EFFECT OF COORDINATION OF BORDER MANAGEMENT PRACTICES ON CARGO CLEARANCE EFFECIENCY IN KENYA, A CASE OF KEY BORDER STATIONS IN KENYA

BY

EDITH MUTINDI NGANGA

A Research Project submitted to the School of Business and Economics in Partial Fulfillment of the Requirements for the Award of Masters Degree in Tax and Customs Administration

2021

DECLARATION

Declaration by the Candidate

This research project is my original work and has not been presented for a degree in any other University. No part of this work may be reproduced without the prior written permission of the author and/or Moi University.

Signature …………………………………   Date………………………

Edith Mutindi Nganga

KESRA/105/0034/2018

Declaration by Supervisors

This research project has been presented for examination with our approval as University Supervisors.

Signature …………………………………   Date………………………

DR. DORIS GITONGA

School of Business and Economics

Moi University, Kenya

Signature …………………………………   Date………………………

DR. JAPHETH KOGEI

School of Business and Economics

Moi University, Kenya

DEDICATION

This research project is dedicated to my friends and family for their unwavering support.

ACKNOWLEDGEMENT

My outmost acknowledgment goes to my supervisors, for the tireless professional guidance to see the success of this research project. I also thank all my friends, family and colleagues for their support and motivation throughout May Almighty God Bless you all.

ABSTRACT

Though the standard World Custom Organization clearance time is 3 days, the current clearance time in Kenya is 2 weeks or more which heightens the need for coordinated border management. Implementing coordinated border management strategies can reduce internal costs and inefficiencies, improve security, and increase their ability to facilitate trade and generate revenue at the border. However, despite the recognition of the importance of coordinated border management, the available studies are not conclusive on its effect on cargo clearance. The main objective of the study was to determine the effect of coordinated border management on cargo clearance in Kenya, a case of key border stations in Kenya. The specific objectives were to: establish the effect of coordinated flow of information between agencies, coordinated verification of goods and customs electronic procedures on cargo clearance at key border stations in Kenya. The study was anchored on three theories namely Theory of Constraints, Institutional Theory and System Theory. An explanatory research design was followed by the study targeting 445 employees and officials at four border stations in Kenya namely inland container depot in Nairobi and nonstop border posts at Namanga, Busia and Malaba. A sample size of 206 respondents was arrived at using Fischer formula. The study used primary data which was collected from the respondents using structured questionnaire and data analyzed using descriptive and inferential statistics. Statistical Package for Social Sciences computer software aided in the data analysis. Tables and graphs were used for presentation of findings. The study found out that Coordinated Flow of Information (r=0.118), Coordinated Verification of Goods (r=0.142) and Customs Electronic Procedures (r=0.287) have a positive effect on the cargo clearance at the border stations. The results of the regression analysis also showed that the CBM practices studied explain explain 53.1% of the variations in cargo clearance at the border stations (R^2=0.531). From the hypothesis testing, Coordinated Flow of Information had a p value of 0.006, Coordinated Verification of Goods had a p value of 0.026 while Customs Electronic Procedures had a p value of 0.032 which shows that all the variables had a significant effect on cargo clearance (p<0.05). The study thus concludes that these CBM practices can severely enhance, hamper or interfere with the cargo clearing process at the border stations. The study recommends process re-engineering at the border posts which will allow customs to streamline procedures, and as a result perform tactical and operational activities in a harmonized fashion. The study also recommends relevant policymakers and government agencies from partner states should work together to implement a more cost-effective CBM practices. The study further recommends that C&BC department of KRA should effectively integrate cargo clearance functions with ICT based systems through application of electronic cargo clearance methods.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

OPERATIONAL DEFINITION OF TERMS

Border Stations: A designated point on the border between two countries where people and their goods are checked, verified and allowed entry (Lamptey, 2013).

Cargo Clearance: Necessary procedure in permitting goods that are transported to a country through an authorized customs broker. Within this process, there's also information regarding shipments with imports and exports with parties involved in the process (Ndinda, 2008). In this study, cargo clearance efficiency was measured using clearance time, clearance cost, lodgment cost and backlog time.

Coordinated Border Management (CBM): A 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, 2014). In this study, CBM was operationalized using coordinated flow of information, coordinated verification of goods and cargo, and custom electronic procedures.

Customs: Body whose role is to collect applicable duties (taxes) as well as enforce trade related prohibitions and restrictions. Customs may perform their function as a dedicated Customs Agency, a Ministerial Department, or from within a Revenue Authority depending on the country (WCO 2015).

Tariff: Tax on goods coming into a country or going out of a country (Sawhney and Sumukadas, 2005).

ABBREVIATIONS AND ACRONYMS

C&BC: Customs and Border Control

CBM: Customs Border Management

SPSS: Statistical Package for Social Sciences

WCO: World Customs Organization

CHAPTER ONE

BACKGROUND

1.1 Background of the Study

The changing nature in the border environment thus requires a structured method for rationalizing how regulations are given effect and for synchronizing strategies between border agencies. This heightens the need for Coordinated Border Management (CBM) which refers to a 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, 2014).

At the government level, designing and implementing a CBM system can result in a more effective delivery of service at the border as contra-dictions and redundancies. While from a resource perspective, CBM can bring about savings through economies of scale occurring hence improving the cargo clearance process (WCO, 2011). Apart from political influence, global economic transformation has globally affected border environment. Particularly, dramatic increase in trade during the past two decades has served as a key strategy for economic growth, but at the same time has created economic globalization and increasingly complex international environment (WTO, 2011).

Additionally, international trade has led to integration of finance and businesses on one global market, while creating the need for innovative approaches of doing business. Currently, the main function of Customs is to collect applicable duties (taxes) as well as enforce trade related prohibitions and restrictions. Customs may perform their function as a dedicated Customs Agency, a Ministerial Department, or from within a Revenue Authority depending on the country (WCO 2015).

Compliance with customs and trade procedures thus demands a great deal of coordination between the various business entities involved in moving the goods. Globally, most countries customs declarations can be made electronically but may still require supporting paper documents such as the import licence, origin declaration and copies of the commercial invoice (ASYCUDA, 2016). In many countries customs declarants need to hold official licences, such as that of a customs broker. In other countries the use of licensed customs professionals is voluntary or not required.

European Union (EU) was one of the first developers who embraced the idea of CBM. Together with United Nations Development Program (UNDP) EU focused on developing CBM in South Caucasus (Georgia, Azerbaijan and Armenia), Central Asia and several European countries (Moldova and Ukraine). In Asia CBM is actively discussed among different stakeholders to reduce the transportation costs of goods (Lamptey, 2013). In Norway and Sweden, the customs officers of each country have authority for border control and inspections not only on behalf of their countries but also for neighbouring countries as well. Kazakhstan controls borders jointly with China, Kyrgyzstan and Russian Federation.

USA has recently also introduced smart Borders which serve as platforms for security and trade facilitation with the neighbouring countries (Polner, 2011). A study by Polner, (2011) further revealed that for customs, improved efficiency and effectiveness of the border management can be achieved through greater coordination of agencies represented at border. This coordination between border agencies, is one of the critical concepts for facilitation of trade on domestic and international levels. The processes of

CBD have had a significant impact on the border environment of the countries concerned (Jain, 2012).

Globalisation and international trade liberalisation initiatives have resulted in the rapid growth of the value and volume of goods moving across borders in East Africa. At the continental level, the African Union (AU) has passed a series of regulations since the late 1990s that seek to guide border management in Africa. At the same time, there has been recognition of the need to harmonise and consolidate these agreements to ensure the implementation of specific border management clauses (Lamptey, 2013). However, despite the awareness of East African states of the threats or benefits of effective border management, there has not been a common approach or rigorous effort at both the national and sub-regional levels to implement holistic border management strategies.

Border agents mandated to manage the country's borders lack the capacity to carry out their mandates effectively (Lamptey, 2013). Savage, Fransman and Jenkins (2013) point out the burdensome paperwork being the reason for holdups in customs. In their literature review, Sawhney and Sumukadas (2005) state that some of the factors that cause the delays, especially in customs of developing countries, might be the inadequate and inefficient regulations, the infrastructure that connects to railways and roads are usually not automated and communication as well as the use of technology is often rather inadequate.

Gull, (2017) show that an inadequate legal framework for relief import and defective information exchange are the two most constraining factors for efficient customs clearance. These bottlenecks combined bring about additional constraints and impacts that eventually raise costs, spoil goods, impairs normal trade or even fail the whole

assistance operation. Studies have shown that delays because of customs procedures was the biggest problem faced by the integrated air express industry in developing countries (ASEAN, 2000). This shows that there is need to harmonise and consolidate these agreements to ensure the implementation of specific border management clauses in East African Region.

In Kenya, CBM procedures include manifest submission and approval, goods declaration, pre-shipment declarations, clearance process which entails sometime verification of goods through scanning or physical verification. These procedures are often marred with issues such as delays, corruption and loss of goods. Customs procedures in Kenya still suffer numerous challenges which impede their efficiency such as slow gate out process, poor yard planning and poor working corporate culture (Ruto, & Datche, 2015).

A study by Wanyama, (2017) also showed that lack of smooth flow of documentation process was also found to be contributing factor to the delay in the clearance of goods, with the major issues found to be corruption, which means that it is a reality and it exists. Number of officers deployed at the verification section would not match the demand of the work as the research also showed that the volume of goods had increased and therefore, the laid down number of containers that every officer is supposed to verify, cannot reduce congestion at the port. Despite simplification of customs procedures, customs formalities are still lengthy leading to delays in the clearance of goods. This raises the urgency of an evaluation of the role of coordinated border management in reduction of cargo clearance.

1.2 Problem Statement

Cargo clearance efficiency focuses on enhancing coordination and collaboration among governmental agencies, and between governmental agencies and non-state actors. This aims to improve the capacities in integrated border management to facilitate the easy movement of people among partner states (Huiden, & Tan, 2017). However, clearance delays caused by congestion at the ports are often experienced in most borders which affects flow of cargo traffic and clearance times. CBM strategies at both the domestic and international levels, thus reduces internal costs and inefficiencies, improve security, and increase their ability to facilitate trade and generate revenue at the border.

Though many international organizations, such as the World Customs Organization (WCO) provide best practices that can be followed by countries when trading with others, most border post still struggle in implementing international effective custom clearance practices (Kahenu, 2014). In Kenya, the delays at border crossings and ports caused by lengthy, complex procedures and excessive paperwork have create a negative impact on trade and increased cost of doing business. Other challenges include conflicting legal mandates from various government agencies and use of semi-automated procedures. These challenges lead to in-efficient processes which cause delays in cargo clearance thus affecting port operations and overall cost of doing business in the countries (Kabui, & Mwaura, 2019).

Coordinated border management therefore aims at streamlining and harmonizing procedures hence optimization of resources (Cobarrubias, & Pickles, 2015). However, custom clearance in Kenya is still very slow leading to significant increased cost of business. Challenges also continue to be experienced in terms of long queues during

clearance of more than 5 Km, cumbersome paper works and high storage charges. Other challenges are abandonment of goods by agents due to poor pricing, lack of automation, low level mechanization, bureaucratic processes from governmental agencies and poor road network which causes congestion (Wanyama, 2017). As such in the past three years, numerous complaints have been received from importers and customs licensed clearing agents pertaining to the delays in the clearance of their containers with the consignments taking over fourteen days to be cleared.

Though the standard WCO clearance time is 3 days, the current clearance time in Kenya is 2 weeks or more which heightens the need for coordinated border management (Cheruiyot, & Rotich, 2018). In a successful CBM environment, individual countries not only increase their own efficiencies at the border but also reduce trade barriers to regional integration hence economic progress (Godenau, & López-Sala, 2016). In Kenya, implementing CBM strategies can therefore reduce internal costs and inefficiencies, improve security, and increase their ability to facilitate trade and generate revenue at the border. However, despite the recognition of the importance of coordinated border management, the available studies are not conclusive on its effect on cargo clearance (Kabui, & Mwaura, 2019; Sichilima, & Gikonyo, 2017). Understanding this is imperative as cargo clearance plays a big impact in economic development and if it lags it will impact negatively on the economy in Kenya. The study aimed at addressing these research gaps while answering the research question; what is effect of coordinated border management on cargo clearance in Kenya?

1.3 Research Objectives

1.3.1 General Objective

The main objective of the study was to determine the effect of coordination of border management practices on efficiency of cargo clearance in Kenya, a case of key border stations in Kenya.

1.3.2 Specific Objectives

The study was guided by the following specific objectives:

i. To establish the effect of coordinated flow of information between agencies on efficiency of cargo clearance in key border stations in Kenya.

ii. To examine the effect of coordinated verification of goods on efficiency of cargo clearance in key border stations in Kenya

iii. To evaluate the effect of customs electronic procedures on efficiency of cargo clearance in key border stations in Kenya

1.4 Research Hypotheses

The study aimed at testing the following research hypotheses:

H_{01}: Coordinated flow of information between agencies has no significant effect on efficiency of cargo clearance in key border stations in Kenya

H_{02}: Coordinated verification of goods has no significant effect on efficiency of cargo clearance in key border stations in Kenya

H_{03}: Customs electronic procedures have no significant effect on efficiency of cargo clearance in key border stations in Kenya

1.5 Significance of the Study

This study aimed at finding out the importance of coordinated border management on improving cargo clearance practices. The findings of the study will therefore be of much benefit to not only the shareholders in at the inland container depot but also the public, the government and academicians as well. The results and recommendations might thus be useful in reviewing the available border management practices and formulation of better and well-organized practices to enable them to suit the demanding cargo clearance environment.

The findings of the study could also be of much importance to the policy makers and regulatory bodies in the transport sector. The recommendations by this study might help the government of Kenya through the Ministry of Transport and Infrastructure formulate policies which will favour the adoption of measures of improving the effectiveness of cargo clearance at the inland container depots. The study is also significant because proper facilitation of trade can help in attracting Foreign Direct Investment (FDI) which can lead to integration of the country into the global economy.

Owing to the fact that this study seeks to bridge the literature gap that exists on coordinated border management and cargo clearance practices, it will form a valuable information source. Researchers and academicians will find this information useful as cargo clearance remains a huge challenge more so in developing countries. Thus, the study can form a source of reference and a point of further studies by researchers based on the limitations of the present study and areas of further research that will be recommended.

1.6 Scope of the Study

The focus of the study was on investigating coordinated border management and cargo clearance at key border stations in Kenya. The independent variables were coordinated flow of information between agencies, coordinated verification of goods and customs electronic procedures while the dependent variable will be cargo clearance in Kenya, case of inland container depot Nairobi. The population for this study comprised of employees and officials at four border stations in Kenya namely inland container depot in Nairobi and nonstop border posts at Namanga, Busia and Malaba. The study used primary data which was collected from the respondents using structured questionnaire and data analysed using descriptive and inferential statistics.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the relevant literature pertaining to the study topic. Particularly, the chapter begins with a review of the study concepts and theoretical frameworks underpinning the study discussing their propositions and implications to the study. This is followed by the empirical the studies conducted in the similar field both locally and internationally. The chapter concludes with the conceptual framework and an overview of the research gaps.

2.2 Cargo Clearance Concept

According to WCO, (2015) the main functions of custom administration include trade facilitation, and customs control. Particularly, custom control includes prevention of the infiltration of illicit drugs or other hazardous substances, intellectual property rights protection, and in particular, tariff collection. For developing countries, revenue raising appears still the main function of customs. Correspondingly, manifest acquittal prior to delivery remains the norm for their cargo clearance process. Consequently, their customs suffer from information overload, with its consequential delays. The main functions undertaken during the clearance process include documentation, verification, handling procedures and payments.

For uniformity, the world's Customs organization has set out rules, procedures and regulations which every clearing agent must familiarize with. The clearing procedures provide a ready-made framework for running the customs and can help an organization achieve its objectives by setting out certain etiquette (Akinyi, 2007). The customs and

excise department are therefore entrusted with the responsibility of documentation and clearance of all cargo in and out of the port. Thus, any slight delay in documentation or clearance of cargo at the port can cause serious congestion of containers which in the long run may cause the importer or agent colossal amounts of money in terms of demurrages.

Procedural delays in border controls impede road haulage and cause stagnation of goods in the warehouse, which, in turn, raise the transportation fees and the inventory charges (Ndinda, 2008). The introduction of CBM system into the customs clearance process will therefore bring about faster clearance of cargo, improve revenue control and will provide up-to-date accurate information on trade in goods (UNCTAD 2003). Several countries have reduced clearance time dramatically with automation of processing system. For example, as stated above, the Japanese customs reduced the customs clearance time significantly from 50.3 hours to 30.8 hours for air cargo and from 142.1 hours to 81.1 hours for sea cargo.

2.3 Coordinated Border Management Concept

Development of CBM concept started in mid-1990s, when governments realized demand for coordinated border activities of different agencies for trade facilitation. CBM is of interest to non-customs border agencies, policymakers, and international organisations. According to World Customs Organization (WCO) Coordinated Border Management is utilized in meaning harmonized activities at the borders. However, other organisations have devised their own terminology, including but not limited to Integrated Border Management (EU), Collaborative Border Management (the World Bank), and Comprehensive Border Management (Organisation for Security and

Cooperation in Europe) (WCO, 2010). The increased sensitization of CBM is due to the need for border agencies to coordinate their actions in attempts of improving effectiveness and efficiency of border procedures.

In practice, CBM has become a cornerstone for a set of donor-driven structural border reforms in numerous countries (Huiden, & Tan, 2017). This represents an approach to manage borders involving public service agencies working across portfolio boundaries in a coordinated manner to achieve a shared goal thus providing a cohesive government response to the challenges of border management. This presents a logical way to manage border operations to ensure efficient and effective processes. The CBM procedures are also used by all regulatory agencies who are involved in border security and regulatory requirements that apply to travellers, goods and conveyances crossing international borders.

Through coordinated border management system not only is trade facilitated but also the clearance of travellers while ensuring secure borders (WCO 2009). CBM is implemented on two dimensions. The first dimension is a domestic border management system which involves intra-service and inter-agency cooperation, or in other words coordination within and among agencies of one country. The second dimension is the international border management system which involves international co-operation between customs administrations of different countries (OSCE, 2012).

Numerous benefits have been established to be accrued from the utilization of CBM services. To begin with, CBM enables governments to eliminate conflicts of different policies while delivering them more efficiently (Aniszewski, 2009) This provides holistic approach for governments to see perspectives of border management involving

other stakeholders, like private sector, which can't be done alone by individual border agencies. Resource wise, CBM can deliver effective resource distribution by bringing together modern Information and Communications Technology (ICT) between border agencies. Additionally, to individual agencies, CBM develops information sharing systems which serve as platforms for modern risk management practices.

2.3.1 Coordinated Flow of Information

The main principles for coordinating the flow of information within a CBM system are based on the notion that better information from the trade, facilitated by clear standards and quick submission procedures, leads to better decision-making by cross-border regulatory authorities. Regulatory openness, simplified submission, information shairing, and information protection are all criteria that must be followed in order for this to happen (WCO, 2016). Requirements must be open so that the trading community understands who is supplying what information, when it must be supplied, and how it must be submitted. This ensures that the regulatory authorities have all of the information they necessary to process the cargo, reducing the likelihood of extra information being required owing to ambiguous requirements.

Waiting for further information to be provided before making clearance decisions causes inefficiencies and bottlenecks that should be avoided. Streamlined Information submission methods should be expedited, whether through paper forms or technological technologies. Duplications in information needs should be avoided to the greatest extent feasible (i.e., the identical information should only be supplied once), and only information necessary for guaranteeing regulatory integrity should be requested. Information does not have to be supplied all at once - the process can be simplified so

that information that is crucial for security and major regulatory needs can be examined first, while other less critical information may be submitted within a certain timeframe (WCO, 2012).

Information sharing means that, to the greatest extent possible, relevant information submitted by the trading community relating to shipments crossing the border should be shared between cross-border regulatory agencies concerned, allowing for risk management and collective decision-making to either control high-risk shipments or facilitate low-risk ones (WCO 2014). Furthermore, the confidentiality of information received and communicated to approved parties must be preserved to maintain trust between the trading community and cross-border regulatory bodies. To protect the interests of the trading community and provide a legal foundation for cross-border regulatory bodies' operations, information exchange between them must be guided by explicit standards and, if applicable, legal obligations.

2.3.2 Coordinated Verification of Goods and Cargo

The key principles for coordinated goods verification within a CBM system are based on the assumption that the smooth movement of low-risk cargo across borders is critical to regulatory agencies' key value proposition: value preservation and effective handling of high-risk cargo leads to greater value preservation by not impeding the movement of low-risk cargo. Cross-border regulatory authorities should work together to enforce high-risk cargo controls (Tosevska and Trpcevska, 2011).

The processes for performing the inspections should be obvious to the trader, and if a cargo requires several agencies to examine it, it should be done at the same time by all parties involved, or by a lead agency (e.g. Customs) permitted to conduct the check on

behalf of another agency. To guarantee successful results for everybody, the similarities and differences of the various forms of controls used by different CBRAs should be considered holistically, and where possible, the inspection of the commodities might be undertaken at designated interior areas rather than at the borders.

Physical infrastructures should be structured to allow the seamless flow of goods-transporting vehicles, and efforts should be made to detect any bottlenecks (i.e. through a Time Release Study). Cross-Border Regulatory Agencies and the commercial sector should continue to collaborate to eliminate bottlenecks. Cross-border regulatory bodies should have the appropriate equipment and facilities to carry out control and seek beneficial synergies by pooling such resources (WCO, 2014).

2.3.3 Custom Electronic Procedures

A significant aim is to make extensive use of information and communication technology, primarily to advance Customs operations ahead of cargo delivery, automate processes, and reduce human participation. Processes are automated to reduce intervention in 80% of transactions, controls are positioned where they will be most effective without obstructing business, remote facilities for lodging declarations are provided, paperless and cashless processes are introduced, certain operations are privatized, and finally agencies participating in the system are linked electronically.

Electronic filing allows registered customers to view their files from any computer with internet connection, making it more convenient. Importers/brokers had to travel to the ECC for loading or be EDI or DTI-enabled before this. Electronic filing now makes it easier and less expensive for all importers/brokers to file entries, regardless of size. Because small importers account for more than half of the 800,000 import entries filed

each year, the number of people who profit from electronic filing is significant (KIFWA, 2009).

According to Abrenica and Tecson (2003), e-lodgment enables agents to discover the conclusion of the selection process considerably sooner (for example, whether or not the cargo has been picked for physical inspection), allowing them to take steps to guarantee cargo is processed and released with fewer problems. Electronic filing enables customers to view their files from any computer with internet connection, making it more convenient. The sole condition is that you be CPRS-registered and have a Customs client number, which indicates that you are eligible to trade electronically with the Bureau of Customs. This is a reasonably simple criterion to meet.

The biggest challenge that Customs stakeholders have in adopting electronic lodgment is poor connection and frequent server failures, which are caused by insufficient infrastructure or systems. The government's lack of preparedness is thought to have impeded the implementation of IT-based policies. Adjustments to handle peak hour demand and 24/7 server availability would be the most impactful system upgrades. All ports should have infrastructure in place. In light of rapidly changing procedures, updated and unambiguous guidelines must be issued quickly (Harzing, 2018).

2.4 Theoretical Review

2.4.1 Theory of Constraints (TOC)

This theory was developed by Goldratt in the 1980s (Reid, 2007). It is an instinctive framework used in identifying the most important limiting factor that stands in the way of achieving a set objective and then systematically improving that constraint until it is no longer the limiting. Umble and Spoede (1991) argue that if any other factor other

than the weakest link is strengthened, the strength of the whole chain is not increased. Simatupang et al. (2004) suggest that there are different kinds of constraints namely physical or non-physical.

Physical constraints relate to physical limitations such as resources, capacity and material. Non-physical constraints relate to laws, regulations, procedures, measures etc. Secondly, a constraint can be located outside or inside the actual supply chain, hence external and internal constraints. External constraints relate to the market and other limitations outside the supply chain, whereas internal constraints are capacity and material limitations directly inside the supply chain. Improvements in the processes should focus on the weakest areas in the organization hence eliminating the constraints.

The relevance of the theory to the study is that it is a useful theory and tool when identifying and locating constraints. Specifically, the verification procedure comprises of the main constraint during the clearance process due to the long bureaucratic procedures involved that lead to delays limiting the speed and efficiency. The main constraints include the verification policies, or the procedures put in place as there is lack of clear goals to be followed often leads to conflicts among the different functions slowing improvement (Buddas, 2014). Based on this theory, CBM acts as a mechanism of addressing the challenges and bottlenecks during the verification procedures in the cargo clearance process hence theorised to have a positive impact.

2.4.2 Institutional Theory

This theory was introduced by Paul and Powell, (1991). According to this theory, organizations are viewed not to be autonomous agents that seek to maximize profit but survive within a social network of expectations and norms that shape and constrain

managerial choice. The theory helps to link an organization's actions and societal views. Management is conscious of social opinions and views and ready to integrate societal expectations and norms, regulations, requirements and rules in its day-to-day organizational operations. Therefore, the theory demonstrates the importance of focusing on internal business processes that conform to the societal norms and expectations for better organizational performance.

The theory also notes that existing regulatory environment determine cross-border trade which largely depends on the support accorded to it by the relevant law enforcement institutions (Napoli, 2014).

The regulatory pillar of institutions consists of rules and regulations either taken for granted or well supported by public opinion or law enforcement that are intended to encourage certain behaviours and discourage others (Ang & Michailova, 2008). The theory classifies the regulatory environments as either less restrictive or more restrictive. In effect, conforming to regulations, registration requirements and enforcement of cross-border arrangements carry an element of cost.

The proposition of this theory is that as much as institutional arrangements matter in controlling cross-border exchange especially in terms of enforcement, it is important to note that overall, all exchange transactions encounter costs. The theory sensitizes on the importance of facilitating seamless flow of information during the cargo clearance. Therefore, CBM through coordinated flow of information will act to ensure that the involved stakeholders are constantly updated with the required information hence minimizing delays or physical delivery of the required information or documents for the clearance processes.

2.4.3 System Theory

The systems theory was developed from the work of Ludwig von Bertalanffy (1956). According to this theory a system is a set of social, biological, technological or material partners co-operating on a common purpose. This theory treats an organization as a system that is made by putting together various subsystems. Organizations are treated as open systems that interact with the environment by the way of input, transformation and output.

An organization as an open system has three components, input or resources (such as equipment and employees), transformation also referred to as throughput (include processes that use the inputs to transform to the products or services required) and output (include; products and services).

The theory holds that it is important for an organization to continually scan its environment to enable it respond to any change (Buckle, & Thompson, 2020). The purpose of environmental scan is to understand the market dynamics such as competition, technological advancements and others. The application of system theory is very important in an organisation that is applying technology to change the way it operates. The theory mainly concentrates on control mechanism applied for the change and feedback received within the organization. It aims at control of negative feedback by creating an equilibrium and brings the needed stability when implementing the change. The theory enables the business to remain in-tandem with changing environment.

Based on this theory, for the CBM system to be efficient, each element in the system must work together since the weakness of one subsystem will hinder the efforts of the

other subsystems which in turn affect the entire process. This theory is relevant to this study in that it tends to identify the CBM as a system that contain other sub-systems that work together towards a set objective. According to this theory, if challenges affect one sub-system in the system, the entire system will be affected hence negative effect on the clearance process.

2.5 Empirical Literature Review

2.5.1 Coordinated flow of information and cargo clearance

Tosevska and Trpcevska, (2011), established that after implementation of Single Window system in Macedonia, stakeholders both from government and private sector were able to reap benefits which simple search mechanisms; straightforward procedures for obtaining a licenses; resource savings (time, costs and human resources); improved communication; and contact with and resolution of problems by CARM the responsible agency for its functioning (Kostovski 2011). The results of the research indicated that the Single Window System had helped to facilitate trade by speeding up the process of obtaining licenses, providing savings in terms of time, human resources and costs, and generally, in facilitating the activities of economic operators.

Bhero, and Hoffman, (2014) studied Optimizing Border-Post Cargo Clearance with Auto-ID Systems. the study found out that there is need to bring a system with a human activity monitoring functionality to the proposed system. Also, the system will be more complete if it can monitor movement of cargo throughout the transit period of cargo from source to destination. If the tracking data is shared or linked to customs' cargo risk engines, then it becomes easier to separate compliant from non-compliant cargo. This

would further enhance the usefulness of the system with the overall expected improvement in trade facilitation.

Hsu et al, (2015) looked at import cargo processing in an air cargo terminal. It then constructed a customs clearance-network based on cargo, information and human flows. The study concluded that flow network lead to the sub-division of the network into several operational units and a customs clearing team would work on separate units. The analysis, indicated performance of about 63%. However, the researchers indicated a decrease in percentage when the volume of cargo handled per given time increased beyond a certain limit. This decrease in performance is attributed to the limit in the number of work teams working on customs clearance.

Bhero et al. (2015) investigated the impact of a radio-frequency identification system and information interchange on clearance processes for cargo at border posts of South Africa. The researcher adopted a descriptive research methodology whereby the border post officials were interviewed. The findings were that the average transit time across all cargo types decreased from 17.40 hours to a minimum of 12.53 hours at 80% of pre-declared cargo and then increased slightly to 13.60 hours at 100% pre-declared cargo with the adoption of RFID in the cargo clearing system. This was attributed to the number of customs officials set to a fixed number and therefore as more and more cargo is pre-declared, the demand for customs processing capacity increases beyond what is available; hence the increase after reaching a minimum.

Lund and Manyka (2016) sought to determine the role of digital trade in strengthening the global trade and investment system for sustainable development in the developing countries. The researchers contend that both large and small companies, as well as

individual entrepreneurs and consumers, in both developed economies and the emerging world will be increasingly affected by the digital developments, which constitute both an opportunity and a competitive challenge. However, for governments and policymakers, the rapid transformation of digital trade raises important issues that will need to be addressed, including lingering barriers to its growth, appropriate ways of measuring it, and questions about governance and data security.

Mugambi, (2017) did a study on the effect of cargo tracking system on cross-border trade between Kenya and Uganda. The research adopted an exploratory research design and focused on the structure of an enquiry with an aim of drawing inferences from a causal relationship of the data. The findings were that the electronic cargo tracking system adopted by Kenya Revenue Authority has been able to reduce the level of diversion of cargo to the local market as well as reducing the time taken to clear the cargo at the border points and the collection of duties and fines has been made easier due to the implementation of the system.

Current cross-border clearance systems are characterized by a lack of transparency from the perspective of the consignor and consignee and by little coordination between the actions of different role-players (Nsiah, 2014). Systems should be put in place for information sharing processes to be done electronically hence reducing the physical movement from one office to the other in order to physically submit clearance documents. Coordinated flow of information thus facilitates the exchange of trade relevant information between traders and government agencies, and amongst government agencies, for obtaining permits and licences, certificates and necessary approvals. *Thus, the proposed hypothesis (H_{01}): Coordinated flow of information*

between agencies has no significant effect on cargo clearance at key border stations in Kenya.

2.5.2 Coordinated verification of goods and cargo clearance

Dias, (2015) accessed Integrated approach for import/export certificate processing for efficient cargo clearance. A questionnaire was circulated among a sample of 100 importers and exporters or their representatives in order to gather information on ground level practical problems faced by them. Existing laws and regulations as well as regulatory processes at several agencies were examined to identify the correct legal position and any existing automated solutions. It was found that in almost all the instances manual procedures are in use in the issuance of certificates (licenses/permits) and in subsequent debit/write-off steps introducing delays, duplications and poor control effects. It is recommended that Automated Certificate Processing System be put into use integrated with the existing Customs Automated System.

Asare, (2017) examined the automated clearing system at Tema port in Ghana and assess its impact on cargo clearing. The case study design based on the quantitative research approach was relied on for this research. It was found out that a well-established system of cargo clearing was put in place and widely advocated to all the stakeholders involved in the industry. However, it was also discovered that port automation has had a minimal impact on the duration of cargo clearing cargo because of the constant demands for hardcopies of documents already submitted online.

Kabui, and Mwaura, (2019) investigated the Effect of Single Window System on cargo clearance efficiency at the port of Mombasa. The study adopted a quantitative approach targeting a population of 155 respondents. Stratified sampling technique was used to

get a sample size of 112 respondents. Data was collected using a structured questionnaire with Likert scale measurement. The study found that Single Window concept has positive effect on Shipping procedures (p-value 0.952), Pre-clearance permits (p-value 0.861), Customs goods declaration procedures (pvalue 0.950) and hence improved cargo clearance efficiency at the port of Mombasa. Chang, et al., (2020) proposed a novel implementation of a cloud cargo image system via Quick Response (QR) codes to reduce the amount and cost of manual unpacking examinations for export containers. First, individual cargo pictures for different owners are taken before loading. After loading, cargo scenario photos are also taken right before sealing the doors. According to the customs inspection procedure, all containers selected for checks were X-rayed. If cargo X-ray images cannot be identified by customs, the container must be unpacked for examination. In this study, customs officers can access the cargo interior photos with a voucher via its QR code. By comparing X-ray images and cargo scenario photos, the officers verify whether the inspection cargo and declared goods are consistent. Thus, the amount and cost of manual unpacking examination can be substantially reduced.

Verification is a procedure of confirming the contents and data entered on the import. Any slight delay in verification of cargo at the border posts can cause serious congestion of containers which in the long run may cause the importer or agent colossal amounts of money in terms of demurrages. Verification personnel are assigned the duties to ensure that imported goods are examined according to the laid down procedures (Wanyama, 2017). *Thus, the proposed hypothesis (H_{02}): Coordinated verification of goods has no significant effect on cargo clearance at key border stations in Kenya.*

2.5.3 Customs electronic procedures and cargo clearance

According to Nasser et al., (2013), port efficiency has the potency of ensuring customer satisfaction, increasing the level of demand, hence profitability all things being equal. The researchers argued that optimization of loading and unloading operation is considered a very significant approach to curb the issue of delay in clearance; and thereby ensuring the transmission of goods from suppliers to consumers within a minimal time period. Most companies are very successful in their job because they are able to deliver goods duly to their customers with a lower cost.

Nsiah, (2014) conducted a study electronic cargo clearance procedures at the Port of Tema. The study was at the port of Tema which handles about 80% of Ghana's imports (GPHA, 2006). A mixed sampling techniques was used in sampling a total of 142 respondents for the study. Results from data analysis revealed that majority of shippers (92%) were in favour of electronic cargo clearance at the Port. Majority of freight forwarders (68%) engaged in cargo clearance of goods. In respect of the rationale for endorsing the electronic cargo clearance procedures, a high number of the shippers (32%) explained that it would reduce bureaucratic procedures associated with cargo clearance at the Port. Majority of the freight forwarder (34%) also explained that it would ensure efficiency of cargo clearance operations.

Ayodeji (2014) looked at the Impact of electronic tax systems on Tax Administration in Nigeria. He argued that the dwindling global fortune occasioned by the fall in the price of crude oil, the major source of wealth for Nigeria shifted the attention of the government and major stakeholders in the country to the revenue generated locally. But the daunting task of boosting the Internally Generated Revenue necessitates the

adoption of electronic tax systems technologies to drive Tax administration and concluded that electronic tax systems plays an important role in the increase of internally generated revenue in Nigeria by ensuring compliance thereby boosting productivity and economic activities in the country.

Kabiru (2016) sought to determine the effect of electronic cargo tracking system and operational performance at Kenya Revenue Authority and on transporters between Kenya and other East African Countries. Using qualitative data collected via the questionnaires, the findings was that the tracking system has been beneficial in improving the overall operational performance for both Kenya Revenue Authority and the transporters who have already implemented the system and are using it especially for the cargo that is outbound. Based on the findings most of the users appear to be neutral especially on critical matters such as the system infrastructure and its capabilities.

Amankwah-Sarfo, et al., (2018) studied how import clearance digitalization can impact socioeconomic development in developing country context. `Port digitalization has become important because it can be used by the governments in developing countries to support socioeconomic development. A growing body of research on port systems exists, however, this has focused more on implementation and use with less attention on socioeconomic impact. Given this gap, this paper employed qualitative interpretive case study as the methodology to investigate import clearance digitalization in Ghana. The findings show that import clearance digitalization can help improve efficiency in customs clearance, increase government revenue and reduce port-related corruption.

The manual system of cargo clearance is too cumbersome with high level of bureaucracy, which leads to long dwell time of cargoes at the border posts. There has thus been great concerns about the delay in clearance of goods and cargoes and most port authorities have made attempts to review their cargo clearance processes in favour of electronic process of cargo clearance. The urgency of an e-system of goods and cargo clearance is thus pertinent to help ease the problems and complexities associated with the manual, paper work clearing system of the customs procedure. However, infrastructure lags and other factors are militating the smooth running of the e-system of cargo clearance at the border posts in Kenya. *Thus, the proposed hypothesis (H$_{03}$): Customs electronic procedures have no significant effect on cargo clearance at key border stations in Kenya.*

2.6 Research Gaps

Studies conducted have established that the cargo clearance process is faced with impediments including cumbersome regulatory systems and decentralized documentation processes coupled with bureaucratic clearing procedures; and lack of communication between stakeholders (Nkoroi, 2015). Sometimes it is cost-effective and safe to move cargo through the longer route to avoid a border crossing. Also, there is a possibility of differences in treatment between customs in the same country (Cheruiyot, & Rotich, 2018). These challenges experienced have affected trade across borders with key stakeholders raising concerns due to frequent disruption of their business, because of delays in cargo clearance at various ports.

In Kenya, cargo clearance procedures are one of the major bottlenecks in product supply chains in Kenya. The delays at border crossings and ports caused by lengthy, complex

procedures and excessive paperwork have created a negative impact on trade and increased cost of doing business in the Kenya. Though the available theoretical framework supports the relevance of CBM practices in addressing the challenges faced in the clearance process, the studies conducted have not been fully conclusive on the impact on cargo clearance as shown by Table 2.1.

As such, most studies conducted have investigated the concepts separately without determination of the effect on cargo clearance with there being limited local evidence. The available literature is thus not sufficient enough, presenting a research gap this aimed at addressing. Understanding this is imperative to elevate the clearance process at the border posts which has been slow for the last two decades.

Table 2.1: Research Gaps

Author	Research Topic	Findings	Research Gap
Kabui, and Mwaura, (2019)	Effect of Single Window System on cargo clearance efficiency at the port of Mombasa.	The study found that Single Window concept has positive effect on cargo clearance efficiency at the port of Mombasa.	The study recommends more studies to be done on variables that affect cargo clearance efficiency at the port of Mombasa which were not covered under this study.
Amankwah-Sarfo, et al., (2018)	How import clearance digitalization can impact socioeconomic development in developing country context.	The findings show that import clearance digitalization can help improve efficiency in customs clearance, increase government revenue and reduce port-related corruption.	The study was not able to narrow down to the specific digital clearance procedures of importance.
Mugambi, (2017)	Effect of cargo tracking system on cross-border trade between Kenya and Uganda.	The findings were that the electronic cargo tracking system adopted by Kenya Revenue Authority has been able to reduce the level of diversion of cargo to the local market	The study was limited to the cross borders without investigating the inland borders.
Asare, (2017)	Automated clearing system at Tema port in Ghana and assess its impact on cargo clearing	It was found out that a well-established system of cargo clearing was put in place and widely advocated to all the stakeholders involved in the industry	It was discovered that automation has had a minimal impact on the duration of cargo clearing cargo because of the constant demands for hardcopies of documents already submitted online.
Kabiru (2016)	Effect of electronic cargo tracking system and operational performance at Kenya Revenue Authority and on transporters between Kenya and other East African Countries.	The findings were that the tracking system has been beneficial in improving the overall operational performance for both Kenya Revenue Authority	The study did not establish the nature of relationship between CBM and cargo clearance.

Lund and Manyka (2016)	Role of digital trade in strengthening the global trade and investment system for sustainable development in the developing countries.	The researchers contend that both large and small companies, as well as individual entrepreneurs and consumers, in both developed economies and the emerging world will be increasingly affected by the digital developments	The study did not narrow down to how the digital advancements may be employed in cargo clearance.
Bhero et al. (2015)	Impact of a radio-frequency identification system and information interchange on clearance processes for cargo at border posts of South Africa.	average transit time across all cargo types decreased from 17.40 hours to a minimum of 12.53 hours at 80% due to CBM	The study was done from an international setting hence cannot be equally compared locally.
Hsu et al, (2015)	Import cargo processing in an air cargo terminal.	The study concluded that flow network lead to the sub-division of the network into several operational units.	However, the researchers indicated a decrease in percentage when the volume of cargo handled per given time increased beyond a certain limit.
Bhero, and Hoffman, (2014)	Optimizing Border-Post Cargo Clearance with Auto-ID Systems	The study found out that there is need to bring a system with a human activity monitoring functionality to the proposed system	There is need to enhance the usefulness of the system with the overall expected improvement in trade facilitation.
Ondiek, 2013)	CBM implementation by KRA	The study revealed that the greatest challenges encountered by KRA were resistance to change, lack of requisite skills, lack of adequate policies, lack of resources, and lack of a supportive telecommunication infrastructure.	The study did not investigate the effect of the CBM on cargo clearance process.
Tosevska and Trpcevska, (2011)	Implementation of Single Window system in Macedonia	Single Window System had helped to facilitate trade by speeding up the process of obtaining licenses and providing savings in terms of time.	The study was done from an international setting hence cannot be equally compared locally.

Source: Author (2020)

2.7 Conceptual Framework

This framework provides a relationship between the research variables. In this study, the conceptual framework shows the coordinated border management practices as the independent variable, laws and regulation as the moderating variable and cargo clearance as the dependent variable as shown by Figure 2.1.

Independent variable   *Dependent variable*
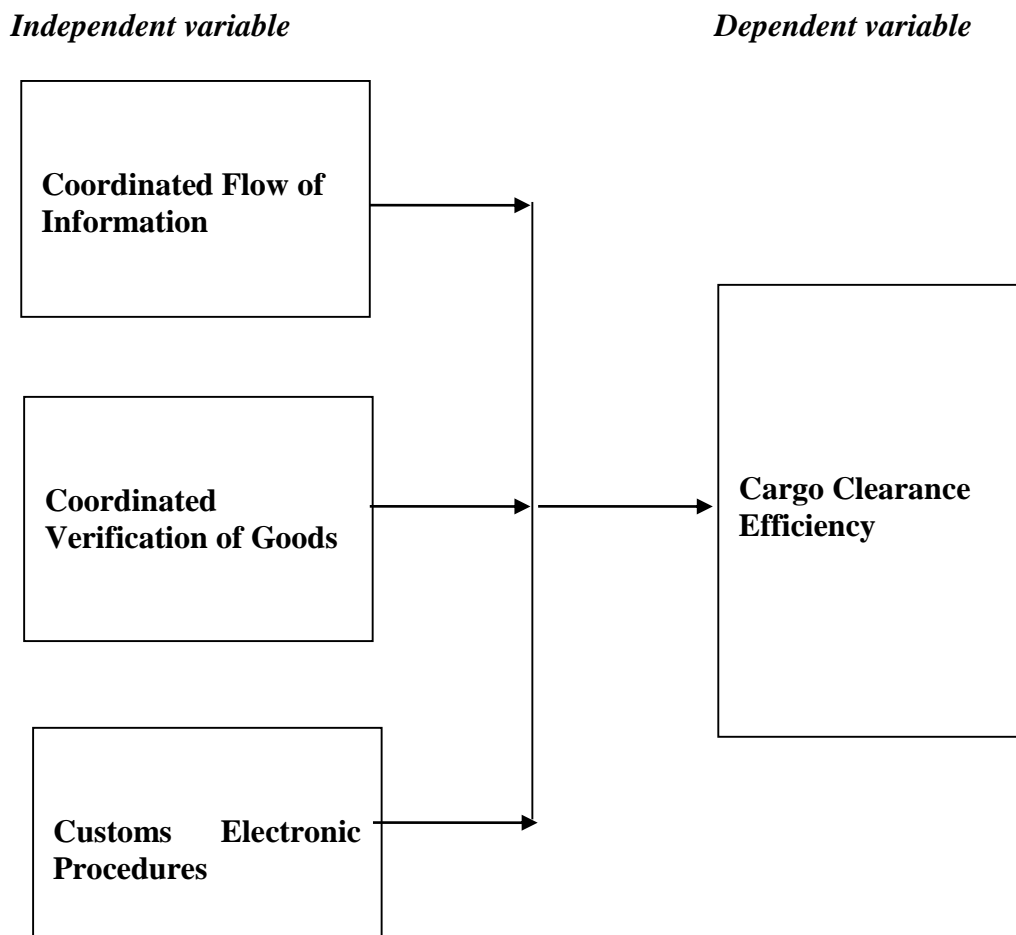
Figure 2.1: Conceptual Framework

Source: Author, 2021

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter encompasses the research methodology which was adopted in conducting the research. It is a systematic manner of approach of obtaining meaningful findings both theoretically and practically. The research methodology therefore formed a guide in collection, analysis and reporting of data. Particularly, the chapter consists of the research design, study population and sampling design, data collection methods and the data analysis techniques which was used.

3.2 Research Design

Research design entails the scheme in answering the research questions and control variance in data collection (Kothari, 2014). The research design should be comprehensive enough in covering all aspects of the study to facilitate accurate and valid conclusions to be made on the phenomenon being investigated. An explanatory research design was used by the study. This research design is utilized as it permits researchers to accumulate data, abridge, presents information and decipher it with the end goal of elucidation. It comprises elucidation of a population in relation to significant study variables with the core focus being describing the occurrence of the phenomenon under study Creswell & Creswell, 2017). The research design also acts to ensure systematic data collection and that the study's integrity is maintained.

3.3 Population

The study population comprises of all factors or individuals over which the study conclusions are to be generalized. The population for this study comprised of

employees and officials of border agencies involved in cargo clearance at four border stations in Kenya namely inland container depot in Nairobi and nonstop border posts at Namanga, Busia and Malaba. This constitutes a total of 445 respondents as shown by Table 3.1.

Table 3. 1 Study Population

Category	ICD	Namanga	Busia	Malaba	Total
Port Health	10	20	22	16	**68**
KRA Officials	15	10	10	12	**47**
Freight Forwarders	20	15	15	10	**60**
Clearing Agent	80	65	55	70	**270**
Grand Total	**125**	**110**	**102**	**108**	**445**

Source: KRA, (2021)

3.4 Sampling Design

3.4.1 Sample Size

The sample size for the study was obtained using the Fisher formula. This Sample Size Determination technique is termed to be the most appropriate for the study as it yields a representative sample for proportions (Chow, *et al*, 2017).

$$n = \frac{Z^2pq}{d^2}$$

Whereby n is the sample size desired, z entails the normal standard deviate based at the 95% confidence interval (1.6), whereas p entails the prevalence of those with knowledge of NP who have the desired characters in the study and d is the standard error at 95% confidence interval while p was assumed to be 50% since the prevalence is not known.

q is (1-p) which is 1-0.5=0.5

Therefore n= {(3.24) ² 0.05 0.5}/ 0.05²

n= 384

Due to the population being not more than 10,000 the alternative formula was employed;

$$nf = \frac{n}{1 + n/N}$$

Whereby *nf* is the sample size being desired (population not more than 10, 000); n is sample size desired (population exceeding 10,000) and N is the population estimate which is 250 nurses

Hence;

$$nf = \frac{384}{1 + 384/445}$$

This translated to 206 respondents.

3.4.2 Sampling Procedure

The different population categories formed the strata for the study. The weight of the stratum was identified by relating the number of respondents under the strata in relation to the entire population as shown by Table 3.2. Convenience sampling was used in selecting the freight forwarders and clearing agents whereby the researcher included the respondents that were most accessible. This sampling method was preferred for this population as it is incredibly prompt, uncomplicated, and economical. Simple random sampling technique on the other hand was used to select the port health and KRA officials. Simple random sampling guarantees each member has an equal chance of being selected to participate in the study.

Table 3. 2: Sample Size

Category	Population	Desired Sample
Port Health	68	32
KRA Officials	47	21
Freight Forwarders	60	28
Clearing Agent	270	125
Total	**445**	**206**

3.5 Data Collection

The data for this study was collected using primary means which was through self-administered questionnaires with the aid of 2 research assistants. The use of a questionnaire for data collection provided the advantages such as versatility, speed and cost effectiveness. The questionnaire were semi-structured into sections; the first section of the questionnaire collected the background information of the respondent; the second part collected data on the first objective of the study, the third part collected data on the second objective, the fourth part collected data on the third objective, the fifth part collected data on the fourth objective, whereas the sixth part collected data on the dependent variable. A Likert Scale was employed in rating the responses of the respondents.

3.6 Pilot Testing

To enhance reliability and validity, the data collection instruments were pre-tested on 10 respondents who were selected from the ICD in Nairobi. The population selected in the pilot study were not the respondents for the study. The piloted sample were encouraged to make comments and suggestions concerning instructions, clarity of questions and relevance. Finally, the pilot survey drew responses on the design and content of the instrument and suggestions for more efficient and practical way of

administering it. The pilot testing were re-run until the researcher was satisfied with the data collection instruments.

3.6.1 Validity of the Research Instruments

Validity is the extent to which differences found with a measuring tool reflect true differences among respondents being tested (David, 2019). In this study, data validity was ensured using content validity which is the extent of measurement to which the data obtained represent a phenomenon. To achieve this, a draft questionnaire was developed in close coordination with the study supervisors. Constructive criticism from the project supervisor who has had extensive experience and expertise in the questionnaire was encouraged as improvements were made according to the supervisor's advice and suggestions.

3.6.2 Reliability of the Research Instruments

Cronbach's alpha is a popular measure of reliability because of its objectivity and robustness (Tavekol & Dennick, 2011). Besides being considered as an objective measure reliability, Cronbach's alpha is considered to be a more robust internal consistency estimates compared to its counterpart Kunder-Richardson (K-R20). Its robustness arises from its flexibility to test items which are scores dichotomously and also when items are weighted. Cronbach's alpha coefficient was used to measure internal consistency. Cronbach's alpha reliability normally ranges between 0 and 1. The closer Cronbach's coefficient is to 1.0 the better the internal consistency of the items of the scale as shown in **Table 3.3.**

Table 3. 3: Reliability Test Results

Variable	Alpha Coefficient (α)
Coordinated Flow of Information	**0.788**
Coordinated Verification of Goods	**0.702**
Customs Electronic Procedures	**0.813**
Cargo Clearance	0.7498
Aggregate	**0.7632**

3.7 Data Analysis and Presentation

Before analysis, data was cleaned to eliminate discrepancies and thereafter, data was coded and keyed in to the computer. Coding entails in ascribing particular codes for every line or supplementary lines of text written down (Rubin & Rubin, 2011). In this study, the data categories and codes employed in analyzing the data were drawn from existing theories and sprung from a predetermined conceptual framework. Both descriptive and inferential analyses were conducted on the collected data. Descriptive statistics including arithmetic mean and standard deviation for each variable were calculated whereas inferential statistics included correlation and regression analysis. From the Likert scale items, weighted scores were obtained where weights are data driven and proportional to probabilities helps to find total score of a respondent and also total score of an item as expected values.

Correlation analysis was conducted to establish the association between the independent and dependent variables in the study whereby Pearson Product-Moment Correlation Coefficient was determined. Regression analysis on the other hand fostered determination on the nature of relationship between the research variables. Statistical Package for Social Sciences (SPSS) computer software aided in the data analysis. Tables, graphs, pie charts and scatter plots were used for presentation of findings.

3.7.1 Multiple Regression Analysis

A multiple regression model was used to test the significance of the effect of the independent variables on the dependent variable. The multiple regression model was as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where:

Y = Cargo clearance in Inland Container Depot Nairobi.

β_i = The coefficients representing the various independent variables.

β_0 = the Y intercept

X_1 = Coordinated Flow of Information

X_2 = Coordinated Verification of Goods

X_3 = Customs Electronic Procedures = the error term which is assumed to be normally distributed with mean zero and constant variance.

3.7.2 Diagnostic Tests

Diagnostic tests on the assumptions of regression analysis were done to ensure that quality of quantitative data assessment is valid. Diagnostic tests to be done include normality, linearity test and multi-collinearity. The ANOVA test of linearity was used to check for linearity of the relationships between the independent and the dependent variables data. Linearity assumption was conducted on the regression model so that incorrect conclusions about the relationship between dependent variable and predictor variables were avoided. Variance Inflation Factor (VIF) and tolerance degree were used to indicate presence of multicollinearity test. Multicollinearity was corrected by

removing highly correlated variables. Normality was tested using degree of skewness and kurtosis of the variables.

3.7.3 Hypothesis Testing

Table 3.4 shows how the hypotheses for the study was undertaken.

Table 3. 4 Hypothesis Testing

Hypothesis	Test	Criteria
H_{01}: Coordinated flow of information between agencies has no significant effect on cargo clearance at key border stations in Kenya.	Inferential Analysis	F-Tests, T-tests, P-values
H_{02}: Coordinated verification of goods has no significant effect on cargo clearance at key border stations in Kenya.	Inferential Analysis	F-Tests, T-tests, P-values
H_{03}: Customs electronic procedures have no significant effect on cargo clearance at key border stations in Kenya.	Inferential Analysis	F-Tests, T-tests, P-values

3.8 Measurement of Research Variables

Table 3.5 shows the measurement of the research variables.

Table 3. 5 Measurement of Variables

Variable	Type	Measurement	Scale	Analysis
Cargo Clearance	Dependent	• Clearance time • Clearance cost • Lodgment cost • Backlog time	Ordinal	Descriptive analysis Inferential analysis
Coordinated Flow of Information	Independent	• Communication Transparency • Coordinated submission of information • Information sharing rate • Cargo information security	Ordinal	Descriptive analysis Inferential analysis
Coordinated Verification of Goods	Independent	• Streamlined checkpoints • Congestion management • Human resource capability • Clearing infrastructure	Ordinal	Descriptive analysis Inferential analysis
Customs Electronic Procedures	Independent	• Information databases • Electronic processing of the cargo • Up to date operation systems • Cargo information monitoring information	Ordinal	Descriptive analysis Inferential analysis

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter represents the results of the data that was collected from the study, analyzed and interpreted. The overall objective of the study was to determine the effect of coordinated border management on cargo clearance in Kenya, a case of key border stations in Kenya. The chapter contains the study response rate, descriptive analysis and inferential analysis including correlation, regression analysis and chi-square t-test. The chapter finalizes with the testing of the research hypothesis.

4.2 Response Rate

The population of the study constituted employees and officials of border agencies involved in cargo clearance at the four main border stations in Kenya. As such, 210 questionnaires were issued out of which, 175 of them were dully filled and returned which translates to a response rate of 83% which was considered to be more than sufficient in addressing the research objectives (Mugenda & Mugenda, 2008). The response rate of the study is shown by Table 4.1.

Table 4.1: Response Rate

Response Rate	Frequency	Percentage
Responded	175	85%
Not Responded	31	15%
Total	**206**	**100%**

4.3 Descriptive Analysis

This section represents the descriptive statistics in relation to the study namely; gender, age, education, duration of work and category of the respondents.

4.3.1 Gender of Respondents

The study aimed at determining the gender of the respondents. As shown by Figure 4.1, 51% female while 49% were male which implies that there was gender neutrality in the responses obtained.
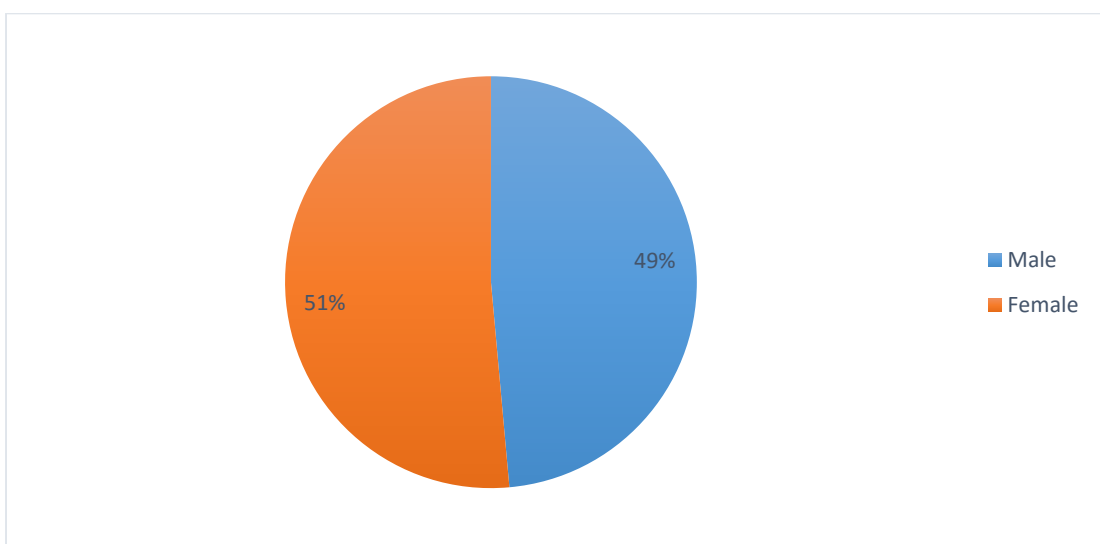
Figure 4. 1 Gender of Respondents

4.3.2 Age of Respondents

This section sought to find out the age of the respondents. The findings as shown by Table 4.2 indicate that 29% were between 26 to 35 years, 28% were between 18 to 25 years, 22% between 36 to 45 years, 10% between 46 to 55 years while 11% above 55 years. This shows that majority of the respondents were above 26 years (72%).

Table 4. 2 Age of Respondents

Age Bracket	Frequency	Percentage
18-25	49	28%
26-35	50	29%
36-45	39	22%
46-55	18	10%
Over 55	19	11%
Total	**175**	**100%**

4.3.3 Education of Respondents

This section sought to find out the education level of the respondents. The findings as shown by Table 4.3 indicate that 54% had diplomas, 17% had certificates, 11% had degrees, 13% had masters while 4% had doctorates. This implies that the respondents were well qualified for their respective positions.

Table 4. 3 Education of Respondents

Highest level of education	Frequency	Percentage
Certificate	30	17%
Diploma	95	54%
Degree	20	11%
Masters	23	13%
Doctorate	7	4%
Total	**175**	**100%**

4.3.4 Category of the Respondents

On the category of the respondents, 58% were clearing agents, 18% were Port health officers, 20% were freight forwarders while 4% were KRA officials as shown by Table 4.4.

Table 4. 4 Category of the Respondents

Category	Frequency	Percentage
Port Health	32	18%
KRA Officials	7	4%
Freight Forwarders	35	20%
Clearing Agent	101	58%
Total	**175**	**100%**

4.3.5 Duration Worked at the border station

The study also aimed at determination of the duration the respondents had at the border station. The results obtained as shown by Table 4.5 indicate that 21% had worked for less than a year, 33% for 1 to 5 years, 34% for 5 to 10 years and 12% more than 10 years. This is an indication that majority of the respondents (79%) had worked at the border stations for a considerable length of time of more than a year hence conversant with the coordinated border management practices at the border stations.

Table 4. 5 Duration Worked at the border station

Duration	Frequency	Percentage
Below 1 year	29	21%
1-5 years	46	33%
5-10 years	48	34%
Above 10 years	17	12%
Total	**140**	**100%**

4.4 Coordinated Border Management at Border Stations in Kenya

The main objective of the study was determination of the coordinated border management practices at border stations in Kenya. Specifically, three CBM practices

were investigated including coordinated flow of information, coordinated verification of goods and customs electronic procedures.

4.4.1 Coordinated Flow of Information

The study sought to determine the extent of adoption of coordinated flow of information practices at the border posts in Kenya. To achieve this, a 5 point Likert Scale was used where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent. Table 4.6 represents the findings obtained.

Table 4. 6 Coordinated Flow of Information

Statement	Mean	Std Dev
Regulatory transparency have reduced greatly the trade barriers and delays in clearance	4.12	0.996
Information pertaining to cargo details is highly protected	3.17	1.104
There has been information sharing of trade procedures due to the current reforms.	2.55	0.741
Harmonization in trade has been enhanced due to streamlined submission	3.63	1.116
The revenue obtained has been maximized as a result of coordinated flow of information	3.62	1.294
Having coordinated flow of information has improved custom administration system performance.	4.22	1.026

As per Table 4.6, the respondents indicated a very large extent on regulatory transparency have reduced greatly the trade barriers and delays in clearance and having coordinated flow of information has improved custom administration system performance with means of 4.12 and 4.22 respectively. The respondents also indicated

a large extent on the revenue obtained has been maximized as a result of coordinated flow of information and harmonization in trade has been enhanced due to streamlined submission having means of 3.62 and 3.63 respectively. However, a moderate extent was indicated on information pertaining to cargo details is highly protected and a small extent on there has been information sharing of trade procedures due to the current reforms with means of 3.17 and 2.55 respectively. This shows that though coordinated flow of information has been able to increase the transparency, security and revenue maximization, the same is yet to be reflected on harmonization of trade.

4.4.2 Coordinated Verification of Goods

The study sought to determine the extent of adoption of coordinated verification of good practices at the border posts in Kenya. To achieve this, a 5 point Likert Scale was used where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent. Table 4.7 represents the findings obtained.

Table 4. 7 Coordinated Verification of Goods

Statement	Mean	Std Dev
There is continuous improvement in cargo tracking seals.	3.51	0.702
There is constant monitoring of goods	3.47	0.780
There are streamlined checks and clearance	3.97	0.893
There is adequate and skilled manpower	2.83	1.282
There is proper congestions management	3.20	1.023
The infrastructure available is capable in undertaking bulk cargo clearances	3.82	1.272

On coordinated verification of good practices at the border posts in Kenya, a large extent was indicated on there are streamlined checks and clearance and the

infrastructure available is capable in undertaking bulk cargo clearances with means of 3.97 and 3.82 respectively. A moderate extent was noted on There is continuous improvement in cargo tracking seals, there is proper congestions management and there is constant monitoring of goods having means of 3.51, 3.20 and 3.47 respectively. However, on there is adequate and skilled manpower a small extent was stated with a mean of 2.83. This implies that most of the coordinated verification of good practices are yet to be fully embraced and implemented in facilitating cargo clearance.

4.4.3 Customs Electronic Procedures

This section also aimed to examine the extent of adoption of coordinated electronic procedures at the border posts in Kenya. To achieve this, a 5 point Likert Scale was used where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent. Table 4.8 represents the findings obtained.

Table 4. 8 Customs Electronic Procedures

Statement	Mean	Std Dev
There are up to date operation systems	3.69	1.139
Continuous upgrade of e-system	3.35	1.286
Data collection database use facilitates faster recording, storage and retrieval of information	3.63	1.275
Customs Electronic Procedures are user friendly	3.21	1.265
Reduced clearance time due to the technology advancement.	3.75	0.956
Customs Electronic Procedures improve cargo security	3.84	1.016
Monitoring and review procedures	3.55	1.225

As shown by Table 4.8, on cargo electronic procedures improve cargo security and Reduced clearance time due to the technology advancement a large extent was noted with a means of 3.84 and 3.75. A large extent was also noted on there are up to date

operation systems, data collection database use facilitates faster recording, storage and retrieval of information, and monitoring and review procedures with means of 3.69, 3.63, and 3.55 respectively. However, a moderate extent was observed on continuous upgrade of e-system and custom electronic procedures are user friendly having means of 3.35 and 3.21 respectively. Based on these responses, it shows that electronic custom procedures are gaining increased popularity due to the benefits in improving efficacy and speed of operations.

4.5 Cargo Clearance at border stations in Kenya

The study also sought to aimed at examining the level of cargo clearance at border stations in Kenya. To achieve this, a 5 point Likert Scale was used where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent. Table 4.9 represents the findings obtained.

Table 4.9 Cargo Clearance at border stations in Kenya

Statement	Mean	Std Dev
There is improved clearance efficiency	3.95	1.041
Clearance time has reduced substantially	3.71	1.169
There has been reduction of the clearance cost	3.14	1.166
Subsidized lodgement cost	2.82	1.073
Enhanced service delivery	3.07	0.913
Improved customer satisfaction	2.90	1.078

The results obtained as shown by Table 4.9 show that the cargo clearance was performing well to a large extent in terms of improved clearance efficiency having a mean of 3.95. A large extent was also noted on reduction in clearance time with a mean of 3.71. However, on reduction in clearance cost and enhanced service delivery, a moderate extent was indicated with means of 3.14 and 3.07 respectively. Further on

subsidized lodgment cost and improved customer satisfaction, a small extent was stated with a means of 2.82 and 2.90 respectively. This shows that despite significant strides being made after the introduction of CBM concept, there are still gaps in the cargo clearance with need to be addressed.

4.6 Diagnostic Tests

Diagnostic tests on the assumptions of regression analysis were done to ensure that the quality of quantitative assessment is valid. These included the normality test, multicollinearity test, correlation test and heteroscedasticity.

4.6.1 Test for Normality

The test for normality was undertaken so as to ensure that the study variables are normally distributed. This was through accessing the skewness and kurtosis of the variables whereby; Skewness is the extent to which a distribution of values deviates from symmetry around the mean and Kurtosis which is a measure of the "peakedness" or "flatness" of a distribution. The results obtained are shown by Table 4.10.

Table 4. 10 Test for Normality

	N	Skewness	Kurtosis
Cargo Clearance	175	-0.866	-0.198
Coordinated Flow of Information	175	0	-1
Customs Electronic Procedures	175	-0.222	-1.224
Coordinated Verification of Goods	175	0.041	-0.207
Valid N (listwise)	175		

The findings as shown by Table 4.10, Cargo Clearance had a Skewness of -0.866 and a Kurtosis of -0.198, Coordinated Flow of Information had a Skewness of 0 and a

Kurtosis of -1, Customs Electronic Procedures had a Skewness of -0.222 and a Kurtosis of -1.224, while Coordinated Verification of Goods had a Skewness of 0.041 and a Kurtosis of -0.207. Hence all the dependent and predictor variables were well distributed as their Skewness values were falling within +/-1 to +/-1 and their kurtosis values were around to 0, +2 or -2.

4.6.2 Test for Multicollinearity

To test for multicollinearity, degree of Tolerance and VIF were used. The findings obtained are presented in Table 4.11.

Table 4. 11 Test for Multicollinearity

Variable	Tolerance	VIF
Coordinated Flow of Information	0.939	1.065
Coordinated Verification of Goods	0.911	1.098
Customs Electronic Procedures	0.872	1.146

The results in Table 4.11 indicate that Coordinated Flow of Information had a tolerance of 0.939 and VIF of 1.065, Coordinated Verification of Goods had a tolerance of 0.911 and VIF of 1.098, while Customs Electronic Procedures had a tolerance of 0.872 and VIF of 1.146. This shows that all the research variables had tolerance of greater than 0.1 and VIF less than 10. The findings implied that there was no multicollinearity problem.

4.6.3 Test for Serial Correlation

The study tested for autocorrelation using Durbin-Watson with the findings obtained being presented in Table 4.12.

Table 4. 12 Test for Serial Correlation

Variables	Durbin-Watson
a. Predictors: (Constant), Customs Electronic Procedures, Coordinated Flow of Information, Coordinated Verification of Goods	
b. Dependent Variable: Cargo Clearance	1.473

The study obtained a Durbin-Watson of 1.473 which is within the critical $1.5<d<2.5$. This implies that there was no linear serial correlation in the multiple regression model.

4.6.4 Test for Heteroscedasticity

Heteroscedasticity occurs when the variance of the errors varies across the observations. If the error terms do not have constant variance, they are said to be heteroscedastic. This study used Breusch-Pagan/ Cook-Weisberg to test for heteroscedasticity. The null hypothesis is that the error variances are all equal while the alternative hypothesis is that the error variances are a multiplicative function of one or more variables. The findings obtained as presented by Table 4.13 indicate that the constant variance ($Chi^2 = 44.02$) is insignificant *(P = 0.225)*. Thus, the study failed to reject the null hypothesis and conclude that the error variance is equal thus heteroscedasticity is not a problem in the study data. Hence, the study accepted the null hypothesis that there is no difference in residual variance of independent to dependent variables tested.

Table 4. 13 Test for Heteroscedasticity

Mode l	H0	Variables	Chi^2 (4)	Prop>Chi^2
1	Constant variance	Customs Electronic Procedures, Coordinated Flow of Information, Coordinated Verification of Goods	44.02	0.225

4.7 Validity Test

To confirm whether the data was valid, factor analysis was done using the Kaiser-Meyer-Olkin (KMO) test and the Bartlett's sphericity test were performed. The results obtained as per Table 4.14 indicate that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.828 which was above 0.7 (Kaiser, 1974) threshold. This meant that the sample was adequate for factor analysis. The Chi-Square value for Bartlett's Test of Sphericity was 24.223 with degrees 8 of freedom and p-value less than 0.05 indicating suitability of data for structure detection (Bartlett, 1954). This confirms that the data collected was valid for further analysis.

Table 4. 14 KMO and Bartlett's Test

Statistic		Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.828
Bartlett's Test of Sphericity	Approx. Chi-Square	24.223
	df	8
	Sig.	.000

4.8 Inferential Analysis

4.8.1 Correlation Analysis

To establish the relationship that existed between the research variables, Karl Pearson's coefficient of correlation was employed by the study. This method entails the measure

of the strength of a linear association between two variables and is denoted by r. The

findings of the Correlation Analysis are presented in Table 4.15.

Table 4. 15 Correlation Analysis

		Coordinated Flow of Information	Coordinated Verification of Goods	Customs Electronic Procedures
Coordinated Flow of Information	Pearson Correlation	0.118		
	Sig. (2-tailed)	0.233		
Coordinated Verification of Goods	Pearson Correlation	0.142	1	
	Sig. (2-tailed)	0.058		
Customs Electronic Procedures	Pearson Correlation	$.287^{**}$	$.293^{**}$	1
	Sig. (2-tailed)	0	.000	
	N	175	175	175

From the Pearson Coefficient, all the research variables including Coordinated Flow of

Information (r=0.118), Coordinated Verification of Goods (r=0.142) and Customs

Electronic Procedures (r=0.287) have a positive effect on the cargo clearance at the

border stations. Therefore a unit change in these variables will result in an unit change

on the efficiency of cargo clearance. However only the effect of customs electronic

procedures was significant as the p-value was less than 0.05. This means that it was

able to predict the changes on the cargo clearance levels.

4.8.2 Regression Analysis

To determine the relationship that exists between the dependent and independent

variables, regression analysis was computed. The results of the regression analysis as

shown by Table 4.16 shows that the CBM practices studied explain 53.1% of the variations in cargo clearance at the border stations (R^2=0.531). This implies that only 46.9% of the variation in the cargo clearance is explained by factors other than those investigated by the study.

Table 4. 16 Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.677a	.531	.514	1.161

a. Predictors: (Constant), Customs Electronic Procedures, Coordinated Flow of Information, Coordinated Verification of Goods

The study further undertook ANOVA analysis to establish the validity and effectiveness of the model in explaining the relationship between procurement practices and county performance. The model in Table 4.16 was found to be valid at 99% level of significance as the p-value was less than 0.01 as per Table 4.17. This means that the independent variables are a good predictor of variations in cargo clearance.

Table 4. 17 Model Validity

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	7.414	3.000	2.471	1.835	.000b
Residual	230.300	171.000	1.347		
Total	237.714	174.000			

a. Predictors: (Constant), Customs Electronic Procedures, Coordinated Flow of Information, Coordinated Verification of Goods
b. Dependent Variable: Cargo Clearance

The value of the constant in Table 4.18 shows that the cargo clearance at the border stations in Kenya will always exist at a certain minimum (β_0 =3.329, $P < 0.05$). From the model coefficients, Coordinated Flow of Information (β_1 = 0.047), Coordinated

Verification of Goods ($\beta_2 = 0.211$) and Customs Electronic Procedures ($\beta_3 = 0.081$) were found to affect the cargo clearance at the border stations in Kenya positively. This implies that an increase in these CBM practices will result in improvement of the cargo clearance. In addition, all the variables had a p-values less than 5% ($P < 0.05$) meaning that, when these variables are significant in explaining the variations in cargo clearance at the border stations in Kenya.

Table 4. 18 Model Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.329	0.486		6.855	.000
Coordinated Flow of Information	.047	0.087	.041	.540	.006
Coordinated Verification of Goods	.211	0.094	.173	2.250	.026
Customs Electronic Procedures	.081	0.081	.076	.994	.032

a. Dependent Variable: Cargo Clearance

4.9 Test of Hypothesis

4.9.1 Test of Hypothesis One

H_{01}: Coordinated flow of information between agencies has no significant effect on cargo clearance at key border stations in Kenya.

This hypothesis intended to test whether coordinated flow of information positively translate to better cargo clearance at key border stations in Kenya. The hypothesis H01: $\beta_1 = 0$ versus H1: $\beta_1 \neq 0$ was tested. The regression results indicated a p value of 0.006, which was less than 0.05 at 5% level of significance. The hypothesis was rejected since the p value was less than 0.05. This study, therefore, concludes that coordinated flow

of information has a significant effect on cargo clearance at key border stations in Kenya..

4.9.2 Test of Hypothesis Two

H$_{O2}$: Coordinated verification of goods has no significant effect on cargo clearance at key border stations in Kenya.

This hypothesis intended to test whether coordinated verification of goods positively translate to better cargo clearance at key border stations in Kenya. The hypothesis H02: $\beta2 = 0$ versus H2: $\beta2 \neq 0$ was tested. The regression results indicated a p value of 0.026, which was less than 0.05 at 5% level of significance. The hypothesis was rejected since the p value was less than 0.05. This study, therefore, concludes that coordinated verification of goods has a significant effect on cargo clearance at key border stations in Kenya.

4.9.3 Test of Hypothesis Three

H$_{O3}$: Customs electronic procedures have no significant effect on cargo clearance at key border stations in Kenya.

This hypothesis intended to test whether customs electronic procedures positively translate to better cargo clearance at key border stations in Kenya. The regression results indicated a p value of 0.032, which was less than 0.05 at 5% level of significance. The hypothesis was rejected since the p value was less than 0.05. This leads to the rejection of the null hypothesis (H03) and acceptance of (H3). This study, therefore, concludes that customs electronic procedures has a significant effect on cargo clearance at key border stations in Kenya.

The summary of the study hypothesis that were tested is presented by Table 4.19.

Table 4. 19 Hypothesis Testing Results

Hypothesis	Criteria	Findings	Conclusion
H_{01}: Coordinated flow of information between agencies has no significant effect on cargo clearance at key border stations in Kenya.	P-values ($P<0.05$)	(P= 0.006, <0.05).	Reject the hypothesis
H_{02}: Coordinated verification of goods has no significant effect on cargo clearance at key border stations in Kenya.	P-values ($P<0.05$)	(P= 0.026, <0.05).	Reject the hypothesis
H_{03}: Customs electronic procedures have no significant effect on cargo clearance at key border stations in Kenya.	P-values ($P<0.05$)	(P=0.032, <0.05).	Reject the hypothesis

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, a summary of the key findings of the study is presented. This is followed by conclusions made thereafter and recommendations to both policy and practice.

5.2 Summary of the Key Findings

The purpose of the study was to determine the effect of coordinated border management on cargo clearance in Kenya, a case of key border stations in Kenya. The population for this study comprised of employees and officials at four border stations in Kenya namely inland container depot in Nairobi and nonstop border posts at Namanga, Busia and Malaba. The study used primary data which was collected from the respondents using structured questionnaire and data analyzed using descriptive and inferential statistics. Statistical Package for Social Sciences (SPSS) computer software aided in the data analysis. Tables, graphs, pie charts and scatter plots were used for presentation of findings. A summary of key findings and discussion is presented below as per the research objectives;

5.2.1 Coordinated flow of information and cargo clearance at key border stations in Kenya.

The study sought to determine the influence of coordinated flow of information on cargo clearance at key border stations in Kenya. From the correlation analysis, coordinated flow of information had a positive effect on the cargo clearance. Therefore a unit change in coordinated flow of information practices will result in an unit change in cargo clearance at the border stations. This implies that an increase in these practices

will result in significant improvement in cargo clearance. A similar positive effect was obtained by Bhero, and Hoffman, (2014) who studied Optimizing Border-Post Cargo Clearance with Auto-ID Systems and found out that there is need to bring a system which will improve information shairing. Hsu et al, (2015) looked at import cargo processing in an air cargo terminal also concluded that flow network lead to the subdivision of the network into several operational units and a customs clearing team would work on separate units.

5.2.2 Coordinated verification of goods and cargo clearance at key border stations in Kenya.

The study aimed at finding out the influence of coordinated verification of goods on cargo clearance at key border stations in Kenya. From the correlation analysis, coordinated verification of goods had a positive effect on the performance of cargo clearance. Therefore a unit change in coordinated verification of goods practices will result in an unit in clearance at key border stations in Kenya. This implies that an increase in these practices will result in significant improvement in cargo clearance. This finding compares to Kabui, and Mwaura, (2019) who investigated the Effect of Single Window System on cargo clearance efficiency at the port of Mombasa and also found a positive effect brought about by cordinated verification of goods on cargo clearance. The same sentiments were also held by Cheruiyot, and Rotich, (2018), Huiden and Tan (2017), and Gull, (2017) in their respective studies.

5.2.3 Customs electronic procedures and cargo clearance at key border stations in Kenya.

The study aimed at examining the influence of customs electronic procedures on cargo clearance at key border stations in Kenya. From the correlation analysis, customs electronic procedures had a positive effect on the performance of cargo clearance. Therefore a unit change in customs electronic procedures will result in an unit in clearance at key border stations in Kenya. This implies that an increase in these practices will result in significant improvement in cargo clearance. Similar findings were also obtained by Mugambi, (2017) who did a study on the effect of cargo tracking system on cross-border trade between Kenya and Uganda and found that the electronic cargo tracking system adopted by Kenya Revenue Authority has been able to reduce the level of diversion of cargo to the local market as well as reducing the time taken to clear the cargo at the border points and the collection of duties and fines has been made easier due to the implementation of the system. On the contrary, Asare, (2017) who examined the automated clearing system at Tema port in Ghana discovered that port automation has had a minimal impact on the duration of cargo clearing cargo because of the constant demands for hardcopies of documents already submitted online.

5.2.4 Relationship between CBM practices and cargo clearance at key border stations in Kenya.

The study was set out at determination of the relationship between CBM practices and cargo clearance at key border stations in Kenya. The results of the regression analysis statistics revealed that the CBM practices studied explain 53.1% of the variations in cargo clearance at the border stations (R^2=0.531). This implies that only 46.9% of the variation in the cargo clearance is explained by factors other than those investigated by

the study. The test of variance results also show that the model was valid in describing the relationship that existed between the variables *(P < .001)*. Theoretically according to System Theory, Theory of Constraints (TOC) and Institutional Theory, CBM acts as a mechanism of addressing the challenges and bottlenecks during the verification procedures in the cargo clearance process hence theorised to have a positive impact. The processes of CBD was also found to have a significant impact on the border environment of the countries concerned according to a study by Jain, (2012). A similar positive relationship was obtained by Cobarrubias, and Pickles, (2015) who found out that coordinated border management ensures streamlining and harmonizing procedures hence optimization of resources. Whereas Godenau, and López-Sala, (2016) concluded that in a successful CBM environment, individual countries not only increase their own efficiencies at the border but also reduce trade barriers to regional integration hence economic progress.

5.3 Conclusion

According to the study findings obtained under the analysis of the collected data, the researcher makes several conclusions with respect to the research objectives as the data was collected. The study three CBM practices investigated including coordinated flow of information, coordinated verification of goods and customs electronic procedures were found to positively affect cargo clearance at key border stations in Kenya. The study thus concludes that these CBM practices can severely enhance, hamper or interfere with the cargo clearing process at the border stations. The study also concludes for cargo clearance to be improved at the border stations, the relevant departments in KRA must be able to properly implement, monitor and evaluate these practices. Further

the CBM in general is concluded to have a significant role to play in as far as the cargo clearance at key border stations in Kenya is concerned.

5.4 Recommendations

The study recommends process re-engineering at the border posts which will allow customs to streamline procedures, and as a result of increased coordination, to thereby perform tactical and operational activities in a harmonized fashion. Particularly, the study suggests that the time, manpower and information should be tackled first through process re-engineering, as they are typically consequences of CBM process-design. This coordinated approach also encourages information sharing which paves the way for the best practice of shared-decision making.

The study recommends that KRA should pay attention to periodic stakeholder training on operational and prospective system automation processes. KRA should put more emphasis on self-declaration of goods and import data sharing which affects compliance. Cargo Tracking Systems and E-seals ought to be subsidized to allow greater inclusion of all stakeholders.

The study also recommends relevant policymakers and government agencies from partner states should work together to implement a more cost-effective CBM practices. The border stations in collaboration with the equivalent organization in the partner states should equip their employees with relevant skills to help them understand the modern CBM practices as a way of improving quality of human resources undertaking clearance processes at the border posts.

The study further recommends that C&BC department of KRA should effectively integrate cargo clearance functions with ICT based systems through application of electronic cargo clearance methods, use of automated systems; implementation of supportive ICT infrastructure for encouraging adoption of ICT based cargo clearance systems and training of customs staff on ICT skills. The regional government through relevant institutions should also improve their cooperation and integration to improve effectiveness of CBM practices.

5.5 Suggestions for Further Research

The study has provided a starting point for further research on the role of CBM on cargo clearance. However, there are certain areas which have emerged from the study that are still demanding and thus prompt the need for further research. To begin with, the study was limited only to key border posts which may not an actual representation of other stations that have in implemented CBM practices such as in-land and marine ports. The study recommends further research encompassing these other stations for generalization of the findings. Another limitation was that the study only investigated three CBM practices including coordinated flow of information, coordinated verification of goods and customs electronic procedures. In this regard, further research is suggested taking into consideration other CBM practices not covered by the study. A replication of this study should also carried out using a larger sample and a combination of more than one of data collecting instrument should be used such as interview and focus group discussions these will help to counter check the information provided.

REFERENCES

Abeywickrama, M. H., & Wickramaarachchi, W. A. D. N. (2015). Study on the Challenges of Implementing Single Window Concept to Facilitate Trade in Sri Lanka: A Freight Forwarder Perspective. *Journal of Economics, Business and Management*, *3*(9), 883-888.

Amankwah-Sarfo, F., Effah, J., & Boateng, R. (2018). *Import Clearance Digitalization and Socioeconomic Development: The Case of Ghana.*

Aniszewski, S. (2009). *Coordinated border management: A concept paper*. (WCO Research Paper No.2), 6-16.

Asare, Y. (2017). *Evaluating the Automated Clearing System at Ghana's Port it's Impact on Exports and Import.*

ASEAN. (2000). *"Delivering business into the 21st century: The integrated express industry in the ASEAN region." A research report by the US-Association of Southeast Asian Nations* (ASEAN) Business Council.

ASYCUDA. (2016). "About ASYCUDA." Retrieved from http://www.asycuda.org/aboutas.asp.

Bhero, E., & Hoffman, A. (2014). Optimizing border-post cargo clearance with auto-ID systems. *Journal of Machine to Machine Communications*, 1(1), 17-30.

Bhero, E., Hoffman, A., Lusanga, K. & De Coning, A.,(2015). Impact of a radio-frequency identification system and information interchange on clearance processes for cargo at border posts, *Journal of Transport and Supply Chain Management* 9(1),

Buckle, M., & Thompson, J. (2020). *The UK financial system: Theory and Practice*. Manchester University Press.

Buddas, H. (2014). A bottleneck analysis in the IFRC supply chain. *Journal of Humanitarian Logistics and Supply Chain Management,* 4,(2), 222- 244.

Chang, K. Y., Liu, C. P., Huang, M. L., Shen, J. H., & Ding, J. F. (2020). Implementation of Cargo Image System Via QR Code for Export Containers: Case Study of the Keelung Port. *Marine Technology Society Journal*, 54(1), 97-109.

Cheruiyot, S., & Rotich, G. (2018). Factors affecting the implementation of one stop border post strategy: A case study of the Malaba border. *International Academic Journal of Human Resource and Business Administration*, *3*(1), 303-324.

Cobarrubias, S., & Pickles, J. (2015). Riding routes and itinerant borders: Autonomy of migration and border externalization. *Antipode,* 47(4), 894-914.

Cooper, D. R. & Schinder, P. S. (2014). *Business research methods*. 10th Ed. New York: Mc Graw Hill.

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

Cukrov, M., Juretić, S., & Žgaljić, D. (2014). *Improving the Efficiency of Customs Procedures in the Mediterranean Sea Ports as a Function of Development of Port Transport Networks.* Book of, 231.

David, F. R., (2019). *Strategic management: A competitive advantage approach, concepts and cases.* Pearson.

Dias, P. A. (2015). *Integrated approach for import/export certificate processing for efficient cargo clearance (Doctoral dissertation).*

Godenau, D., & López-Sala, A. (2016). Multi-layered migration deterrence and technology in Spanish maritime border management. *Journal of Borderlands Studies,* 31(2), 151-169.

Gull, M. (2017). Customs Clearance in Disaster Relief: Managing Constraints.

Huiden, R., & Tan, Y. H. (2017). *Coordinated Border Management Through Digital Trade Infrastructures and Trans-National Government Cooperation: The FloraHolland Case.* In International Conference on Electronic Government (pp. 240-252). Springer, Cham.

Jain S. (2012). Coordinated border management: the experience of Asia and the Pacific region. World Customs Journal, 6(1), 63-67.

Kabiru, V.N (2016). *Electronic cargo tracking system and operational peformance at kenya revenue authority and on transporters,* Unpublished MBA Project, University of Nairobi

Kabui, B. N., & Mwaura, T. G. D. P. (2019). Effect of Single Window System Procedures on Cargo Clearance Efficiency in Kenya: A Case for Mombasa Port.

Kabui, B. N., & Mwaura, T. G. D. P. (2019). *Effect of Single Window System Procedures on Cargo Clearance Efficiency in Kenya:* A Case for Mombasa Port.

Kahenu, S. M. (2014). *Non-tariff barriers in eac customs union: implications for trade in manufactured goods in Kenya* (Doctoral dissertation, University of Nairobi).

Kariuki, D.O. (2009). *A study on systematic change management at Kenya Revenue Authority*. Unpublished MBA Project, University of Nairobi, Kenya

KenTex Cargo (2014). *How to clear at the Port of Mombasa*: https://kentexcargo.com/blog/how-   to-clear-acontainer-at-kra-port-in-mombasa-cost-procedure-explained/

Kothari, R. (2014). *Research Methodology; Methods & Techniques*. New Delhi: New Age International Publishers.

KRA (2017). Corporate History - Kenya Revenue Authority. Access from kra.go.ke/index.php/about-kra/kra-history

Lamptey, A. A. (2013). *Rethinking Border Management Strategies in West Africa: Experience from the Sahel.*

Li, L. (2010). *A critical review of technology acceptance literature.* Referred Research Paper, 4.

Lund. S & Manyika, J (2016). *How Digital Trade is Transforming Globalisation*,

Michailova, S., & Ang, S. H. (2008). Institutional explanations of cross-border alliance modes: The case of emerging economies firms. *Management International Review*, 48(5), 551-576.

Mugambi, N.,(2017). *Effect of Cargo Tracking System On Cross-Border Trade Between Kenya and Uganda.* Unpublished MBA Project, University of Nairobi.

Napoli, P. M. (2014). *Automated media: An institutional theory perspective on algorithmic media production and consumption*. Communication Theory, 24(3), 340-360.

Nasser, S., Hassan, J., Mohammad, K.K., & Miad, F. (2013). An analysis of the executives' strategies for decreasing the goods and containers dwell time in Iranian seaports. *Interdisciplinary Journal of Contemporary Research Business*, Vol. 4, No. 12.

Ng, A. Y., & Gujar, G. C. (2009). Government policies, efficiency and competitiveness: The case of dry ports in India. *Transport Policy,* 16(5), 232-239.

Nkoroi, I. (2015). *Assessing the informal cross border trade between Kenya and Uganda* (Doctoral dissertation, University of Nairobi).

Nsiah, L. (2014). *A Review of Electronic System and Process of Cargo Clearance: A Case Study of the Port of Tema* (Doctoral dissertation, University of Ghana).

Ondiek, J.A. (2013). *Responses by Kenya Revenue Authority (KRA) to the challenges in the implementation of the Customs' Reforms and Modernization (CRM).* MBA project, University of Nairobi, Kenya.

Organization for Security and Co-operation in Europe and United National Economic Commission for Europe (2012). Handbook of best practice at border crossings- a trade ad transport facilitation perspective, Luxembourg: ImPrimerie Centrale S.A., 31-230

Polner, M. (2011). Coordinated border management: from theory to practice. *World Customs Journal,* 5(2), 49-64.

Ruto, W. K., & Datche, E. (2015). Logistical factors influencing port performance a case of Kenya ports authority (KPA*). International Journal of Current Research and Review*, 7(12), 52.

Savage, C. J., Fransman, L., & Jenkins, A. K. (2013). Logistics in Namibia: issues and challenges: original research. *Journal of Transport and Supply Chain Management*, 7(1),1-8.

Sawhney, R., & Sumukadas, N. (2005). Coping with customs clearance uncertainties in global sourcing. *International Journal of Physical Distribution & Logistics Management*, Vol. 35, No. 4, pp. 278-295.

Schmitt, A. J., & Singh, M. (2012). A quantitative analysis of disruption risk in a multi-echelon supply chain. *International Journal of Production Economics*, Vol. 139, No. 1, pp. 22-32.

Sichilima, M., & Gikonyo, A. (2017). *Opening opportunities: Kenya's electronic single window connects East Africa to global value chains* (No. 113166, pp. 1-5). The World Bank.

Simatupang, T. M., Wright, A. C., & Sridharan, R. (2004). Applying the theory of constraints to supply chain collaboration. *Supply chain Management: an international journal*, 9(1), 57-70.

Wanyama, T. (2017). Causes of delay in clearance of goods at the port of Mombasa. *International Journal of Supply Chain and Logistics,* 1(1), 22-43

Weyer, J. (1994). *Wortreich Drumherumgeredet: System Theorie Ohne Wirklichkeitskontakt*

World Customs Organization (WCO) 2010, List of countries who have expressed their intention to implement the WCO Framework of Standards, www.wcoomd.org/files/1.%20Public%20files/ PDFandDocuments/Enforcement/FOS_bil_03.pdf.

World Customs Organization (WCO), (2009). *Background paper to facilitate the discussion on coordinated border management, WCO Inter-Agency Forum on Coordinated Border Management, WCO, Brussels*.

WTO (2015). World Trade Report 2015; Speeding up trade: benefits and challenges of implementing the WTO Trade Facilitation Agreement. Geneva, World Trade Organization.

APPENDICES

Appendix I: Research Questionnaire

The purpose of this study is to determine the *"Effect of coordinated border management on cargo clearance in Kenya, a case of key border stations in Kenya"*. Your voluntary and honest participation in completing the provided questionnaire will highly be appreciated. All the information provided will be treated with outmost confidentiality and only used for academic purpose. Please provide information as accurate as possible.

Kindly respond to all questions as accurately as possible in the spaces provided.

SECTION A: BACKGROUND INFORMATION (please tick where appropriate)

1. Please indicate your gender

    Male   (   )

    Female   (   )

2. Kindly indicate your category

    Port Health   (   )

    KRA Officials   (   )

    Freight Forwarders (   )

    Clearing Agent   (   )

    Others   (   ) Specify…………………………………………

3. Please indicate your age

    18 – 25 years   (   )

    26 – 35 years   (   )

    36 – 45 years   (   )

    45 – 55 years   (   )

    Above 55 years   (   )

4. What level of education have you completed?

Certificate   (   )

Degree   (   )

Diploma   (   )

Masters   (   )

Doctorate   (   )

5. Please indicate length of time you have worked at the border station

Below 1 year   (   )

1 – 5 years   (   )

5 – 10 years   (   )

Above 10 years   (   )

SECTION B: EFFECT OF COORDINATED BORDER MANAGEMENT ON CARGO CLEARANCE

6. **Coordinated Flow of Information**

Please rate the extent to which the following on coordinated flow of information have influenced cargo clearance using a scale of 1 to 5 where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent.

Statement	1	2	3	4	5
Regulatory transparency have reduced greatly the trade barriers and delays in clearance					
Information pertaining to cargo details is highly protected					

Statement	1	2	3	4	5
There has been information sharing of trade procedures due to the current reforms.					
Harmonization in trade has been enhanced due to streamlined submission					
The revenue obtained has been maximized as a result of coordinated flow of information					
Having coordinated flow of information has improved custom administration system performance.					

7. Coordinated Verification of Goods

Please rate the extent to which the following on coordinated verification of goods influence cargo clearance using a scale of 1 to 5 where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent.

Statement	1	2	3	4	5
There is continuous improvement in cargo tracking seals.					
There is constant monitoring of goods					
There are streamlined checks and clearance					
There is adequate and skilled manpower					

Statement	1	2	3	4	5
There is proper congestions management					
The infrastructure available is capable in undertaking bulk cargo clearances					

8. Customs Electronic Procedures

Please rate the extent to which the following influence cargo clearance using a scale of 1 to 5 where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent.

Statement	1	2	3	4	5
There are up to date operation systems					
Continuous upgrade of e-system					
Data collection database use facilitates faster recording, storage and retrieval of information					
Customs Electronic Procedures are user friendly					
Reduced clearance time due to the technology advancement.					
Customs Electronic Procedures improve cargo security					

Statement	1	2	3	4	5
Monitoring and review procedures					

SECTION C: CARGO CLEARANCE AT INLAND CONTAINER DEPOT

9. Please rate of following statements on cargo clearance using a scale of 1 to 5 where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent.

Statement	1	2	3	4	5
There is improved clearance efficiency					
Clearance time has reduced substantially					
There has been reduction of the clearance cost					
Subsidized lodgement cost					
Enhanced service delivery					
Improved customer satisfaction					

10. According to you what is the extent of influence of coordinated border management on cargo clearance in Kenya?

Very Small Extent (   )   Small Extent   (   ) Moderate Extent   (   )

Large Extent (   ) Very Large Extent (   )

11. Are there any other factors affecting cargo clearance in Kenya?

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

END

Thank you for your time

Appendix II: NACOSTI research License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 714550

Date of Issue: 02/December/2021

RESEARCH LICENSE

This is to Certify that Miss.. Edith Mutindi Ng'ang'a of. Kenya School of Revenue Administration, has been licensed to conduct research in Busia, Nairobi, Narok on the topic: EFFECT OF COORDINATION OF BORDER MANAGEMENT AND CUSTOMS PROCEDURES ON EFFICIENCY OF CARGO CLEARANCE IN KENYA, A CASE OF KEY BORDER STATIONS IN KENYA for the period ending : 02/December/2022.

License No: NACOSTI/P/21/14739

714550
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.