EFFECT OF DRY PORT OPERATIONAL FACTORS ON TRADE FACILITATION IN KENYA

BY

IRENE GICHUHI

A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF BUSINESS AND ECONOMICS, DEPARTMENT OF ACCOUNTING AND FINANCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER IN TAX AND CUSTOMS ADMINISTRATION

MOI UNIVERSITY

2021

DECLARATION

Declaration by Candidate

This research project is my original work that has not been presented to any other examination body. No part of this research should be reproduced without my consent or that of Moi University.

Signed: …… Date: ……..

Irene Gichuhi

MU/KESRA/0035/2016

Declaration by Supervisors

This research project has been submitted with our approval as the appointed University supervisors.

Signed: ……. Date: ……..

Dr. Marion Nekesa,

Department of Research,

Kenya School of Revenue Administration, Nairobi.

Signed: ……. Date: ……..

Dr. Joel Chepkwony,

Department of Marketing &Logistics,

School of Business & Economics, Moi University.

DEDICATION

I wish to dedicate this project to God Almighty my creator, my pillar of strength, my source of wisdom, insight and knowledge. I also dedicate this to my parents, siblings to my beautiful daughter Nyokabi who have accorded me unconditional support throughout my academic journey.

ACKNOWLEDGEMENT

Foremost, I wish to give thanks to God for granting me strength, wisdom and patience during this pursuit to further my studies.

My most sincere gratitude goes to my project supervisors Dr. Marion Nekesa and Dr. Joel Chepkwony for the support and guidance which has been accorded me throughout my research. I would also like to acknowledge the management of Kenya School of Revenue Administration and Moi University for their continued support during the period of my course work.

Finally, I must express my profound gratitude to my family i.e. my parents, my siblings and my lovely daughter Joy for their unwavering support and encouragement throughout my years of study

ABSTRACT

In light of global perspective, the main aim of establishing a Dry Port is to decongest the main sea port and facilitate trade by reducing trade costs and clearance time. However, the benefits that come with dry ports have not been fully realized with many stakeholders who engage with the ICDs complaining of high transaction costs and lengthy clearance times. These are against the tenets of trade facilitation. This study sought to evaluate the effect of port operational factors on trade facilitation in Kenya. The focus of the study was Nairobi Inland Container Depot. The specific objective of the study was to interrogate the effect of infrastructure development, capacity of personnel, customs automation and interagency coordination on trade facilitation at Nairobi ICD. The Queuing Theory, Stakeholder Theory, Systems Theory, Dynamic Capability Theory and The New Trade Theory are the theoretical framework that guided the study. The study adopted explanatory research design. The target population of the study consisted of 351 stakeholders in international trade comprising of KRA customs staff, exporters, importers, transporters and clearing agents. The study used primary data and adopted stratified random sampling to select the sample size of I87 participants. Primary data was collected through the use of closed ended structured questionnaires. The study employed descriptive statistics in the form of frequencies, means and standard deviations and inferential statistics in the form of correlation and multiple regression analysis to evaluate the relationship between the variables of the study. From the findings of the multiple regression analysis, it was established that a unit change in Infrastructure Development would lead to a 0.381 increase in Trade Facilitation at Nairobi ICD as shown by (β_1=0.381, p=0.000) ; a unit change in Capacity of Personnel would lead to a 0.210 increase in Trade Facilitation at Nairobi ICD as shown by (β_2=0.210, p=0.001) ; a unit change in Customs Automation would lead to a 0.196 increase in Trade Facilitation at Nairobi ICD as shown by (β_3=0.196, p=0.001) ; a unit change in Interagency Coordination would lead to a 0.248 increase in Trade Facilitation at Nairobi ICD as shown by (β_4=0.248, p=0.000). Therefore, the study concluded that Port operational factors have a significant influence on trade facilitation in Kenya. The study recommended that infrastructure development, capacity of personnel, Customs automation and interagency coordination should continuously be enhanced to increase trade facilitation in Kenya. The study suggested that future studies can evaluate other factors that influence trade facilitation in Kenya.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

OPERATIONAL DEFINITION OF KEY TERMS

Capacity of personnel: This term refers to the quantitative requirement of the human resource (i.e. number of staff), qualitative requirement (i.e. competence and ability of the staff), as well as time requirement (i.e. within a specific time interval) (Michaelis and Schnier, 1990). Human capital is sometimes used synonymously with human resources, although human capital typically refers to a narrower effect (that is, the knowledge the individuals embody and economic growth) (Aizzat, Ling Tan & Khan, 2018).

Customs automation: It is a term used to describe the application of communication and information technologies (ICT) for attaining the mission of Customs and border control. It is a powerful tool in trade facilitation in the simplification and harmonization of trade procedures. Customs automation as used in this context seeks to look at lodging of declarations, cargo tracking, and cargo verification in relation to trade facilitation at the Nairobi Inland Container Depot. (OECD 2005)

Dry port operation: A dry port provides services for the handling and temporary storage of containers, general and/or bulk cargoes that enters or leaves the dry port by any mode of transport such as road, railways, inland waterways or airports.

Dry port: refers to a secure inland location for handling temporary storage, inspection and customs clearance of freight moving in international trade. (UN, 2020).

The dry port concept is based on a seaport directly connected by rail with inland intermodal terminals where containers can be dealt with in the same way as if they were in a seaport.

Infrastructural Development: In this context, infrastructure development means the basic organizational physical structures i.e. transport facilities, parking space and equipment needed for the efficient operation of the Nairobi Inland Container Depot (Kenya Ports Authority website)

Interagency Coordination: Can be defined as the coordinated approach by border control agencies, both domestic and international, in the context of seeking greater efficiencies over managing trade and travel flows, while maintaining a balance with compliance requirements **(WCO, 2020).** This study with regard to trade facilitation looks at joint verification, sharing of equipment, multi-agency cooperation in interagency coordination.

Trade facilitation: This is a concept directed towards reducing the complexity and cost of the trade transaction process and ensuring that all these activities take place in a transparent, effective, efficient and predictable manner (Volpe Martincus & Christian, 2016). WTO has defined trade facilitation as harmonization and simplification of international trade procedures, where trade procedures are the practices, activities, and formalities involved in collecting, processing, presenting, and communicating the data required for the movement of goods in international trade.

ABBREVIATIONS AND ACRONYMS

EAC	East African Community
ICD	Inland Container Depot
KAM	Kenya Association of Manufacturers
KPA	Kenya Ports Authority
KRA	Kenya Revenue Authority
OECD	Organization for Economic Co-operation and Development
TEUS	Twenty-Foot Equivalent Unit
TFA	Trade Facilitation Agreement
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
WCO	World Customs Organization
WTO	World Trade Organization
GATT	General Agreement on Tariffs and Trade (GATT

CHAPTER ONE

INTRODUCTION

This chapter contains the background of the study as general outlook of what the study has covered internationally and locally, it highlights the statement of the problem that has motivated the study, the research objectives, significance and the scope of the study.

1.1 Background of the Study

The global economy has increasingly become interconnected and open with countries adopting global value chains. Hence, cross-border trade has become critically important (Fulmer, 2009). The exigency to increase global trade has entailed the review of tariffs and non-tariff trade barriers to trade such as cumbersome formalities, long clearance times, increased transaction costs and excess documentations. As such efforts to further liberalize trade through trade facilitation has become the priority of regional and international organizations including the World Trade Organization (WTO), World Customs Organization (WCO) and the United Nations (UN).

In view of multimodal transport, global container trade is facing increased challenges. In particularly container ports are facing increase in capacity challenges, environmental factors and community restriction. To counter the challenges of sea port, the concept of Dry Ports was borne. Dry port also known as Inland Container Depot (ICD) rose out of the need to decongest the seaport (Cullinane 2012). The introduction of Inland Container Depots has become a viable mitigation measure against capacity constraint and congestion as compared to green field projects for new ports. The attractiveness and essence of inland terminals is captured by Klink (2000) who posited that by participating in the operations and investing in inland container terminals, a sea port can establish itself in the inland regions. Inland terminals can be

considered as extended gates through which transport flows improved and adjusted to match conditions in the port itself. The extended gate notion is further supported by Veenstra *et al*. (2012) who argued that the extended gate function of the ICDs can generate substantial benefits in terms of logistics performance, modal shift, trade facilitation and regional development. The main benefits of Inland Container Depot include handling and storage of containers, cargo consolidation and distribution, receipts and delivery of containers as well as maintenance of containers (Dadvar *et al*, 2011).

In view of the role of the regional and global perspective of Inland Container Depots, ICD's are considered to increase port efficiency thus facilitating trade. In America, ICD's facilitate seaport container traffic flow and provide competitive inland services such as high level inland connectivity and seaport expansion (Rodrigue, 2011). Regionally, the largest ICD operation in Africa is City Deep Port in Johannesburg, South Africa. It has hinterland connection with Botswana, Democratic Republic of Congo (DRC), Malawi, Zambia, and Zimbabwe. One of the features of City Deep Port in Johannesburg in South Africa is its 2000 terminal ground slots for imports and exports (Kunaka, 2013). In Europe, Port of Duisburg in Germany is the world's largest inland port handling over 40 million tons of good carried by over twenty thousand ships each year.

Globally, ICD's play an important role in trade facilitation. Trade facilitation can be defined as the simplification, automation and harmonization of international trade procedures, particularly export and import procedures, transit requirements and procedures applied by customs and other agencies (WCO, 2020). According to WCO, (2020), the benefits of trade facilitation include reduced transaction costs as well as clearance times. The reduced transaction and clearance times have positive

effect in the growth of the economies through collection of more state revenue, creation of employment opportunities, and improvement in the quality of living as well as poverty reduction.

The OECD Trade Facilitation Indicators estimate that the potential for trade cost reductions from the measures negotiated in the WTO Agreement on Trade Facilitation would amount to 10% of total trade costs for OECD countries and between 13 and 15.5% for countries outside the OECD area (OECD, 2013). According to WCO (2020), trade facilitation tools and instruments incorporate the adoption of Information Communication Technology (ICT), infrastructure improvement, legal framework, stakeholder cooperation, capacity of personnel improvement, Interagency coordination through coordinated border management among others. The effectiveness of ICT through automation is more tangible when one compares customs clearance time between automated and paper-based systems.

The main role of infrastructure in facilitating trade is to decrease the cost of moving goods or services from one location to another. Capacity of personnel in relation to trade facilitation is measured by the delivery of service, the ability of the staff to perform at optimum capacity basing on the training that has been provided to them, the resources at their disposal in the performance of their duties, and the provision of adequate staffing as per the required output. Interagency coordination is required to ensure there is coordinated border management among the respective government agencies (WCO, 2020). Some processes such as joint verification has enhanced trade facilitation by reduction of paperwork and time taken at the borders.

Uma & Matthias (2007) identified five critical factors for effective participation in global network trade: price, speed-to-market, labor productivity, flexibility and

product quality. Speed-to-market crucially depends upon the quantity and quality of trade and trade-related institutions and physical infrastructure.

In 2013, during the 9th WTO Ministerial Conference in Bali, WTO members finalized negotiations of the WTO Trade Facilitation Agreement, which set out multilateral rules that seek to address specific procedural hurdles in order to facilitate trade procedures. The TFA clarifies and improves three articles of the General Agreement on Tariffs and Trade (GATT), negotiated in the 1940s, which were considered inadequate to meet the needs of the modern business world (Daniel, 2005).

In the East African region, Kenya, Burundi and Uganda deposited their instruments of acceptance of the WTO TFA. The Trade Facilitation Agreement aims to: Expedite the movement, release and clearance of goods, including goods in transit, enhance effective cooperation between customs and other appropriate authorities on trade facilitation and customs compliance issues as well as Integrate developing and least developing members' businesses into international trade through provision of technical assistance and capacity building in the area of trade facilitation to reduce the costs of doing business.

In response to increased container volumes, congestion and capacity constraints; KPA and KRA embarked on implementation of inland container depots (ICDs) as capacity enhancement strategy. Kenya through KRA has invested heavily in modernization of infrastructure to facilitate trade but this goes on to show that, although the reforms have led to tremendous improvement in collection efficiency, there were still numerous hurdles that KRA faces in terms of port performance. The Nairobi ICD is owned and operated by Kenya Ports Authority was established in 1984 with a spacious yard of 29 hectares located in Industrial area off Mombasa Road on ICD

Road, can accommodate a throughput of over 180,000 TEUS per annum making it ideal for shippers of both Exports and Imports and also Empty containers. (KPA Website)

In Kenya trade facilitation through port performance is a core component that provides a more efficient and reliable avenue that provides opportunities necessary for revenue collection. The government through partnership with different stake holders has been in the process of facilitating trade through infrastructure development by collaborating with various stake holders like KPA which established Nairobi Inland Container Depot (ICD) and improving the entire roads serving it.

1.2 Statement of the Problem

The main aim of establishing the Dry Ports was to facilitate trade by decongesting the main sea port of Mombasa. However, since the Nairobi ICD is being adopted as a clearing port, KRA has been targeting cargo and demanding 100 % verification with all departments demanding physical inspection (KPA Website). This has caused delays in the clearance of cargo since all cargo arriving from foreign countries are no longer taken to container freight stations (CFS). This has made it is impossible to clear cargo from Nairobi ICD within the four-day grace period resulting in 98% of cargo at the ICD incurring demurrage charges (KIFWA 2018,)

The frequent operational hitches at the ICD in Nairobi have also caused the large pileup of cargo in Kenya's transport chain and it is threatening Kenya's position as the primary transportation hub in the east and central African region. According to (KIFWA 2018,) the congestion at the Inland Container Depot Nairobi has had a ripple effect on traders and consumers due to the high costs of cargo clearance.

Considering that trade facilitation looks at how procedures and controls governing the movement of goods across national borders can be improved to reduce associated cost burdens and maximize efficiency while safeguarding legitimate regulatory objectives, the delays in the clearance of cargo associated demurrage charges goes against the principle of trade facilitation.

According to Rodrigue *et al.*, (2010), ICDs are supposed to provide value added services of customs clearance and maintenance of containers. Introduction of ICDs in the suburbs of the port city or even within the city itself becomes a faster and viable mitigation measure against congestion and capacity constraint as compared to green field projects for new ports. Veenstra *et al.* (2012) argues that the extended gate function of the dry port is to generate substantial benefits in terms of modal shift, logistics performance and regional development. Based on Nairobi ICD experience, the benefits derived have taken different form.

Various studies have been conducted on Nairobi Inland Container Depot. For instance, Gathogo (2019), conducted a study on Port Management Systems and Operational Efficiency at the Inland Container Depot - Embakasi. Considering that few studies have examined the effect of inland container depot operations in facilitating trade.

The four variables/factors presented in the study namely; infrastructure development, capacity of personnel, customs automation and interagency coordination have been advanced by the World Trade Organization (WTO) and World Customs Organization (WCO) as tools for trade facilitation according to the WTO agreement on trade facilitation. Therefore, they affect port operations and are important factors to be considered when examining effect of port operations on trade facilitation.

It is against this backdrop that the present study is conducted to determine the effect of port operations on trade facilitation with a view to come up with recommendations.

1.3 Objective of the Study

1.3.1 General Objective

The main objective of this study was to establish the effect of Port operational factors on trade facilitation in Kenya.

1.3.2 Specific Objectives

The study was guided by the following specific objectives:

i. To evaluate the effect of infrastructure development on trade facilitation at Nairobi ICD.
ii. To establish the effect of Capacity of Personnel on trade facilitation at Nairobi ICD.
iii. To determine the effect of Customs Automation on trade facilitation at Nairobi ICD.
iv. To evaluate the effect of Interagency Coordination on trade facilitation at Nairobi ICD.

1.4 Research Hypothesis

The study tested the following null hypotheses.

H_{01}: Infrastructure development has no significant effect on trade facilitation at Nairobi ICD.

H_{02}: Capacity of personnel has no significant effect on trade facilitation at Nairobi ICD.

H_{03}: Customs automation has no significant effect on trade facilitation at Nairobi ICD.

H_{04}: Interagency coordination has no significant effect on trade facilitation at Nairobi ICD.

1.5 Significance of the Study

The findings of this study benefit key players in international trade. Stakeholders in international trade namely the Government of Kenya (GOK), importers, exporters, traders, transporters and clearing agents benefit from the study by appreciating how ICD is critical in facilitating trade.

The results of this work offer valuable accurate information to the policy makers specifically for KRA Customs Policy Makers in benchmarking their policies.

The study also acts as a source of reference to scholars and academicians conducting studies on ICD's for future studies.

The Kenya Revenue Authority also benefits in growing knowledge on the factors influencing trade facilitation at Nairobi ICD.

1.6 Scope of the Study

The scope of the study was limited to factors that affect trade facilitation at Nairobi ICD namely infrastructure development, capacity of personnel, customs automation and interagency coordination. Besides the port of Mombasa, Kenya Ports Authority (KPA) in partnership with other government agencies also manages two ICDs in Kisumu and Nairobi with the objective of bringing services closer to Port users. This study was undertaken at the Nairobi Embakasi Inland Container Depot because of its capacity to handle large volume of imports and exports and the fact that there has a lot of public awareness campaign by the government regarding the need to clear cargo through the Nairobi ICD. The study adopted explanatory research resign and employed primary data. The study targeted stakeholders in international trade

including importers and exporters, clearing and forwarding agents and KRA customs staff. The study was conducted during the period August 2020 to November 2020 and only covered the variables stated in the specific objectives.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The chapter provides theoretical and empirical information on topics related to the research problem. It begins with a review of concepts then covers theoretical review, empirical review, critique of the literature, identifies research gap and concludes with conceptual framework.

2.1 Review of Concepts

The four variables or factors namely; infrastructure development, capacity of personnel, customs automation and interagency coordination have been advanced by the World Trade Organization (WTO) and World Customs Organization (WCO) as tools for facilitating trade in line with the WTO agreement on trade facilitation. Therefore, they affect port operations and are important factors to be considered when examining effect of port operations on trade facilitation.

2.1.1 Trade Facilitation

The concept of trade facilitation has evolved over the past 10 years to include all Customs, transit and multimodal trade procedures, including transport and infrastructure issues. An informed and coordinated approach to trade facilitation activities requires regular input from business operators and public policymakers directly involved in international trade transactions and policymaking. Trade facilitation is a concept directed towards reducing the complexity and cost of the trade transaction process and ensuring that all these activities take place in an efficient, transparent and predictable manner (Volpe Martincus & Christian, 2016). According to WCO (2020), trade facilitation refers to the simplification, harmonization and

automation of international trade procedures, particularly import and export procedures, transit requirements and procedures applied by customs and other agencies. The overall objective of trade facilitation is basically to make transactions involved in trade easier, quicker, more efficient and less costly. By simplifying these procedures, countries are able to increase their overall trade flows which results in the collection of more revenues among other benefits. There are several transaction costs associated with international trade in goods. A broad definition of trade costs includes policy barriers (tariffs and non-tariff barriers), transportation costs (freight and time costs) as well as communication costs and other information costs, enforcement costs, exchange rate costs, legal and regulatory costs and local distribution costs (JE Anderson 2004). OECD (2001) has classified these costs into two forms: direct costs which consists costs of compliance associated with the collection and processing of information and charges for trade related services such as freight, insurance, and handling costs brought about by administrative processes and customs procedures which delay goods in the warehouse leading to an increase in transportation fees and inventory charges and indirect costs which include time-sensitive costs. Other direct and indirect costs can be brought about by a lack of transparency or of uniformity in the interpretation of regulations and contracts which increase the effective cost of producing the necessary trade and procedural information. (UN, 2003). When policymakers are talking about trade facilitation, they are normally referring to a specific set of measures that simplify and streamline the technical and legal procedures for products entering or leaving a country to be traded internationally. As such, trade facilitation covers the full broad spectrum of border procedures, from the simplification and harmonization electronic exchange of data about a shipment, to the trade documents, to the possibility to appeal administrative decisions by border

agencies. In a globalized economy where goods often cross borders several times as both intermediate and final products, trade facilitation helps lower overall trade costs and increase economic welfare, in particular for developing and emerging economies.

In 2013, members of the World Trade Organization (WTO) finalized negotiations of the WTO Trade Facilitation Agreement (TFA), which set multilateral rules that seek to address specific procedural hurdles in order to facilitate trade procedures. The WTO Trade Facilitation Agreement (TFA) entered into force in 2017, and represents a significant opportunity for countries to reap the economic benefits from improving the speed and efficiency of border procedures.

Trade facilitation benefits businesses and consumers alike, and helps tackle corruption in all areas. Whether exporting or importing goods, trade facilitation benefits all countries by allowing better access for businesses to production inputs from abroad and supporting greater participation in global value chains (GVCs). Countries where inputs can be imported and exported in a quick and reliable manner are also more attractive locations for foreign firms seeking to invest and offer consumers lower prices, higher quality products, and a greater array of goods.

Trade facilitation also helps larger and smaller firms participate in trade efficiently and effectively and be in a position to market their products globally. Addressing unnecessary costs related to trade procedures is essential for firms to take full advantage of new market openings. This is especially true for micro-, small- and medium-sized enterprises (SMEs), for which the costs of trading can be disproportionately large.

In addition, trade facilitation is critical for perishable agricultural products and for high-tech manufacturing components, both of which are highly sensitive to delays.

Moreover, trade facilitation is becoming more, not less, important in the digital era. The growing numbers of parcels crossing international borders is both increasing demand, and creating new challenges, for trade facilitation. Finally, not only does simplification of trading procedures promote economic efficiency, but it also removes incentives and opportunities for border-related corruption, thus supporting good governance and integrity.

2.1.2 Customs Automation

Customs automation is an extensional term for information technology (IT) that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals) and computers, as well as necessary enterprise software, middleware, storage, and audio-visual systems, that enable users to access, store, transmit, and manipulate information (Smyrnova-Trybulska *et al* 2015).

It is described as the application of information and communication technologies (ICT) for accomplishing the mission of Customs. It may support the entire clearance process - from lodging, acceptance and processing of cargo and goods declarations for import, export and transit, payment of applicable duties and taxes, to release of the goods from Customs control - or only part of it. Customs automation and the use of information and communication technology (ICT) in trade procedures have attracted considerable attention in WTO discussions on trade facilitation. Several developing countries have raised the issue of their lack of capacity to implement potentially new WTO trade facilitation disciplines as a result of financial constraints however, it is a universal consensus that automation brings great value to any organization and therefore most times, the benefits outweigh the costs. Automation gives rise to significant implementation, operating and maintenance costs however; the great majority of developing countries already have automated customs systems in their

main seaports and airports. (OECD,2005) and hence, significant progress has been made in the automation processes. Automation can be among the most essential factors for ensuring the success of trade facilitation measures considering its significant efficiency-enhancing impact on government border procedures. A general consensus has found that automation may efficiently serve both public and private interests. Automation has the potential to facilitate trade while also helping to meet objectives related to the maintenance of national and social security. Smooth trade flows are paramount in many countries that are dependent on just-in-time delivery and global supply chain systems. Predictable border services, customs clearance time and trade transaction costs are important factors when companies consider investing or doing business in a country (OECD, 2005). From a public sector perspective, limited human resources and rapidly growing trade volumes have led to the recognition of automation as essential to safeguard and meet budgetary, health, environmental and other social goals.

Automation can facilitate the use of risk management and risk-based selectivity and the collection of data for reporting external trade statistics. Standard 7.4 of the Revised Kyoto Convention (RKC) also requires Customs to establish the necessary enabling legal framework, including electronic authentication methods (e.g. digital signatures). The Kyoto Convention ICT Guidelines provide great detail about Customs automation and project management. The list of topics covered in these Guidelines includes: application areas of ICT (e.g. declaration processing, release, e-payment, transit, trade statistics, enforcement); system development process, project and change management; IT security; outsourcing in Customs; IT-related legal aspects; and many more. Issues related to customs automation and the use of information and communication technology (ICT) in trade procedures has attracted

considerable attention in WTO discussions on trade facilitation. This has brought out the importance of automation process in trade facilitation.

2.1.3 Capacity of Personnel

The personnel capacity refers to the quantitative requirement of the human resource such as number of staff, qualitative requirement such as competence and ability of the staff as well as time requirement (Michaelis and Schnier, 1990). Capacity of personnel can be measured by capacity development the process by which individuals and organizations obtain, improve, and retain the skills, knowledge, tools, equipment, and other resources needed to do their jobs competently. It allows individuals and organizations to perform at a greater capacity in the maximization of productivity. Capacity development is term indexes a series of initiatives from the 1950s in which the active participation of local communities' members in social and economic development was encouraged via national and subnational plans. Business as well as governments and international organizations have been involved in capacity building related to cross border transactions and customs issues for some time

In most organizations whether large or small, there are three basic elements to look out for. The first is the human element which comprises of employee working in the organization, second is the method of operation needed to enable the organization function effectively both internally and externally, while the third element is how to enhance productivity and the efficiency of employees. This is where capacity building and manpower development come into play.

In the current global market, companies are made up of competitors, regardless of industry. To develop a competitive advantage, it is important that firms truly leverage on the personnel as a competitive weapon. A strategy for improving workforce

productivity to drive higher value for the firms has become an important focus. Firms seek to optimize their workforce through comprehensive personnel development programmes not only to achieve business goals but most important is for a long term survival and sustainability. To accomplish this objective, organizations will need to invest resources to ensure that employees have the knowledge, skills, and competencies they need to work effectively in a rapidly changing and complex environment. In response to the changes, most organizations have embraced the notion of human capital has a good competitive advantage that will enhance higher performance. Personnel development becomes a part of an overall effort to achieve cost-effective and organizations performance. Hence, organizations need to understand human capital that would enhance employee satisfaction and improve performance. Although there is a broad personnel development has positive effects on organizations' performance, the notion of performance for personnel remains largely untested.

Capacity building, training and manpower development have over the years risen to a new found importance, so much so that numerous literatures abound on the topic both within the academic and non-academic circles. It is much more than training and includes; human resources development, which involves the process of equipping individuals with skills that enables them to perform at an optimum capacity.

2.1.4 Interagency coordination

It's the coordinated approach by border control agencies, both domestic and international, in the context of seeking greater efficiencies over managing trade and travel flows, while maintaining a balance with compliance requirements (WCO, 2020)

Customs administrations operate in a complex environment of constant change; they are required to respond with efficient regulation to international trade and to comply with regional, national and international obligations. Interagency coordination has traditionally been an important and difficult issue of public administration**.** While there is some variation in how coordination is defined, there is general agreement in the literature that coordination involves the instruments and mechanisms that aim to enhance the voluntary or forced alignment of tasks and efforts of organizations within public actors. These mechanisms are used in order to create a greater coherence, and to reduce redundancy, inadequateness and contradictions within and between policies, implementation and management. (Bouckaert, Peters, & Verhoest, 2010)**.** To accommodate changes in these areas, it is important to construct interagency coordination regimes to implement change processes. Lessons and experiences shared among agencies foster organizational flexibility to adapt to changes and deal with complexity. However, in sharp contrast, there is a lack of analysis of interagency coordination, which is required to appropriately promote efficient regulation of international trade and functioning of customs administrations. Interagency coordination has traditionally been an important and difficult issue of public administration. Since customs administrations operate in a complex environment of constant change, they are required to respond with efficient regulation to international trade and to comply with regional, national and international obligations. One of the most recent developments on interagency coordination is the Single Window System. This is a trade facilitation idea which allows a user to get sufficient information from one source. As such, the implementation of a single window system enables international traders to submit regulatory documents at a single location and/or single

entity. Single Widow System is one way that has fostered trade facilitation by enhancing interagency cooperation.

2.2 Theoretical Framework

The Queuing Theory, Stakeholder Theory, Systems Theory, Dynamic Capability Theory and The New Trade Theory are the theoretical framework that guided the study.

2.2.1 Queuing Theory.

According to Janos (2012), queuing theory deals with unpleasant experiences of life, waiting and queuing. Globally, ports are facing challenges relating to container clearance as they wait in lines leading to delays that cause congestion at the port. Traffic movement in terms of vessels and containers through a port is a complex phenomenon. Effectiveness and efficiency of a port depend on how fast the loading and unloading of ships TEUS containers for both exports, imports and empty containers usually measured per annum. Queuing theory model would provide managers and port operators with a useful set of decision-making formulas and algorithm for designing port systems and services (Kalavaty 2007)

2.2.2 Stakeholder Theory

The study of interagency coordination and capacity of personnel will be guided by stakeholder theory. This theory was first described by Ian Mitroff (1983), in his novel "Stakeholders of the Organizational Mind." Immediately thereafter, Edward Freeman released an article the same year in the California Management Review but did not cite or attribute Mitroff as the original source of Stakeholder theory. Shortly after the article, Freeman went ahead to publish the book "Strategic Management: A Stakeholder Approach." In the book, Freeman presented his view of capitalism by

stressing the interconnected relationship that exists between businesses, suppliers, investors, clients, employees, and the neighboring community (Freeman, 1992). The theory views corporation as the larger social body; hence, it should be responsible to the groups and people than owners of the firm. It is because the enterprise impacts the lives of people like workers and customers who are dependent on the operations of the company. Thomas Donaldson (1995) argued that stakeholder theory has descriptive, instrumental and normative aspects that are mutually supportive. Descriptive is used in research to identify and define characteristics and behaviors of companies and how they're managed. Instrumental uses empirical data to find connections between management of stakeholders and reaching corporate goals. Normative is a core theory on the function of the corporation and how it can morally carry out its processes, ensuring that management sticks to positive philosophical guidelines. In a capitalist society, business enterprise tends to be connected with the state of the society. As such, an organization should understand that it is not only responsible to the owners of the company but also the society. Stakeholder theory points that an organization is only successful when it delivers value to all its stakeholders, and those values can come in many forms beyond financial benefits. It is, therefore, unethical for the corporation to consider monetary gain for owners of the business as the primary responsibility since an organization is part of the community, hence, decision made by the corporation without considering the needs of the locals can have a negative impact of the community. While it is widely accepted that businesses ought to consider more than making profits and needs of the shareholders, critics of the theory have seen it as a problem to American Corporations whereby fiduciary obligations are used.

Stakeholder theory drives more productivity and profits while still practicing ethical benefits (Freeman, 1992). Organizations find that the mental health of workers can

greatly be improved through increasing job satisfaction. Besides, the presence of mental health among a firm's workforce can elevate their status in the corporation's social economic status in a given local community. When an organization practices stakeholder theory, there will be healthy competition among firms as they thrive to benefit their stakeholders. The application of stakeholder theory can also have a positive impact on workers and customers. When employees, who are part of the stakeholders, feel that their employer values them, they would work hard and become productive to ensure that the organization achieve its goals. As such, it means that firm will not only have an improve retention of their workers, but also of their clients. When productivity is high, the quality of goods and services that is delivered to the market will be great. With the improvement comes customer loyalty taken that they are part of the company's growth. Basing on this argument, the study on capacity of personnel and interagency coordination at the inland container depot can be advanced.

2.2.3 Systems Theory

According to the Systems Theory, complex adaptive systems are made up of many interacting components whose interactions are diverse and have a capacity of learning. An Inland Container Depot can be looked at as a system that depend on the flow of information. Therefore, its components represented by various government agencies stationed at the port have to learn and adapt in order to influence the overall efficiency.

Departments within the port are considered as subsystems of the port thus open systems theory requires that there is a feedback and feedforward mechanism so that the organization can cope with changes in the surrounding environment (Stefan 2013).

Stakeholder in international trade that includes ports authorities that manage container terminals, customs department, clearing and forwarding agents, shipping agents need to collaborate in order to maintain port efficiency.

2.2.4 Dynamic Capability Theory

The dynamic capability theory was formulated by Selznic and Eisenhardt in 1980s. The theory posits that the innovation, capacity development and performance related outcome are linked to the dynamic capabilities of the available resources within the organization.

According to Murphy and Hill (2012), approach to capacity development is threefold; marketing, staff development and ICT/innovations. This theory is useful in this study as it emphasis on the importance of staff learning and development and also adoption of ICT that has been operationalized in this study by evaluating the effect of Capacity of personnel and Customs Automation on Trade facilitation at Nairobi ICD.

2.2.5 The New Trade Theory

In contrast to the classical theories, the new trade theory (Krugman, 1979; 1980) explains why countries engage in intra-industry trade and firms' heterogeneity. This theory originated in the work of Bernard *et al* (2003) and Melitz (2003). This is a valuable result because the great bulk of global trade is intra-industry rather than inter-industry in nature. The ability of the theory to explain this feature of global trade is made possible by a number of assumptions: consumers prefer variety in consumption, the market is populated by firms selling different varieties of a good and there are increasing internal returns to scale in production, meaning that a firm's average cost of production falls as its volume of production increases.

The theory predicts that trade costs can have a disproportionately adverse impact on small developing economies. Typically, small developing economies have large agricultural or natural resource sectors typified by constant returns to scale, and only a small manufacturing sector. In contrast, big developed economies have a large manufacturing sector operating under increasing returns to scale. In this setting, trade costs lead both to less trade and to a disproportionate relocation of manufacturing to the big developed countries. Meanwhile, small developing countries become concentrated in the agricultural or natural resource sector.

The key to explaining this result lies in the tension created between the consumer's love of variety and increasing returns to scale. With open trade and zero trade costs, consumers in the big developed country will purchase both foreign and domestic manufactured goods because of their preference for variety. All things being equal, love of variety leads to more trade. On the other hand, increasing returns to scale gives a cost advantage to manufacturing firms in the developed country because of the size of the market and the larger scale of production that could be achieved by firms there. All things being the same, consumers in the developed country will prefer to purchase lower-cost domestic varieties than higher-cost foreign varieties.

Inefficient trade procedures that lead to higher trade costs upset this balance by making purchases (imports) of foreign varieties costlier. As a consequence, consumers in the developed country substitute away from foreign varieties towards domestic varieties. This shift in demand towards domestic manufactured goods gives greater scope for what are already powerful scale forces to operate. The manufacturing sector in the big developed country expands even more while it shrinks in the small developing country. This analysis suggests that small developing

countries that want to diversify their economies have a strong interest in lowering trade costs, as this reduces incentives for manufacturing to concentrate in the biggest markets.

According to new trade theory countries are the objects of interest and analysis. In the last decade, new models of trade have emerged that have shifted this focus to firms' heterogeneous firms' literature (Melitz, 2003). These models are motivated by empirical studies that reveal the striking diversity of firms in terms of size, productivity and participation in international trade (Bernard *et al.*, 2007; 2007).

The studies find that only a small number of firm's export, and that the vast majority are only able to sell in the domestic market. The reason for this disparity is that firms differ in productivity: those with low productivity do not survive competition; more productive firms can compete but only in the domestic market, while only the most productive firms are able to enter and compete in the export market. There are two productivity thresholds: the minimum level needed for a firm to survive, and the level at which a firm starts exporting part of its production.

The main result of the heterogeneous firms' literature is that any reduction in trade costs brings the two thresholds closer to each other, increasing the range of firms that are driven out by competition and the range of firms that enter the export market. This is beneficial to the economy, as resources (capital and labor) are released from the least productive firms and reallocated to the most productive firms.

While it might be obvious that a reduction in trade costs will increase a country's exports, this literature shows the need to distinguish between the two ways in which trade costs can be reduced and the different ways exports can increase as a consequence (Chaney, 2006). Trade costs can be categorized as either variable or

fixed. Variable trade costs are costs that have to be paid on every unit of export. Tariffs are a prominent example of variable trade costs, as an importer needs to pay duty on every unit he imports. Fixed trade costs are costs that have to be incurred independently of the volume of exports. A firm deciding on whether to enter a particular market might have to incur a cost to learn about the trade procedures in that country. These are costs incurred even before it ships a single product to the foreign market.

An increase in exports can take place along two dimensions or margins: the intensive and extensive margins. The intensive margin refers to existing exporters increasing the volume of their exports, while the extensive margin refers to an increase in exports achieved by new firms entering the export market.

A reduction in variable trade costs affects both the extensive and intensive margins of trade. It enables existing exporters to capture a larger share of the export market and firms with a lower level of productivity than incumbent exporters to enter the export market. A reduction in fixed trade costs only affects the extensive margin of trade. Trade facilitation will reduce both fixed and variable trade costs, making it possible for incumbent exporters to capture a larger share of the international market, and for firms that have never exported before to begin to do so.

If trade facilitation reduces both fixed and variable trade costs, this analysis implies that one should see trade expansion along both margins. Those enterprises that are currently engaged in international trade as exporters will most likely expand the volume of their exports. In addition, firms that were shut out of foreign markets will now find it possible to enter these markets and begin exporting. These new firms may be smaller and less productive than current incumbents but the reduction in trade cost

now gives them an opportunity to participate in international trade. This theory is relevant to this study as it emphasis the need to reduce trade costs as it can have a disproportionately adverse impact on trade facilitation.

2.3 Empirical Review

2.3.1 Infrastructure development and trade facilitation

Omondi (2014) assessed the role of road transport infrastructure in enhancing regional integration: the case study of Kenya's road network. This study addresses the relationship between road transport infrastructure and regional integration specifically, within the East African Community and how this relation enhances economic growth and development in the region. The study found that, improved road transport infrastructure hugely contributes to regional integration and hence enhances economic growth and development. The study recommended that governments in the region should strive to ensure that integration works as a means to achieve their development objectives. In so doing, this will facilitate movement of goods and services across borders with subsequent related benefits.

2.3.2 Capacity of personnel and trade facilitation at Nairobi ICD

Kumar and Gupta (2012) conducted a meta-examination to decide the impact of training on trade facilitation among 10 firms utilizing subjective investigation. The after effects of the investigations demonstrated that rater's character qualities impact rating choices. Other logical elements incorporate, for example, representative's fulfillment with the training procedure all in all, the exhibition examination input, or workers' assessments of the apparent quality, equity, and decency of the presentation evaluation routine (Kumar & Gupta, 2013). Besides, worker support in the training

procedure is decidedly identified with the fulfillment with the training framework, saw reasonableness, and acknowledgment of such training.

2.3.3 Customs automation and trade facilitation at Nairobi ICD

Hossain & Amin (2014) conducted a study on the impact of information technology in trade facilitation in Bangladesh. The study used descriptive research design. The findings revealed that implementation of IT in trade facilitation were limited even though it had a positive impact. Hossain and Amin (2014) suggested that the IT system should be implemented without any limitation to encourage trade facilitation.

2.3.4 Interagency coordination and trade facilitation at Nairobi ICD

Mbithe (2015) sought to identify trade barriers and economic integration between Kenya and Uganda. The study aimed at examining the effects of trade barriers on economy integration between Kenya and Uganda. Using a descriptive survey design, both qualitative and quantitative data collection techniques were employed. The study involved the Uganda Embassy, Ministry of Foreign Trade and traders of both Kenyan and Ugandan nationality. The study found that trade policies, nontariff and institutional barriers were the key challenges to trade between the two countries. The study concluded that a large trade potential exists between Kenya and Uganda and that trade liberalization through regional cooperation initiatives can enhance the realization of this potential. However more appropriate trade policies were needed.

Khaguli (2013) sought to establish the factors affecting trade facilitation in east Africa and their impact on Kenya/Uganda/Tanzania/Rwanda/Burundi border points. The goal of this study was to answers the question as to whether Facilitation can reduce costs of doing business and if Trade Facilitation leads to economic growth of East African countries. The paper utilized the Gravity Model to establish the

relationship between variables. Empirical results indicated that the border points in East Africa play an important part in Trade Facilitation if impediments to trade are addressed. The 8 border points in the study exhibited cross cutting non-tariff barriers which impacted negatively on Trade Facilitation and increased costs of doing business.

2.4 Critique of Literature

Omondi (2014) assessed the role of road transport infrastructure in enhancing regional integration: the case study of Kenya's road network. This study addressed the relationship between road transport infrastructure and regional integration specifically, within the East African Community. The study contributed in opening knowledge gaps on regional integration and road infrastructure. However, the study does not relate the effect of inland container depot infrastructure on trade facilitation which the current study seeks to address.

Mbithe (2015) sought to identify trade barriers and economic integration between Kenya and Uganda. The study aimed at examining the effects of trade barriers on economy integration between Kenya and Uganda. Using a descriptive survey design, both qualitative and quantitative data collection techniques were employed. Though recent and relevant, the study concentrated on economic integration between Kenya and Uganda. The study did not examine the component of ICD in trade facilitation. Thus, there was a need for a study to be conducted that analyses the effect of ICD operations on trade facilitation with a focus on Nairobi Inland Container Depot. The current study sought to fill the contextual gap of the study.

Kumar and Gupta (2012) conducted a meta-examination to decide the impact of training on trade facilitation among 10 firms utilizing subjective investigation.

Despite the study highlighting the impact of training on trade facilitation, the study did not examine the impact of human resource factors such as capacity of the personnel in facilitating trade. The study was also not Kenyan based.

Hossain and Amin (2014) conducted a study on the impact of information technology in trade facilitation in Bangladesh. The study was exhaustive but narrowed down to Bangladesh whose findings cannot necessarily apply to an African country like Kenya in a different macro-economic environment. Different global markets present dynamic industrial challenges and so the study is limited to a specific case, only focusing on Bangladesh. The contextual, methodological and knowledge gap necessitated the current study that seek analyze not only customs automation as a variable but also other variables that facilitate trade.

Khaguli (2013) sought to establish the factors affecting trade facilitation in east Africa and their impact on Kenya/Uganda/Tanzania/Rwanda/Burundi border points. The goal of this study was to answer the question as to whether Facilitation can reduce costs of doing business and if Trade Facilitation leads to economic growth of East African countries. The paper utilized the Gravity Model to establish the relationship between variables. Empirical results indicated that the border points in East Africa play an important part in Trade Facilitation if impediments to trade are addressed. The study contributed in opening knowledge gaps on trade facilitation in East Africa for other subsequent studies. Though recent and relevant, the study concentrated on costs while not taking into consideration other aspect of trade facilitation. The current study sought to fill the contextual gap of the study.

2.5 Research Gaps

From the reviewed literature, there exists a research gap. Previous studies have generalized findings that don't specifically examine the effect of Nairobi inland container depot operations on trade facilitation. The current study sought to fill the research gap by interrogating the effect of Dry depot operational factors on trade facilitation with a focus on Nairobi Inland Container Depot.

2.6 Summary of Literature Review and Research Gaps

Table 2.1: Summary of Literature Review and Research Gaps

Author & Year	Focus of Study	Research Gap	Focus on current Study
Omondi 2014	Kenya Road Networks. The role of Road transport in enhancing Trade Facilitation	The study was done within EAC Community	This Study focuses on Trade facilitation at the Nairobi ICD
Kumar & Gupta 2012	The study conducted an examination on impact of training on trade facilitation among 10 firms	The study did not examine the impact of capacity of personnel in Trade facilitation	This study s examine the impact of capacity of personnel in Trade facilitation at the Nairobi Inland Container Depot
Hossain & Amin 2014	The study is on impact of technology on trade facilitation	The study was carried out in Kenya and Uganda and did not narrow down to Dry Ports	This study focuses on impact of Information Technology on Trade Facilitation at the Nairobi ICD
Mbithe 2015	The study is on trade barriers and economic intergration between Kenya and Uganda	The Study was carried out in Kenya and Uganda	The current study focuses on interagency coordination at the Nairobi ICD
Khaguli 2013	Study on factors affecting Trade Facilitation in East Africas boarder points	Study was carried out within E.A Boarder points and focused mainly on costs affecting Trade Facilitation	This study focuses on infrastructure development, capacity of personnel, customs automation and interagency coordination on Trade Facilitation at Nairobi ICD

Source: Researcher (2020)

2.7 Conceptual Framework

The conceptual model illustrated in Figure 2.1 represents a diagrammatic representation of the variables of the study with the independent variables being; Infrastructure Development, Capacity of personnel, Customs automation and interagency coordination while Trade facilitation at Nairobi ICD is the dependent variable. Figure 2.1 illustrates the conceptual framework.

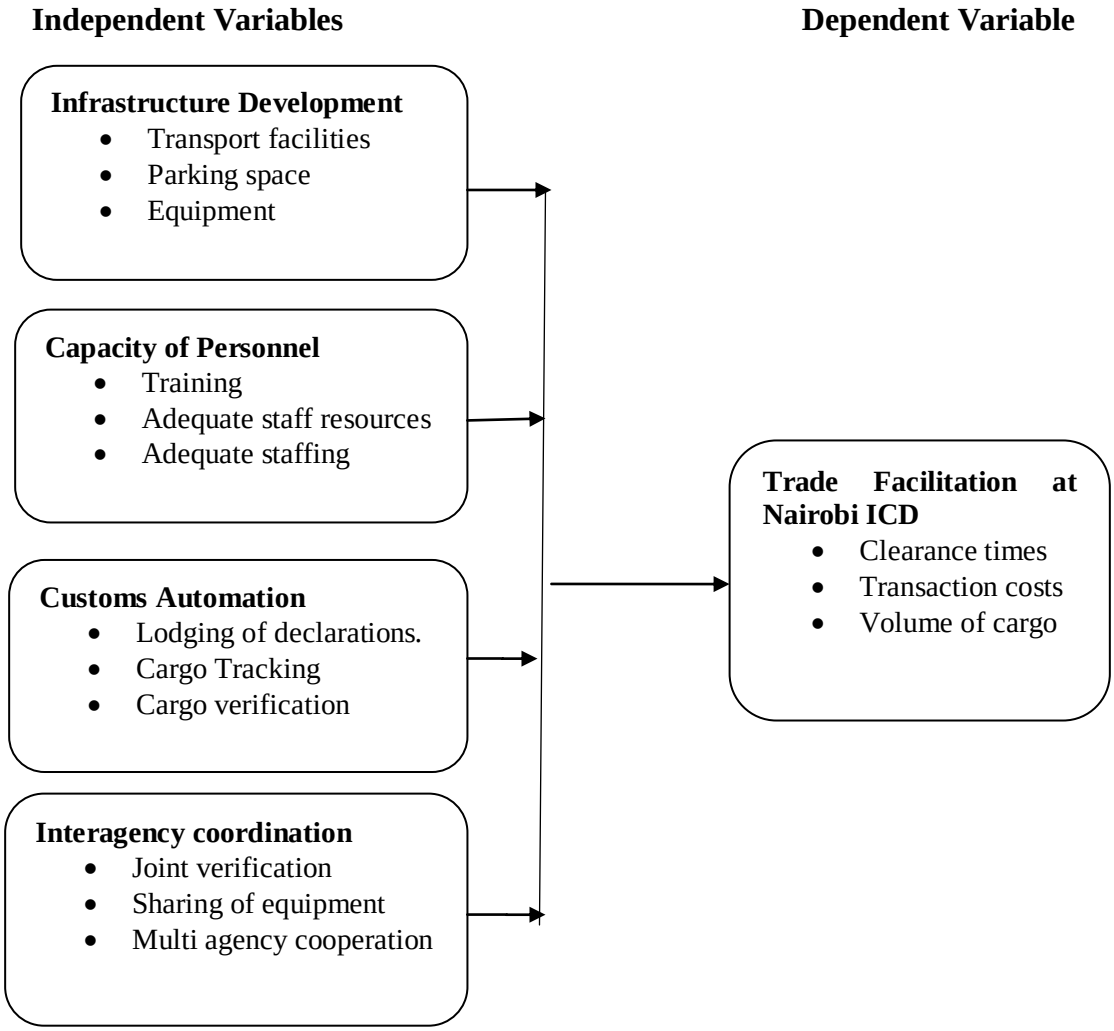


Figure 2.1: Conceptual Framework

Source: Adopted from Word Customs Organization (WCO) Trade Facilitation Tools and Instruments, Modified by the Researcher,2020

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents the research methodology used in the study to accomplish the research objectives raised in the first chapter. It discusses in detail the methodological choice and the research design, target population, sample size, sampling method, data collection instruments and data analysis.

3.1 Research Design

A research design is the procedures for collecting, analyzing, interpreting and reporting data in research studies (Creswell & Plano Clark 2007). In addition to adopting explanatory research design, this research adopted both quantitative and qualitative approach. Explanatory design attempts to establish causal effect relationships among the variables. In this study, causal effect relationship was illustrated by examining the effect of Infrastructure Development, Capacity of personnel, Customs Automation and Interagency Coordination on Trade facilitation at Nairobi ICD.

3.2 Target Population

The target population is the entire aggregation of respondents that meet the designated set of criteria (Burns & Grove 1997). For the purpose of this study, the target population was drawn from key players in international trade who regularly engage the Nairobi ICD comprising of importers, exporters, transporters, clearing and forwarding agents individuals who are representatives of the various companies at a middle and senior level as well as staff from KRA's customs department. Based on the statistics obtained KPA Annual Report (2017), there are 351 stakeholders in

international trade who rely regularly on Nairobi ICD. This gives a total population of 351 as shown in Table 3.1.

Table 3.1: Sampling Frame

Category	Target Population
KRA Customs Staff	62
Exporters	87
Importers	90
Transporters	40
Clearing Agents	72
Total	**351**

Source: KPA Annual Report (2017)

3.3 Sampling Design

A sampling design is the framework, or road map, that serves as the basis for the selection of a sample. It refers to the procedure the researcher would adopt in selecting items for the sample. The sampling technique that was applied in this study is stratified random sampling. Stratified random sampling is a variant of probability random sampling which allows the population to be divided into several sub-populations (strata) which are individually more homogeneous than the total population. Then items from each stratum are drawn to constitute a sample.

3.4 Sample Size Determination

Yamane (1967) formula was used to arrive at the sample size.

$$n = \frac{N}{1 + N(e)^2}$$

In the formula, n is the sample size, N is the entire sum of target population of the study, e is the error or significance level. The conservative significance level of five

percent will be applied to balance between committing of Type I and Type II errors. Using the entire population of 351 and significance level of 0.05, the sample size was as follows:

$$n = \frac{351}{1 + 351(0.05)^2}$$

$$n = \frac{351}{1.877}$$

$$n = 187$$

A sample of 187 was therefore drawn from the population as shown in table 3.2. The calculated sample was proportionately distributed as shown in Table 3.1.

Table 3.2: Sample size.

Item	Target Population	Proportion of sample size	Sample size
KRA Customs Staff	62	17%	32
Exporters	87	25%	47
Importers	90	26%	48
Transporters	40	11%	21
Clearing Agents	72	21%	39
	351	**100**	**187**

Source: Researcher (2020)

3.5 Data Collection Instruments and Procedures

3.5.1 Data Collection

Data collection is the process of gathering quantitative and qualitative information on specific variables with the aim of evaluating outcomes or gleaning actionable insights. Burns and Grove (2003) define data collection as the precise, systematic gathering of information relevant to the research sub-problems, using methods such as interviews,

participant observations, focus group discussion, narratives and case histories. The study employed questionnaires to collect primary data from key players in international trade. Before the collection of data, the researcher sought for research permit from the National Commission for Science, Technology and Innovation (NACOSTI). Once approval was granted, the researcher obtained consent for the respondents to participate in the study from their respective organizations and thereafter proceeded with data collection.

3.6 Pilot Test

A pilot test is a small scale preliminary study conducted in order to evaluate feasibility, duration, cost, adverse events, and improve upon the study design prior to performance of a full-scale research project. It is the imitation and trail of the main survey. According to Korstjens & Moser (2018), the objective of pilot test is to test the research protocols for the entire research. The pilot test involved 25 participants. The respondents selected for the pilot test were not drawn from the target population of the study. The information obtained from the pilot test was then subjected to descriptive and inferential statistical data analysis techniques. Through the pilot study the validity and reliability of the questionnaire was established by adjusting the responsiveness and applicability of the questions not well answered.

Refer to Appendices II for the Pilot Test.

3.6.1 Reliability of the Research Instrument

Reliability of an instrument is the measure of the degree to which a research instrument yields consistent results or data after repeated trials (Cooper, 2003). It describes the extent which data collection instruments can produce consistent and stable results. Cronbach's alpha was proposed by Lee Cronbach in 1951. It is a

function of the number of items, the average covariance between item-pairs, and the variance of the total score (Durach, 2017). Computation of Cronbach's Alpha was done using Statistical Package for Social Scientist (SPSS). An alpha of $0.7 \leq \alpha < 0.9$ is acceptable as it indicates that the questionnaire has high reliability. The results of the Cronbach reliability test were as follows:

Table 3.3 Reliability Statistics

Cronbach's Alpha	N of Items
.845	25

Table 3.4 Test of Reliability of Questionnaire

Variable	Number of Items	Cronbach Alpha score	Conclusion
Infrastructure Development at Nairobi ICD	5	0.8404	Reliable
Capacity of personnel at Nairobi ICD	5	0.8398	Reliable
Customs automation at Nairobi ICD	5	0.8374	Reliable
Interagency coordination at Nairobi ICD	5	0.841	Reliable
Trade Facilitation at Nairobi ICD	5	0.8382	Reliable

Source: Research data (2020)

Refer to Appendices III for the Item Total Statistics.

3.6.2 Validity of the Research Instrument

Validity is defined as the extent to which a concept is accurately measured in a quantitative study. Validity evaluates the soundness of research, especially the research design and methods (Taherdoost, 2016). This study used both construct

validity and content validity. For construct validity, the input variables were sub dived into sections and the specific variables of the study were tied to the conceptual framework. To ensure content validity, the questionnaire was reviewed by the two research supervisors and also three independent experts in international trade. On the basis of their evaluation, their comments were used to ensure that content validity was enhanced.

3.7 Data Analysis

Questionnaires were checked for completeness and were organized in an appropriate manner to facilitate data analysis. The collected data were thereafter coded, edited and cleaned to facilitate data analysis. With respect to data transformation, primary data collected by use of questionnaire structured on a five point Likert scale was summarized in terms of Means based on the dependent and independent variables of the study. The Means of the dependent and independent variables of the study were then subjected to descriptive and inferential statistical analysis. Inferential statistical analysis employed Pearson correlation and multiple regression analysis to establish the significance of the relationship between the predictor and the outcome variables. The equation representing the algebraic expression of the study model is as follows;

Model

$$\mathbf{Y= \beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4 + \varepsilon}$$

Where Y = Trade Facilitation at Nairobi ICD

X_1= Infrastructure Development

X_2= Capacity of personnel

X_3= Customs automation

X_4= Interagency coordination

β_0= the intercept term of the multiple regression line

β_1, β_2, β_3, β_4 represent the slope coefficient of the multiple regression line.

ε = Error term

3.8 Assumptions of Multiple Regression Analysis

Before multiple regression analysis was conducted, the data was checked to ensure that the assumptions of multiple regression analysis (normality, linearity, Multicollinearity and heteroscedasticity) were not violated.

3.8.1 Normality Test

Normality test is used to determine whether a data set resembles a normal distribution (Amata 2017). Statistical procedures are based on the assumption that the data follows a normal distribution. Shapiro-Wilk and Kolmogorov-Smirnov tests were used to check for the normality of the study data.

3.8.2 Linearity Test.

Linearity test is used to establish whether there is a linear relationship between the predictor and the outcome variables. Analysis of Variance (ANOVA) was used to check for linearity between the dependent variables and all the four independent variables.

3.8.3 Multicollinearity

Multicollinearity occurs when the predictor variables are highly correlated. Multicollinearity was assessed using Variance Inflation Factor (VIF).

3.8.4 Heteroscedasticity

Heteroscedasticity is as a term used to describe the situation when the variance of the residuals from a model is not constant. It is a violation of the multiple regression

analysis. This assumption was checked by visual examination of a plot of the standardized residuals (the errors) by the regression standardized predicted value.

3.9 Measurement of variables

Table 3.5 below illustrates the measurement of the study variables.

Table 3.5: Measurement of variables

Objective	Variables	Indicators	Measuring Scale	Research Approach	Tool of Analysis
	Dependent Variable: Trade Facilitation at Nairobi ICD	- Clearance times -Transaction costs -Volume of cargo	5-point Likert scale	Quantitative	Descriptive Analysis
To explore the effect of Infrastructure Development on trade facilitation at Nairobi ICD.	Independent Variable: Infrastructure Development	-Transport facilities -Parking space -Equipment	5-point Likert scale	Quantitative	Pearson's Correlation and Multiple Linear Regression
To establish the effect of Capacity of Personnel on trade facilitation at Nairobi ICD.	Independent Variable: Capacity of Personnel	-Training -Adequate staff resources. -Adequate staffing.	5-point Likert scale	Quantitative	Pearson's Correlation and Multiple Linear Regression
To determine the effect of Customs Automation on trade facilitation at Nairobi ICD.	Independent Variable: Customs Automation	-Lodging of declarations. -Cargo Tracking -Cargo verification	5-point Likert scale	Quantitative	Pearson's Correlation and Multiple Linear Regression
To evaluate the effect of Interagency Coordination on trade facilitation at Nairobi ICD.	Independent Variable: Interagency Coordination	-Joint verification -Sharing of equipment -Multi agency cooperation	5-point Likert scale	Quantitative	Pearson's Correlation and Multiple Linear Regression

Source: Researcher (2020)

3.10 Ethical Consideration

Ethical considerations are pertinent to this study because of the nature of the problem, the method of data collection and the kind of persons serving as research participants.

Before data collection, permission to carry out research was sought from the relevant authority. The researcher also ensured that confidentiality of the information obtained should only be used for the purpose of the study. Individuals had the option to refuse to participate. The dignity, privacy and interest of the participants is respected and protected. Research data shall remain confidential and all participants remain anonymous.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Introduction

This chapter addresses the findings from the data analysis that was conducted to examine the effect of Inland Container Depot Operations on Trade facilitation in Kenya, case study of Nairobi Inland Container Depot). Data was analyzed using descriptive and inferential statistical methods.

4.1 Response Rate

The study sampled 187 KRA Customs Staff, Exporters, Importers, Transporters and Clearing Agents and collected data using questionnaires. A total of 164 questionnaires were returned and well answered achieving 87.7% response rate. This response rate is in agreement with Kothari (2007) who asserted that a response rate of 50% is acceptable to analyze and publish, 60% is good, 70% is very good and beyond 80% is an excellent response rate. This is summarized in table 4.1 below.

Table 4.1: Response Rate

Number of returned questionnaires	Targeted respondents	Response rate (%)
164	187	87.7

Source: Research data (2020)

4.2 Demographics

This section presents the findings on the demographic characteristics of the respondents.

4.2.1 Gender of Respondents

The study sought to establish the gender of the respondents; table 4.2 shows the results of the descriptive statistics on gender.

Table 4.2 Gender

Statement	**Ƒ**	**%**
Male	94	57.3
Female	70	42.7
Total	**164**	**100**

Source: Research data (2020)

Out of the 164 respondents, 94 (57.3%) of the respondents were males, while 70 (42.7%) were female. These findings imply that both genders were represented in the study. However, males seem to engage the Nairobi Inland Container Depot in international trade.

4.2.2 Age of the Respondents

The researcher sought to establish the age of the respondents. Table 4.3 shows the results of the descriptive statistics on the age of the respondents.

Table 4.3 Age of the Respondents

Statement	**Ƒ**	**%**
25 yrs and below	25	15.2
26-35 yrs	40	24.4
36-45 yrs	52	31.7
46-55 yrs	31	18.9
56 yrs and above	16	9.8
Total	**164**	**100**

Source: Research data (2020)

The results of the study established that 52 (31.7%) who were the majority respondents were 36-45 years, 40 (24.4%) were between 26-35 years, 31 (18.9%) were between 46-55 years, 25 (15.2%) were 25 years and below while 16 (9.8%) were

50 years and above. This indicates that majority of the respondents were in the middle ages.

4.2.3 Respondents level of Education

The researcher sought to establish the respondent's level of education. Table 4.4 shows the results of the descriptive statistics on education level of respondents.

Table 4.4 Respondents level of Education

Statement	Ƒ	%
Secondary	34	20.7
Diploma	36	22.0
Bachelor	47	28.7
Masters	34	20.7
PhD	13	7.9
Total	**164**	**100**

Source: Research data (2020)

From the findings, 47 (28.7%) representing the majority had Bachelor's degree, 36 (22%) had Diploma, 34(20.7%) had Secondary certificate, 34 (20.7%) had Masters Degree while 13(7.9%) were PhD holders. Due to relatively high level of education of the respondent, they were considered to be highly informed and their individual responses reliable to be used in the study.

4.2.4 Work Experience

The study sought to establish the work experience of the respondents. Table 4.5 shows the results of the descriptive statistics on work experience.

Table 4.5 Work Experience of the Respondents

Statement	Ƒ	%
1-5 yrs	15	9.1
6-10 yrs	41	25.0
11-15 yrs	51	31.1
15 yrs and above	57	34.8
Total	**164**	**100**

Source: Research data (2020)

From the findings, it was established that 57 (34.8%) who were the majority had work experience of 15 years and above, 51(31.1%) 11-15 years, 41(25%) 6-10 years while 15(9.1 %) 1-5 years.

4.3 Descriptive Statistics

With respect to data transformation, primary data was collected by use of questionnaire structured on a five point Likert scale ranging from strongly disagree to strongly agree. The collected data was thereafter summarized in terms of means based on the dependent and independent variables of the study. The means were then subjected to descriptive and inferential statistical analysis.

The researcher used descriptive statistics to evaluate the participant's responses. Frequencies and percentages were used to evaluate responses based on a five-point Likert's scale ranging from 1 Strongly Disagree to 5 Strongly Agree.

4.3.1 Descriptive statistics results on Infrastructure Development at Nairobi ICD

The first objective of the study was to explore the effect of Infrastructure Development on trade facilitation at the Nairobi ICD. The findings of the descriptive statistics are shown Table 4.6.

Table 4.6: Descriptive results – Infrastructure Development at Nairobi ICD.

Statements		SD	D	N	A	SA	Total
The expansion of roads at Nairobi ICD has led to smooth flow of traffic hence saving transaction cost of importers and exporters	*f*	14	2	4	70	74	**164**
	%	8.5	1.2	2.4	42.7	45.1	**100.0**
There is enough parking space for vehicles waiting clearance at Nairobi ICD	*f*	5	56	47	49	7	164
	%	3.0	34.1	28.7	29.9	4.3	**100.0**
Construction of modern halls has enhanced clearance of Goods which takes reasonably less time.	*f*	0	9	12	71	72	**164**
	%	0.0	5.5	7.3	43.3	43.9	**100.0**
Modern facilities such as gantries and weighbridge has reduced traffic flow at Nairobi ICD.	*f*	4	58	45	50	7	**164**
	%	2.4	35.4	27.4	30.5	4.3	**100.0**
There is sharing of equipment's and facilities among EAC partner states customs authorities stationed at Nairobi ICD.	*f*	2	7	6	70	79	**164**
	%	1.2	4.3	3.7	42.7	48.2	**100.0**

Source: Research data (2020)

From the findings as illustrated in table 4.6, majority of the respondents agreed that the expansion of roads at Nairobi ICD has led to smooth flow of traffic hence saving transaction cost of importers and exporters as shown by 74 (45.1%); majority of the respondents disagreed that there is enough parking space for vehicles waiting clearance at Nairobi ICD as shown by 56 (34.1%); majority of the respondents agreed that the construction of modern halls has enhanced clearance of goods which takes reasonably less time as shown by 72 (43.9%); majority of the respondents disagreed that modern facilities such as gantries and weighbridge has reduced traffic flow at Nairobi ICD as shown by 58 (35.4%); majority of the respondents agreed that there is sharing of equipment's and facilities among EAC partner states customs authorities stationed at Nairobi ICD as shown by 79 (48.2%); This implies that majority of the

respondents agreed with the statements that suggest the influence of Infrastructure Development on trade facilitation at Nairobi ICD.

4.3.2 Descriptive statistics results on Capacity of Personnel at Nairobi ICD

The second objective of the study was to establish the effect of Capacity of Personnel on trade facilitation at Nairobi ICD. The findings of the descriptive statistics are shown on Table 4.7 below.

Table 4.7: Descriptive statistical findings – Capacity of Personnel at Nairobi ICD

Statements		**SD**	**D**	**N**	**A**	**SA**	**Total**
The employees are frequently trained at Nairobi ICD	***f***	0	0	8	53	103	**164**
	%	0	0	4.9	32.3	62.8	**100.0**
Employees are well motivated through rewarding to ensure they effectively contribute to Nairobi ICD operations	***f***	5	3	6	70	80	**164**
	%	3.0	1.8	3.7	42.7	48.8	**100.0**
There are adequate staff members to oversee the operations of the departments at Nairobi ICD	***f***	1	14	41	79	29	**164**
	%	.6	8.5	25.0	48.2	17.7	**100.0**
There are adequate resources and involvement of senior management to address the challenges affecting staff Nairobi ICD	***f***	0	0	6	89	69	**164**
	%	0	0	3.7	54.3	42.1	**100.0**
Employee performance appraisal is regularly conducted to improve service delivery at Nairobi ICD.	***f***	4	1	4	61	94	**164**
	%	2.4	.6	2.4	37.2	57.3	**100.0**

Source: Research data (2020)

From the findings as illustrated in table 4.7, majority of the respondents agreed that employees are frequently trained at Nairobi ICD as shown by 103 (62.8%); majority of the respondents agree that employees are well motivated through rewarding to ensure they effectively contribute to Nairobi ICD operations as shown by 80 (48.8%);

majority of the respondents are agree that there are adequate staff members to oversee the operations of the departments at Nairobi ICD as shown by 79 (48.2%); majority of the respondents agree that there are adequate resources and involvement of senior management to address the challenges affecting staff Nairobi ICD as shown by 89 (54.3%); majority of the respondents agree that employee performance appraisal is regularly conducted to improve service delivery at Nairobi ICD as shown by 94 (57.3%). This implies that majority of the respondents agreed with the statements that suggest the influence of Capacity of personnel on Trade facilitation at Nairobi ICD.

4.3.3 Descriptive statistics results on Customs Automation at Nairobi ICD

The third objective of the study was to determine the effect of Customs Automation on Trade facilitation at Nairobi ICD. The findings of the descriptive statistics are shown on Table 4.8 below

Table 4.8: Descriptive statistical findings – Customs Automation at Nairobi ICD

Statements		SD	D	N	A	SA	Total
Adoption of ICMS has reduced the transaction cost incurred by both the stakeholders in clearance of goods at Nairobi ICD.	***f***	0	2	2	78	82	**164**
	%	0	1.2	1.2	47.6	50.0	**100.0**
There are few cases of the system downtime at Nairobi ICD	***f***	1	8	47	72	36	**164**
	%	0.6	4.9	28.7	43.9	22.0	**100.0**
Single Window clearing system has reduced delays at Nairobi ICD	***f***	14	2	4	66	78	**164**
	%	8.5	1.2	2.4	40.2	47.6	**100.0**
There is adequate ICT hardware at Nairobi ICD such as scanners	***f***	0	0	9	54	101	**164**
	%	0	0	5.5	32.9	61.6	**100.0**
The adoption of ECTS has reduced delays at Nairobi ICD	***f***	14	2	7	68	73	**164**
	%	8.5	1.2	4.3	41.5	44.5	**100.0**

Source: Research data (2020)

From the findings as illustrated in table 4.8, majority of the respondents agreed that adoption of ICMS has reduced the transaction cost incurred by both the stakeholders in clearance of goods at Nairobi ICD as shown by 82(50.0%); majority of the respondents agree that there are few cases of the system downtime at Nairobi ICD as shown by 72 (43.9%); majority of the respondents agree that single Window clearing system has reduced delays at Nairobi ICD as shown by 78(47.6%); majority of the respondents agree that there is adequate ICT hardware at Nairobi ICD such as scanners as shown by 101 (61.6%); majority of the respondents agree that the adoption of ECTS has reduced delays at Nairobi ICD as shown by 73(44.5%). This implies that majority of the respondents agreed with the statements that suggest the influence of Customs Automation on Trade facilitation at Nairobi ICD.

4.3.4 Descriptive statistics results on Interagency Coordination at Nairobi ICD

The fourth objective of the study was to determine the effect of Interagency Coordination on Trade facilitation at Nairobi ICD. The findings of the descriptive statistics are shown on Table 4.9 below.

Table 4.9: Descriptive statistical findings– Interagency Coordination at Nairobi ICD

Statements		SD	D	N	A	SA	Total
There are adequate resources and involvement of senior management to address the operational challenges affecting Nairobi ICD	***f***	0	20	31	72	41	**164**
	%	0	12.2	18.9	43.9	25.0	**100.0**
There is cooperation between different stakeholders at Nairobi ICD such as importers, customs staff, clearing agents	***f***	6	8	19	56	75	**164**
	%	3.7	4.9	11.6	34.1	45.7	**100.0**
Various Government agencies at Nairobi ICD are anxious about embracing coordination at Nairobi ICD.	***f***	14	2	4	70	74	**164**
	%	8.5	1.2	2.4	42.7	45.1	**100.0**
The personnel are sufficient to match the level of commitment required to fully support Nairobi ICD	***f***	4	6	8	51	95	**164**
	%	2.4	3.7	4.9	31.1	57.9	**100.0**
Custom authorities from the EAC partner states at Nairobi ICD are involved in joint verification of cargo.	***f***	29	22	28	41	44	**164**
	%	17.7	13.4	17.1	25.0	26.8	**100.0**

Source: Research data (2020)

From the findings as illustrated in table 4.9, majority of the respondents agreed that there are adequate resources and involvement of senior management to address the operational challenges affecting Nairobi ICD as shown by 72(43.9%); majority of the respondents agreed that there is cooperation between different stakeholders at Nairobi ICD such as importers, customs staff, clearing agents as shown by 75(45.7%); majority of the respondents agreed that various Government agencies at Nairobi ICD

are anxious about embracing coordination at Nairobi ICD as shown by 74(45.1%); majority of the respondents agreed that personnel are sufficient to match the level of commitment required to fully support Nairobi ICD as shown by 95(57.9%); majority of the respondents agreed that Custom authorities from the EAC partner states at Nairobi ICD are involved in joint verification of cargo as shown by 44(26.8%). This implies that majority of the respondents agreed with the statements that suggest the influence of Interagency Coordination on Trade facilitation at Nairobi ICD.

4.3.5 Trade Facilitation at Nairobi ICD

Trade facilitation was the dependent variable of the study. The respondent's level of agreement with the statements on trade facilitation was descriptively measured. The findings of the descriptive statistics are shown on table 4.10.

Table 4.10: Descriptive statistical findings – Trade Facilitation at Nairobi ICD

Statements		SD	D	N	A	SA	Total
The import and export volumes has increased since the establishment of Nairobi ICD	***f***	4	6	8	49	97	**164**
	%	2.4	3.7	4.9	29.9	59.1	**100.0**
The time taken to clear goods has significantly reduced enabling importers and exporters to incur less storage charges at Nairobi ICD	***f***	3	9	8	51	93	**164**
	%	1.8	5.5	4.9	31.1	56.7	**100.0**
Automation of service at Nairobi ICD has reduced cases of corruption and delays in the clearance of goods	***f***	14	2	6	70	72	**164**
	%	8.5	1.2	3.7	42.7	43.9	**100.0**
Various stakeholders such as importers, exporters and clearing agents are involved in numerous programs organized by Nairobi ICD aimed at facilitating trade	***f***	5	12	11	51	85	**164**
	%	3.0	7.3	6.7	31.1	51.8	**100.0**
Importers and exporters incur less transaction cost in the clearance of goods at Nairobi ICD	***f***	0	9	6	70	79	**164**
	%	0	5.5	3.7	42.7	48.2	**100.0**

Source: Research data (2020)

The study findings revealed that majority of the respondents were in agreement that the import and export volumes has increased since the establishment of Nairobi ICD as shown by 97 (59.1%); that the time taken to clear goods has significantly reduced enabling importers and exporters to incur less storage charges at Nairobi ICD as shown by93 (56.7%); that Automation of service at Nairobi ICD has reduced cases of corruption and delays in the clearance of goods as shown by 72(43.9%); that various stakeholders such as importers, exporters and clearing agents are involved in numerous programs organized by Nairobi ICD aimed at facilitating trade as shown by 85(51.8%); last but not least that Importers and exporters incur less transaction cost in the clearance of goods at Nairobi ICD as shown by 79 (48.2%).

4.4 Diagnostic tests

Diagnostic tests were computed to ensure that the assumptions of the multiple regression analysis namely normality, linearity, homoscedasticity and multicollinearity were not violated.

4.4.1 Normality Test

Normality test is used to determine whether a data set resembles a normal distribution (Amata 2017). Statistical procedures are based on the assumption that the data follows a normal distribution. Shapiro-Wilk and Kolmogorov-Smirnov tests are the two test that were used to test for the normality of data based on the p-values. For the two tests, the null hypothesis is rejected if the p-value is less than 0.05 implying the data is not normally distributed whereas null hypothesis is retained if the p-value is greater than 0.05 implying that the data is normally distributed. This research employed both Kolmogorov-Smirnov and Shapiro-Wilk test to test for normality.

Table 4.11: Normality Test

	Kolmogorov-Smirnov			**Shapiro-Wilk**		
	Statistic	Df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.059	164	.200	.789	164	.195
Standardized Residual	.059	164	.200	.789	164	.195

Source: Research data (2020)

Based on Kolmogorov-Smirnov test and Shapiro-Wilk test on Table 4.11, the residuals were normally distributed since the null hypothesis was retained as the p-values for Kolmogorov-Smirnov and Shapiro-Wilk were $p=0.2>0.05$ and $p=0.195>0.05$ respectively implying the data was normally distributed.

4.4.2 Linearity Test

Linearity test is used to establish whether there is a linear relationship between the predictor and the outcome variables. Analysis of Variance (ANOVA) was used to check for linearity between the dependent variables and all the four independent variables. The findings are indicated on Table 4.12.

Table 4.12 Analysis of Variance (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	21.860	4	5.465	82.958	.000
	Residual	10.474	159	.066		
	Total	32.334	163			

a. Dependent Variable: Trade Facilitation

b. Predictors: (Constant), Interagency Coordination, Customs Automation, Infrastructure Development, Capacity of Personnel

Source: Research data (2020)

From the findings on Table 4.12, the F-calculated was greater than F-critical (F=82.958, p=0.000< 0.05). This means that the model used was statistically significant and a good fit for linear regression.

4.4.3 Multicollinearity Test

Multicollinearity occurs when the predictor variables are highly correlated. Multicollinearity was assessed using Variance Inflation Factor (VIF). If the VIF value lies between 1-10, then there is no Multicollinearity whereas if the VIF <1 or > 10, then there is Multicollinearity. Table 4.13 shows the results of the Multicollinearity test.

Table 4.13 Multicollinearity Test

Variable	Tolerance (1/VIF)	VIF
Infrastructure Development	.674	1.484
Capacity of Personnel	.496	2.014
Customs Automation	.552	1.812
Interagency Coordination	.596	1.678
Mean VIF		**1.747**

Source: Research data (2020)

From the findings on table 4.13, a mean aggregate VIF of 1.747 was obtained which lies between 1-10. This was interpreted to mean that there was no Multicollinearity.

4.4.4 Heteroscedasticity Test

Heteroscedasticity occurs when the variance of the error term is not constant. The assumption of equal variances was tested using scatter plot. Refer to appendix V for the results of the Heteroscedasticity.

4.5 Inferential Statistics

The researched adopted inferential statistical methods namely correlation and multiple regression analysis to evaluate the relationship between the predictor and the outcome variables. This analysis was computed with the aid of the Statistical Package for Social Sciences (SPSS).

4.5.1 Correlation Analysis

Correlation analysis deals with finding the strength of linear association between two variables. Correlation analysis assists the researcher to establish the nature of the relationship in order to make a valid conclusion and recommendation about the variables. Normally a correlation coefficient (r) lies between +1 and -1 with interpretations as follows: If $r = -1$, there is a perfect negative correlation; If $-1 < r < -0.75$, there is a strong negative correlation; If $-0.75 < r < -0.25$, there is a fair negative

correlation ; If -0.25< r< 0, there is weak negative correlation; If r =0, there is no correlation; If 0< r < 0.25, there is a weak positive correlation; If 0.25< r < 0.75, there is a fair positive correlation; If 0.75< r < 1, there is a strong positive correlation; If r =1, there is a perfect positive correlation . A positive correlation means the two items under test affect each other in a way that as one improves the other also improves with a negative correlation indicating that indicating the opposite. The test of significance in the relationship is done at either a significant value of 5% or 1%. The results of the Pearson correlation analysis are presented in tables 4.14.

Table 4.14 Correlation Analysis

		Trade Facilitation at Nairobi ICD	Infrastructure Development	Capacity of Personnel	Customs Automation	Interagency Coordination
Trade Facilitation at Nairobi ICD	Pearson Correlation	1	.684**	.642**	.630**	.634**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	164	164	164	164	164
Infrastructure Development	Pearson Correlation	.684**	1	.431**	.511**	.454**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	164	164	164	164	164
Capacity of Personnel	Pearson Correlation	.642**	.431**	1	.610**	.596**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	164	164	164	164	164
Customs Automation	Pearson Correlation	.630**	.511**	.610**	1	.448**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	164	164	164	164	164
Interagency Coordination	Pearson Correlation	.634**	.454**	.596**	.448**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	164	164	164	164	164

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

Source: Research data (2020)

From the results of Pearson correlation analysis indicated on table 4.14, a significantly strong positive correlation between Infrastructure Development and Trade Facilitation at Nairobi ICD is observed as shown by ($r=0.684$ $p=0.000<0.01$) at 1% level of significance; a significantly strong positive correlation between Capacity of Personnel and Trade Facilitation at Nairobi ICD is observed as shown by ($r=0.642$ $p=0.000<0.01$) at 1% level of significance; a significantly strong positive correlation between Customs Automation and Trade Facilitation at Nairobi ICD is observed as shown by ($r=0.630$ $p=0.000<0.01$) at 1% level of significance; a significantly strong positive correlation between Interagency Coordination and Trade Facilitation at Nairobi ICD is observed as shown by ($r=0.634$ $p=0.000<0.01$) at 1% level of significance. From the findings, inter correlation between the independent variables was relatively low eliminating Multicollinearity.

This finding was interpreted to mean that that any positive changes in Infrastructure Development, Capacity of Personnel, Customs Automation and Interagency Coordination would enhance Trade Facilitation at Nairobi ICD.

4.5.2 Multiple Regression Analysis

A multiple regression analysis was done to evaluate the relationship between the independent variables; Infrastructure Development, Capacity of Personnel, Customs Automation and Interagency Coordination with the dependent variable Trade Facilitation at Nairobi ICD.

The results of the multiple regression analysis were summarized in the form Model summary, Analysis of variance and Beta Coefficients.

Table 4.15 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.822	.676	.668	.25666

a. Predictors: (Constant), Interagency Coordination , Customs Automation, Infrastructure Development, Capacity of Personnel

Source: Research data (2020)

Table 4.15 presents the Correlation Coefficient denoted as R and the Coefficient of determination (R square) that was adjusted to Adjusted R square.

From the model summary results, R was 0.822, which was an indication of a fairly strong positive correlation between the dependent variable Trade Facilitation at Nairobi ICD and the four dependent variables namely Interagency Coordination, Customs Automation, Infrastructure Development and Capacity of Personnel. The Coefficient of determination for model denoted by R square of 0.676 that was adjusted to 0.668 can be interpreted to mean that 66.8% of all changes in Trade Facilitation at Nairobi ICD can be explained by the four predictors. This implies that the remaining 33.2% of the variation in Trade Facilitation at Nairobi ICD was accounted for by other factors that were not included in the model.

Table 4.16 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.860	4	5.465	82.958	.000
	Residual	10.474	159	.066		
	Total	32.334	163			

a. Dependent Variable: Trade Facilitation at Nairobi ICD

b. Predictors: (Constant), Interagency Coordination , Customs Automation, Infrastructure Development, Capacity of Personnel

Source: Research data (2020)

The ANOVA table results indicate that the regression model is significant as shown by an F-value of 82.95, for degrees of freedom for the regression of 4 and degrees of

freedom for the residual of 159 as shown by {F (4, 159) = 82.958, p =0 .000<0.05}. With an F-calculated value greater than F-critical, this implied that the model was statistically significant and a good fit for linear regression.

Table 4.17: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.533	.219		2.436	.016
	Infrastructure Development	.315	.045	.381	6.931	.000
	Capacity of Personnel	.228	.069	.210	3.274	.001
	Customs Automation	.154	.047	.196	3.234	.001
	Interagency Coordination	.200	.047	.248	4.236	.000

a. Dependent Variable: Trade Facilitation at Nairobi ICD

Source: Research data (2020)

Model Statistics

Infrastructure Development β_1=0.381, t=6.931, p=0.000 < 0.05

Capacity of Personnel β_2=0.210, t=3.274, p=0.001 < 0.05

Customs Automation β_3=0.196, t=3.234, p=0.001 < 0.05

Interagency Coordination β_4=0.248, t=4.236, p=0.000 < 0.05

From the findings of the Beta Coefficients, it was established that Infrastructure Development positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by (β_1=0.381, p=0.000 < 0.05). This was interpreted to mean that keeping all other factors constant, a unit change in Infrastructure Development would lead to a 0.381 increase in Trade Facilitation at Nairobi ICD.

Capacity of Personnel was found to positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by (β_2=0.210, p=0.001 < 0.05). This was interpreted to mean that keeping all other factors constant, a unit change in Capacity of Personnel would lead to a 0.210 increase in Trade Facilitation at Nairobi ICD.

Customs Automation was found to positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by (β_3=0.196, p=0.001 < 0.05). This was interpreted to mean that keeping all other factors constant, a unit change in Customs Automation would lead to a 0.196 increase in Trade Facilitation at Nairobi ICD.

Interagency Coordination was found to positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by (β_4=0.248, p=0.000 < 0.05). This was interpreted to mean that keeping all other factors constant, a unit change in Interagency Coordination would lead to a 0.248 increase in Trade Facilitation at Nairobi ICD.

From the findings of multiple the regression model was deduced as follows:

Model 1:

$Y= \beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4 + \varepsilon$

Where:

Y= Trade Facilitation at Nairobi ICD;

β_0= defines Trade Facilitation at Nairobi ICD without inclusion of independent variables.

B_1, β_2, β_3, β_4 represent the slope coefficient of the multiple regression line.

X_1 = Infrastructure Development at Nairobi ICD;

X_2 = Capacity of Personnel Nairobi ICD;

X_3 = Customs Automation at Nairobi ICD

X4 = Interagency Coordination at Nairobi ICD;

e = error term

4.6 Hypotheses Test

The five objectives of the study were to explore the effect of Infrastructure Development, Capacity of Personnel, Customs Automation and Interagency Coordination on trade facilitation at Nairobi ICD. This informed the four null hypothesis of the study H_{01} H_{02} $H_{03\ and}$ $H_{04.}$

The coefficients result on Table 4.19 revealed the following:

Infrastructure Development at Nairobi ICD β_1=0.381, t=6.931, p=0.000 < 0.05

Capacity of Personnel at Nairobi ICD β_2=0.210, t=3.274, p=0.001 < 0.05

Customs Automation at Nairobi ICD β_3=0.196, t=3.234, p=0.001 < 0.05

Interagency Coordination at Nairobi ICD β_4=0.248, t=4.236, p=0.000 < 0.05

Based on p<0.05 and t>2.000, this implied that all the four research null hypothesis were rejected and their alternative hypothesis H_1, H_2, H_3 and H_4 were accepted.

Table 4.18: Summary of Hypotheses Tests

	Hypothesis	t-value	p-value	Verdict
Ho1:	Infrastructure development has no significant effect on trade facilitation at Nairobi ICD.	6.931	0.000	Reject
Ho2:	Capacity of personnel has no significant effect on trade facilitation at Nairobi ICD	3.274	0.001	Reject
Ho3:	Customs automation at has no significant effect on trade facilitation at Nairobi ICD	3.234	0.001	Reject
Ho4:	Interagency coordination has no significant effect on trade facilitation at Nairobi ICD.	4.236	0.000	Reject

4.7 Discussion of the Findings

This section presents per objective discussion of the findings and collaborates them to other studies.

4.7.1 Infrastructure Development and Trade Facilitation at Nairobi ICD

From the results of the Pearson correlation analysis, a significantly strong positive correlation between Infrastructure Development and Trade Facilitation at Nairobi ICD was observed as shown by ($r=0.684$ $p=0.000<0.01$) at 1% level of significance; This was interpreted to mean that any positive change in Infrastructure Development will have an effect on Trade Facilitation at Nairobi ICD.

From the finding of the multiple regression analysis, it was established that Infrastructure Development positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by ($\beta_1=0.381$, $p=0.000 < 0.05$). This was interpreted to mean that keeping all other factors constant, a unit change in Infrastructure Development would lead to a 0.381 increase in Trade Facilitation at Nairobi ICD.

4.7.2 Capacity of Personnel and Trade Facilitation at Nairobi ICD.

From the Pearson correlation analysis, a significantly strong positive correlation between Capacity of Personnel and Trade Facilitation at Nairobi ICD was observed as shown by ($r=0.642$ $p=0.000<0.01$) at 1% level of significance. This was interpreted to mean that any positive change in Capacity of Personnel will have an effect on Trade Facilitation at Nairobi ICD.

From the findings of the multiple regression analysis, it was established that Capacity of Personnel was found to positively and significantly influenced Trade Facilitation in Kenya ($\beta_2=0.210$, $p=0.001 < 0.05$). This was interpreted to mean that keeping all

other factors constant, a unit change in Capacity of Personnel would lead to a 0.210 increase in Trade Facilitation at Nairobi ICD.

4.7.3 Customs Automation and Trade Facilitation at Nairobi ICD.

The coefficient of the Pearson Correlation analysis indicated a significantly strong positive correlation between Customs Automation and Trade Facilitation in Kenya was observed as shown by ($r=0.630$ $p=0.000<0.01$) at 1% level of significance. This was interpreted to mean that any positive change in Customs Automation will have an effect on Trade Facilitation at Nairobi ICD.

From the findings of the multiple regression analysis, it was established that Customs Automation was found to positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by ($\beta_3=0.196$, $p=0.001 < 0.05$). This was interpreted to mean that keeping all other factors constant, a unit change in Customs Automation would lead to a 0.196 increase in Trade Facilitation at Nairobi ICD.

4.7.4 Interagency Coordination and Trade Facilitation at Nairobi ICD.

Based on the results of the Pearson Correlation analysis, a significantly strong positive correlation between Interagency Coordination and Trade Facilitation at Nairobi ICD was observed as shown by ($r=0.634$ $p=0.000<0.01$) at 1% level of significance. This was interpreted to mean that any positive change in Interagency Coordination will have an effect on Trade Facilitation at Nairobi ICD.

From the findings on multiple regression analysis, Interagency Coordination was found to positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by ($\beta_4=0.248$, $p=0.000 < 0.05$). This was interpreted to mean that keeping all other factors constant, a unit change in Interagency Coordination would lead to a 0.248 increase in Trade Facilitation at Nairobi ICD.

From the model summary results, the Correlation coefficient of 0.822 denoted by R was which was an indication of a fairly strong positive correlation between the dependent variable Trade Facilitation at Nairobi ICD and the four dependent variables namely Interagency Coordination, Customs Automation, Infrastructure Development and Capacity of Personnel.

The findings of this study is in tandem with Omondi (2014) that established that improved road transport infrastructure hugely contributes to regional integration and trade facilitation. Similar findings that were arrived at by this study asserted that a unit change in Infrastructure Development at Nairobi ICD leads to an increase in Trade Facilitation in Kenya.

The study findings can also be compared to Khaguli (2013) that established that the border points in East Africa play an important part in Trade Facilitation if impediments to trade are addressed.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the main research findings, conclusions, recommendations and suggestions for future research.

5.1 Summary of Research Findings

5.1.1 Infrastructure Development and Trade Facilitation at Nairobi ICD

The first objective of the study was to explore the effect of infrastructure development on trade facilitation at Nairobi ICD. From the results of the descriptive statistics, it was deduced that majority of the respondents agreed with the statements that suggest the influence of infrastructure development on trade facilitation at Nairobi ICD.

The results of Pearson Correlation analysis, a significantly strong positive correlation between Infrastructure Development and Trade Facilitation at Nairobi ICD was observed as shown by ($r=0.684$ $p=0.000<0.01$) at 1% level of significance; This was interpreted to mean that any positive change in Infrastructure Development will have an effect on Trade Facilitation at Nairobi ICD.

From the finding of the multiple regression analysis, it was established that Infrastructure Development positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by ($\beta_1=0.381$, $p=0.000 < 0.05$). This was interpreted to mean that keeping all other factors constant, a unit change in Infrastructure Development would lead to a 0.381 increase in Trade Facilitation at Nairobi ICD.

5.1.2 Capacity of Personnel and Trade Facilitation at Nairobi ICD.

The second objective of the study was to establish the effect of Capacity of Personnel on trade facilitation at Nairobi ICD. From the results of the descriptive statistics, it

was deduced that majority of the respondents agreed with the statements that suggest the influence of the Capacity of personnel on Trade facilitation at Nairobi ICD.

From the Pearson correlation analysis, a significantly strong positive correlation between Capacity of Personnel and Trade Facilitation at Nairobi ICD was observed as shown by ($r=0.642$ $p=0.000<0.01$) at 1% level of significance. This was interpreted to mean that any positive change in Capacity of Personnel will have an effect on Trade Facilitation at Nairobi ICD.

From the findings of the multiple regression analysis, it was established that Capacity of Personnel was found to positively and significantly influenced Trade Facilitation in Kenya ($\beta_2=0.210$, $p=0.001 < 0.05$). This was interpreted to mean that keeping all other factors constant, a unit change in Capacity of Personnel would lead to a 0.210 increase in Trade Facilitation at Nairobi ICD.

5.1.3 Customs Automation and Trade Facilitation at Nairobi ICD.

The third objective of the study was to determine the effect of Customs Automation at the Nairobi ICD on trade facilitation in Kenya. From the results of the descriptive statistics, it was deduced that majority of the respondents agreed with the statements that suggest the influence of Customs Automation on trade facilitation at Nairobi ICD.

The coefficient of the Pearson Correlation analysis indicated a significantly strong positive correlation between Customs Automation and Trade Facilitation in Kenya was observed as shown by ($r=0.630$ $p=0.000<0.01$) at 1% level of significance. This was interpreted to mean that any positive change in Customs Automation will have an effect on Trade Facilitation at Nairobi ICD.

From the findings of the multiple regression analysis, it was established that Customs Automation was found to positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by (β_3=0.196, p=0.001 < 0.05). This was interpreted to mean that keeping all other factors constant, a unit change in Customs Automation would lead to a 0.196 increase in Trade Facilitation at Nairobi ICD.

5.1.4 Interagency Coordination at Nairobi ICD and Trade Facilitation in Kenya.

The fourth objective of the study was to evaluate the effect of Interagency Coordination at the Nairobi ICD on trade facilitation in Kenya. From the results of the descriptive statistics, it was deduced that majority of the respondents agreed with the statements that suggest the influence of Interagency Coordination on trade facilitation at Nairobi ICD.

Based on the results of the Pearson Correlation analysis, a significantly strong positive correlation between Interagency Coordination and Trade Facilitation at Nairobi ICD was observed as shown by (r=0.634 p=0.000<0.01) at 1% level of significance. This was interpreted to mean that any positive change in Interagency Coordination will have an effect on Trade Facilitation at Nairobi ICD.

From the findings on multiple regression analysis, Interagency Coordination was found to positively and significantly influenced Trade Facilitation at Nairobi ICD as shown by (β_4=0.248, p=0.000 < 0.05). This was interpreted to mean that keeping all other factors constant, a unit change in Interagency Coordination would lead to a 0.248 increase in Trade Facilitation at Nairobi ICD.

5.2 Conclusion of the Study

The first objective of the study was to explore the effect of Infrastructure Development at Nairobi ICD on trade facilitation in Kenya. From the findings, it was

concluded that Infrastructure Development at the Nairobi ICD positively and significantly influenced Trade Facilitation in Kenya. The findings of this study on infrastructure can be advanced to other Inland Container depots in Kenya to improve trade facilitation.

The second objective of the study was to establish the effect of Capacity of Personnel at Nairobi ICD on trade facilitation in Kenya. From the findings, it was concluded that Capacity of Personnel at the Nairobi ICD positively and significantly influenced Trade Facilitation in Kenya. On the capacity of personnel, the study was not exhaustive as it only involved importers, exporters, clearing agents and KRA customs staff while there are more staff from other government agencies stationed at Nairobi ICD indirectly involved in trade facilitation. More can still be done in this area of study so as to come up with relevant structures for capacity development.

The third objective of the study was to determine the effect of Customs Automation at the Nairobi ICD on trade facilitation in Kenya. From the findings, it was concluded that Customs Automation at the Nairobi ICD positively and significantly influenced Trade Facilitation in Kenya. Customs automation is one form of the application of information and communication technologies (ICT) for accomplishing Customs formalities. Other application of ICT in customs formalities includes the use of scanners and CCTV cameras. As such more can be done to assess the application of ICT in Customs functions in totality.

The fourth objective of the study was to evaluate the effect of Interagency Coordination at the Nairobi ICD on trade facilitation in Kenya. From the findings, it was concluded that Interagency Coordination at the Nairobi ICD positively and significantly influenced Trade Facilitation in Kenya. It is therefore necessary for ICDs

in Kenya to embrace interagency coordination to examine all the barriers of trade that could be hindering trade facilitation.

5.3 Recommendations of the Study

Based on the research findings, it was established that infrastructure development positively influences trade facilitation in Kenya. The study recommends that the government should seek to enhance trade facilitation by continuous modernization of infrastructure so as to align with the most updated facilities such as road networks, machinery, construction of additional dry ports in other major towns such as Busia in order to enhance a smooth flow of goods and services from one point to another. The expansion of parking space and offloading areas is essential to decongest the ICD.

The study further established that capacity of personnel positively influences trade facilitation in Kenya. The study recommends that there is need to enhance the capacity of personnel by acquiring more trained staff and continuous training and equipping of all staff, coming up with motivational and reward schemes that will increase staff productivity. Ensuring that there is continuing professional development to ensure that personnel are able to address the challenges encountered in their job performance. Senior management should be encouraged to fully embrace open policy between themselves and all other members of staff to encourage new innovations.

The findings of the study indicated that customs automation positively influences trade facilitation. The study recommends that customs automation can still be enhanced through continuous upgrade of the existing software to accommodate new developments incorporated by the software developers, adaptation of additional modern equipment such as scanners and electronic cargo tracking systems in all Inland Container Depots in Kenya.

From the findings of the study, Interagency cooperation positively influences trade facilitation. Therefore, it should also be enhanced so as to facilitate trade. This can be done by making Customs the lead government agency among other agencies as it is better placed to regulate imports and exports and facilitate trade.

Finally, the study recommends further studies that will explore other factors affecting trade facilitation at the various dry ports available in the country in order to come up with recommendations that will improve the operations of the ICDs so as to increase trade.

5.4 Suggestions for Future Studies

The study sought to establish the effect of Dry Port operational factors on trade facilitation in Kenya. The study was limited to evaluating the effect of the four independent variables namely Infrastructure Development, Capacity of Personnel, Customs Automation and Interagency Coordination at Nairobi ICD on Trade Facilitation in Kenya. It is therefore suggested that future studies can evaluate other factors that influence trade facilitation at the Nairobi Inland Container Depot

REFERENCES

Ahamed, Y. (2010), "*Final report of feasibility study of dry ports, "Economic Commission for Africa,* United Nation, pp.379-416

Cooper, D. R., & Schindler, P. S. (2006). *Business Research Methods. I.* rwin/McGraw-Hill.

Creswell, J. W. (2013). *Research Design Qualitative, Quantitative, and Mixed Methods Approaches.* Califonia: SAGE Publications Inc.

Cullinane, K., Bergqvist, R., & Wilmsmeier, G. (2012). The Dry Port Concept – Theory and Practice. *Maritime Economics & Logistics.*

Dadvar, E., Ganji, S.R.S,, Tanzifi, M. (2011) *Feasibility Of Establishment Of Dry Ports In Developing Countries: The Case Of Iran*. Journal of Transport and Security 14:19-33

Fulmer, J. (2009). What in the world is infrastructure. *PEI Infrastructure Investor,* 30-32.

Gathogo, C. W. (2019). Port Management Systems and Operational Efficiency at the Inland Container Depot - Embakasi. *University of Nairobi*.

Hossain, S. S., & Amin, M. A. (2014). Impact of information technology in trade facilitation on small and medium-sized enterprises in Bangladesh. *Asia-Pacific Research and Training Network on Trade Working Paper* , Series, No 76.

KIFWA (2018). *Nairobi ICD capacity overstretched . Business Daily Sept.12th 2018*

Khaguli, E. (2013). *Factors affecting trade facilitation in East Africa and their impact on Kenya/Uganda/Tanzania/Rwanda/Burundi border points*. Retrieved from http://erepository.uonbi.ac.ke/handle/11295/59437

Korstjens, & Moser. (2018). Practical guidance to qualitative research. Part 3: Sampling, data collection and and analysis. *European Journal of General Practice* , 24 (1) 9-18.

Krugman, P. (1979). Increasing returns, monopolistic competition, and international trade. *Journal of International Economics,Vol. 9,*, 469–479.

Krugman, P. (1980). Scale economies, product differentiation, and the pattern of trade. *American Economic Review,70(5),*, 950–959.

Kumar, S., & Gupta, V. (2013). Impact of performance appraisal justice on employee engagement: a study of Indian professionals. *Employee Relations*, 35(1), 61-78.

Manoj, K., & Varun, G. (1998). Construct to Theory in Grover. An Assessment of the Survey Research in Principles of Management. *Journal of Operations Management*, 16(407-426).

Marshall, M. N. (1996). *Sampling for qualitative research* . Great Britain: Oxford University Press.

Mbithe, I. (2015). *Trade barriers and economic integration between Kenya and Uganda*. Retrieved from https://pdfs.semanticscholar.org:https://pdfs.semanticscholar.org/9d4f/53b3c649a815d0784b48d5b60f8be103a46f.pdf

Mugenda, O. M., & Mugenda, A. G. (2003). Research methods: Quantitative and qualitative Approaches. *Nairobi: African Centre for Technology Studies.*

Nordås, H., Pinali , E., & Geloso Grosso , M. (2006). *Logistics and Time as a Trade barrier OECD Trade Policy Papers, No. 35.* Paris: OECD Publishing.

OECD, O. F.-O. (2013). *Trade Facilitation Indicators: The Potential Impact of Trade Facilitation on Developing Countries Trade.* Paris: OECD, Trade Policy Paper No. 144.

OECD. (2001). *Organisation for Economic Co-operation and Development (OECD) Business Benefits of Trade Facilitation,D/TC/WP(2001)21/.* Paris: OECD.

OECD. (2005). *The Role of Automation in Trade Facilitation.* Paris: Organisation for Economic Co-operation and Development.

Omondi, S. A. (2014). *The role of road transport infrastructure in enhancing regional integration: The case study of Kenyans road network*. Retrieved from http://erepository.uonbi.ac.ke/handle/11295/75339

Pallant, J. (2010). *SPSS Survival Manual (4th Ed).* Open University Press.

Rodrigue , J. P., Debrie , J., & Gouvernal , E. (2010). *Functions and actors of inland ports: European and North American dynamics.* J. Transp. Geogr., 18: 519-529.

Rodrigue. J.P., Debbie. J., Fremont. A., & Gouvernal, E. (2010) Function and Actors of inland ports: European & North American Dynamics. *Journal of Transport and Geography*. 18: 519-529

Taherdoost. (2016). Valididty and reliability of research instrument. *How to test the validity of a questionnaire in research .*

Uma , S., & Matthias , M. (2007). *Can Sub-Saharan Africa leap into global network trade.* Washington: World Bank Group.

UNCTAD. (2015). *Boosting Investment in Productive Capacities for Trade: A Call to Action.UNCTAD, Policy Brief No. 43.* Geneva: UNCTAD.

Veenstra , A., Zuidwijk , R., & van Asperen , E. (2012). The extended gate concept for container terminals: Expanding the notion of dry ports. 14. *Marit. Econ. Logist.14*, 14-32.

WCO.(2020,217).*wto trade facilitation negotiations.* Retrieved http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/wto-trade-facilitation-negotiations.aspx

Wilmsmeiera, G., & Martı´nez-Zarzoso, I. (2010). Determinants of maritime transport costs -a panel data analysis for Latin American trade. *Transportation Planning and Technology 33:1, 105-121*, 108.

APPENDICES

Appendix I: Questionnaire

IRENE GICHUHI

MOI UNIVERSITY

29th August 2020

Dear Respondents,

RE: DATA COLLECTION

My name is Irene Gichuhi, a Masters student from Moi University in partnership with Kenya School of Revenue Administration (KESRA). In partial fulfillment of the requirements for the award of the degree of Master of Tax and Customs Administration**,** I am conducting an academic research on the **EFFECT OF DRY PORT OPERATIONS ON TRADE FACILITATION (CASE STUDY OF NAIROBI INLAND DEPOT).** This letter is to humbly request you to respond to the questions in the attached questionnaire to enable me carry out this research. This is an academic exercise and you are assured of anonymity and confidentiality.

Thank you in advance for your willingness to generously contribute to this research.

Yours truly,

Irene Gichuhi

SECTION A: DEMOGRAPHIC INFORMATION

1. Gender

Male [ ] Female [ ]

2. Please indicate your age bracket

25 and below	[ ]	25-34	[ ]
35-44	[ ]	45-50	[ ]
51 and above	[ ]		

3. Level of education

Secondary Certificate	[ ]	Diploma level	[ ]
Bachelor‘s Degree Level	[ ]	Master’s Degree Level	[ ]
PhD	[ ]		

4. Years of work experience

1-5	[ ]	6-10	[ ]
11-15	[ ]	Above 15 years	[ ]

Kindly answer the following questions as honestly and accurately as possible. The information given will be treated with a lot of confidentiality and response in this survey will purely be used for academic purpose only.

SECTION B: TRADE FACILITATION AT NAIROBI ICD

Please indicate the extent to which you agree or dis agree with the following statements on Trade facilitation.

Where: 1= strongly disagree, 2= disagree, 3= Neutral, 4= Agree and 5= Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
The import and export volumes has increased since the establishment of Nairobi ICD					
The time taken to clear goods has significantly reduced enabling importers and exporters to incur less storage charges at Nairobi ICD					
Automation of service at Nairobi ICD has reduced cases of corruption and delays in the clearance of goods					
Various stakeholders such as importers, exporters and clearing agents are involved in numerous programs organized by Nairobi ICD aimed at facilitating trade.					
Importers and exporters incur less transaction cost in the clearance of goods at Nairobi ICD.					

SECTION B: INFRASTRUCTURE DEVELOPMENT AT NAIROBI ICD

Please indicate the extent to which you agree or dis agree with the following statements on infrastructure development

Where: 1= strongly disagree, 2= disagree, 3= Neutral, 4= Agree and 5= Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
The expansion of roads at Nairobi ICD has led to smooth flow of traffic hence saving transaction cost of importers and exporters					
There is enough parking space for vehicles waiting clearance at Nairobi ICD					
Construction of modern halls has enhanced clearance of goods which takes reasonably less time.					
Modern facilities such as gantries and weighbridge has reduced traffic flow at Nairobi ICD					
There is sharing of equipment's and facilities among EAC partner states customs authorities stationed at Nairobi ICD.					

SECTION C: CAPACITY OF PERSONNEL AT NAIROBI ICD

Please indicate the extent to which you agree or dis agree with the following statements on capacity of personnel.

Where: 1= strongly disagree, 2= disagree, 3= Neutral, 4= Agree and 5= Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
The employees are frequently trained at Nairobi ICD					
Employees are well motivated through rewarding to ensure they effectively contribute to Nairobi ICD operations					
There are adequate staff members to oversee the operations of the departments at Nairobi ICD					
There are adequate resources and involvement of senior					

management to address the challenges affecting staff Nairobi ICD					
Employee performance appraisal is regularly conducted to improve service delivery at Nairobi ICD.					

SECTION D: CUSTOMS AUTOMATION AT NAIROBI ICD

Please indicate the extent to which you agree or dis agree with the following statements on customs automation.

Where: 1= strongly disagree, 2= disagree, 3= Neutral, 4= Agree and 5= Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
Adoption of ICMS has reduced the transaction cost incurred by both the stakeholders in clearance of goods at Nairobi ICD.					
There are few cases of the system downtime at Nairobi ICD					
Single Window clearing system has reduced delays at Nairobi ICD					
There is adequate ICT hardware at Nairobi ICD such as scanners					
The adoption of ECTS has reduced delays at Nairobi ICD					

SECTION E: INTERAGENCY COORDINATION AT NAIROBI ICD

Please indicate the extent to which you agree or dis agree with the following statements on interagency coordination

Where: 1= strongly disagree, 2= disagree, 3= Neutral, 4= Agree and 5= Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
There are adequate resources and involvement of senior management to address the operational challenges affecting Nairobi ICD					
There is cooperation between different stakeholders at Nairobi ICD such as importers, customs staff, clearing agents					

Various Government agencies at Nairobi ICD are anxious about embracing coordination at Nairobi ICD.					
The personnel are sufficient to match the level of commitment required to fully support Nairobi ICD					
Custom authorities from the EAC partner states at Nairobi ICD are involved in joint verification of cargo.					

THANK YOU

Appendix II: Pilot Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786	.618	.542	.27437

a. Predictors: (Constant), Interagency Coordination at Nairobi ICD, Customs Automation at Nairobi ICD, Infrastructure Development at Nairobi ICD, Capacity of Personnel at Nairobi ICD

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.440	4	.610	8.103	.000
	Residual	1.506	20	.075		
	Total	3.946	24			

a. Dependent Variable: Trade Facilitation in Kenya

b. Predictors: (Constant), Interagency Coordination at Nairobi ICD, Customs Automation at Nairobi ICD, Infrastructure Development at Nairobi ICD, Capacity of Personnel at Nairobi ICD

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.574	.913		.629	.536
	Infrastructure Development at Nairobi ICD	.299	.138	.332	2.161	.043
	Capacity of Personnel at Nairobi ICD	-.080	.235	-.058	-.339	.738
	Customs Automation at Nairobi ICD	.278	.147	.281	1.886	.074
	Interagency Coordination at Nairobi ICD	.394	.127	.510	3.103	.006

a. Dependent Variable: Trade Facilitation in Kenya

Appendix III: Reliability Item-Total Statistics

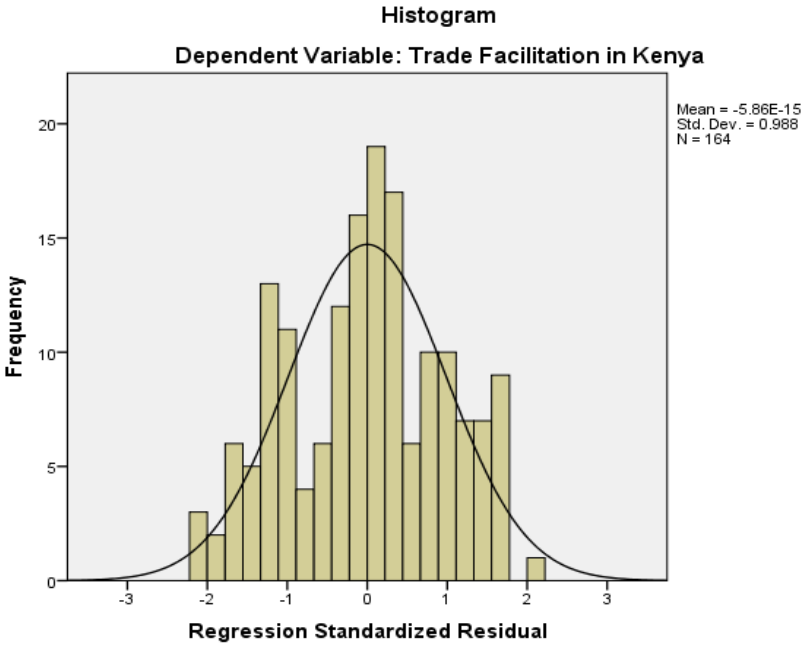
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The expansion of roads at Nairobi ICD has led to smooth flow of traffic hence saving transaction cost of importers and exporters	98.49	88.718	.575	.831
There is enough parking space for vehicles waiting clearance at Nairobi ICD	99.66	97.637	.192	.847
Construction of modern halls has enhanced clearance of goods which takes reasonably less time.	98.37	95.057	.407	.839
Modern facilities such as gantries and weighbridge has reduced traffic flow at Nairobi ICD	99.64	97.753	.182	.848
There is sharing of equipment's and facilities among EAC partner states customs authorities stationed at Nairobi ICD.	98.30	94.459	.465	.837
The employees are frequently trained at Nairobi ICD	98.06	95.653	.546	.836
Employees are well motivated through rewarding to ensure they effectively contribute to Nairobi ICD operations	98.32	93.948	.442	.837
There are adequate staff members to oversee the operations of the departments at Nairobi ICD	98.90	96.739	.278	.843
There are adequate resources and involvement of senior management to address the challenges affecting staff Nairobi ICD	98.26	97.652	.389	.840

Employee performance appraisal is regularly conducted to improve service delivery at Nairobi ICD.	98.18	97.165	.285	.843
Adoption of ICMS has reduced the transaction cost incurred by both the stakeholders in clearance of goods at Nairobi ICD.	98.18	98.269	.311	.842
There are few cases of the system downtime at Nairobi ICD	98.82	97.656	.230	.845
Single Window clearing system has reduced delays at Nairobi ICD	98.47	88.496	.582	.831
There is adequate ICT hardware at Nairobi ICD such as scanners	98.08	95.865	.515	.837
The adoption of ECTS has reduced delays at Nairobi ICD	98.52	88.791	.567	.832
There are adequate resources and involvement of senior management to address the operational challenges affecting Nairobi ICD	98.82	94.797	.355	.841
There is cooperation between different stakeholders at Nairobi ICD such as importers, customs staff, clearing agents	98.01	100.129	.196	.845
Various Government agencies at Nairobi ICD are anxious about embracing coordination at Nairobi ICD.	98.49	88.718	.575	.831
The personnel are sufficient to match the level of commitment required to fully support Nairobi ICD	98.05	95.703	.543	.837

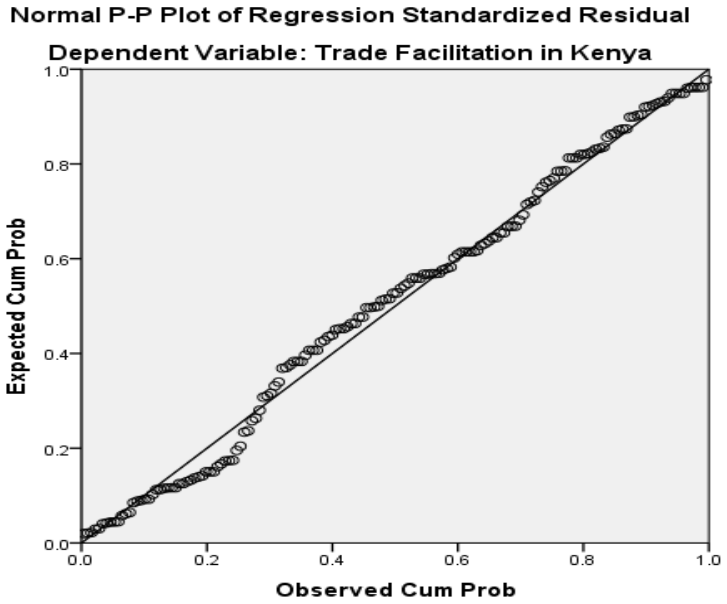
Custom authorities from the EAC partner states at Nairobi ICD are involved in joint verification of cargo.	99.34	93.355	.244	.851
The import and export volumes has increased since the establishment of Nairobi ICD	98.04	95.864	.531	.837
The time taken to clear goods has significantly reduced enabling importers and exporters to incur less storage charges at Nairobi ICD	98.05	95.703	.543	.837
Automation of service at Nairobi ICD has reduced cases of corruption and delays in the clearance of goods	98.52	89.221	.549	.833
Various stakeholders such as importers, exporters and clearing agents are involved in numerous programs organized by Nairobi ICD aimed at facilitating trade.	98.05	95.703	.543	.837
Importers and exporters incur less transaction cost in the clearance of goods at Nairobi ICD.	99.75	98.164	.180	.847

Appendix IV: Assumptions of Multiple Regression Analysis

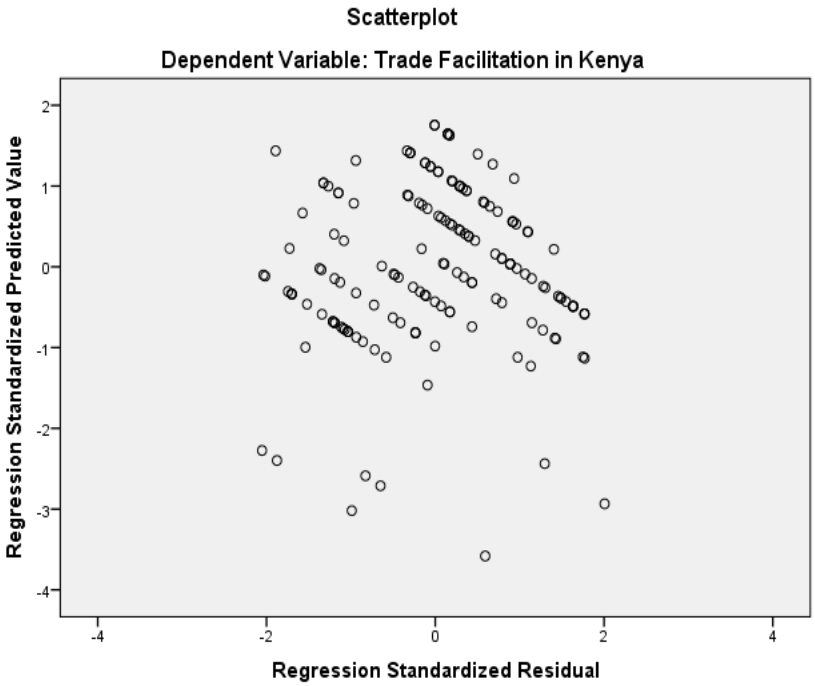
Normality



Linearity



Heteroscedasticity



Appendix V: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 118955

Date of Issue: 12/October/2020

RESEARCH LICENSE

This is to Certify that Miss.. Irene Wanjiku Gichuhi of Moi University, has been licensed to conduct research in Nairobi on the topic: EFFECT OF INLAND CONTAINER DEPOT OPERATIONS ON TRADE FACILITATION (CASE STUDY OF NAIROBI INLAND DEPOT) for the period ending : 12/October/2021.

License No: NACOSTI/P/20/7073

118955

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.