EFFECT OF TRADE FACILITATION ON KENYA'S TRADE PERFORMANCE

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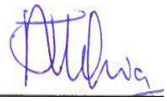
DECLARATION

I, the undersigned, declare that this project is my original work and has not been presented in any institution of higher learning for examination.

Signature……  …… Date…1st December 2023….

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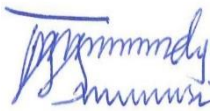
This project has been presented for examination with my approval as the university supervisor.

Signature…  …… Date…1st December 2023…

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DEDICATION

This paper is dedicated to my beloved parents Wilfred Muhia, and Elizabeth Wanjiku, and to my husband Antony Kimani who have been my support system and source of inspiration throughout my academic journey.

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I want to express appreciation to the Almighty God for grace, and guidance, for seeing me through my studies, and for enabling me to finish this research project.

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ABBREVIATIONS

EAC	East African Community
ECOWAS	Economic Community of West African States
GDP	Gross Domestic Product
ICT	Information Communication Technology
KNBS	Kenya National Bureau of Statistics
LPI	Logistics Performance Index
OLS	Ordinary Least Square

Abstract

The widening gap between exports and imports has been a subject of discussion for some time in Kenya. The problem with Kenyan exports is that it has been growing but not at the desired rate. The absolute value of exports has increased over time but has been reduced as compared to the Gross Domestic Product. To correct the trade imbalance, the government implemented several trade facilitation interventions to make exports competitive. These policies include investments in road, rail, and telecommunication networks. The standard gauge railway has not only improved the transportation of bulky goods from the port of Mombasa to Nairobi but also reduced the incidences of accidents and delays experienced on the road. The government has also reduced the procedures and documentation needed to export. The country's corruption index has also improved from position 134/180 in 2019 to position 124/180 in 2020. Thus, making Kenya a competitive destination for exports. The study therefore investigated the impact of trade facilitation on trade performance. Trade facilitation was further decomposed into infrastructure efficiency, ICT, custom procedures, and corruption index. The gravity model was used to decompose trade facilitation and assess its impact on trade performance. Data was collected for a period of 10 years (2010-2021) from the following databases: World Development Indicators (WDI), CEPII database and Transparency International. The study used the Poisson Pseudo Maximum Likelihood regression method because some data points were not normally distributed hence exhibiting heteroskedasticity. The results indicate that GDP, infrastructure efficiency and common language increase trade volume. While distance, customs procedures and corruption had a negative relationship with trade volumes. ICT and landlock variables do not have a relationship with trade volume. From these results, the study recommended that East African countries should consider completing

standard gauge railways and work towards reducing customs procedures and corruption.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The Kenyan export market has been on the rise in the last two decades, however, the value of exports as compared to GDP has been on the decline. This means that the country exports less of what is produced locally. The KNBS (2022) report on status of exports revealed that the trade deficit continues to widen. In 2021 the trade deficit stood at 1.1 trillion Kenya shillings implying that for every shilling of export, there are three shillings worth of goods imported (KNBS, 2022). Bilateral and multilateral trade agreements have also worsened the situation since they encourage competition from developed countries(Afesorgbor, 2018). Intra-Africa trade has increased significantly (UNCTAD, 2020) even though the contribution to the world is still below the expectation at 5% as compared to the desired level of 16% (Traoré & Sakyi, 2017). The probable factors to be blamed include unnecessary taxation regimes, delays in processing the goods, inefficiencies at the ports of entry, poor transport networks, and inefficient communication systems (Sakyi Bonuedi Osei, 2018). These factors coupled withrampant corruption reduce trade performance.

In the international arena, the trade deficit is not different from the Kenyan scenario. In 2020 the developed countries exported twice as much as the African countries. The huge trading gap is mainly attributed to African nations exporting raw materials and importing finished goods (African Export-Import Bank, 2018). Finished goods have a higher value than raw materials thus leading to the widening gap between exports and imports in Africa. Trade facilitation is one of the strategies that can be used to improve trade performance. This involves the improvement of trade processes, harmonization

of documentation, improvement of port efficiency, improvement in theinfrastructure (road, rail, and telecommunication network), and reduction in corruption.These efforts reduce both the cost of doing business and the time taken to enable an entity to either export or import (Eberhard-ruiz & Calabrese, 2018). Therefore, a well-coordinated trade facilitation strategy leads to improvement in trade performance (Seck, 2017).

It is therefore important for the government to prioritize trade facilitation policies to achieve their long-term development agenda. Indeed, most countries Kenya included have committed to adhere to the trade facilitation protocols as designed by the World Trade Organization (WTO). These protocols mandate member governments to implement policies that ease the transportation of goods to border points. The agreement also includes expediting transport, customs, and clearance procedures to reduce transaction costs. Apart from the usual trade facilitation activities elucidated above, the WTO trade facilitation agreement included other issues such as the professionalism of customs officials. Most member countries were advised to hire professional staff to encourage efficiency. The arrangements also include the efficacy of the financial sectors (banks and insurance companies), this is because the sector promotes international trade by providing guarantees to parties involved in international trade (Sakyi et al., 2018).

There have been deliberate efforts by the Kenyan government to improve the processes and procedures for international trade. The government has invested heavily in road, rail, and port infrastructure. The investments in road transport connecting Kenya to Uganda and Kenya to Tanzania have not only eased the movement of goods butalso encouraged trade in East Africa. Kenya is a major gateway to Uganda, Rwanda, Burundi, and Congo. The government has also built bypasses to ensure that tracks are not delayed while passing through Nairobi. The investments in port infrastructure at

Mombasa and Lamu have also improved the number of goods passing through Kenya. Port efficiency in Kenya has been enhanced through improved physical infrastructure, system upgrades and human capital developments. For instance, in Mombasa, the government has expanded the port from 16 to 19 berths. This has increased the port capacity from 750K to 1.3 million TEUS (twenty-foot equivalent unit) per annum.

The investments in information technology have managed to digitize most customs processes in Kenya. These initiatives have yielded significant results in terms of reduced processing times. The importers and exporters of cargo can now save up to 300% of their time while processing trade documents through the digital platform. This system has decreased the efforts needed by importers and exporters to comply. The digital system amalgamates all the 37 government agencies involved in cargo clearance thus making it easier for the business to comply on a single platform. These efforts have reduced both the time and cost of importing and exporting. The automation of payment has eliminated manual processes. This makes it easy for traders to comply, the process takes on average 1 hour as compared to the 7 days it used to take when the system was manual. To improve customer experience, the automated platform has also reduced the number of documents needed to import and export from 10 to 4 documents. This can be attributed to better controls within the platform.

Despite these reforms, Kenya still ranks lower than the Sub-Saharan African countries in terms of trade facilitation. For instance, the documentary processes in Kenya are 10% higher than the Sub-Saharan average. Moreover, the time and cost taken to export/ import are still relatively higher than the Sub-Saharan averages. This means that it takes more time, and it is more expensive to comply in Kenya than it is in most countries in Africa. However, the government has committed to introducing the green channel to

clear low-risk goods such as coffee and tea as recommended by the World Customs Organization. Additionally, cargo clearance has been automated thus reducing the screening time. The introduction of smart gates in 2022 is also expected to reduce track turnaround time. These efforts are likely to enhance the competitiveness of Kenya.

Indeed, Kenya has been ranked number 109 in terms of exports and number 81 in terms of imports based on the recent investments in trade facilitation. The top exports from Kenya include tea, flowers, coffee, and titanium ore. These commodities contributed $1.2B, $766M, $262M, and $194M to the Kenyan economy respectively. Kenya exports mostly to Uganda (831M), the Netherlands (576M), the United States (566M), Pakistan (487M), and United Kingdom (465M). The imports to Kenya include Refined Petroleum ($3.53B), Palm Oil ($1.26B), Packaged Medicaments ($554M), Cars ($549M), and Hot-Rolled Iron ($508M). Kenya imports mostly from China ($5.81B), India ($2.55B), United Arab Emirates ($1.81B), Saudi Arabia ($1.09B), and Malaysia ($1.05B).

The obsession with trade performance is premised on the fact that a country can only achieve its full potential through international trade. The concept of trading creates wealth and increases the general income of the economy (Santos-Paulino, 2017). The economic activity of the nation is partially dependent on the effectiveness of exports since it allows the citizens to sell locally manufactured goods. Exports increase the aggregate demand for the local goods thus creating employment for the local citizens. Additionally, imports assist the local manufacturers in buying raw materials which are needed to produce locally demanded goods. Therefore, both exports and imports contribute towards economic development (Zhou, 2018). The other strategic justification is based on skill transfer which happens when one country trades with another. The trading partners of Kenya have set minimum standards that have to be met

before the goods are accepted in their countries these standards coupled with training enhance the quality of production (Uprety, 2017)

1.1.1 Kenya and WTO Trade Facilitation

The World Trade Organization is an international institution that is mandated to ensure that goods move freely across borders. This organization does this by coming up with policies which eliminate bias and unnecessary charges. The organization encourages member states to charge fees that are commensurate to cargo processing without loading a profit (World Trade Organization, 2019). These efforts are designed to encourage cross-border trade and consequently improve the living conditions in the world. One of the policies advanced by WTO is the 2013 Trade Facilitation Agreement. This protocol does not only champion fairness in terms of fees and duties but also proposes the digitization of processes. The goal of the protocol is to reduce both time and cost to either import or export. In principle, the charges levied should be proportional to the services rendered and not as a source of income to the member countries. The agreements also discourage protectionist charges which discourage importation to protect the local industries(Article VIII of the Protocol).

As a means of Kenya owning up to a commitment to the WTO under the TFA on 29th April 2015, This is summarized in Table 1.1 below.

Table 1.1 The Implementation Status of the Trade Facilitation Agreement

#	Category	Percentage of Implementation
1	Current Rate	7.6%
2	Category A	7.6%
3	Category B	0.0%
4	Category C	0.0%

5	Rate of future implementation Category B	23.9%
6	Rate of future implementation Category C	68.5%

Source: (WTO, 2021)

To successfully implement those trade protocols, the government has appointed a Trade Facilitation Committee (NTFC) whose membership consists of the Government, Private Sector, Academia, and Civil Society totaling 59 members. NTFC was established in February 2015 and ultimately gazette in September 2016. The committee was mandated to: develop a domestic coordination mechanism for the implementation of a trade facilitation agreement, develop procedures for sharing pertinent and appropriate information, and establish rapport to exchange information including active participation in meetings when called upon The objectives of the committee include;

- Administrative mandate for effective and efficient implementation of trade facilitation agreement during the next six years
- Address concerns, needs and views of all involved public agencies and private organizations in the trade facilitation agreement implementation.
- Educate the public and private sector stakeholders as well as the public to understand the benefits of trade facilitation.

Additionally, the info trade Kenya monitors how the various government agencies are implementing the agreement. Specifically, the interventions include engaging in pre-shipment inspection to reduce the processing time and adopting a harmonized system for classifying goods. These efforts are geared towards improving efficiency and transparency while calculating the customs (World Integrated Trade Solution, 2020). Additionally, the Ports Authority has been engaged in the process of transforming the customs services department through training of its human capital. The transformation

is also achieved through digitization of the customs procedures. Most of the manual processes have been digitized, traders can now use the platform to apply for licenses and certifications which are processed digitally within minutes (The World Bank, 2021).

The dual strategy of improving both the human capital and the infrastructure is geared towards creating an enabling environment for international trade. The cost and time taken to clear goods can only be optimized through the partnership between the customs staff, other related government agencies, and the traders (UNCTAD, 2016). The other commitments which have been implemented by Kenya include enabling traders to pay before the arrival of goods, accepting an electronic payment which means that traders can pay remotely, enhanced transparency through publication of processing time, and digitization of risk management procedures. These initiatives have reduced the processing time and quality of service. Kenya has also implemented border agency cooperation. Additionally, the Kenya Revenue Authority has eased the movement of goods by reducing the formalities connected to the importation, exportation, and transit of goods. The adoption of a single window strategy coupled with pre-shipment inspection is some notable progress that has been made to comply with articles 10.1-10.9 of TFA (The World Bank, 2021).

1.2 Research Problem

International trade is popular for its positive contribution to economic growth, particularly in developing economies. International trade is also an important catalyst for the socioeconomic development of a country. Trade enables the exchange of goods, services, and technological know-how. Economic development is achieved through the exchange of goods and services. The imbalanced distribution of natural resources implies that every country will have more of some raw materials and less of some types

of raw materials. International trade is therefore needed to facilitate the movement of goods from one surplus country to a deficit country. Therefore, international trade enables the development of the local economy because it provides the deficit of raw materials. Moreover, companies can sell the excess goods and services to other countries with a deficit in what is locally available.

Therefore, the interventions of international trade eliminate the deficit of consumption and capital goods and services in the economy. Trade enables the local citizens to consume the goods which can be produced locally, and goods produced in other countries thus improving their social welfare (Sakyi et al., 2018). Apart from the consumption of goods, international trade also makes it possible for emerging economies to import capital goods needed to drive local industrialization plans. This leads to an increase in general employment in developing countries. The overreliance on imports can only be eliminated if developing countries start to add value to their raw materials. The importation of capital goods also improves and reduces the trade deficit since most countries will be able to export finished goods and earn more foreign currency.

Moreover, through the importation of capital goods knowledge and technology are shared with the African countries to enable the local labor force to maintain these capital goods (Seck, 2017). Consequently, the tax man benefits directly from the customs received from the traders. For instance, the World Bank Report (2016) found that customs duty contributed between 5% to 40% of total revenue in African countries. International trade contributes directly to the GDP through import and export duties. Indirectly the trade contributes through the profits and gains made by importers and exporters in the form of corporate taxes, value-added tax paid on the goods and services, and PAYE deducted from employees. However, the WTO trade facilitation

protocols discourage countries from direct import and export duties. The protocols aver that countries could gain more through indirect earnings than direct customs duties.

Despite the benefits of international trade elucidated above, Kenya has yet to enjoy the full benefits of international trade. Just like other developing countries Kenya has fewer exports than the imports (Hakobyan, 2017). Most of the exports from Kenya are raw materials such as unprocessed tea, unprocessed coffee, and flowers. On the other hand, most of the imports are processed goods such as refined petroleum, packaged medicine, cars, and palm oil (African Export-ImportBank, 2018). This has created a consistent trade deficit between Kenya and its trading partners since the value of raw materials is far less than the value of the finished goods. The trade deficit therefore continues to sustain significant pressure on Kenya's shilling against major currencies in the world. This translates to higher prices of domestic goods since most consumer goods are imported (Kinuthia, 2016).

The Kenyan government has responded with several policy instruments to deal with the distressed balance of trade. Over the last 10 years, the Kenyan government has invested in infrastructure development to enhance trade competitiveness and improve trade balance. These investments have improved trade, especially between Kenya and its neighboring East African countries (World Integrated Trade Solution, 2020). The standard gauge railway for example has improved transport logistics and consequently, this has positioned the Mombasa port as the preferred clearance port as compared to Dar es Salaam. The government has also invested in its ICT infrastructure at the port to enhance efficiency and increase competitiveness (East African Economic Outlook,2018). These contributions have increased trade performance, but the degree of efficiency is unknown because of the lack of empirical studies on this subject.

Additionally, empirical research provides conflicting evidence, some studies have found a positive association between trade facilitation and trade performance (Manfred, 2018; Odebiyi & Alege, 2019), while others have found no relationship between trade facilitation and trade performance (Katerina, & Dragan, 2016). Most of these studies have relied on the gravity model to set up the data analysis framework. However, the gravity model used in these studies has made a false assumption that there are no transportation and energy costs. This false assumption may skew the results of these studies and consequently affect the usefulness of the findings. Indeed, transportation accounts for 40% of the cargo cost in Africa (Eberhard-ruiz & Calabrese, 2018; Vilakazi & Paelo, 2017). It is therefore important to use an augmented model that takes care of all the relevant costs associated with international trade.

The other problem area relates to the use of composite indicators of trade facilitation (Gaglio, 2015). These indicators usually lamp up the components of trade facilitation without segregating them into their various observable components thus making it difficult to formulate policies for specific problems within the international trade market. Indeed, Yadav (2014) recommended that trade facilitation should be decomposed into sub-variables. The justification for this decomposition is premised on the fact that the various components of trade facilitation affect international trade players differently. Therefore, the paper is designed to look at the impact of the various decomposed components of trade facilitation on trade performance.

1.3 Research Questions

The study answered the following questions.

i. What is the impact of trade facilitation on trade performance?
ii. What is the impact of Infrastructure (road, port, and air infrastructure) on trade performance?

iii. What is the role of Information Communication Technology (ICT) on trade performance?

iv. What is the impact of customs procedures on trade performance?

v. What is the impact of corruption on trade performance?

vi. What are the policies to be implemented based on research findings?

1.4 General Objective

The main aim of the study was to examine the impact of trade facilitation on trade performance.

1.4.1 Specific Objectives

The specific variables have been decomposed into the various constructs of trade facilitation. These objectives therefore include.

i. To investigate the impact of Infrastructure (Road, port, and air infrastructure) on trade performance.

ii. To examine the role of Information Communication Technology (ICT) on trade performance.

iii. To investigate the impact of customs procedures on trade performance

iv. To investigate the impact of corruption on trade performance

v. To recommend policies based on the findings of the study.

1.5 Significance of the Study

The role of TF on trade performance has been looked at as though these studies have not decomposed trade facilitation as its core component. Most of the studies in Africa have not assessed the role of the various components of trade facilitation. Instead, these studies have used indices that provide aggregate measures of trade facilitation. The segregation of TF into specific components will enable policymakers to make specific

interventions based on the study findings. This will improve policy frameworks since it eliminates generalizations and leads to a focused intervention. Therefore, policymakers will benefit from the conclusions made thereof and formulate very specific policies which will help Kenya to improve trade performance.

The theoretical assumptions provide conflicting assumptions; competitive advantage theory avers that there is no competitive advantage for the intra-trade between African nations since they have a similar competitive advantage (they are producers of primary goods). However, the iceberg model and the new theory of international trade postulate that trade facilitation does increase trade performance even for countries within EA.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Literature review encompasses evaluations of assumptions that constitute relevant theories of the study. The literature which supports various theoretical assumptions is addressed in this chapter. The last part of this chapter looks at the summary of both theoretical and empirical analysis.

2.2 Theoretical Literature

The role of trade facilitation on trade performance can be explained by the competitive advantage theory, the Iceberg model and the Heckscher-Ohlin theory of international trade. Trade facilitation is intentional interventions that are designed to make the exchange ofgoods and services easy (Appiah, Osei, Selassie, Osabutey, 2019). These interventionsinclude efficiency in the procedures and processes of conducting trade. The streamlining of processes that are needed to import and export goods and services results in time-saving and hence improves trade performance. The second part of trade facilitation deals with the infrastructure; the movement of goods from the production location to the port of exit requires that a country invests in road and rail infrastructure. Additionally, investments in telecommunication are required to help traders trackthe movement of goods (Eberhard-ruiz & Calabrese, 2018). Good road networks and telecommunication channels reduce the cost of doing business hence increasing trade volumes (Marti & Puertas, 2017). The other part of trade facilitation deals with the governance of the entire process. The corruption levels in a country affect port efficiency and procedures.

The relationship between TF initiatives and trade performance is primarily anchored

on the theory of comparative advantage. This theory avers that acountry can gain a competitive advantage by concentrating on what it can produce best.International trade therefore assists the country to sell surplus goods and import the goods that they cannot produce locally. Specialization assists the country to compete favorably in international market.

Therefore, a country does not have to struggle with what it does not know how to produce but buys it from a partner which has the expertise to produce the goods they don't have. In return, the country concentrates on what it can do best and exports it to its trading partners (Odebiyi & Alege, 2019). The result is that the trading partners get high-quality goods that they would not have enjoyed if all the member states were individually producing the goods. However, the problem with developing countries is that they export mostly primary goods, for instance, Kenya, Uganda, and Tanzania produce surplus maize. This then erodes the comparative advantage that would have been enjoyed if maize was produced only in one country (Afesorgbor, 2017).

Trade facilitation therefore helps to reduce the cost of exports by streamlining the processes (Portugal-Perez, & Wilson, 2012). Even though the Kenyan government has improved on export and import processes, there is still some room for improvement. For instance, the country still has more compliance documents as compared to developed countries. The cost of exporting is also relatively higher than the EU counterparts (UNCTAD, 2020). Trade facilitation also eases the movement of goods from one point to the other. Improvements in the transport sector therefore have a great impact on export efficiency. On average a percentage increase in transport efficiency leads to a 0.5 % increase in international trade competitiveness. In Africa 40% of costs are related to transportation, therefore a reduction of this cost center is a plus for both

traders and the country generally (World Integrated Trade Solution, 2020).

However, some commentators have criticized the assumptions of the theory of competitive advantage. These critics argue that most African countries produce the sameclass of raw materials. The major economies in East Africa, for example, produce raw tea and coffee. These countries therefore do not enjoy any competitive advantage while trading with each other because they all specialize in producing and exporting similar goods. Under these circumstances, it is not possible to gain a competitive advantage because of the similarity in the advantages. Indeed, some studies document that there is no impact of trade facilitation on trade performance.

However, these criticisms are not entirely true, trade facilitation still has a role in enhancing trade performance even within the East African nations. The tax regimes in these countries are different, Kenya taxes the agricultural inputs while Tanzania and Uganda do not. The cost arbitrage creates a natural advantage for the two countries. The agricultural goods produced in Tanzania and Uganda are relatively cheaper because of the tax advantage hence increasing their trade competitiveness in Kenya. The second weakness of the criticism is the fact that every country has unique resources and as such competitive advantages still exist. For instance, even though the three countries produce coffee Kenya's coffee is better ranked than coffee produced in Uganda and Tanzania. The genuine concern, therefore, relates to the fact that a country can choose to specialize in the wrong product where they do not have a competitive advantage.

The Iceberg model as proposed by Samuelson (1954) supports the notion that trade facilitation improves trade performance. This theory concentrates on the impact of trade costs on export performance. A reduction in the aggregate cost of trading is

believed to increase not only the export volumes but also the competitiveness. Indeed, Manfred (2018) confirmed that a reduction of trade costs by 1% leads to an increase in export and import competitiveness by 5% globally. Other studies indicate that the elimination of trade barriers can increase intra-African trade by 22% (World Trade Organization, 2019).

Similarly, the new theory of international trade focuses on the exogenous advantages which are provided by nature (Krugman, 1979, 1980). For instance, the proximity to a port of existence like Mombasa is an advantage. The proximity to the port reduces the cost of transportation hence increasing the trade competitiveness. The other natural advantage may come from the traditional practices which make a country best suited to produce some goods better than others (Abbas, & Waheed, 2017). For example, the traditional practices of Maasais encourage beading; this has made Kenya export more beaded works than any other country in East Africa. This theory therefore supports the assumptions of the theory of competitive advantage. The other natural advantages relate to the natural resources and weather, this is attributable to the competitiveness of Kenyan flowers worldwide (Yego, Keror, & Bartilol, 2018).

Similarly, the Heckscher-Ohlin theory of international trade avers that countries should export what they can produce most efficiently and import what they cannot produce. This theory postulates that the resources which are controlled by a country determine the competitive advantage of a nation. This model emphasizes that a country should produce in abundance that which it has a natural advantage over and export it to the countries which do not have the resource capability to produce the goods or services. On the other hand, a country should import the goods which they cannot produce (Dhiman & Sharma, 2019). This model supports the theory of competitive advantage

but concentrates on explaining the relationship in the form of labor and capital resources.

According to this theory Countries with a surplus of capital resources should supply the countries with less capital. These countries are usually technologically advanced and have refined their physical capital. There is therefore no need for developing countries to try to create their physical capital when they can benefit from the importation of technology from the well-developed countries (Laursen, 2015). Countries with more population also have a natural advantage of being labor intensive. These countries shouldhave a natural propensity to export their labor to countries with less workforce. However, in modern economies, this trade can happen without the necessity to move capital or labor physically (Dhiman, Kumar et al., 2020*)*. Many companies have set up their plants in labor-intensive countries to benefit from the labor surplus. Eventhough they have moved the physical capital the labor resources stay where they are. A movement of the labor capital is likely to distort the equilibrium hence it is advisable to retain the labor where there is a surplus and move the capital (Machinery) to where there is more labor (Christofi, Vrontis, Thrassou, & Shams, 2019).

2.3 Empirical Review

The results of empirical enquiries present a confused status of affairs with some studies agreeing that TF improves trade performance and other studies presenting dissecting opinions. Odebiyi and Alege (2019) is one of the studies that found a positive association. However, this study defined trade facilitation narrowly without incorporating the role of infrastructure. In Europe, studies have used the gravity model to show that a reduction in trade procedures does increase export volumes. The number of days and the costs paid to move goods is also a significant factor which affects the

volume of exports. Additionally, most of these studies have ignored the inevitable contribution of logistics efficiency in enhancing export competitiveness. This is even though logistics performance increases export performance by 10%.

The role of trade facilitation on trade performance in Africa was examined by Sakyi and Afesorgbor (2019). PCA was used to analyze various components of trade facilitation. The augmented gravity model was used to fit the overall model using 52 countries for ten years (2006-2015). Trade facilitation was measured as a composite variable comprising time taken to import and export, cost of exportation, export/import documents, and the distance to the frontier. The study concluded that trade facilitation enhances trade performance. Therefore, the study advised that African member states need to reduce the cost of importation and exportation and ease the channels of doing business to support intra-African trade. The political stability of the nation was found to affect trade performance positively. The country's population did not have any significant impact. This study focused on trade performance. Our current focus is on exports because Kenya suffers from a trade imbalance; The number of imports supersedes the exports. This situation worsens the economic performance because it puts much pressure on the dollar. This makes it more difficult to repay the Eurobond loans.

The role of multilateral trade liberalization on trade permanence was examined by Gnangnon (2019). This study also looked at the role of aid to trade in the relationship between trade liberalization and trade performance. Data was collected from a sample of 97 developing countries for a period of 14 years (2002-2015). The study used generalized methods of moments to analyze the unbalanced panel data. The study concluded that trade liberalization only increases export performance if it is

accompanied by aid to trade. The aid assists in enhancing the capacity of developing countries to enable them to compete favorably at the international level. From the foregoing, it is evident that trade liberalizations do not lead to an automatic increase in export performance unless the structural issues of capacity are addressed.

Some studies have incorporated the concept of infrastructure for example Portugal-Perez and Wilson (2012) looked at trade facilitation and export competitiveness, trade facilitation included the components of infrastructure; ICT infrastructure, and port efficiency. However, this study ignored other components of infrastructure such as the road and rail networks. Surprisingly, Odebiyi and Alege, (2019) used the gravity model to analyze the effects of trade facilitation in ECOWAS and found that administrative procedures do not affect trade volumes. However, this study found that infrastructure improves competitiveness within the region. Countries which had invested in infrastructure outperformed their peers who had not invested properly. Trade costs are significantly reduced when road and rail transport are efficient.

The debate on trade facilitation is incomplete without custom efficiency, the inefficiencies in custom processes affect the cost of doing business significantly. It is estimated that customs contribute between 13 to 25% of the non-goods costs (Arbay, 2020). It is therefore imperative for African nations to improve their efficiency in the clearing of goods. The bottlenecks at the border points should be improved to enhance trade competitiveness in Africa. These challenges include the use of outdated technologies, staff incompetency and corruption (Glenday, 1997). These challenges can be resolved through the use of modern technologies to clear goods. The central governments should also train their staff to enhance their efficiency. The unification of goods classification coupled with the abolishment of unnecessary physical inspection

and controls can also solve the problems at the border points.

Over the last 10 years, Kenya has intervened to improve customs efficiency, the adoption of modern technology which allows the traders to submit their documentation in one single window has reduced the time taken to comply with regulations from 2-4 days to less than 3 hours. The publishing of trade regulations has also improved transparency at the port. The simplification and harmonization of customs procedures and documentation have also reduced the time taken to comply. The investments in structures, human capital and new technology have contributed to the improvement of port efficiency. Moreover, risk management is done using a multi-agency approach all stationed at the port. The collaborations between the various government agencies have increased compliance and eliminated unwanted processes (Lowitt, 2017).

The use of information communication technology as a strategy for improving trade facilitation cannot be overemphasized. ICT plays a significant role in reducing the time and costs associated with importing and exporting goods and services. ICT has not only helped to reduce redundant processes but also reduced the need to deliver documents to multiple agencies (Christofi, Vrontis, Thrassou, & Shams, 2019). For instance, automation of the registration processes through a single window has improved the time and effort needed to comply. Improvement in ICT reduces the costof communication consequently this improves the cost of tracking goods in transit. In East Africa, Kenya has the best quality internet broadband connectivity, and mobile money/banking is also robust due to increased smartphone penetration and agency banking. These interventions have led to the continued growth of the ICT sector and consequently its contribution to overall GDP.

The adoption of ICT to clear goods in a single window has increased Kenya's

competitiveness in the international arena. This system has not only reduced the cost and time to import/export but has also increased transparency in customs administration. Additionally, this system has improved risk management at the port. The digitization of compliance processes and procedures has led to increased surveillance and efficiency at the border points. It is now easier to screen goods and comply with the requirements of the law courtesy of the single window clearance system. Teamwork also increased; 27 government agencies are working together to ensure that goods are cleared efficiently.

Some researchers have indicated that the robustness of the results can be improved if the concepts of trade facilitation are decomposed. The need to segregate the components of trade facilitation was elucidated by the works of Katerina and Dragan, (2016). This study used factor analysis to assess the impact of individual aspects of trade facilitation on international trade. This study found that only 5 concepts of trade facilitation are important in enhancing export competitiveness in Southeast European countries. Most of the studies in Africa have not assessed the role of the various components of trade facilitation. Instead, these studies have used indices that provide aggregate measures of trade facilitation. Yadav (2014) recommends that the decomposition should also not only at the trade facilitation level but also at the sector level. Their study advises that the various components of trade facilitation affect the various sectors within the economy differently. they, therefore, propose that sector-based research should be done to establish more targeted policies as opposed to general countrywide propositions.

2.4 Overview of the Theoretical and Empirical Review

Trade facilitation does not only improve international trade but also increases the

competitiveness of exports and imports. There is, however, a need to decompose the concept of trade facilitation to determine which component has the higher explanatory power. This decomposition plays a key role in identifying targeted policies that contribute to policy development. Additionally, there is new evidence that supports the disaggregation of TF components. It is better to handle each component individually rather than through a collective score. The theoretical assumptions also support the different focal points. The Iceberg model and the new theory of international trade support positive association while the theory of competitive advantage infer that there is no relationship between TF and trade performance.

Unfortunately, the subject matter has not been well studied in East Africa, there are indeed empirical studies, but these studies are set in advanced economies that do not mirror the East African situation. Favorite topic includes assessing how trade impacts economic growth (Sakyi, Villaverde, Maza, & Bonuedi, 2017) few authors have thought through the process of segregating the various components of TF. The current study uses a targeted approach to investigate the problem; this approach is superior to the aggregated approach which has since delivered confusing results.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The research methodology which was used to conduct this study is discussed in this chapter. The model specification alongside the data processing procedures was also discussed in detail. The data sources were discussed at the end of the chapter.

3.2 Model Specification

The study used the augmented gravity model to analyze the impact of trade facilitation on trade performance. The model can take care of the variables that affect the relationship between TF and trade performance but are not captured by the basic gravity model. This basic model was first proposed by Tinbergen (1962) and further advanced by Poyhonen (1963) to assist in estimating international trade between two countries. This model was anchored on the law of gravity as proposed by Newton which postulatesthat attraction forces between two separate objects are positively related to the masses of the entities and negatively related to the distance between the two objects. Economists borrowed from the concepts elucidated above and concluded that trade performance can be measured as a function of the Gross Domestic Product (GDP) of the two countries and the distance between the countries. The Gross Domestic Product represents the masses of the two objects while the distance between the replaces the distance between two objects in the countries represents Newton's hypotheses.

Therefore, the basic gravity model can be presented using the equation below.

$X_{ij}=GS_iM_j\Theta_{it}$ 1

Where;

X_{ij} measures the total volume of trade from county *i* to country *j*

G is an autonomous variable that does not depend on either county *i* to country *j*

S_i is the specific characteristic of the exporting country; this can be captured as the exporter's GDP or ease of doing business of the exporting country.

M_j represents the importer's specific characteristics e.g., the GDP.

It is the ease of the country *i* reaching the market of county *j*

This model is, however, simplistic and does not cover all the costs involved in international trade. The study therefore proposes to use the augmented gravity model to include all relevant variables in explaining the volume of trade in a country. The next section is devoted to discussing the other variables that may help in understanding the concept of trade performance in a country.

The basic gravity model assumes that the trade flows between two countries are affected majorly by the GDP and the distance between the two countries. The GDP affects trade performance positively while the distance affects trade performance negatively. The distance creates costs such as transportation costs, and border costs of goods clearance and is time-consuming. The following formulae can be used to represent the relationship.

$X_{ij}=GS_iM_j\Theta_{it}$ 1

$X_{ij} = \beta_0 Y_{\beta 1i} Y_{\beta 2j} D_{\beta 3ij}$ 2

Where;

X_{ij} is the trade flow between countries *i* and *j*, βs are the parameters while Y_i and Y_j are the GDP of importing and exporting countries respectively and D_{ij} is the distance between the two trading countries.

The basic gravity model can be transformed into an augmented gravity model by decomposing equation 2 including other trading costs. These trading costs include the presence of a common language or not, the presence of a port of entry, multiple trade

agreements and corruption index, ease of doing business, proximity to port (landlocked or not), corruption index, Infrastructure (port, road & air efficiency), ICT and custom procedures. The pure mathematical equation 2 is normalized using logarithmic transformation.

$$X_{ij} = \beta_0 + \beta_1 InY_i + \beta_2 InY_j + \beta_3 D_{ij} + \beta_4 LANDL + \beta_5 COL + \beta_6 CORI + \beta_7 INFRAE + \beta_8 CUSPRO + \beta_9 ICT \quad \ldots\ldots 3$$

X_{ij} is not transformed to the log form to take care of the zero trade flows, this is because if transformed, the log of zero is unidentified. In is the natural logarithm β_s are the parameters *LANDL* is a dummy variable representing whether a country is landlocked or not (1 if the county is landlocked and 0 if the country has its port of entry), *COL* Dummy variable for common official language (1 if the countries share an official language otherwise 0). *CORI* is corruption index; *INFRAE* is infrastructure efficiency; *CUSPRO* is custom procedures efficiency, ICT.

The corruption index is added to the equation because it affects the ease of doing business, most of the government processes are compromised when there is rampant corruption, yet most studies have ignored the influence of corruption on export performance. Similarly, ICT supports efficiency in the customs department. The digitization of most processes makes it easy for traders to comply. The digital platforms also enable the traders to track the cargo. Moreover, screening of goods is faster when in a digital environment than in a manual system. It is therefore imperative to examine the impact of ICT on trade performance.

The model also includes the infrastructure efficiency, the infrastructure is composed of port, road, and air infrastructure. Investments in these infrastructures affect the movement of goods. The infrastructure of a nation can affect its competitiveness in

international trade. These investments enhance the flow of goods. Road, port, and air efficiency are included in the model since most of the East African countries rely on thesemodes of transport to support trade within and outside the continent. Air transport is used for less bulky goods and perishable like flowers, the sea is used for bulky goods and road transport assists in supporting the last mile delivery. Moreover, Kenya has invested heavily in the road network in the last 10 years. It is therefore important to examine the impact of road efficiency on trade performance.

Table 3.1: Variable Definitions and Measurements

Variables	Definitions and Measurements	Sign	Source
Trade (Xi j)	Trade flow between partners	+	Hakobyan (2017)
GDP (Yi, & Yj)	Gross Domestic Product in Country I and j respectively measured in US dollars	+	Anderson (2011)
Distance (Dij)	This is the distance between the two trading capital cities	-	Marti &Puertas (2017)
Landlocked(*LANDL*)	This is a dummy variable coded as 1 for landlocked countries and 0 for countries that have a port of entry.	-/+	Hoekman, &Shepherd, (2015)
Common Official Language (COL)	This is a dummy variable for official language coded as follows 1 If the trading countries share an official language otherwise 0	-/+	Sakyi, Villaverde, & Bonuedi (2017)
Infrastructure Port Efficiency (*INFRAE*)	The infrastructure will be computed as a composite variable comprising Port, road, and air efficiency. The quality of road, port, and air infrastructure services will be measured using the 7 Likert scale (1= extremely underdeveloped, 7 = well developed).	+	Tosevska &Tevdovski (2014)
Custom Procedures	The custom procedure index will be computed as a composite variable evaluating the time taken to export, cost of exportation, and documents needed to export.	+	Paleo (2017) Eberhard-ruiz& Calabrese, (2018)
ICT	Computed as a composite score of mobile subscriptions per 100 Population, population using the internet, fixed broadband internet subscription per 100 population, and international internet bandwidth kilobytes per second per user. These variables will be used to compute. The ICT score per country.	+	Ismail (2021)
Corruption Index	This is the corruption perception index of a country calculated by transparency international	-	Gil, Llorca & Martínez (2019)

Source (Research, 2022)

3.3 Data Processing

The study collected both time series data (data collected from one country over time) and cross-sectional data (data collected from different countries). This combination of time series and cross-sectional data forms panel data. Therefore, the study used the Poison Pseudo Maximum Likelihood (PPML) regression methodology as presented by (Silva & Tenreyro, 2006) to estimate the effects of trade facilitation on trade performance. This methodology has been used by other studies to deal with selection bias associated with infinitesimal trade volumes between countries (Afesorgbor, 2017). There is a possibility that some countries will have little or no trade with each other. This may be due to a lack of data or little trade in the near past. PPML regression can deal with zero values or a combination of small and big values as they are without transforming them into logarithm equations. This methodology also makes the interpretation of data easy since it uses the numbers as they are.

The study performed three basic diagnostic tests normality, heteroskedasticity, and multicollinearity. These tests are designed to ensure that the data set is fit for linear regression. The heteroskedasticity test checks for constant variance in the error term to ensure that estimators do not over/underestimate, the Breusch-Pegan test was used to investigate the presence or absence of heteroskedasticity. The multicollinearity tests were conducted to ensure that the independent variables were not correlated. The variance inflation factor was used to test for heteroskedasticity.

3.4 Data and Data Sources

Data was extracted from World Development Indicators (WDI) and WTO databases. Data was collected for a period of 10 years from 2011 to 2021. Data for the export values for, the real GDP and Logistics Performance Index were extracted from the WID database. Distance and common official language datawas obtained from the CEPII database while the corruption index was obtained from Transparency International. The study compared the trade between

Kenya and other members of the East African Community.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The initial section will look at the descriptive statistics followed by diagnostic tests and the regression output. The chapter will also present the interpretation of the results and link it to previous studies.

4.2 Descriptive Statistics

This is a preliminary analysis which provides insights for further analysis. Table 4.1 provides the results of selected statistics of all the variables under consideration.

Table 4.1: Descriptive Statistics

Details	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob
Trade	1.31E+10	1.94E+10	2.35	8.59	463.90	0.00
GDP	1.57E+09	1.7E+09	1.68	6.34	194.79	0.00
Distance	2.52E+08	4.22E+08	2.01	6.47	245.12	0.00
Infrastructure Efficiency	9.10	0.66	-0.09	2.25	5.18	0.00
Custom Procedures	7.46	1.34	0.97	1.96	41.91	0.00
Corruption Index	9.23	0.67	-1.32	3.11	60.72	0.00
Common Language	0.53	0.50	-0.12	1.02	34.84	0.00
ICT	0.41	0.11	-0.75	1.12	42.17	0.00
Land Locked	0.63	0.48	-0.52	1.27	35.49	0.00

Source (Research Findings, 2023)

The data shows that there is great dispersion around the data sets such as trade volume, GDP, and distance. This is because East African countries are different economically. Kenya's economy for example way bigger than Burundi’s economy. This explains the dispersion in the data some countries are also far from each other. However ICT, infrastructure index, corruption index, landlocked and common language have less standard deviation from the mean because

they are calculated indices. Thus making the data a bit more standardized. These results therefore indicate that more in-depth analysis should be done to test for normality. Trade volume, distance and GDP have positive kurtosis more than the normal kurtosis of 3 implying that there are more values above the mean. These variables also have a positive skewness (figures are more than the normal skewness of 0) meaning there are higher values than the sample mean. Infrastructure efficiency, corruption index, landlocked and common language have skewness meaning that they have lower values than sample means. These results are confirmed by Jarque-Bera statistics which is more robust. The statistic shows that the contributions are not normally distributed (All the probability value is less than 0.5).

4.3 Correlation Analysis

Correlation is a pre-analysis done to determine how the variables are correlated with the dependent variable. This analysis can also provide preliminary information about multicollinearity. There are however more superior and robust statistics to heck multicollinearity decisively. Table 4.2 shows the results of the correlation analysis. The rule of thumb stipulates that correlations run from -1 to +1 with higher figures indicating stronger correlation while lower figures indicate low /no correlation. It has been established that correlation coefficients between -0.24 to 0 and 0 to +0.24 indicate no correlation, - 0.25 to -0.49 is equivalent to a weak negative correlation while +0.25 to +4.9 implies a weak positive correlation. Coefficients between -0.5 to -0.74 equal to moderate negative correlation while coefficients between +0.5 to 0.74 imply a moderate correlation. Strong negative correlation between -0.75 to -1 while 0.75 to +1 means a strong positive correlation.

Table 4.2: Correlation Among Variables

	Trade	**GDP**	**DIS**	***CUSP***	**ICT**	***INFO***	**CORI**	**COML**	**LAL**
Trade	1.000								

GDP	0.753	1.000							
DIS	-0.761	0.468	1.000						
CUSP	-0.474	-0.411	-0.543	1.000					
ICT	0.163	0.1305	0.0068	-0.105	1.000				
INFE	0.874	0.726	0.527	-0.497	0.180	1.000			
CORI	0.572	0.516	0.664	-0.417	0.064	0.613	1.000		
COML	0.642	0.679	0.576	-0.666	0.144	0.762	0.614	1.000	
LAL	-0.539	-0.511	-0.398	0.490	-0.17	-0.635	-0.431	-0.725	1.000

Source (Research Findings, 2023)

Table 4.1 shows that GDP and infrastructure efficiency have a strong correlation (0.753 & 0.874 respectively). Distance has a strong negative correlation at -0.761, corruption index and common language have a moderate correlation with trade volumes (0.572 & 0.642), landlocked have a moderate negative correlation with trade volume (-0.539), customs procedures have a weak negative correlation with a coefficient of -0.474 however ICT does not correlate with trade with a coefficient of 0.163. Additionally, the table shows that the explanatory variables have low or no correlations amongst themselves except for infrastructure efficiency and GDP which tend to have moderate correlations. However, a more robust statistical test will be done for heteroskedasticity. Moreover, the selected regression methodology can fit robust estimates even with the presence of heteroskedasticity.

4.4 Diagnostic Tests

These tests are conducted to determine the characteristics of the distributions under study. These tests are important in helping the researcher determine the regression methodology. Three tests were conducted as follows: the normality test through the Jarque -Bera, the

heteroskedasticity test through the Breusch -Pegan -Godfrey statistic, and the test of Multicollinearity through VIF statistics.

4.4.1 Jarque -Bera Test of Normality

The test of normality is conducted using the Jarque -Bera statistic, this test assumes that the data set is normally distributed. This null hypothesis is accepted if the probability is more than 5%. In this case, the study concludes that the data set is not normally distributed because the probability is 0.00% (see Figure 4.1). This implies that it is not appropriate to run linear regression models which assume the normality of data.

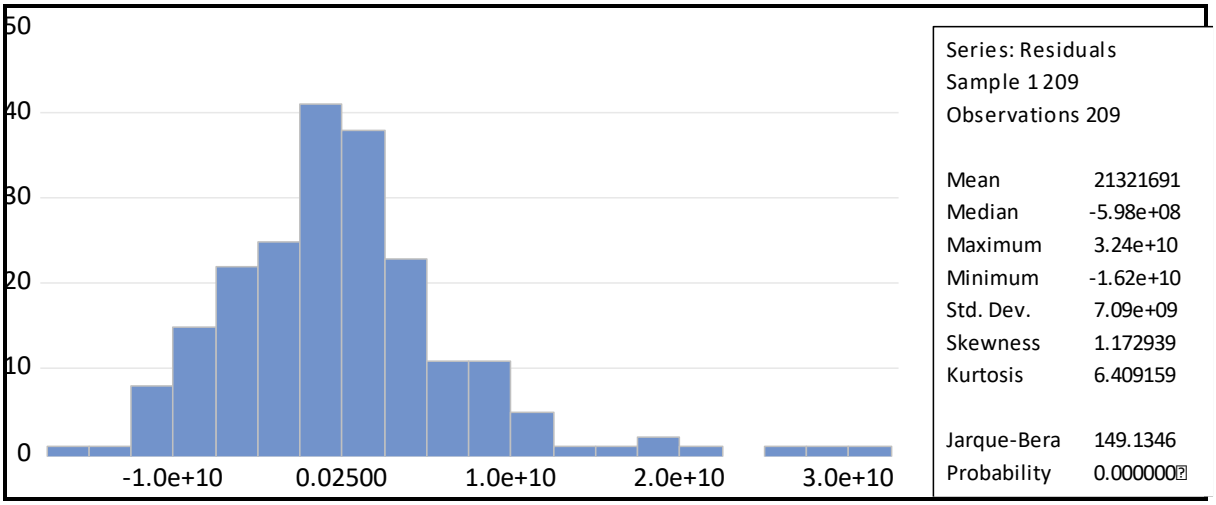

Figure 4.1: Jarque -Bera Test of Normality

4.4.2 Test of Heteroskedasticity

Table 4.3: Heteroskedasticity Test; Breusch -Pegan -Godfrey

F-statistics	4.750538	Prob. F (8,200)	0.0000
Obs*R-Squared	33.37293	Prob. Chi-Square (8)	0.0001
Scaled Explained SS	18.55919	Prob. Chi-Square (8)	0.0174

Source (Research Findings, 2023)

Heteroskedasticity implies that some variables are more dispersed than the mean. This disparity is not favorable for linear regression. The Breusch-Pegan test assumes that the data set is homoscedastic (meaning that the data is not dispersed from the mean). If the p-value is more than 5% then it is accepted. In our case, we found that Prob. Chi-Square is 0.0001 which is less than 5%. We therefore conclude that the data has heteroskedasticity and therefore we cannot use the linear method of regression.

4.4.3 Test of Multicollinearity

Table 4.4: VIF Test of Multicollinearity

	Variance	Uncentered VIF	Centered VIF
C	1.38468	2900.948	N/A
Distance	0.004894	6.426601	2.398444
Custom Procedures	0.0091919	1588.831	2.288223
ICT	0.00024	1.115886	1.106928
Infrastructure Efficiency	0.003403	558.0347	4.038795
Corruption Index	0.0000553	64.30468	3.265959
Common Language	0.002994	360.2261	3.21812
Landlocked	0.012422	2230.816	1.75277
GDP	0.00905	10.07021	4.721915

Source (Research Findings, 2023)

The test of multicollinearity examines if the independent variables are related. This test is important to avoid overestimation. The VIF statistics is designed to identify multicollinearity, it assumes that variables are correlated if they have a VIF of more than 10. The table shows that all centered VIFs are less than 10 hence the study concludes that there is no relationship between the independent variables.

4.4 Discussion of Results

The study used poison pseudo maximum likelihood (PPML) regression methodology to look at the effects of trade facilitation on the volume of trade. This methodology was selected because the data set was heteroskedastic in nature and had missing variables. This methodology of regression has the capability of providing robust results even with data sets which are not normally distributed. Moreover, the methodology can handle heteroskedasticity in the data set and missing values. This methodology is therefore appropriate since the variables were not normally distributed. The data set also exhibited heteroskedasticity majorly contributed by the fact that the distributions were not normal. Some variables such as ICT and infrastructure efficiency were missing in some countries. The PPLM model provides robust estimates with non-normal, non-homogeneous data sets hence the justification for its use in this study.

Table 4.5: Poison Pseudo Maximum Likelihood (PPML) Regression

Variable	Coefficient	Std. Error	z-statistic	Prob.
GDP	0.1770	0.00634	2.79010	0.0053
Distance	-0.2617	0.01013	-2.58154	0.0098
Custom Procedures	-0.1028	0.00579	-1.77424	0.0076
ICT	0.0033	0.00051	0.65610	0.5118
Infrastructure Efficiency	0.7519	0.01011	7.43190	0.0000
Corruption Index	-0.1645	0.01193	-1.37834	0.0016
Common Language	0.9994	0.002598	3.847573	0.0001
Land Locked	-0.3480	0.007328	-0.47571	0.6343
C	1.5461	0.126648	12.2082	0.0000
R-squared	0.787782	Mean dependent var		9.1722
Adjusted R-squared	0.779294	S.D. dependent var		0.6715
S.E. of regression	0.315482	Akaike info criterion		4.1661
The sum of squared resid	19.9058	Schwarz criterion		4.3101
Log-likelihood	-426.3619	Hannan-Quinn criteria.		4.2243
Restr. Log-likelihood	-430.4046	LR statistic		8.0855
Avg. log-likelihood	-2.040009	Prob(LR statistic)		0.4252

Source (Researcher Computations, 2023)

From table 4.5, it is evident that the regression model explains 77.92% of variations in trade volume the rest of the 22.08% is explainable by other factors that are not part of this study. The study also found that there is a constant trade volume which is not dependent on the variables under consideration. This represents the minimum trade that is needed for survival in the global economy. A country however sufficient must buy some goods from others and sell some surplus goods and services to another country. This is the level of trade without trade facilitation or any other variable.

From the analysis, the results indicate that GDP has a significant positive relationship with trade volumes, whereby an increase in GDP by 1 percent leads to an increase in trade volume by 0.17 units. This implies that an increase in the growth of domestic products increases the

chances of trade internationally. This is because they need to sell the surplus goods to countries which are not capable of producing similar goods while at the same time importing some raw materials to manufacture goods. The other rationale is linked to specialization where countries tend to concentrate on the things they can produce better and import what they cannot produce. These results are consistent with the conclusions of Odebiyi and Alege (2019) who concluded that economic growth enhances export performance.

Similarly, infrastructure efficiency and trade volume have a positive relationship, whereby an increase in infrastructure efficiency by 1 percent increases trade volume by 0.7519. The quality of transport infrastructure such as rail, road, and air makes it easy for goods to move from one point to the other. Additionally, the services provided by allied industries such as the logistics sector affect the cost of moving goods and consequently destination competitiveness. It is therefore important to invest in this infrastructure to improve trade volumes (Netirith & Ji, 2022). Kenya has in the recent past invested in various infrastructure projects including the standard gauge railway to ease the movement of goods and improve its competitiveness.

On the other hand, Common language is linked to ease of doing business, it is much easier to do business with partners who understand your language. This not only assists partners in understanding each other but also enables them to understand business cultural practices (Egger & Toubal, 2016). This study found a positive relationship between common language and trade volume. The presence of a common language increased the volume of trading by 0.9994 units. Two variables (ICT and the landlocked status of a country) were found not to have a statistical relationship with trade volume. This may be because these variables are emerging indices which do not have many data points.

However, the study found that distance has a negative relationship with volume of trade, a unit increase in distance leads to a reduction in volume of trade by 0.2617 units. The study used the

distance between two countries to estimate the trading costs associated with transportation. Larger distances were found to increase the time taken for the goods to reach their destination and the direct costs of goods due to increased transportation costs. These results agree with the findings of Afesorgbor (2019) who used PCA (principal component analysis) to investigate the impact of trade facilitation on trade performance and found that distance frontier had a negative relationship with trade performance.

Customs procedures were found to have a negative relationship with trade volume. The results indicated that an increase in customs processes tends to increase costs and decrease a country's competitiveness. From the study, it is evident that an increase in custom costs by one unit decreases the volume of trade by 0.1028 units. This implies that increasing the custom processes leads to more costs of doing business thus discouraging trade partners. Indeed, Kenya has improved in its ease of doing business but overall, Kenya and East African countries still have more custom procedures as compared to other Sub-Saharan countries. The Ease of Doing Business Index ranks East African and below South African countries and North African countries (Ease of Doing Business,2021).

Additionally, the study found that the corruption index has a negative relationship with the volume of trade, this implies that an increase in the corruption index by 1 unit leads to a decrease in the volume of trade by 0.1645 units. Corruption complicates custom clearance procedures because of the environment as it requires businesses to pay more than the stipulated taxes. It also delays the processes unnecessarily. Apart from the overhead costs of corruption, partners who are not willing to pay may be inconsistently banned from trading. These events discourage competitiveness thus reducing trade volumes.

Thus, from the ensuing discussion of the results, we can infer that the use of PPML proved useful and was the best choice for this study.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents the summary of the study, the conclusions drawn from the study policy recommendation, and suggestions for further research.

5.2 Summary

The study was motivated by the fact that Kenya's trade deficit continues to widen despite the trade facilitation efforts which have been put in place by the government of Kenya to make it easy to do more business with Kenya and to enhance trade competitiveness. Moreover, most empirical studies had ignored infrastructure efficiency, ICT, and corruption index. These factors, however, affect trade effectiveness and the government has invested a lot of money to enhance infrastructure, modernize the ICT technology at the ports, and reduce corrupt practices. The lack of sufficient studies that include these variables motivated the commissioning of the research. The study therefore looked at the effects of trade facilitation on trade performance.

Panel data was collected from various databases from East African countries to achieve the objective of the study. Preliminary investigations revealed that the data was not normally distributed. The data set also had the problem of heteroskedasticity, and some data sets were missing. These characteristics of the data implied that linear regression methodologies were not appropriate including the linear panel methods (fixed effects and random effects). The study therefore used the poison pseudo maximum likelihood (PPML) regression methodology to fit the estimates. This methodology is known to be robust even with nonlinear nonnormal distributions. Additionally, the methodology can handle missing variables without omitting any

variable. Thus, it doesn't suffer from omitted variable problems like the panel regression models.

The study found that there is a positive relationship between GDP and trade volume, this is consistent with both theory and other research findings. An increase in domestic production increases the propensity to sell the excess goods to neighboring countries. Increased GDP also implies that the country is getting better in its production efforts. This also means that the population can purchase more imported goods, hence the increase in trade. The distance between the two capital cities was found to have a negative relationship. This is because it becomes more expensive to trade as the distance grows. The direct costs of transportation combined with the allied logistical costs and services discourage trade between partners who are far away. The increased cost diminishes the business case for trade.

The study also found that infrastructure efficiency improves trade volume, and the quality of roads, air, sea transport, and telecommunication infrastructure make it easier for businesses to trade hence the positive relationship. Linked to this is the custom procedures, the study found that an increase in custom procedures leads to a decrease in trade volume. Complicated custom processes consume both time and money, this makes a country less attractive and reduces trade. The common language was found to affect trade favorably. It makes it easier for partners to communicate and understand business and cultural practices. This therefore leads to more understanding and consequently more trade.

However, corruption hurts trade volumes, this is because corruption does not only increase the cost of doing business but also slows down the clearance of goods intentionally. The increased cost coupled with the increased time to clear goods diminishes the business case hence reducing trade volumes. ICT and landlocked status were found not to have a statistical relationship with trade volumes. These results are rather unique and require further scrutiny.

Investments in ICT, for example, are expected to make the processes faster thus improving trade between countries. The results could however be attributed to the fact that there were fewer data points about ICT from some EA countries.

5.3 Conclusions

The study found that GDP, infrastructure efficiency and common language affect the volume of trade positively. The study therefore concludes that trade facilitation measures encourage trade and that these investments should continue not only in Kenya but also in East Africa. The study also found that corruption index, custom procedures and distance reduce the volume of trade. The study therefore concludes that investments in initiatives that reduce corruption, improve custom procedures, and enhance transport will therefore lead to better trade volumes. ICT and landlocked status did not have an impact on trade volume. The study therefore concludes that more studies should be conducted to examine these variables in detail. Based on this the study draws a general conclusion that trade facilitation has a positive impact on trade volumes.

5.4 Policy Recommendation

There is evidence from the study that Gross Domestic Product has a positive relationship with the volume of trade. The study therefore recommends that Kenya should identify specific goods that they can supply to their trading partners. This specialization will not only increase the volume of exports but also strengthen the foreign currency. However, the study found a negative relationship between distance and trade volume. Distance seems to discourage trading due to the increased trade costs which extinguish the business case. Kenya should therefore endeavor to have favorable trading terms with neighboring countries since it makes more business sense.

The study also found that corruption reduces trade volumes, and an increase in the corruption index discourages trading partners. Corruption increases trading costs because businesses are expected to pay extra money beyond the official tariffs. The study therefore recommends that governments should invest in institutions that reduce corruption. This will improve trading amongst partners and increase GDP. This policy is particularly important for Kenya which has experienced relatively high cases of corruption in the past, Kenya is also struggling with its balance of trade and a reduction in corruption particularly at the port will enhance the attractiveness of Mombasa port and enhance more trade.

The study found that an increase in custom procedures leads to a decrease in trade volume, it is therefore important that East African countries should reduce custom procedures to encourage more trade across the region. The implementation of the single clearance system has borne some fruits in making it easier to do business with Kenya. However, the country is still lagging if compared to South Saharan countries such as South Africa. Kenya can improve its trade volumes by being more efficient at the port. There is a need to automate the remaining manual processes and upskill the staff to enhance efficiency. These initiatives whole be implemented by other East African countries to improve trade within the region.

The study found that transport infrastructure has a positive relationship with trade volumes. This implies that investments in road networks, air, telecommunication channels and rail networks have positive returns. Kenya started to upgrade its rail network by constructing a standard gauge railway from the port of Mombasa through Nairobi. The plan was to construct it to the border of Uganda similarly the Ugandan government would also develop their rail transport to Kampala through to the border of Rwanda. The dream was to have a rail network from Mombasa to Kigali. This network would have reduced both the time and cost time to transporting goods by 50%. However, Uganda and Rwanda have since pulled out, based on the

findings of this study a recommendation is made to the two countries to invest in the project and improve trade volumes.

5.5 Suggestions for Further Studies

Even though the study has established that there is a significant impact of trade facilitation on trade volumes there is a need to look at port effectiveness. Most studies that have examined port effectiveness have only looked at the number of days it takes to clear goods and the procedures that are followed before goods are cleared. These studies however fail to look at the efficiency of human capital in the ports. Most governments especially the developed countries have invested both in the physical capital which improves goods clearance and the human capital which interacts with the customers. Kenya for example has invested heavily in training her port officials on how to use order technology. However, no study has been commissioned to look at the impact of human capital efficiency as a trade facilitation initiative on volumes of trade.

Common language has been found to have a positive impact on trade volumes between partners. This study has confirmed that similar language improves trade volumes amongst partners. The East African countries have a common local language; Kiswahili this language is originally spoken in the coastal areas but has been adopted by Kenya and Tanzania as a national language. Uganda and Rwanda also have a clear understanding of this language. However, most studies that have looked at the impact of the common language of international trade tend to overlook local languages such as Kiswahili. This study therefore recommends that a study be conducted to establish the effect of Kiswahili as a common language on trade effectiveness in East Africa.

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