higher level of financial development experience higher export shares and trade balances in manufactured goods. Then in a second study, (Beck, 2003) verify the hypothesis that countries with better developed financial sectors have higher exports and trade balances in industries that rely more on external financing.

Susanto *et al.* (2011) study found there is positive effect of financial development on bilateral trade flows and that the effect is more prominent in the manufacturing sector, with relatively large economies of scale. Furthermore, according to the results of their research, an export from developing countries is more affected by financial development than an export from developed countries.

Demir and Dahi (2011) study indicated that a well-developed financial sector has positive impact on total exports with higher value addition and on exports of manufactured goods that depend on external finance. The Demir and Dahi (2011) findings are in line with Goksel (2012) study which opines that, there are negative effects from financial constraints in a country on its exporting performance and that differences in financial structures between countries negatively affect bilateral trade. Empirical findings in his study show that financial development encourages the amounts of countries' exports, since firms need credits to cover their costs

Kar *et al.* (2013) study on Turkey examined the relationship between financial development and international trade for the period of 1989-2007 and found a unidirectional relationship from financial development to international trade. Shaheen *et al.* (2011) study also confirmed a long-run relationship between financial development, international trade and economic growth in the case of Pakistan. Kiendrebeogo (2012) examined the linkage between financial development and international trade in developed and developing countries for the period of 1961-2010. The research results indicate a bidirectional relationship between financial development and international trade. Furthermore, the results indicate that due to different levels of economic development the causality varies between developed and developing countries.

Korhan *et al.* (2015), based on the empirical results for Pakistan, suggests that better financial system will promote international trade and consequently economic growth. Study by Korhan *et al.* (2015), further adds that financial development may represent a certain degree of comparative advantage for at least those industries that have a higher dependence on external financing. Such industries are likely to have higher shares of exports and obtain more trade benefits in countries that have higher levels of

financial development. This is also in line with the findings of Sahoo *et al.* (2013) on their study on determinants of service exports of India.

Herve and Ange-Patrick (2016) applies Error correction model and cointegration method to study the link between financial development and international trade growth in Cote d'Ivoire using time series data covering the period of 1980-2014. The results revealed that the link between financial development and international trade is weak and negative in Cote d'Ivoire.

Bilas, Bosnjak and Norak (2017) study examined the relationship between financial development and international trade in Croatia over the period of 1997-2015 using the autoregressive distributed lag (ARDL) bounds testing approach to cointegration. The study reveals a unidirectional Granger causality from financial development to international trade at the 10 percent significance level, and negative long-run and the positive short-run relationships between financial developments and international trade in Croatia.

2.3.3 Foreign Direct Investment and Service Exports

Several developing countries compete for Foreign Direct Investment (FDI) by offering tax incentives to large multinational companies or by reducing barriers to foreign investment. This strategy is motivated by a widely held view that multinationals act as a catalyst for export expansion and improve the competitiveness of the host country (Goswami *et al.*, 2012). FDI promotes exports of a host country by (a) augmenting domestic capital for exports, (b) transferring technology for new products for exports, (c) facilitating access to new and large foreign markets, and (d) training local workers and upgrading their technical and management skills (Goswami *et al.*, 2012).

De Gregorio (1992) opines that foreign direct investment influences the supply-side factors of service exports such as the quality of human capital and workers skills and the market penetration potential. Alfaro (2003) study shows that the benefits of FDI vary across sectors after examining the effect of foreign direct investment on growth in the primary, manufacturing, and service sectors. In the study, using cross-country data for the period 1981-1999 suggests that foreign direct investments in the primary sector, has a negative effect on growth, while investment in manufacturing is positive. Evidence from the service sector was not clear

Wong *et al.* (2009) study on the relationship between Foreign Direct Investment and service trade for Malaysia and Singapore, using Vector Autoregressive (VAR) frameworks found out that there is bidirectional causality between inward FDI and the total trade volume in services as well as between FDI and service import for Singapore. This showed that for Malaysia, the causality is weaker and unidirectional, from inward FDI to service import. Both Singapore and Malaysia are export-oriented economies and receive substantial inflows of FDI, with Singapore being the largest recipient among countries in the Southeast Asia region.

World Bank (1993) report and Sharma (2000) however cautions that the role of foreign direct investment on export promotion depends on its motive and nature of the policy regime respectively. Mousumi and Jita (2011) study on the link between FDI inflows and service export of India for the period 1991-2008 analyses the long-term relationships among the two variables using the Johansen and Juselius multivariate cointegration approach while the short and long run dynamics were captured through vector error correction models. A unidirectional causality was observed from FDI inflows to service export. Regression Analysis was also done for the time period 1991

to 2008, which revealed that FDI inflows in the services sector of consultancy services and transport services influenced services export.

Eichengreen and Gupta (2012) investigated the determinants of service exports performance of 60 developing countries over the period 1980-2008. The study found that among other factors, foreign direct investment had a significant influence on service exports. Mkpado (2013) study on the significance of FDI on services trade and non oil exports in Nigeria found FDI to have a positive relationship with the exportable services. Further, Saleena (2013) study on impact of FDI on India service exports was found to result in an increase in productive capital stock, technological growth and facilitates transfer of managerial skills, therefore improving global services trade.

Ahmad, Kaliappan and Ismail (2017) study on the determinants of service export in selected developing Asian countries (China, Hong Kong, South Korea, India, Iran, Indonesia, Malaysia, Philippines, Singapore, Thailand, Kuwait, Saudi Arabia and Turkey) applied a static linear panel data analysis on annual data covering the period of 1985-2012. The main finding indicated that exchange rate, foreign income, foreign direct investment (FDI), the value added by services and communication facilities are likely to influence service exports in the selected developing Asian countries.

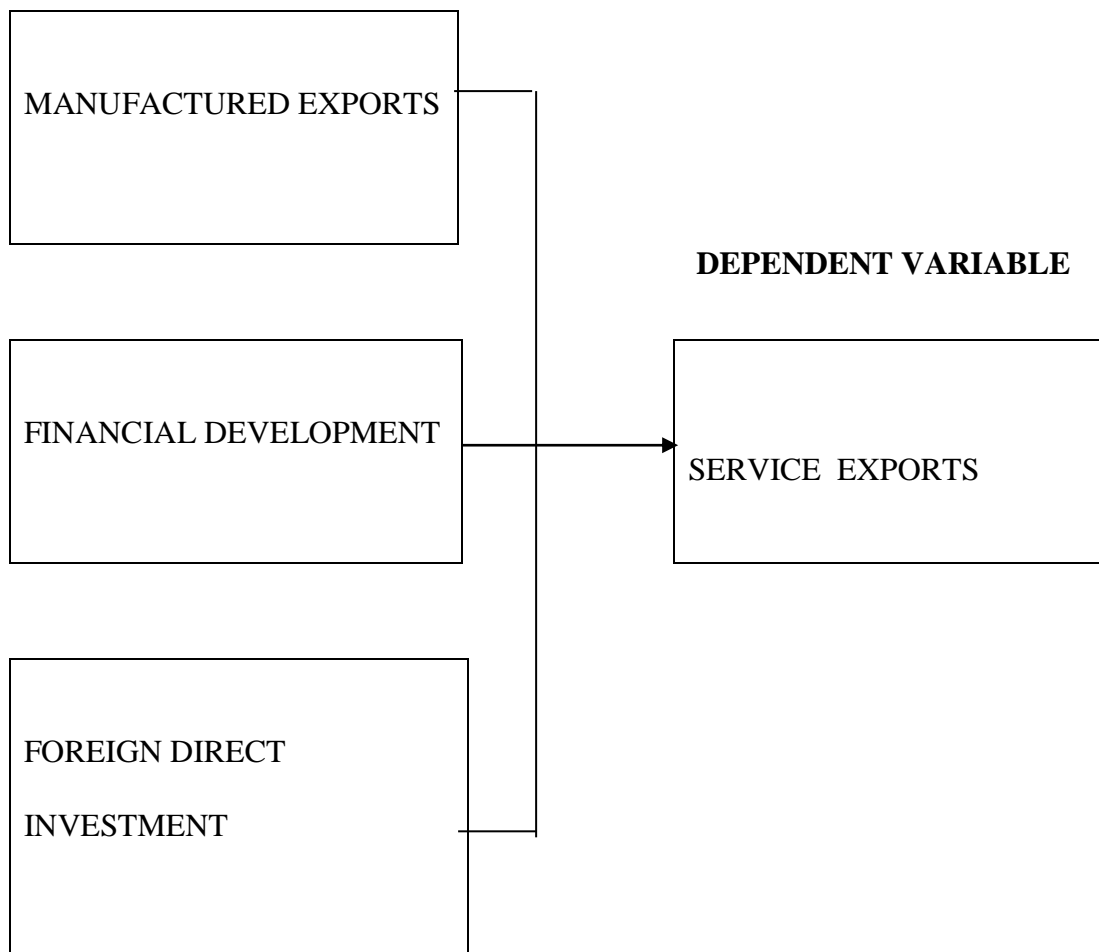
2.4 Research Gap

The existing literature does not point to a consistent conclusion with regard to the relationship between manufactured exports, financial development and foreign direct investment with service exports. Further, most of the literature on determinants of service exports have been done in developed economies without giving due attention to the developing economies and specifically Kenya. This research in particular, the

country's level of financial development and manufacturing exports have been given due consideration in determining service exports in Kenya unlike in recent studies. It is of great necessity for Kenya to put in place strategies that can increase its global service exports. Therefore understanding determinants of service exports is paramount in order to have an expansion of Kenya's global service exports. No study has so far applied ARDL approach and by extension analyzed financial development and manufacturing exports as factors in determining Kenya service exports and hence the nobility of this research.

2.5 Conceptual Framework

The conceptual framework operates on the assumption that despite Kenya's service exports increase, it has failed to expand on global arena. It is conceptualized that Kenya's service exports are influenced by manufactured exports, financial development (this looks at both financial institutions and markets on the indices of depth, access and efficiency) and foreign direct investment as shown in figure 2.3.

INDEPENDENT VARIABLES**Figure 2.3** Conceptual Framework**Source:** Author's own conceptualization, 2019

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

This chapter comprises of the research design, data type and sources, the specification of the ARDL export model and how data was analyzed.

3.1 Research Design

Research design is a planned and structured investigation conceived so as to obtain answers to research problem or question. This study employed explanatory research, which determines the cause effect relationship between independent variables and the dependent variable (Walliman, 2011). The explanatory research design was adopted because it analyses the cause effect relationship between two or more variables. This involved collection and analysis of secondary data that helped ascertain the relationship between the independent variables; manufacturing exports, financial development and foreign direct investment and the Service exports of Kenya as the dependent variable.

3.2 Area of Study

This study looked at the total service exports by Kenya to the global world as service trade contributes 60 percent of the country's GDP and is a key component of Kenya total exports. Services trade is also a source of employment for the Kenyan economy. Other main drivers of Kenya economy are merchandise trade and Agriculture. Therefore the study focused on the effect of Kenya's manufactured exports, financial development and foreign direct investment on its service exports. The country Kenya is found on the Eastern part of African Continent and is bordered by South Sudan and Ethiopia to the North, Uganda to the West, Tanzania to the South and Somalia and Indian Ocean to the East. Kenya is therefore the geographical area of study.

3.3 Data Types and Sources

The study used annual secondary data (1980-2017) that were sourced from the UNCTAD, World Development Indicators (WDI) and a few secondary sources that were deemed credible for the study. Secondary data was chosen because of the macroeconomic nature of the study in addition to its availability and organized nature. The thirty eight year (1980-2017) period was chosen because of the challenges of services data availability. Therefore the sample size is n=38 based on judgmental sampling.

3.4 Data Analysis Techniques

This study employed both descriptive and inferential statistics in analysis. Stata software version 14 was used in the analysis of the time series data. Autoregressive distributed lag model (ARDL) was used to determine the relationship of variables. The p value of each variable is calculated to establish the significance in the model in which the threshold for rejecting null hypothesis was set.

3.5 Model of Data Analysis

The Kenya service exports is first modeled as a function of manufactured exports, financial development and foreign direct investment as shown in equation (3.1) and then transformed into ARDL model as shown in equation (3.2)

$$TSE=F(MNEXP, FNDEV, FDI).....(3.1)$$

Where;

TSE= Total service exports of Kenya that is measured in US dollars

MNEXP=Manufactured exports is measured as a ratio to Kenyan merchandise exports

FNDEV=Financial Development that is an average index of depth, access and efficiency of Kenyan financial institutions.

FDI=Foreign Direct Investment is measured in US dollars

The advantages of the ARDL approach are that the model provides consistent and robust estimates for the long-run and short-run relationship among variables. Another advantage of adopting ARDL is that the method yields consistent estimates of the long-run coefficients, being asymptotically normal irrespective of I(1) or I(0). Further, this approach does not require pretesting of variables (Waliullah *et al.*, 2010). ARDL model applied to cointegration also tend to be more efficient to capture the long-term relationship data in small samples, and the model perform well irrespective of whether variables are stationary I(0), non-stationary I(1), or even mutually cointegrated (Pesaran and Shin, 1999).

In formulating the empirical model, this research applied ARDL model in equation (3.2) below.

$$\Delta \text{LnTSE} = \alpha + \sum_{n=1}^n \beta_i \Delta \text{Ln}(\text{MNEXP})_{t-i} + \sum_{n=1}^n \delta_i \Delta \text{Ln}(\text{FNDEV})_{t-i} + \sum_{n=1}^n \mu_i \Delta \text{Ln}(\text{FDI})_{t-i} + \lambda_1 \text{Ln}(\text{MNEXP})_{t-1} + \lambda_2 \text{Ln}(\text{FNDEV})_{t-1} + \lambda_3 \text{Ln}(\text{FDI})_{t-1} + \varepsilon_i \dots \dots \dots (3.2)$$

Where Ln is the natural logarithm, α is the drift component, the first part of the equation with β_i , δ_i , and μ_i represent the short-run dynamics of the model whereas the parameters λ_1 , λ_2 , and λ_3 represents the long-run relationships and ε_i is white noise error term with zero mean and constant variance.

3.6 Econometric and Data Issues

Time series data are mostly affected by trends, therefore unit root tests are recommended to test the stationarity of the variables under consideration.

3.6.1 Unit Root Test

In order to obtain reliable and consistent results among variables when using time series, it is important to ascertain the level of stationarity. Stationary series have a constant mean and variance independent of time while non-stationary series are unpredictable; they cannot be modeled or forecasted. Therefore non stationary data need to be transformed into stationary in order to obtain consistent and reliable results (Gujarati, 2004)

The unit root test is used to examine the stationarity of the data; however, selecting the appropriate unit root test is difficult when it comes to estimation. To improve the robustness of the selected variables, several unit root tests can be applied. Enders (1995) argued that it is beneficial to perform more than one unit root test at the same time; the Augmented Dickey and Fuller (1981) and Phillips- Perron (1988) tests. If both the unit root tests give the same results then the order of integration of series is reliable. The Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests are the two most widely used unit root tests for stationarity of data in literature.

3.6.2 Augmented Dickey–Fuller Test

Following Engel and Granger (1987), ADF test procedure is defined as follows:

$$\Delta Y_t = a_0 + a_1 Y_{t-1} + \sum_{i=1}^T b_i \Delta Y_{t-i} + e_t \dots \dots \dots (3.3)$$

$$\Delta Y_t = a_0 + B_2 t + a_1 Y_{t-1} + \sum_{i=1}^T b_i \Delta Y_{t-i} + e_t \dots \dots \dots (3.4)$$

The equations (3.3) and (3.4) above are the Augmented Dickey-Fuller test without trend and with trend respectively where ΔY_t is the differenced Y_t series, Y_{t-1} is the first lag of Y_t series, ΔY_{t-1} is the first differenced Y_t series; b_i is the constant coefficient and e_i is the white noise error term and t is the trend variable (Gujarati, 2004). The null hypothesis is that the series Y_t is nonstationary if $a_1=0$ in (3.3) and (3.4) while the alternative hypothesis is that the series Y_t stationary if $a_1 < 0$ in (3.3) and (3.4).

According to the ADF test, the null hypothesis of non-stationarity is rejected if the t-statistic on α_1 , which is expected to be negative, is significantly different from the critical values for a given sample size (Gujarati, 2004). The number of lagged difference terms to include in (3.3) is often determined empirically. The series is differenced and lagged repeatedly until it becomes stationary, that is, until the order of integration is determined. If any two series are integrated of the same order, then they can be tested for co-integration (Gujarati, 2004).

3.6.3 Philip-Perron (PP) Test

Furthermore, this study applied an alternative unit root test developed by Phillips and Perron (1988), which proposes a semi-parametric correction of serial correlation and time-dependent heteroskedasticity. In particular, the Phillips-Perron test (PP) is a generalization of the Dickey Fuller procedure that allows the error terms to be weakly dependent and heterogeneously distributed (Enders, 1995).

This test involves the following equations:

$$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \mu_t \dots \dots \dots (3.5)$$

$$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \alpha_2 \left(t - \frac{T}{2} \right) + \mu_t \dots \dots \dots (3.6)$$

Where T is the number of observations and the error term μ_t is such that $E\mu_t = 0$, but there is no requirement that the error term is serially uncorrelated. The Phillips-Perron t-statistics are modifications of the ADF t-statistics that take into account the less restrictive nature of the error process (Enders, 1995).

3.6.4 Lag Length Selection Criteria

Since the ADF requires identification of the lag structure of a particular variable, the Likelihood Ratio (LR), the Akaike Information Criterion (AIC), the Hannan Quinn Information Criterion (HQIC) and the Swartz Bayesian Information Criterion (SBIC)

are used to determine the optimal number of lags for each variable prior to testing for stationarity.

The issue of finding the appropriate lag length for each of the underlying variables for the ARDL model is important because of the need to have Gaussian error terms (standard normal error terms that do not suffer from non-normality, autocorrelation, heteroscedasticity) (Enders, 1995). However, to select the appropriate model of the long run underlying equation, this study determined the optimum lag length (k) by using the Akaike Information Criterion (AIC) because of its advantages for small sample size as it is the case in this study and the ability to address the issue of over parameterizations and to save the degrees of freedom (Kripfganz and Schneider, 2016).

3.6.5 Cointegration Test

Two series y_t and x_t are said to be integrated of the same order if there exist β such that $y_t - \beta x_t$ is $I(0)$, Enders (1995). This means that y_t and x_t in the regression equation (3.5) do not drift too far apart from each other overtime.

$$y_t = \beta x_t + e_t \dots \dots \dots (3.7)$$

This implies that there is a long-run equilibrium relationship between the two variables, that is, the series in (3.7) move together over time or $I(0)$. Therefore a time series is said to be integrated of order d , $I(d)$ if unit roots can be removed by differencing the series d times. A set of variables of the same integration order d , are said to be cointegrated if a linear combination of the variables exist which is $I(0)$, Enders (1995).

3.7 Data Estimation and Analysis

The empirical analysis of this study was based on Autoregressive Distributed Lag (ARDL) model applied to cointegration, as proposed in Pesaran and Shin (1999) and Pesaran *et al.* (2001). According to Nkoro and Uko (2016) the model is chosen due to its advantage over the cointegration tests in non-stationary variables, such the ones developed by Engle and Granger (1987), Phillips and Hansen(1990) and Johansen (1991), as well as over the traditional VAR methodology.

Prior to the application of the ARDL approach, one needs to check the order of integration. In this study, traditional Augmented Dicker Fuller (ADF) test was used to check for the unit root in every variable in model and thus determine the order of integration. This is to ensure that the variables were not I(2) stationary so as to avoid spurious results as the bounds test is based on the assumption that the variables are I(0) or I(1) or both.

The first step in the ARDL bounds testing approach was to estimate equation (3.2) by ordinary least squares (OLS) in order to test for the existence of a long-run relationship among the variables by conducting an F-test for the joint significance of the coefficients of the lagged levels of the variables. The null hypothesis model was;

$$H_0: \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = 0 \text{ (Long- run relationship does not exist)} \dots \dots \dots (3.8)$$

$$H_1: \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq \lambda_6 \neq 0 \text{ (Long run relationship exist)} \dots \dots \dots (3.9)$$

First, the bounds test for the null hypothesis of no cointegration is conducted. The calculated F-statistic is compared with the critical value tabulated by Kripfganz and Schneider (2018).

If the test statistics exceeds the upper critical value, the null hypothesis of a no long-run relationship can be rejected regardless of whether the under lying order of

integration of the variables is 0 or 1. Similarly, if the test statistic falls below a lower critical value, the null hypothesis is not rejected. However, if the test statistic falls between these two bounds, the result is inconclusive. When the order of integration of the variables is known and all the variables are $I(1)$, the decision is made based on the upper bound. Similarly, if all the variables are $I(0)$, then the decision is made based on the lower bound.

After establishing the long-run relationship, the next step was to select the optimal order of lag by using Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC) or Hannan-Quinn Criterion (HQC), the long-run estimates are estimated using ARDL approach (Pesaran, 1997).

In order to estimate the short-run model, the error correction model was derived by a simple transformation in the ARDL model allowing the error correction term to show the speed of adjustment from disequilibrium to equilibrium (Nkoro and Uko, 2016). The presence of an error-correction term informs that any deviations from the long run equilibrium are the response on the changes in the dependant variable (Nkoro and Uko, 2016). The error correction model (ECM) is as below;

$$\Delta \text{LnTSE} = \alpha_i + \sum_{n=1}^n \beta_i \Delta \text{Ln(MNEXP)}_{t-i} + \sum_{n=1}^n \delta_i \Delta \text{Ln(FNDEV)}_{t-i} + \sum_{n=1}^n \mu_i \Delta \text{Ln(FDI)}_{t-i} + \phi_t \text{ECM}_{t-1} + \varepsilon_t \dots \dots \dots (3.10)$$

Where ECM_{t-1} is the error correction term while ϕ_t shows the speed of adjustment to the long run equilibrium.

3.8 Description and Measurement of Study Variables.

Table.3.1: Measurement of the Study Variables

Variable	Measurement
Total Service Exports(TSE)	Total value of services flowing out of the country annually in US dollars.
Manufactured Exports(MNEXP)	Manufactured exports as a ratio of merchandise exports
Financial Development(FNDEV)	Financial development index looks at depth, access and efficiency indices in financial institutions and markets.(Appendix 2)
Foreign Direct Investment(FDI)	Annual inward flow of FDI in US dollars

Source: Author, 2019

3.9 Diagnostic Tests

According to Brown, Durbin and Evans (1975), to ascertain the goodness of fit of the ARDL model, diagnostic and stability tests should be conducted. The diagnostic test examines the autocorrelation, multicollinearity, heteroscedasticity and normality. The structural stability test is conducted by employing the cumulative sum of recursive residuals (CUSUM)

3.9.1 Autocorrelation Test

Autocorrelation refers to situation where two or more consecutive errors terms are related (Gujarati, 2004). This problem in time series data was tested using Breusch-Godfrey serial correlation LM test. The null hypothesis of no serial correlation is tested against the alternative hypothesis of the existence of serial correlation. Two lags were used to test for the presence of autocorrelation in the Breusch –Godfrey serial correlation test. The null hypothesis is rejected if the probability value of the calculated chi-square statistic is less than 0.05 (Gujarati, 2004).

3.9.2 Multicollinearity Test

Multicollinearity occurs when the two or more independent variables in a model are correlated (Gujarati, 2004). This study applied Vector Integrating Factor (VIF) test whereby a conclusion was made based on its value. If the VIF value is greater than 10 or $1/VIF$ is less than 0.1 then there is multicollinearity. Alternatively, if the VIF is less than 10 and $1/VIF$ is greater than 0.1 then multicollinearity does not exist (Gujarati, 2004).

3.9.3 Heteroskedasticity Test

The variance of linear regression model should be constant for the model to hold. If the error terms do not have constant variance, they are said to be heteroskedastic (Gujarati, 2004). The Breusch –Pagan –Godfrey Heteroskedasticity test was used to test the residuals in terms of whether they are homoskedastic or not, the null hypothesis being a homoskedastic disturbance term against the alternative hypothesis of heteroskedastic disturbance term. Rejection of the null hypothesis depended on the significance of the computed chi-square statistic at 5 percent level of significance (Gujarati, 2004).

3.9.4 Normality Test

Normality test should be done to get credible results. This test is carried out in case there are residuals that are not normally distributed which may thereafter result to invalid inference from t-test and F-test statistics (Gujarati, 2004). Shapiro-Wilk test was used to test for normality whereby P values were computed and used to make an inference. If p- value calculated is greater than the critical value, then the variable is normal. However, if the p- value calculated is smaller than the critical value, then the variable is not normal (Gujarati, 2004).

3.9.5 Model Stability Test

The Cumulative Sum of Recursive Residuals (CUSUM) was used to confirm the stability of the coefficients with the null hypothesis being that the coefficients are stable against the alternative hypothesis that the coefficients are not stable plotted at 5 percent significant level (Gujarati, 2004).

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Overview

This chapter presents the estimates of the determinants of Kenya service exports by first looking at the trends of the variables. The subsequent sections give results of the stationarity tests and the existence of cointegration. The chapter concludes by giving estimates of the short-run and long-run of the variables and diagnostic tests.

4.1 Trend Analysis of Independent Variables

Both the manufacturing exports and the financial development variables showed a steep decline towards the year 2000 when the economy was experiencing slow growth but afterwards they assume an increasing trend (Appendices 3 and 4). However the foreign direct investment variable experienced a flat growth towards the year 2000 then like the other variables assumed a growth trajectory (Appendix 5). The rising trajectory could be as a result of political stability experienced after year 2002 that had peaceful election and the strengthening of the East African Community in the year 2010.

4.2 Statistical Tests

Time series data are usually influenced by trends and movements. Therefore the following tests were done to enhance the analysis involving time series data.

4.2.1 Multicollinearity

Multicollinearity occurs when two or more independent variables are highly related. This study applied Vector Integrating Factor (VIF) test whereby a conclusion was made based on its value (Appendix 6). If the VIF value is greater than 10 or $1/VIF$ is less than 0.1 then there is multicollinearity. Alternatively, if the VIF is less than 10

and $1/\text{VIF}$ is greater than 0.1 then multicollinearity does not exist. If multicollinearity is present, the affected variables are dropped or left depending on the level of collinearity.

Table 4.1: VIF and 1/VIF Findings

Variable	VIF	1/VIF	Status
Logmnexp	1.75	0.571	MULTICOLLINEARITY ABSENT
Logfdi	1.48	0.677	MULTICOLLINEARITY ABSENT
Logfndev	1.31	0.765	MULTICOLLINEARITY ABSENT
Mean VIF	1.51		

Source: Author, 2019

The above results in Table 4.1 shows that multicollinearity was absent in all the variables since their VIF is less than 10 and $1/\text{VIF}$ is greater than 0.1, therefore all the variables were retained in the model.

4.2.2 Correlation Analysis

Correlation analysis was carried out to aid in identifying the strength and direction of the relationship between the independent variables and the dependent variable (Appendix7). Table 4.2 presents a summary of the correlation coefficients among the variables that affect service exports.

Table 4.2: Pearson Correlation Coefficient

	LOGTSE	LOGMNEXP	LOGFNDEV	LOGFDI
LOGTSE	1.0000			
LOGMNEXP	.8618	1.0000		
	0.0000			
LOGFNDEV	-.2344	-0.3977	1.0000	
	.1566	0.0134		
LOGFDI	.7174	0.5048	0.0387	1.0000
	0.0000	.0012	0.8175	

Source: Author, 2019

The correlation result in Table 4.2 shows that there is a positive relationship between service exports and manufacturing exports, and foreign direct investment. On the other hand there is a weak and negative relationship between service exports and the financial development. The observed positive relationship maybe due to overall Structural Adjustment Programs (SAPs) that showed overall decline towards the year 2000 when the programs were in process of implementation together with political instability that was experienced towards the year 2000 and an overall increase after the year 2002 when the country experienced some political stability and the SAPs had taken full effect. The weak negative relation between the service exports and the financial development may be due to the application of the new financial development index that looks at both the financial institutions and financial markets which as in Kenya are not well developed as in advanced economies.

4.2.3 Diagnostic Tests

Results of the Breusch – Godfrey serial correlation test are presented in Table 4.3. The null hypothesis is rejected if the probability value of the calculated chi-square statistic is less than 0.05. The probability value of the computed Chi-square statistic

was not significant at 5 percent level of significance. Therefore, the null hypothesis was not rejected implying that the residuals were not serially correlated.

The results of the Breusch –Pagan Heteroskedasticity test are presented in Table 4.3. The probability value of the computed chi-square statistic was greater than 5 percent level of significance. Therefore, the null hypothesis was not rejected implying that the residuals were homoscedastic.

The results of the Shapiro-Wilk normality test are presented in Table 4.3. The probability value of Shapiro-Wilk test was not significant at 5 percent level of significance. Therefore, the null hypothesis was not rejected; hence the residuals were normally distributed.

The results of the Ramsey-reset test are presented in Table 4.3. The probability value of the F-statistic was insignificant. Therefore, the null hypothesis was not rejected implying that the model was correctly specified.

A plot of the Cumulative Sum of Recursive Residuals (CUSUM6) shows that the coefficients are stable as the recursive residuals lie within the 5 percent level of significance as shown in Appendix 13.

Table 4.3: Diagnostic Tests

Test series	Coefficient	P-values
Autocorrelation(Breusch –Godfrey LM)	1.455	0.228
Heteroskedasticity(Breusch-Pagan/Cook-Weisberg)	1.18	0.278
Normality test(Shapiro-Wilk test)	1.165	0.374
Model specification(Ramsey RESET test)	1.20	0.326

Source: Author, 2019

4.2.4 Lag length Selection Criteria

Since the unit root tests requires identification of the lag structure of a particular variable, the Likelihood Ratio (LR), the Akaike Information Criterion(AIC), the Hannan Quinn Information Criterion (HQIC) and the Swartz Bayesian Information Criterion (SBIC) were used to determine the optimal number of lags for each variable prior to testing for stationarity (Appendix 8). However the optimal lags for the ARDL modeling was based on the AIC because of its advantages for small sample size as it is the case in this study. Further, since determination of the optimal lag length is so crucial in ARDL model, AIC helps to address the issue of over parameterizations and to save the degree of freedom (Kripfganz and Schneider, 2016).

4.2.5 Unit Roots Test

Since the ARDL model was used in this study, it was important to determine stationarity of the variables. This was to ensure that the variables were not I(2) stationary so as to avoid spurious results. According to (Waliullah *et al.*, 2010) in the presence of I(2) variables the computed F-statistics provided by Pesaran *et al.*(2001) are not valid because the bounds test is based on the assumption that the variables are I(0) or I(1).

Enders (1995) suggested using both the Augmented Dickey Fuller (1981) and Phillips-Perron (PP) unit root tests. The unit root tests were estimated both at level and first difference. Therefore the Augmented Dickey Fuller test was first used to test for the stationarity of the variables in levels and first difference then followed by Phillips-Perron (PP) unit root test (Appendix 9). However this study relied on Augmented Dickey Fuller (ADF) as is a powerful tool for testing for stationarity of variables as it accounts for serial correlation through inclusion of lags of the variables (Enders, 1995). The null hypothesis is that the variable under consideration has a unit

root or is not stationary while the alternative hypothesis is that the variable of interest is stationary. The null hypothesis is rejected if the absolute value of the computed ADF test exceeds the absolute critical value at one percent and 5 percent. Table 4.4(Appendix 9) presents the ADF results of the unit root tests and corresponding lags.

Table 4.4: ADF Unit Root Test Results

Variable(lags)	Test statistic	1% critical value	5% critical value	10% critical Value	Status
LOGTSE(1)	-0.841	-3.675	-2.969	-2.617	NON-STATIONARY
LOGMNEXP(4)	-2.413	-3.696	-2.978	-2.620	NON-STATIONARY
LOGFNDEV(1)	-1.692	-3.675	-2.969	-2.617	NON-STATIONARY
LOGFDI(4)	-0.275	-3.696	-2.978	-2.620	NON-STATIONARY

Source: Author, 2019

The results in Table 4.4 shows that all the variables are non-stationary at both levels, therefore the variables were differenced and the results are as shown in Table 4.5 below.

Table 4.5: ADF Unit Root Test Results for Differenced Variables

Variable	Test statistic	1% critical value	5% critical value	10% critical value	Status
LOGTSED1	-5.391***	-2.642	-1.950	-1.604	STATIONARY
LOGMNEXPD1	-9.306***	-2.642	-1.950	-1.604	STATIONARY
LOGFNDEVD1	-6.818***	-2.642	-1.950	-1.604	STATIONARY
LOGFDID1	-9.582***	-2.642	-1.950	-1.604	STATIONARY

Note: *** shows significant level at one percent

Source: Author, 2019

Based on ADF test, all the series were found to be stationary at their first differences. The ADF results shows that all the variables considered in this study are integrated of

order one, I (1). Following Enders (1995) suggestion of using both the Augmented Dickey Fuller (1981) and Phillips-Perron (PP) unit root tests, the results for Philip-Perron unit root test at level are presented in Table 4.6(Appendix 9).

Table 4.6 Philip-Perron Unit Root Test Results

Variable	Test statistic	1% critical value	5% critical value	10% critical value	Status
LOGTSE(1)	-1.268	-18.016	-12.884	-10.440	NON STATIONARY
LOGMNEXP(4)	-3.874	-18.016	-12.884	-10.440	NON STATIONARY
LOGFNDEV(1)	-5.377	-18.016	-12.884	-10.440	NON STATIONARY
LOGFDI(4)	-19.468***	-18.016	-12.884	-10.440	STATIONARY

Note: *** shows significant level at one percent

Source: Author, 2019

From Table 4.6, only the variable for foreign direct investment was stationary at level while the others were non stationary. Therefore the non stationary variables were differenced after which they were all stationary as shown in Table 4.7.

Table 4.7 Philip-Perron Unit Root Test Results for Differenced Variables

Variable	Test statistic	1% critical value	5% critical value	10% critical value	Status
LOGTSED1	-34.458***	-23.908	-18.736	-16.128	STATIONARY
LOGMNEXPD1	-60.655***	-23.908	-18.736	-16.128	STATIONARY
LOGFNDEV1	-37.464***	-23.908	-18.736	-16.128	STATIONARY

Note: *** shows significant level at one percent

Source: Author, 2019

Thus, with the establishment of the order of integration, the study proceeded to testing for long-run relationship expressed in equation (3.2).

4.2.6 Bounds Tests for Cointegration

The first step of the ARDL bounds analysis was to investigate presence of long-run relationship among the variables included in the equation (3.2). The model was estimated by OLS for each variable and the optimal lag was selected by Akaike Information criterion (AIC) method because of its advantages for small sample size as it is the case in this study (Nkoro and Uko, 2016). After estimation, the F-test was conducted on joint significance of the lagged variables in levels (Appendix10). The result of the F-test is presented in Table 4.8. The Table also provides the upper and lower Kripfganz and Schneider (2018) critical values. These critical values have been obtained with response surface regressions based on large-scale simulations and they are available for any sample size and any number of regressors, and they also properly account for the number of short-run coefficients in the model (Kripfganz and Schneider, 2018).

Table 4.8: Bounds F-test for Cointegration Analysis

Critical value	level of significance	Lower bound value	Upper bound value
F=14.465 ***	1%	6.119	7.666
	5%	4.193	5.408
	10%	3.390	4.458

Note: *** shows significant level at one percent (F-statistic: 14.465 Significant at 0.01 marginal values with 7.666 as upper bound value).

Source: Author, 2019

The results in Table 4.8 and Appendix 10 show that the calculated value of the F-test is 14.465 which was compared with the upper and lower bound of Kripfganz and Schneider (2018) critical values. From the Table, the F-calculated is more than the upper bound of F test at one percent significant level. Therefore, it was concluded that there is a significant long run relationship between the dependent and independent

variables. This means rejecting the null hypothesis of no co-integration at one percent significant level. This confirmed the existence of long run relationship among the variables manufactured exports, financial development, foreign direct investment and Kenya service exports. Since the results from ARDL bounds tests indicated that there exists a long-run relationship among variables, Error Correction Method (ECM) model was employed to investigate short-run, long-run relationships and the speed of adjustment to equilibrium state by using the ECM.

4.3 Long-run ARDL Relationship Analysis

In the table 4.9, the results are generated from ARDL model estimated the long-run coefficients of the variables in the study (Appendix 11). The lag structure of the ARDL model was determined by the Akaike Information criterion (Appendix 11) because of its advantages for small sample size as it is the case in this study and its ability to address the issue of over parameterizations and to save the degree of freedom (Kripfganz and Schneider, 2016).

Table 4.9: Long- run Coefficient using ARDL Model (1, 4, 2, 0)

Dependent variable(lnTSE)	Coefficient	Standard Error	t-statistic	Prob
LnMNEXP	1.668	0.202	8.27	0.000***
LnFNDEV	1.235	0.403	3.06	0.006***
LnFDI	0.044	0.062	0.71	0.485
CONSTANT	10.09	2.311	4.37	0.000***

Note: *** means significant level at one percent

Source: Author, 2019

The results in table 4.9 of estimated long run results reveal that the manufactured exports have a positive and statistically significant long-run relationship with the Kenya service exports. Therefore the null hypothesis that manufactured exports have

no significant influence on Kenya service exports was rejected at one percent level of significance. This implied that a one percent increase in manufactured exports increased the Kenya services exports by 1.67 percent. This result is in line with the study of Sahoo *et al.* (2013) on determinants of India service exports, as an increase in manufacturing exports leads to a higher demand for services due to network effect. The manufacturing exports significance is also supported by Hoekman and Mattoo (2008) study that links the use of knowledge intensive business, transport, financial and communication services in manufacturing productivity to be positively correlated. Further, as Sahoo *et al.* (2013) and Lodefalk (2012) puts it, the exports of services are linked closely with and rise of exports of manufactured goods since services such as transport, traveling communication and business services are used as inputs. Dash and Mishra (2013) in their ARDL model in analyzing India's service exports also found manufactured exports to have a positive and significant effect on service exports. This therefore shows the spillover effect of manufactured exports on the service exports. In general, this result is supported by (Hoekman and Mattoo, 2008) study which opines that the use knowledge intensive business and financial, transport and communication services in the manufacturing production to be positively correlated to international trade.

Similarly, the estimated long run result revealed positive and significant relationship between financial development and service exports. Therefore, the null hypothesis of financial development in Kenya has no effect on service exports was rejected at one percent significance level. This means that a one percent increase in financial development leads to an increase of 1.23 percent on the Kenya's service exports. This is also in line with Sahoo *et al.* (2013) as easier access to financial assistance by the business communities encourages business expansion and also a well developed

financial sector reduces transactional costs that are incurred in service exports. Moreover, Rajan and Zingales (1998) study explains that financial development helps firms avoid moral hazard and adverse selection problems and to enhance export growth by using external financing. Korhan *et al.* (2015) study also points out that financial development may represent a certain degree of comparative advantage for at least those industries that have a higher dependence on external financing. Therefore such industries are likely to have higher shares of exports and obtain more trade benefits in countries that have higher levels of financial development as in the case of Kenya in the region.

Further, the FDI had insignificant relationship with the Kenya service exports. Therefore the null hypothesis that Kenyan foreign direct investment has no significant impact on its service exports was not rejected. This result supports the argument by (Sharma, 2000) that whether FDI contributes to the exports growth or not depends on the nature of policy regime. This study finding is contrary to the study by Wong *et al.* (2009) that revealed that some of the component of trade in services such as education, banking and insurance are best conducted through FDI and another one by Ahmad, Kaliappan and Ismail (2017) on the determinants of service export in selected developing Asian that found foreign direct investment (FDI) to influence service exports in the selected developing Asian countries.

4.4 Short-run ARDL Relationship Analysis

The results in table 4.10 show that the short-run relationship estimated by ARDL model depicts that there is a significant but negative effect of manufactured exports on total service exports at lag two. Similarly, in the short run, financial development has a positive significant effect on total services exports at two. The error correction term is negative and significant at one percent level, thereby affirming the existence

of co-integration among the variables. The coefficient of the error correction term (ECM_{t-1}) of 57.46 percent shows the speed of adjustment to equilibrium state within a year, as the frequency of the data is annual. Since the error correction term is significant and large, the speed of adjustment towards the long-run equilibrium is therefore high. The reported R squared presented in Appendix 11 implies that the variables in the estimated model explain 60.04 percent of the variation in Kenya service exports.

Table 4.10: Results for Error Correction Model using ARDL (1, 4, 2, 0)

Dependent variable	Coefficients	Standard errors	t-statistic	P-values
SER				
LogMNEXP				
D1	-0.429	0.216	-1.98	0.06
LD	-0.446	0.215	-2.07	0.05**
L2D	-0.802	0.271	-2.96	0.007***
L3D	-0.613	0.249	-2.46	0.022**
LogFNDEV				
D1	-0.189	0.325	-0.58	0.568
LD	0.792	0.269	2.94	0.007***
Cons	10.094	2.310	4.37	0.000***
ECM_{t-1}	-0.575	0.146	-3.94	0.000***

Note: ***, ** means significant at level 1 and 5 percent respectively

Source: Author, 2019

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Overview

This chapter presents the summary of findings, conclusions, policy recommendations and suggestions for further research.

5.1 Summary of the Findings

This study investigated the determinants of Kenya service exports within ARDL model, using time series data for the period 1980-2017. The study used the Autoregressive distributed lag (ARDL) bounds testing procedure developed by Pesaran *et al.* (2001) to examine the presence of long-run relationship among the variables, and the Vector Error Correction Model to investigate the short-run dynamics.

First the variables were tested for multicollinearity using Vector Integrating Factor (VIF) and multicollinearity was confirmed absent for all the variables. Therefore the variables were retained in the model. Correlation analysis showed existence of positive correlation between service exports, manufactured exports and the foreign direct investment.

Empirical results of stationarity analysis revealed that all the variables attained stationarity after first difference therefore the variables were of $I(1)$. The estimated F-Statistics was above the upper Kripfganz and Schneider (2018) critical values at one percent significant level confirming the presence of long run relationship among the variables. Empirical results further showed that there was a significant long-run equilibrium relationship among manufactured exports, financial development and service exports at one percent level of significance. While the foreign direct

investment had a positive but insignificant relationship with service exports. The estimated long-run parameters indicated that manufactured exports and financial development had a significant positive impact on Kenya service exports while foreign direct investment had a positive relation but not significant on service exports.

The coefficient of ECT_{t-1} was negative and statistically significant. This confirmed the existence of long-run relationship among the variables. The stability of the coefficients was confirmed using cumulative sum of residuals (CUSUM6) that showed that the coefficients were stable at 5 percent level of significance.

5.2 Conclusions

Trade in services has been found to be the new engine at driving economic growth and a source of employment in many economies. Further, trade in services is least affected by economic shocks compared to trade in goods. Therefore, this study provided an overview of the recent developments of Kenya service exports to the rest of world. The study has indicated how service trade has become an increasingly important contributor to economic growth and employment and a key component of the economy. This study therefore looked at the effect of manufactured exports, financial development and foreign direct investment on Kenya service exports. Though other studies have used other variables as potential determinants of service exports, this study chose manufactured exports because of its center stage of government programme on manufacturing (one of the big four agenda) and the financial development based on recent advancement in technology and expansion of Kenyan financial institutions regionally. Further, the two variables have not been analyzed with respect to service exports in Kenya's perspective.. This study applied ARDL model in testing the significance of the variables.

A trend analysis showed both the manufacturing exports and financial development had a steep decline towards the year 2000 after which they both assume a growth trajectory. Foreign direct investment however experienced a flat growth towards the year 2000 and like the other variables assumed a growth trajectory. The growth trajectory among the variables could be explained by the political stability experienced after the year 2002 and further strengthening of the East African Community in 2010.

Since manufacturing exports that has been found to be a significant determinant of Kenya service exports, it implies that with a robust manufacturing sector supported by the government, Kenya service exports will experience an expansion in the global market in addition to provision for employment opportunities. Further boosting manufacturing productivity enhances technological innovation, financial, communication and transport services as they are key input in manufacturing process and are key component of any economy that can be competitive in international trade and also enhance its developmental agenda like vision 2030. This has been the case in developed economies where service trade is a major component of employment and GDP.

The significance of financial development implies that when firms are able to access financial services easily and at a reasonable cost, then they can invest in technical upgrading that can help them exports more. This has a link to improvement in manufacturing productivity which makes manufacturing firms to improve the quality of their products therefore increasing their exports which can further enhance service exports. This is supported by Demir and Dahi (2011) study which opines that a well-developed financial sector has a positive impact on total exports with higher value addition and that exports of manufactured goods depend on external finance.

5.3 Policy Recommendations

From the results, manufactured exports and financial development plays significant contributions on Kenya service exports. It is therefore important for the government to implement policies and provide incentives for the continuation of the development of the manufacturing and financial sectors for growth and global expansion of Kenya service exports.

For the manufacturing exports, the government can emphasize on policies that promote value addition in firms manufacturing processes that can improve on the quality of the products for exports. Further, the government can formulate policies that will enable easy access to foreign markets by emphasizing on brand quality and come up with a more active industry association that can sponsor international conventions or events to showcase the Kenya manufactured exports.

In relation to the financial development, the government should enact policies that ensure that there is an enabling environment for transparency and proper reporting systems within the financial sector to ensure investor's confidence that can attract both domestic and foreign investors. A well developed and regulated financial sector will increase savings that provides the requisite capital for the investment in the economy both in manufacturing and other services related sectors. In addition, the policies should ensure that there is continuous growth in areas of financial inclusion, financial stability, financial institutions and products offered in order to make the sector more competitive and more efficient.

5.4 Suggestions for Further Research

This study recommends further research on determinants of Kenya service exports by use of other variables especially infrastructure development and institutional quality

and different methodology from ARDL model. Furthermore, studies should go beyond just factors that affect the Kenya service exports but also examine competitiveness of Kenya service exports globally.

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APPENDICES

Appendix 1: Classification of Services Sectors by General Agreement of Trade in

Services

1. Business services
2. Communication services
3. Construction services
4. Distribution services
5. Educational services
6. Environmental services
7. Financial services
8. Health-related and social services
9. Tourism and travel -related services
10. Recreational, cultural and sporting services
11. Transport services
12. Other services not elsewhere included

Source: WTO, 2014

Appendix 2. Measuring Financial Development Index

The financial development index (Sahay and others 2015b; Svirydzenka 2016) combines sub indices on financial institutions and markets along the dimensions of financial depth, access, and efficiency.

Financial Institutions

Depth: Private sector credit to GDP, pension fund assets to GDP, mutual fund assets to GDP, and life and non-life insurance premiums to GDP.

Access: Commercial bank branches per 100,000 adults and ATMs per 100,000 adults.

Efficiency: Net interest margin, lending-deposit spread, non-interest income to total income, overhead costs to total assets, return on assets, and return on equity.

Financial markets

Depth: In percent of GDP: Stock market capitalization, stock market turnover, international government debt securities outstanding, and total debt securities outstanding of private nonfinancial corporations.

Access: Percent of stock market capitalization outside of top 10 largest companies, total number of debt security issuers (domestic and external, nonfinancial corporations, financial corporation's).

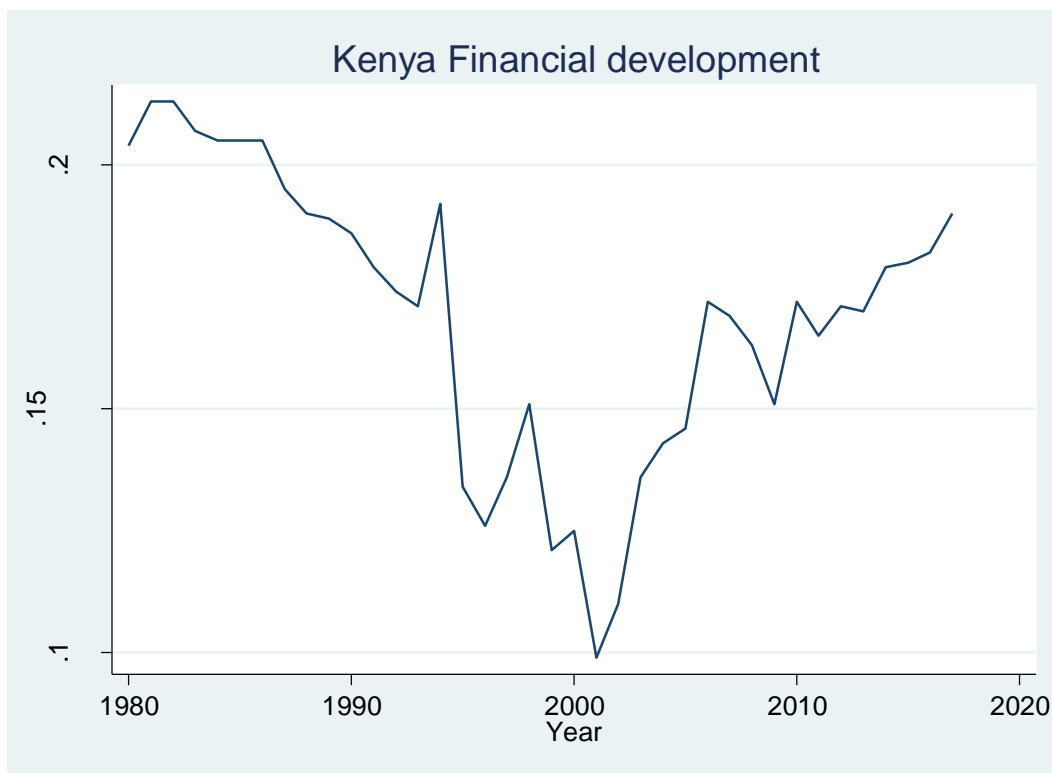
Efficiency: Stock market turnover ratio (stock market turnover/capitalization).

The underlying series and sub indices are combined in a linear manner, with weights being determined by principal component analysis. Financial depth has a relatively large weight in the financial institutions and markets sub indices. However, for the overall index, financial markets and institutions enter with equal weights.

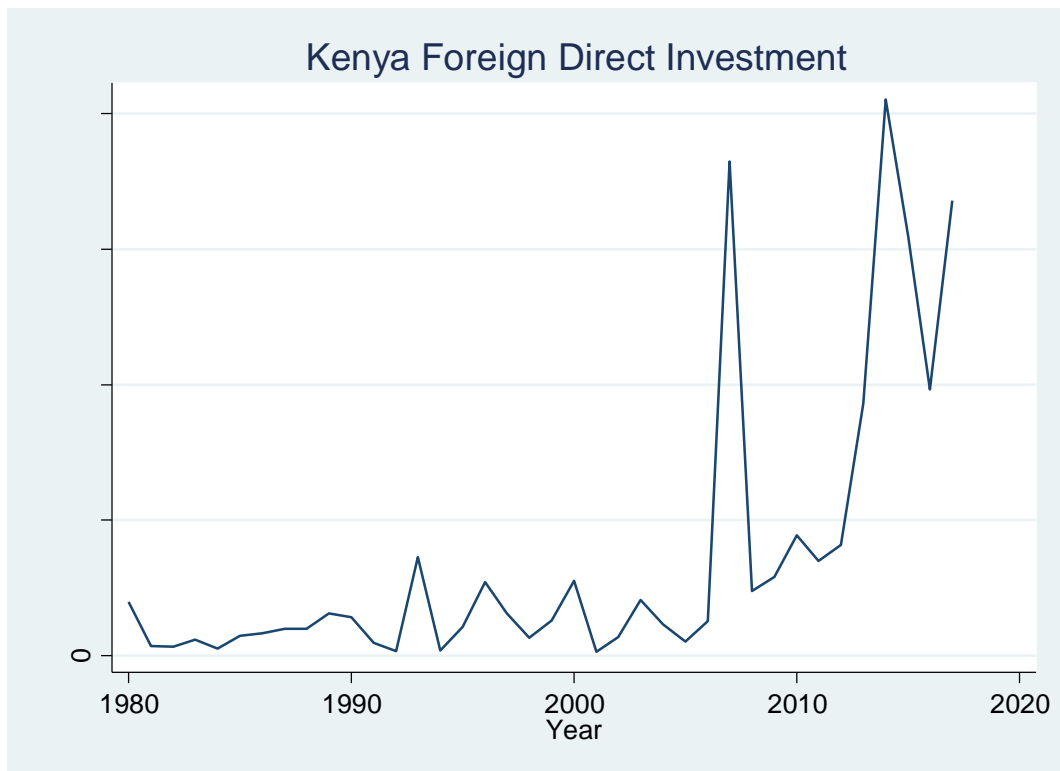
Appendix 3: Trend for Kenya Manufacturing Exports



Source: Author, 2019

Appendix 4: Trend for Kenya Financial Development.

Source: Author, 2019

Appendix 5: Trend for Kenya Foreign Direct Investment

Source: Author, 2019

Appendix 6: Multicollinearity Test of the Variables

*test for multicollinearity

. vif

Variable	VIF	1/VIF
logmnexp	1.75	0.570807
logfdi	1.48	0.677066
logfndev	1.31	0.764833
Mean VIF	1.51	

Appendix 7: Pearson Correlation Coefficient Test

* pearson correlation,with sig provides the p-values

. pwcorr logtse logmnexp logfndev logfdi,sig

	logtse	logmnexp	logfndev	logfdi
logtse	1.0000			
logmnexp	0.8618	1.0000		
logfndev	-0.2344	-0.3977	1.0000	
logfdi	0.7174	0.5048	0.0387	1.0000

Appendix 8: Lag Length selection Criteria

*lags selection criteria

. varsoc logtse

```

Selection-order criteria
Sample: 1984 - 2017
Number of obs = 34
-----+-----+
|lag | LL LR df p FPE AIC HQIC SBIC
|-----+-----+
| 0 | -35.2135 .492797 2.1302 2.14551 2.1751 |
| 1 | 6.61354 83.654* 1 0.000 .04464* -.271385* -.240765* -.181599* |
| 2 | 6.63397 .04086 1 0.840 .047303 -.213763 -.167833 -.079084 |
| 3 | 6.75406 .24019 1 0.624 .049848 -.162004 -.100765 .017568 |
| 4 | 7.10798 .70784 1 0.400 .051833 -.123999 -.04745 .100466 |
-----+-----+
Endogenous: logtse
Exogenous: _cons

```

. varsoc logmnexp

```

Selection-order criteria
Sample: 1984 - 2017
Number of obs = 34
-----+-----+
|lag | LL LR df p FPE AIC HQIC SBIC
|-----+-----+
| 0 | -17.4032 .172852 1.08254 1.09785 1.12743 |
| 1 | 7.62184 50.05 1 0.000 .042069 -.330696 -.300077 -.24091 |
| 2 | 11.2211 7.1985 1 0.007 .036116 -.483593 -.437664 -.348914 |
| 3 | 12.6654 2.8886 1 0.089 .035207 -.509729 -.44849 -.330158 |
| 4 | 14.8611 4.3914* 1 0.036 .03285* -.580066* -.503517* -.355601* |
-----+-----+
Endogenous: logmnexp
Exogenous: _cons

```

```

. varsoc logfndev
  Selection-order criteria
  Sample: 1984 - 2017                Number of obs   =      34
+-----+
|lag |    LL    LR    df    p    FPE    AIC    HQIC    SBIC  |
+-----+
| 0 | 9.60283                .035299  -1.506049  -1.490739  -1.461156  |
| 1 | 29.4167 39.628*  1  0.000  .011673* -1.61275* -1.58213* -1.52296*  |
| 2 | 29.5031  .1727  1  0.678  .012321  -1.559  -1.51307  -1.42432  |
| 3 | 29.5184  .03064  1  0.861  .013064  -1.50108  -1.43984  -1.32151  |
| 4 | 29.6065  .1762  1  0.675  .013799  -1.44744  -1.37089  -1.22298  |
+-----+

Endogenous: logfndev
Exogenous:  _cons

```

```

. varsoc logfdi
  Selection-order criteria
  Sample: 1984 - 2017                Number of obs   =      34
34
+-----+
|lag |    LL    LR    df    p    FPE    AIC    HQIC    SBIC  |
+-----+
| 0 | -57.6677                1.84629  3.45104  3.46635  3.49593  |
| 1 | -52.7338  9.8677  1  0.002  1.46506  3.21964  3.25026  3.30942  |
| 2 | -51.3143  2.839  1  0.092  1.42981  3.19496  3.24089  3.32964  |
| 3 | -47.2813  8.0661*  1  0.005  1.19694  3.01655  3.07779*  3.19612*  |
| 4 | -46.1574  2.2477  1  0.134  1.1895*  3.00926*  3.08581  3.23373  |
+-----+
--+

Endogenous: logfdi
Exogenous:  _cons

```

Appendix 9: ADF and Philip-Perron (1988) Unit Root Test Results

*stationarity test

. dfuller logtse, regress lags(1)

Augmented Dickey-Fuller test for unit root Number of obs = 36

```

----- Interpolated Dickey-Fuller -----
              Test          1% Critical      5% Critical      10% Critical
              Statistic      Value          Value          Value
-----
Z(t)          -0.841         -3.675         -2.969         -2.617
-----

```

MacKinnon approximate p-value for Z(t) = 0.8069

```

-----
D.logtse |   Coef.   Std. Err.    t    P>|t|   [95% Conf. Interval]
-----+-----
logtse |
   L1. | -.0408001  .0485351   -0.84  0.407   -.1395454   .0579453
   LD. | .0409582  .1741502    0.24  0.816   -.313353   .3952693
      |
   _cons | .9202248  1.027324    0.90  0.377   -1.169881   3.010331
-----

```

```
. dfuller logmnexp, regress lags(4)
```

```
Augmented Dickey-Fuller test for unit root      Number of obs   =      33
```

```
----- Interpolated Dickey-Fuller -----
          Test          1% Critical      5% Critical      10% Critical
          Statistic      Value          Value          Value
-----
Z(t)          -2.413          -3.696          -2.978          -2.620
-----
```

```
MacKinnon approximate p-value for Z(t) = 0.1382
```

```
-----
D.logmnexp |   Coef.   Std. Err.    t    P>|t|   [95% Conf. Interval]
-----+-----
logmnexp |
   L1. | -.1758661   .0728933    -2.41  0.023   -.3254309   -.0263013
   LD. | -.3264141   .1727939    -1.89  0.070   -.6809579    .0281296
  L2D. | .4728503   .1816252     2.60  0.015    .1001861    .8455146
  L3D. | .2575895   .1866492     1.38  0.179   -.125383    .640562
  L4D. | -.171616   .1778307    -0.97  0.343   -.5364945    .1932626
      |
   _cons | .5899856   .233223     2.53  0.018    .1114515    1.06852
-----
```



```
. dfuller logfndev, regress lags(1)
```

```
Augmented Dickey-Fuller test for unit root      Number of obs   =      36
```

```
----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(t)          -1.692          -3.675          -2.969          -2.617
-----
```

```
MacKinnon approximate p-value for Z(t) = 0.4351
```

```
-----
D.logfndev |   Coef.   Std. Err.    t    P>|t|   [95% Conf. Interval]
-----+-----
logfndev |
      L1. |-.1582104   .0934907   -1.69   0.100   - .3484186   .0319978
      LD. |-.0700699   .1706622   -0.41   0.684   - .4172847   .277145
      |
      _cons |-.2889449   .1694853   -1.70   0.098   - .6337654   .0558755
-----
```

```
. dfuller logfdi, regress lags(4)
```

```
Augmented Dickey-Fuller test for unit root      Number of obs   =      33
```

```
----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(t)          -0.275          -3.696          -2.978          -2.620
-----
```

```
MacKinnon approximate p-value for Z(t) = 0.9289
```

```
-----
D.logfdi |   Coef.   Std. Err.    t    P>|t|    [95% Conf. Interval]
-----+-----
logfdi |
   L1. | -.0612414   .2224048   -0.28   0.785   - .5175783   .3950955
   LD. | -.7782122   .293786   -2.65   0.013   -1.381011   -.1754131
  L2D. | -.6436637   .3208379   -2.01   0.055   -1.301969   .0146414
  L3D. | -.2220479   .2869295   -0.77   0.446   -.8107785   .3666828
  L4D. | .0900066   .2019137    0.45   0.659   -.3242862   .5042993
      |
   _cons | 1.390993   3.934939    0.35   0.726   -6.682834   9.46482
-----
```

```
. pperron logtse, regress lags(1)
```

```
Phillips-Perron test for unit root      Number of obs   =      37
                                         Newey-West lags =      1
```

```
----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value           Value           Value
-----+-----
Z(rho)          -1.268           -18.016          -12.884          -10.440
Z(t)            -0.740           -3.668           -2.966           -2.616
-----+-----
```

```
MacKinnon approximate p-value for Z(t) = 0.8361
```

```
-----+-----
logtse |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
logtse |
      L1. | .9669506    .045598    21.21  0.000    .8743818    1.059519
      |
      _cons | .7552856    .9653991    0.78  0.439   -1.204579    2.71515
-----+-----
```

```
. pperron logmnexp, regress lags(4)
```

```
Phillips-Perron test for unit root      Number of obs   =      37
                                         Newey-West lags =      4
```

```
----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(rho)          -3.874          -18.016          -12.884          -10.440
Z(t)            -1.630           -3.668           -2.966           -2.616
-----
```

```
MacKinnon approximate p-value for Z(t) = 0.4677
```

```
-----
logmnexp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
logmnexp |
      L1. |   .8784077   .0711025    12.35   0.000     .734062   1.022753
      |
      _cons |   .4044677   .2254044     1.79   0.081    -.0531275   .8620629
-----
```

```
. pperron logfndev, regress lags(1)
```

```
Phillips-Perron test for unit root      Number of obs   =      37
                                          Newey-West lags =      1
```

```
----- Interpolated Dickey-Fuller -----
          Test          1% Critical      5% Critical      10% Critical
          Statistic      Value          Value          Value
-----
Z(rho)      -5.377          -18.016          -12.884          -10.440
Z(t)        -1.722           -3.668           -2.966           -2.616
-----
```

```
MacKinnon approximate p-value for Z(t) = 0.4196
```

```
-----
logfndev |   Coef.   Std. Err.    t    P>|t|   [95% Conf. Interval]
-----+-----
logfndev |
      L1. | .844996   .087441    9.66  0.000   .6674814   1.022511
      |
      _cons | -.2807814 .1581968  -1.77  0.085  -.6019379   .0403752
-----
```

```
. pperron logfdi, regress lags(4)
```

```
Phillips-Perron test for unit root      Number of obs   =      37
                                         Newey-West lags =      4
```

```
----- Interpolated Dickey-Fuller -----
          Test          1% Critical      5% Critical      10% Critical
          Statistic      Value          Value          Value
-----
Z(rho)      -19.468      -18.016      -12.884      -10.440
Z(t)        -3.225      -3.668      -2.966      -2.616
-----
```

```
MacKinnon approximate p-value for Z(t) = 0.0186
```

```
-----
logfdi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
logfdi |
   L1. |   .540029   .1517522     3.56  0.001     .2319556   .8481024
      |
   _cons | 8.278964   2.719082     3.04  0.004     2.758934  13.79899
-----
```

```
. * first differencing
. gen logtseD1=D1.logtse
(1 missing value generated)

. gen logmnexpD1=D1.logmnexp
(1 missing value generated)

. gen logfndevD1=D1.logfndev
(1 missing value generated)

. gen logfdiD1=D1.logfdi
(1 missing value generated)
```

```
. dfuller logtseD1,noconstant lag(0)
```

```
Dickey-Fuller test for unit root          Number of obs   =          36
```

```

----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(t)          -5.391          -2.642          -1.950          -1.604
```

```
. dfuller logmnexpD1,noconstant lag(0)
```

```
Dickey-Fuller test for unit root          Number of obs   =          36
```

```

----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(t)          -9.306          -2.642          -1.950          -1.604
```

```
. dfuller logfndevD1,noconstant lag(0)
```

```
Dickey-Fuller test for unit root          Number of obs   =          36
```

```

----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(t)          -6.818          -2.642          -1.950          -1.604
```

```
. dfuller logfdiD1,noconstant lag(0)
```

```
Dickey-Fuller test for unit root          Number of obs   =          36
```

```

----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(t)          -9.582          -2.642          -1.950          -1.604
```

```
. pperron logtseD1,trend
```

```
Phillips-Perron test for unit root      Number of obs   =      36
                                          Newey-West lags =      3
```

```
----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(rho)      -34.458      -23.908      -18.736      -16.128
Z(t)        -5.647       -4.279      -3.556      -3.214
-----
```

```
MacKinnon approximate p-value for Z(t) = 0.0000
```

```
. pperron logmnexpD1,trend
```

```
Phillips-Perron test for unit root      Number of obs   =      36
                                          Newey-West lags =      3
```

```
----- Interpolated Dickey-Fuller-----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(rho)      -60.655      -23.908      -18.736      -16.128
Z(t)        -8.892       -4.279      -3.556      -3.214
-----
```

```
MacKinnon approximate p-value for Z(t) = 0.0000
```

```
. pperron logfndevD1,trend
```

```
Phillips-Perron test for unit root      Number of obs   =      36
                                          Newey-West lags =      3
```

```
----- Interpolated Dickey-Fuller -----
      Test          1% Critical      5% Critical      10% Critical
      Statistic      Value          Value          Value
-----
Z(rho)      -37.464      -23.908      -18.736      -16.128
Z(t)        -7.146       -4.279      -3.556      -3.214
-----
```


Appendix 10: Cointegration Test for the Variables

```
. estat ectest
Pesaran, Shin, and Smith (2001) bounds test

H0: no level relationship          F =    14.465
Case 3                            t =    -6.345

Finite sample (2 variables, 33 observations, 1 short-run coefficients)

Kripfganz and Schneider (2018) critical values and approximate p-values
```

	10%		5%		1%		p-value	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
F	3.390	4.458	4.193	5.408	6.119	7.666	0.000	0.000
t	-2.583	-3.240	-2.932	-3.627	-3.647	-4.410	0.000	0.000

do not reject H0 if

both F and t are closer to zero than critical values for I(0) variables
(if p-values > desired level for I(0) variables)

reject H0 if

both F and t are more extreme than critical values for I(1) variables
(if p-values < desired level for I(1) variables)

Appendix 11: Long Run and Short Run Relationship of Independent Variables and Kenya Services Exports

```
. ardl logtse logmnexp logfndev logfdi,aic ec
ARDL(1,4,2,0) regression

Sample: 1984 - 2017
Number of obs   =    34
R-squared       =    0.6004
Adj R-squared   =    0.4266
Log likelihood =  21.502321
Root MSE       =    0.1563
```

D.logtse	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+-----					

ADJ								
	logtse							
	L1.		-.5746468	.1459543	-3.94	0.001	-.8765761	-.2727174
-----+-----								
LR								
	logmnexp		1.668466	.2017784	8.27	0.000	1.251055	2.085876
	logfndev		1.234794	.4030458	3.06	0.006	.4010304	2.068558
	logfdi		.0443873	.0623577	0.71	0.484	-.0846095	.1733841
-----+-----								
SR								
	logmnexp							
	D1.		-.4290102	.2164484	-1.98	0.060	-.8767677	.0187474
	LD.		-.4464593	.2154401	-2.07	0.050	-.8921311	-.0007875
	L2D.		-.8015201	.2708646	-2.96	0.007	-1.361846	-.2411939
	L3D.		-.6125445	.2486929	-2.46	0.022	-1.127005	-.0980841
	logfndev							
	D1.		-.1883713	.3254038	-0.58	0.568	-.8615203	.4847778
	LD.		.7916285	.2689	2.94	0.007	.2353665	1.347891
	_cons		10.09429	2.310982	4.37	0.000	5.313662	14.87492
-----+-----								

Appendix 12: Post- estimation Diagnostic Tests

```
. *breusch-godfrey test for autocorrelation
```

```
. estat bgodfrey
```

Breusch-Godfrey LM test for autocorrelation

```
-----
```

lags (p)	chi2	df	Prob > chi2
1	1.455	1	0.2277

```
-----
```

H0: no serial correlation

```
. *breusch pagan test for heteroscedsticity
```

```
. estat hettest
```

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of logtse

chi2(1) = 1.18

Prob > chi2 = 0.2779

```
. *shapiro wilk normality test
```

```
. swilk e
```

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
-----+-----					
e	38	0.96935	1.165	0.320	0.37455

```
. *ramsey reset test for fitted values
```

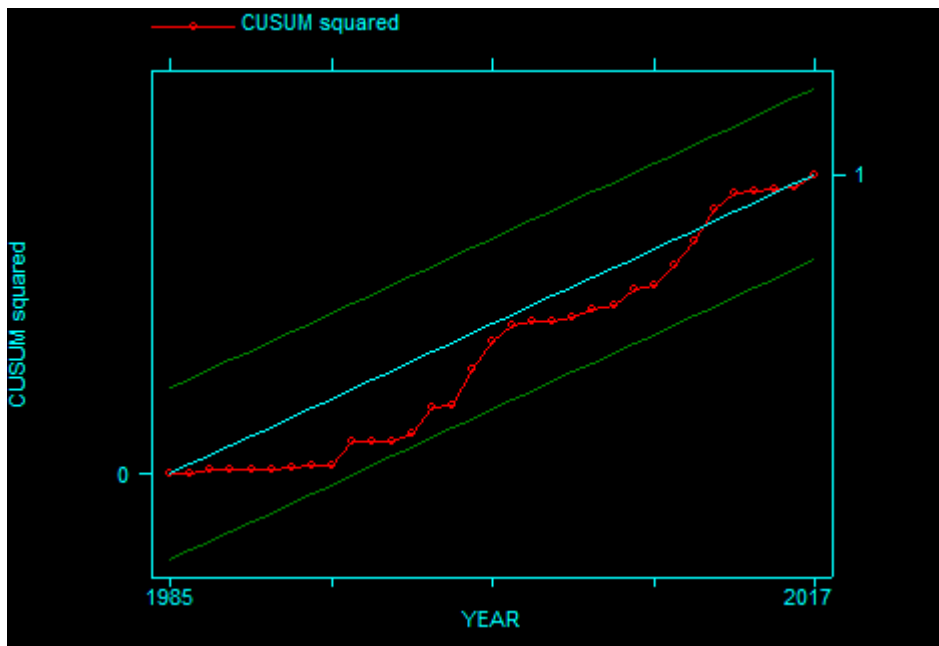
```
. estat ovtest
```

Ramsey RESET test using powers of the fitted values of logtse

Ho: model has no omitted variables

F(3, 31) = 1.20

Prob > F = 0.3259

Appendix 13 : Cusum6 Squared Model Stability Test.

Source: Author, 2019

Appendix 14: Data used in the Study

year	tse	mnexp	fndev	fdi
1980	5.9e+08	12.132	.204	7.9e+07
1981	5.7e+08	11.326	.213	1.4e+07
1982	5.7e+08	12.057	.213	1.3e+07
1983	5.2e+08	11.59	.207	2.4e+07
1984	5.5e+08	9.913	.205	1.1e+07
1985	5.8e+08	11.392	.205	2.9e+07
1986	6.5e+08	10.501	.205	3.3e+07
1987	7.4e+08	12.544	.195	3.9e+07
1988	8.0e+08	12.605	.19	3.9e+07
1989	9.2e+08	12.801	.189	6.2e+07
1990	1.1e+09	29.245	.186	5.7e+07
1991	1.0e+09	20.531	.179	1.9e+07
1992	1.1e+09	36.355	.174	6.4e+06
1993	1.3e+09	28.281	.171	1.5e+08
1994	1.6e+09	28.845	.192	7.4e+06
1995	1.6e+09	27.571	.134	4.2e+07
1996	1.6e+09	26.394	.126	1.1e+08
1997	2.1e+09	25.316	.136	6.2e+07
1998	2.4e+09	23.638	.151	2.7e+07
1999	2.5e+09	22.203	.121	5.2e+07
2000	1.0e+09	20.787	.125	1.1e+08
2001	1.1e+09	23.29	.099	5.3e+06
2002	1.1e+09	24.032	.11	2.8e+07

2003	1.2e+09	24.163	.136	8.2e+07
2004	1.6e+09	25.665	.143	4.6e+07
2005	1.9e+09	31.907	.146	2.1e+07
2006	2.4e+09	35.712	.172	5.1e+07
2007	2.9e+09	37.262	.169	7.3e+08
2008	3.3e+09	36.54	.163	9.6e+07
2009	2.9e+09	36.595	.151	1.2e+08
2010	3.8e+09	34.666	.172	1.8e+08
2011	4.1e+09	34.9	.165	1.4e+08
2012	4.9e+09	35.554	.171	1.6e+08
2013	5.1e+09	36.855	.17	3.7e+08
2014	5.0e+09	36.957	.179	8.2e+08
2015	4.6e+09	37.103	.18	6.2e+08
2016	4.5e+09	37.257	.182	3.9e+08
2017	4.6e+09	28.35	.19	6.7e+08