Effects of Automated Customs Systems on Trade Facilitation in Kenya

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DECLARATION

This research project is my original work and has not been presented for a post graduate diploma in any other academic or non-institution.

Signature ..... Date .....

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This research is submitted for examination with my approval as the University Supervisor.

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DEDICATION

This research work is dedicated to my siblings, classmates and Kesra fraternity.

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ABSTRACT

The study aimed at determining the effects of automated customs systems on trade facilitation in Kenya. The specific objectives were to examine the effects of Integrated Customs Management System, determining the effects of single window systems and establishing the effects of electronic cargo tracking system on trade facilitation in Kenyan. The study was anchored on three relevant theories: The study will be based on four theories which include: Technology change, constraints and operational measures, Mobility intergenerational, theory of planned behavior. The study adopted a descriptive research design and targeted 683 Clearing and forwarding agents and customs officers in Nairobi. The clearing and forwarding firms were registered with the KIFWA. A questionnaire containing both structured and semi-structured questions was used to collect primary data. A pilot study was carried out on 10customs officers and 11 clearing and forwarding firms that did not form part of target population to test the reliability and validity of the research instrument. The study used Cronbach's alpha (α) coefficient to test reliability, while face and content validity were used for checking for validity of the research instrument. The primary data collected was analyzed with the use of SSPS version 28. Data analysis was conducted using descriptive statistics and inferential statistics by use of moderated multiple regression analysis. The questionnaire was conceived using the type of Likert scale. For a sample target of 205 participants, a stratified sampling method was used and out of 205 questionnaires issued, 165 (80.49%) were dully field. Data were coded and entered into SPSS from which correlation analysis was used to evaluate the collected information. Both quantitative analysis and regression analysis were used as a data analysis technique. The information gathered have been executed through different models to obviously highlight the factors that determine the impacts of customs schemes on trade facilitation. The investigator also used a multivariate regression analysis to determine the relationship between the independent variables and the variable dependent. The study revealed that Integrated Customs Management System, Single Window system and Electronic Cargo Tracking System had significant influence on trade facilitation in Kenya. The results indicated that Integrated Customs Management System has reduced the clearance time of the cargos hence reducing the cost of doing business in Kenya. The study concluded that Integrated Customs Management System, Single Window system and Electronic Cargo Tracking System influence facilitation of trade in Kenya. The Integrated Customs Management System had more impact on trade facilitation then followed by Electronic Cargo Tracking System. The study recommends that Customs administration should adopt the automation of customs systems to enhance their productivity and profitability. The study established that the adoption of various systems on customs departments had a major effect on traders and clearing and forwarding companies because custom systems reduce the average lodging time and clearance time of goods. From these findings, there was quick movement of products as a result of the implementation of various customs systems. Thus, the implementation of various customs systems has a major impact on facilitating trade in Kenya.

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LIST OF ABBREVIATIONS AND ACRONYMS

EAC	East African Community
GATT	General Agreement on Trade and Tariff
RECTS	Regional Electronic Cargo Tracking System
RFID	Frequency identification
SME	Small Medium Enterprise
SWS	Single Window System
WCO	World Customs Organization
WTO	World Trade Organization

DEFINITION OF OPERATIONAL TERMS

Customs: This is an agency in a country responsible for collecting tariffs and for controlling the flow of goods, including animals, transports, personal effects, and hazardous items, people, into and out of a country (Mukherjee, *et al.* 2016)**.**

Automated Customs- This refers to an integrated management system for international trade operations in an up-to-date **c**omputerized environment (Mukherjee, *et al.* 2016)**.**

Regional Electronic Cargo Tracking System: This system uses tracking Devices to monitor the movement of goods on transit routes (KRA, 2016).

Scanners: These are Integrated devices for examining, reading, or monitoring images through X-Ray for photographic prints, computer editing. Additionally, they display/relay information retrieved from the system (TechTarget, 2010).

Simba 2005 System: This is an online application used by Customs and Border Control Officers and Clearing Agents to Process, clear import/export Goods, confirm or process payments, and Lodge Entries within their system (Provencal, 2017).

Trade Facilitation: It relates to the simplification, harmonization and automation of international trade processes, in particular import and export processes, customs and other agencies ' transit regulations and processes (Moïsé & Sorescu, 2019).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The Kenyan customs department is the official unit of government that has the ultimate authority to administer the laws and regulations that guide the importation, exportation, movement of goods, duty collection, and trade statistics across the borders of the country. This institution's authority is mandated by the laws made by partner states. It can be noted that the role of customs in Kenya has faced numerous challenges. However, the regional efforts between the countries of the East African Community, and other regional blocs, for example, COMESA, IGAD, EU, SADC among others, have in some way helped in reducing these barriers. These regional blocs through integration came up with guidelines on how trade facilitation is made easier amongst the states. For instance, in the East African community customs management, the flow of goods and services is made easier while preventing the movement of contraband across borders (EAC, 2004).

According to (Staff, 2018), The call for customs administration modernization to achieve agility, precision, effectiveness, transparency trade through multiple customs schemes which are being implemented in its administration. The introduction of the automated system in trade facilitation has helped in changing the customs department through faster goods processing, and improving the alignment with operations of the international best practices, and ensuring the ease of business transactions across the borders.

Indeed, there are many administrative challenges in trade. These limitations can be burdensome since customs processes and regulations have failed to tie with increasing trade dynamics globally. Africa has trailed behind for a long time. Under World Trade Organization round negotiations, Trade facilitation has significantly become a priority towards increasing regional and global interactions in economic ties (Organization, 2018). In today's WTO round

negotiations, Trade facilitation has become an essential drive and has been regularly been quoted in supply chain security (Wilkinson, Hannah, & Scott, 2006). Automation in service delivery is a recommended solution in global trade; it highly increases efficiency. With constant technological advancements in all sectors including the transportation of goods across national and international borders, the administrative challenges that accompany customs management become reduced.

Furthermore, as earlier stated, the dynamics that are globally accepted by international trade unions and regional blocs are meant to regulate how traders of national borders and governmental institutions operate (Bhattachrya and Hossain, 2006). Consequently, the automated customs system seeks to ensure that there is a smooth flow of trading activities. Through globalization, regional and world trade has been improved. This is mainly due to technological advancements. The automation of customs is made possible through the application of information and communication technologies. It can be argued that Kenya's introduction of automated customs management has been essential to the country's economic growth.

1.1.1 Global Perspective of Automated Customs Systems

Globally, many countries are undertaking different reforms so as to modernize their customs operations. The nations are working towards getting well organized and competent customs services that without fail balances its multiple responsibilities so as to achieve maximum compliance with the defined regulatory requirements and the purposed customs revenue objectives not forgetting at the same time enabling legal drive for both exports and imports, including people and animals across the border points (Ranker,2003). However, conditions differ among different countries because each custom administration is called for to tailor its reforms and modernization efforts according to its implementation capabilities, national objectives and availability of resources. There are some core principles which are required for

countries globally to achieve the reforms and modernization objectives. They may include: use of information and communications technology, reliable and intelligence risk management programs, ensuring partnership with the private sector and increased working together with other border control agencies.

Customs schemes based on trade facilitation have become common and have been applied to the ever-increasing amount of trade sector operations (WCO, 2018). Trade facilitation has been acknowledged as one of the key drivers of export competitiveness aimed to smoothen the efficient flow of trade. Trade facilitation represents a deepening of the high trade policy agenda, from the legislation and regulation to real operational practice and execution, including multilateral obligations administration. Trade across international borders enables individual traders, companies, or countries to expand their markets that would otherwise not have been possible (Sedgwick, 2013). Customs reform attempts have been led by the development of supply chain globalization, e-commerce (Liliana Avelar-Sosa, 2019).

According to World Trade Organization (WTO), notified Free Trade agreements (FTAs), General Agreement on Trade and Tariffs (GATT), and Customs Unions in force at the beginning of 2017, countries which involved in these agreements aim to harmonize trade procedures and customs regulations (Freund, 2016). In particular, unions were formed between countries which shared the borders and such agreements require coordination of border management policies and systems by member countries. Therefore, customs union members formed a common external tariff for trade with the third party, and trade between member states in the customs union was duty-free.

Delays in time are sensitive to products which may lead to more striking consequences, a decline of up to 6% in trade. According to (Jones et al, 2015), it is estimated that when a product delay for one day to reach its destination for a single nation is equal to a 1 percent reduction in

total trade of the nation or is equivalent to a travel range of 70km also. Large companies are capable of absorbing the costs of delays in time which are more likely to trade in. these expenses may result in preventing small companies from participating in cross-border operations. Many nations have worked to eliminate various customs inefficient processes by using different technologies to enhance border processes.

1.1.2 Regional Perspective of Automated Customs Systems

African countries have managed to rise to the challenge the improved economic growth and better its living standards for her people, reforms and modernization especially geared towards improved resource mobilization are of extreme importance. Therefore, a number of African countries that work together with international bodies such as the World Bank, World Customs Organizations (WCO), United Nations Conference on Trade and Development (UNCTAD), and World Trade Organization (WCO) have currently employed initiatives leading to increased volumes of trade and thus increasing revenue collection. Customs reforms and initiatives in Africa have been greatly relied on as a strategy of improving the revenue collection.

The revenue administration structures for most of the developing countries have failed to meet the set revenue objectives and have also not been as productive as desired. This has called for the need to reform the revenue structures for most of the developing countries. This has been done with the aim of achieving economic efficiency, revenue adequacy, simplification of customs procedures and equity and fairness among the traders. Some policy advice has been directed towards such countries in the process of redesigning their tax policies through various reforms (Blinder, 2008). This has led to introduction of new customs reforms, more efficient administrative tools to block the loopholes that led to tax evasion as well as the call to widen tax bases and cut on exemptions. For instance, in South Africa, through the reform and modernization strategies has recorded a significant benefit in clearing time of the cargo by the customs administration. Also, there has been an increasing transparency within the customs

administration staff and also with other trading countries (Wondemagegne, 2014). Locally, countries have faced a number of challenges that called for enhancement of professionalism in revenue administration.

A decrease in trade-related transactions and transportation in an important domestic agenda item and policy goals could be pursued by national customs administration and other government departments engaged in the cross border management (Revised Kyoto convention, 2018). Under the WCO, Revised Kyoto Convention was created in 1974 and amended in 1999 to reflect the changes in trade and development of information technology. The Kyoto Convention contains principles that provide a roadmap for its countries. The Convention encourages simplification, harmonization, transparency, and standardization of customs procedures (Revised Kyoto Convention, 2018)

1.1.3 Local Perspective of the Automated Customs Systems

Kenya like many other countries, automation of customs procedures has been a priority by different agencies who are involved in international trade. According to (Kafeero, 2007), the mode of customs operations greatly affects international trade either positively or negatively. Kenya being the founding member of WTO hence an essential part of its financial policies and it's committed to WTO values. This gives remedy to all its trading partners to Most Favored Nation (Draper, 2017). Kenya being one of the members of the EAC, OAU, COMESA, IGAD, and EU, pursues preferential trade agreements to increase commercial flows. Currently, the Kenyan customs administration is being transformed to adopt core items to keep in line with the trends in international trade, economic realities, and society expectations. Based on the 2002 development plan, describes a trade policy that is being implemented to reduce tariffs and eventually eliminating them. The country relies on these tariffs because it’s an important component of its trade policy, especially with the important development of various treaties (EA, 2018).

Kenya being one of the members of World Customs Organization (WCO) and is also engaged in many negotiations of customs agreements that apply globally which include; Harmonized System Convention, which formed the basis for the products tariff classification of traded on the market worldwide. According to (EA, 2018), World customs organization membership created the best worldwide practices as a result of benchmarking, training customs officer and networking with other organizations and international trade participants including, International Chamber of Commerce, UNCTAD and WTO among others.

Kenya has embarked on modernization projects and Customs Services Department (CRM) reform where the objective of this project is to help in transforming custom departments into modern customs administration to be lined with accepted standards worldwide and best practices as outlined in the WCO Revised Kyoto, WTO treaties and Harmonization Convention all though Kenya has not yet formalized the Revised Kyoto Convention (EA, 2018). In addition, Kenya being one of the members of WTO implemented trade facilitation contracts and various processes including the Agreement on Customs Valuation and Pre-Shipment Inspection, Rules of Origin, Import Licensing Procedures, Technical Trade Barriers and more (Koul, 2018).

The present inadequacy of a regulation framework institutions, poor ports, human capacity, rail, inefficiency in processing of trade documents and road infrastructure. All this continue to impact the business community through products delays and clearance at various points of entry and exit. This has led to high transaction costs associated with the old method being used, which has reduced Kenya competitiveness on products on the global markets. According to (Bartle et al. 2018), many trade barriers in terms of trade facilitation have an internal and boundary effect on Kenyan businesses in terms of time taken to perform company procedures and operations that need to be followed. Trade facilitation concerned is mainly associated with border and border issues processes. Border trade facilitation is mainly directed at using

information technology to improve port activity efficiency, on the other hand "behind the border", market infrastructure and physical development are involved in trade facilitation. These processes affect transaction costs by enhancing the efficiency of local and global trade (East Africa, 2018).

1.2 Statement of the Problem

Custom systems were adopted by customs department purposefully because of their ability to impact on trade facilitation in Kenya. The custom systems adopted by departments include; Integrated Customs Management System, Single Window System and Electronic Cargo Tracking System. Although good trade facilitation produces a lot towards improving tax collection as is directed by (Grainger, 2016), the commonest problem that is faced by trade facilitation is less attention paid to the question of whether changes in custom systems and scope of international commerce are creating pressures for the globalization of taxation and coordination of national tax policies. Globalization of taxation can only occur when a country steps in to manage the more complex jurisdictional disputes and tax-collecting problems that arise from the increasingly transnational character of international business. According to (Jones & Seghetti, 2015), indicated that improper use or abuse of the custom system can translate to a delay in products reaching their destination for a single nation which can be equal to a 1 percent reduction in trade of the nation.

Generally, customs ineffectiveness at the border, ports and airports could lower global trade and triple the benefits for consumers from tariff reductions. This can reduce the gains, which would be realized supposed customs systems would be properly streamlined (Sahoo et al., 2017). Lack of streamlining custom system in customs departments contribute to an increase in cases of bribery and corruption, poor infrastructure and less efficient cross-border services. Even though customs ought to play a role, on focusing on the collection of taxes on various imported goods and duties when it is not streamlined, this role is not effectively done.

For instance, over the last ten years, traffic through the Port of Mombasa has increased by 7.1 percent per annum, rising from 14.419 million tons in 2006 to 26.73 million tons in 2015. About 70 percent of the ports traffic is destined to the local market with the rest shared between Uganda, Rwanda, Burundi, Tanzania, Democratic Republic of Congo, South Sudan and Somalia. Uganda is the major transit point with its traffic claiming 78 percent of transit share (Transit Market Share, 2015). In 2004, KRA partnered with the WCO and conducted a Time Release Study, which measured the amount of time it took for cargo to be cleared through the various entry points. It was found that it took more than ten days to clear a container through the seaport of Mombasa. The increased trade volume has forced the customs department to embrace modern technology and working method in order to be more efficient in meeting the increased demand by traders for faster clearance of cargo. Customs therefore has to meet these challenges and expectations against the background of human and financial resource constraints. This has been successfully attained by synchronizations of various systems in various systems towards a common repository mapping which is a fundamental tool in automation.

Regardless of the fact that Customs systems are being used by customs department for years to facilitate trade, there still exist gaps on why the players in the market feel that they are not well facilitated to carry out trade. It is based on these frequent problems associated with poor management in customs department to traders that has called for the study on the effects of custom systems on trade facilitation in Kenya is conducted. The study will examine custom systems employed to promote both local and international trades, by regulating or facilitating importation and exportation of goods.

1.3 Research Objectives

1.3.1 General Objective

The general objective of this study was to investigate the effects of Automated Customs Systems on Trade Facilitation in Kenya.

1.3.2 Specific Objectives

i. To examine the effects of Integrated Customs Management System on Trade Facilitation in Kenya
ii. To establish the effects of Electronic cargo tracking system on Trade Facilitation in Kenya
iii. To determine the effects of Single Window system on Trade Facilitation in Kenya

1.4 Research Questions

i. What is the effect of Integrated Customs Management System on Trade Facilitation in Kenya?
ii. How does the electronic cargo tracking system affect Trade Facilitation Kenya?
iii. How does single window system affect Trade Facilitation Kenya?

1.5 Justification of the Study

Customs agencies globally face the emerging of dilemma of balancing demand to improve trade facilitation across the border areas and the country EA, (2018). They are under pressure to deliver customers focused services, collect accurate revenues without a loss to the government and prevent illegal trade within the constraints of limited resources and to make trade easier for traders. All these call for modernization of customs administration to deliver, accuracy, security and transparency. These prompt the custom departments to implement the Integrated Customs Management System, single window system and electronic cargo tracking system in their operations. For instance, Integrated Customs Management System consolidates

all the existing customs systems into one modern, robust, and more efficient system built on the latest technology with capability of seamlessly internal and external systems as need arise.

Inefficient procedures within the borders may result to slow trade system within the country and may lead the country to be less attractive to investments and trade, (Bekoe et al., 2016). However, taking actions to improve efficiency of border operations has enabled countries to achieve a substantial increase in trade and revenue collection despite the various reductions brought by trade liberations. This study aims at determining various impacts caused by customs systems on the import, export goods, diversion of goods within the country whether they are effective to reduce the transaction cost in order to create competitive advantage to the traders to enable them facilitate their goods in the market at the right time. According to (Barbosa, 2019), point out that customs administration should aim at delivering accuracy, transparency and security due to call of modernization using systems rather than restrictive.

According to (Rippel, 2018), Kenyan **1.5.1 Kenya Government**

governments will gain more due to adoption of various custom systems by Kenya revenue authority in the department of customs on trade. The implementation of the schemes will lead to effective boundary processes that make the administration process more efficient. All this will increase the collection of revenue and avoids tax evasion for the state. According to (Fidrmuc & Fidrmuc, 2016), small reductions in the cost of trade transactions, such as long burocratic processes, result in considerably enhanced trade. This will apply to both rich and poor nations, but developing nations will demonstrate greater comparative trade gains because of the comparative inefficiency of their present schemes and because agri-food and tiny and medium-sized enterprise (SME) trade, which is most significantly impacted by inefficient processes, are essential to the economies of these nations.

1.5.2 Traders

The traders both small and big will benefit more when customs systems are applied on trade as result of goods being delivered much faster to their customers or consumers which will make them to be more competitive in the market and less expensive (Arvis, et al. 2018). In addition, consumers will gain because they will not pay the costs of lengthy border delays that might be included in the cost of goods. For instance, if a transit truck waits at the border for not less than a week, eventually the customer is paying for its being off the road and it's unproductive during that time.

According to (Brett et al., 2018), with small reductions in the transactions cost of trade, such as long boundary processes, result in considerably enhanced trade. This is true for both rich and poor nations, but developing nations would demonstrate greater comparative trade gains due to the comparative inefficiency of their present schemes and because agri-food and tiny and medium-sized enterprise (SME) trade, which is most significantly impacted by inefficient processes, are essential to these countries' economies. According to (Brett et al., 2018) demonstrate how trade facilitation policies impact distinct economic industries and distinct kinds of traders to decrease transaction costs. Research by the OECD demonstrates that developing countries benefited from trade facilitation by two-thirds of total global welfare benefits. However, OECD countries alone had to undertake trade facilitation, developing nations will lose out.

1.5.3 Customs Administration

The benefits of facilitating trade are reducing business-government transaction expenses (Meltzer, 2013). However, customs administrations face increasing quantities of trade clearance, tracking and, at the same moment, they are compelled to add fresh control

legislation, for instance in the region of safety. Concepts of trade facilitation assist customs administrations fulfill their responsibilities by using the easier procedure or scheme to facilitate the necessary process. Moreover, where companies compete in terms of expenses; any decrease in the transaction costs associated with trade would produce a benefit. Thus, transaction costs threaten business competitiveness and inhibit Customs' best use of limited control resources. Trade facilitation also enhances continuous rises in amounts of trade and complexity that alter the global trading community's operating environment considerably (L.Ingalls et al., 2018).

As a consequence, it also enhanced the effectiveness of border activities through transparency in their activities and consistency; this enables customs departments to devote minimal attention to "low risk associated" passengers and shipments, enabling customs funds to be redeployed on intensified. In addition, it also improves border management efficiency, thereby reducing trade costs for business.

1.5.4 Researchers

This study will be very important to researchers because it will provide relevant information that researchers can use to unlock the full potential of infrastructure investment and policy reform on trade in order to improve the trade of goods within or outside the country. In addition, Study on customs systems on trade facilitations can avail various information's relevant for the researchers that they can in turn use to advice other countries on how best they can implement trade facilitation measures or systems that can help other countries to streamline processes, harmonize rules, and strengthen their institutions (Rippel, 2018).

1.6 Scope of the Study

This study will be limited on the effects of Customs Systems on trade facilitations in Kenya. The study will rely on primary data, which will be obtained from Customs department in KRA. The study will narrow at Times towers main office, who are responsible for controlling,

collecting revenue, taxes, monitoring goods getting inside and outside the country, transit, and clearances of cargo at the main office times towers. In addition, the study will focus on newly implemented systems in this department which include; Integrated Customs Management System (ICMS), electronic cargo tracking system (ECTs) and single window system (SWS) in various operations when handling import, export and monitoring of goods.

1.7 Limitations of the Study

The researcher experienced varied limitations in relation to this study. First, the issue of corvid 19 has seriously affected the usual way of interaction. Therefore, physical meeting of the participants towards distribution of questionnaires was definitely affected. However, the researcher had put in place adequate measure and tried to convince the participants of non-disclosure of their identity. Another limitation was obtaining data from other similar studies as the area of study was limited research, the areas were unique and seemed to have not been vastly researched in the past. Finally, there was the issue of financial constrain as the researcher had to make physical movement to the scene of data collection of which was not sponsored by the academic institution.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Literature review refers to evaluation of the existing literature based on one's subject or the topic being studied, by reviewing literature relevance to the study topic. Literature review is important in the research in that it creates a sense of rapport reader so that they can trust one's study. This section will provide a review of some of the current literature on research on customs system impacts on trade facilitation by critically examining their aims, methodology and results. It also covers main sections such as conceptual framework, theoretical literature and empirical literature, research gaps, study-related criticism of current literature and summary.

2.2 Theoretical Review

This shows an understanding of various theories ,concepts that are relevant to the topic under study and help to make a prediction about a given situation (Carnwell & Daly, 2015). Theoretical review covers various theories on customs systems affecting trade facilitation. It explores thoughts on the impacts of various systems used by customs administration on Trade process. Generally, it helps us to have definitions, concepts, relevant indicators variables facilitating trade and analysis of existing literature on the subject. The following theories are therefore used in the study: Technological Change Theory, Theory of Constraints, Mobility Intergenerational Theory and Trade Facilitation Theory

2.2.1 Technological Change Theory

This theory is defined as the overall process of innovation, invention and diffusion of technology. This theory was developed by Everett M. Rogers' and focuses on the adoption of Integrated Customs Management System by custom administration. Technological change has

also been demonstrated earlier with the' Linear Model of Innovation,' which has now been mainly discarded to be substituted by a model of technological change involving innovation at all phases of research, production, dissemination, and use (Tidd et al., 1997). Generally, technological change modeling often implies the innovation process. This continuous improvement process is often modeled as a curve that shows downward expenses over time (Coronado *et al.*, 2017).

Regarding custom systems management, there has been a liberal change in technology that has been adopted to improve custom management and facilitate trade. The custom system has also registered a progressive change in technology over years. In 2005, customs department under Kenya Revenue Authority implemented Simba 2005 with technical assistance from the Government of Senegalese. The system was part of the proposed modernization and reforms programs aimed at streamlining various operations in customs department. Because this is the department that deals mostly with exporters and importers of goods and services and being the highest revenue earner among customs departments(Mbui, 2016). The system was introduced to aid promote efficiency in clearing and forwarding of imported and exported goods by providing electronic submissions for the required import or export and to allow easy lodging of traders' information of clearance within the system. The Integrated Customs Management System was later introduced to replace Simba 2014 System in 2016.

After formally introducing the Electronic Single Window System, Kenya made remarkable progress in 2014 (Djanitey, 2018). This was intended to create it much easier, quicker and easy to document cargo clearance across its boundaries. The Single Window System is a technological change that Kenya has implemented to support international trade in Kenya by decreasing delays and reducing expenses connected with border clearance while retaining the necessary controls and collection of levies, charges, duties and taxes on imports or exports where applicable. In order to encourage trade facilitation and reduce the cost of doing business,

all these customized schemes have been implemented. In this way, international trade processes, in particular import and export processes, transit conditions and processes implemented by customs and other organizations, are simplified, harmonized and automated hence increasing trade efficiency.

2.2.2 Theory of Constraints

This theory was first applicable to business systems, Blackstone (2013) This theory mainly focused on the limitations that Single Window System experiences. According to (Blackstone, 2010), assumes that performance of an organization cannot improve due to a specific problem or inefficiencies. The constraint can however be established by looking at the effect it causes to an organization. The operation performance will improve once the main constraint within the organization is established and removed. A constraint is described as anything that prohibits a system from attaining an output that is greater than its objective. It is observed that a system is a set of interconnected components that share a common objective. This theory applied to business systems for the first time (Blackstone, 2010).

Based on this theory, Kenya Revenue Authority ensures that it establishes internal process that will support the introduction of the Single Window system. The developments have to be repeated severally until the system is fully owned by the employees and is producing results. There are various challenges that may stem from using the system at the initial stages and there is need to deal with them as they emerge, and the learning curve lessons recorded for future reference. The goal of this theory in business is to eliminate the constraints so as to maximize the owners‟ or stockholders‟ wealth. According to (Alwadain et al., 2016), constraints are like individuals or departments that are unable to maintain up with the modifications. If this department cannot add more value it will not be able to maximize on the returns. Nevertheless, policy constraints are a management decision or business culture that limits the system. Therefore, there is need for the management to meet regularly with their team members for

them to be able to receive feedback and use the feedback to make improvements to the policy and over internal processes. A dedicated setup team within an organization is essential in driving the whole organization towards the geared results.

2.2.3 Mobility Intergenerational Theory

This is a modern social science paradigm that explores not only people's motion, but also products that are traded. It also examines these movements ' wider social consequences. This theory is very important for Customs Department officers to digitalize cargo monitoring scheme to assist in monitoring and track cargo from on-loading and off-loading locations which help to prevent diversion of cargo on transit (Kominers et al., 2018). In reaction to the growing realization of the historical and modern significance of motion on people and products in society, this theory started in the 1990s (Williams, 2016). Usually higher mobility rates and fresh types of mobility in which bodies mix with data and distinct mobility patterns motivated this turn.

The mobility paradigm contains fresh methods to theorize how mobility lies at the core of constellations of authority, identity creation, and everyday micro geographies. According to (Kominers et al., 2018), mobility arose as a criticism of contradictory orientations in social science towards both sedentary and reterritorialization. People have often been seen as unchanging entities linked to particular locations, or in a globalized or frenetic life, mobility looks at forces and movements that drive, constrain and are generated by those movements (Williams, 2016).

2.2.4 Theory of Planned Behavior

The Theory of Planned Behavior indicates that behavioral intention to engage in an activity is greatly determined by attitude, and perceived behavioral control which is also a subjective norm. According to Ajzen (2020), Theory of Planned Behavior revolves around the individual

factors which enhances to the adoption of a new technology. From a study that was conducted by Bargaz et al., (2018) to establish the extent at which the local government in Pakistan adopted the use of the excise collection system, it was observed that majority were unwilling to abandon the old system on the ground that were not of user-friendliness and efficiency. Therefore, it was noted that system adoption is mainly enhanced by adequate training and user awareness that would definitely transform the user behavior towards its adoption.

The major step towards promoting customers' insolences in the software industry is by looking into the power of a particular brand. According to Farquhar (1990), there are three levels of building attracting a customer behavior; these include evaluation, accessibility and consistency. Talking of planed behavior and evaluation of technological brands for customers, Keller (2008), customers' opinion to purchase can always be achieved when customers are completely made aware of a brand that instills some level of familiarity while holding strong association with the memory. For several years, revenue agencies have always wanted to have an experience of efficiency have always found it difficult to achieve. In essence, a prospective excise agency may be aware of the presence an electronic operation management system, but completely deficient of information on how to adopt such systems of the implication up on adoption. It is under this premise that the concept of customers' behaviors enables marketers of such institutions to come up with unique brands targeted at the benefit of such institutions (Keller, 1993). On the other hand, customer-based brand equity at institutions of revenue collections are mainly concerned with potential customers some which are limited because they can mainly be sourced from the state agencies thereby making their behaviors intrinsic.

Furthermore, Ricardo alludes compliance in trade is productive so long as each trader and clearing agents complies with local and international trade regulations, it has a relative performance productivity advantage. For instance, Transparency International, (2012) found out that the worst customs stations reported in terms of time spent to clear goods were the at

Kenya and Tanzania borders of Namanga, Taveta, Holili, LungaLungaand Loitoktok as truck drivers would spend an average of 68 hours to clear their goods. This opens up the opportunity for traders and clearing and forwarding agents to give bribes to speed-up the process. Therefore, the development of theory is to enhance the efficiency and effectiveness if integrity in customs is enhanced to internal and external stakeholders involved in clearance of cargo as it will increase trade facilitation and minimization of cost involved in trade.

2.3 Conceptual Framework

This is a set of wide principles and concepts drawn from appropriate research areas and used to structure a later lecture (Kasumu, 2013). The figure below will guide the research and show how the factors in this research interrelate. The main factors mentioned in this conceptual framework are consistent with the theories built for this research to explain, predict, and master phenomena such as interactions, occurrences, actions, and so on.

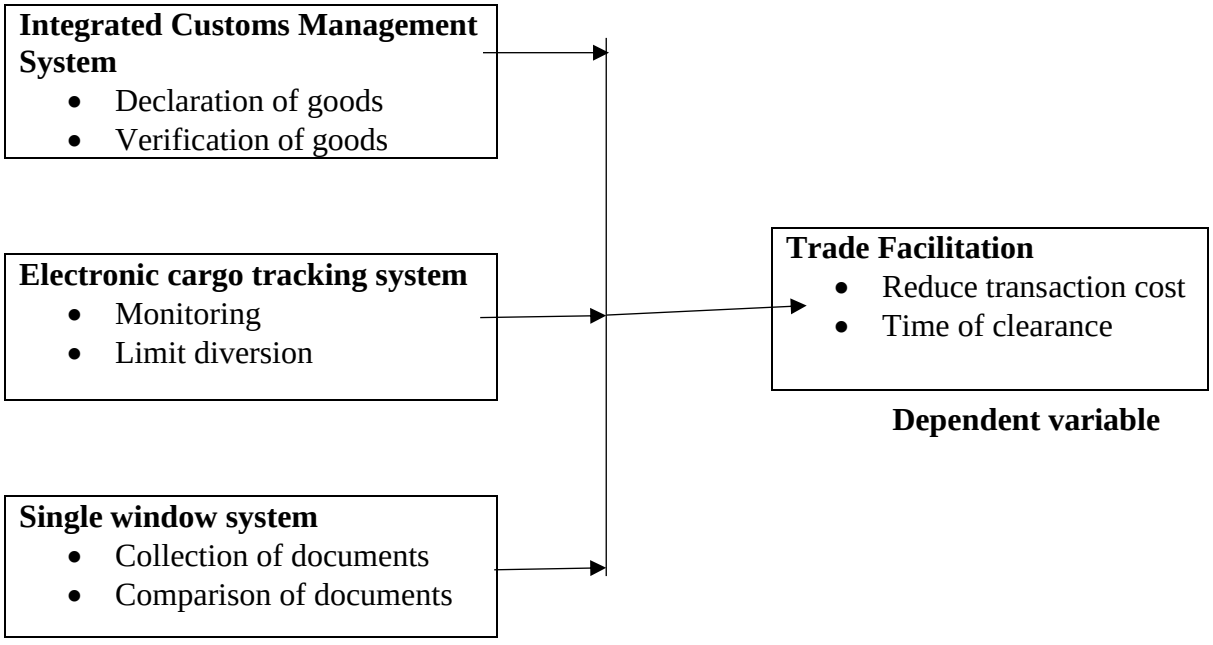

Figure 2.1 Conceptual Framework

2.3.1 Integrated Customs Management System

This system is bilateral and multilateral trade of goods and services exchanged at a certain monetary value, (Provencal, 2017). Kenya government agency (KRA) in the department of customs, taxes goods flowing in and out of the country for business purposes. This is what is known as import duty or export duty, in similar term tax. The agency which is taxed with this responsibility to collect duties uses these systems to help them collect the required documents for traders in one system to enable them facilitate their transaction process faster. The system is known to customs department as importers and exporters' fraternity as ICMS that allows online submission of documents through the Internet which include; online declarations of cargo or entries (Kaibe, 2012).

This system helps in smoothly shipping and clearing goods out and in country through the application in the system or software, which makes the process to be much easier to clear cargo at the port without holding up in queue waiting for services, which enable the traders to clear the cargo faster. System being computerized or automated it requires human personnel to run them efficiently in order to improve performance (Naser, et al., 2017). Although this system is good and had been embraced to facilitate trade by enhancing export and import of goods, it requires every personnel operating the system to acquire proper training on how to use the system efficiently without any hitches. This system is web based thus it is limited to both online declaration and payment (Djanitey, 2018). Since not all traded related activities can be applied and payment be payment online, this aspect comes out as a gap which is associated to this system which the current study aimed at bridging.

2.3.2 Electronic Cargo Tracking System

The ECTS system incorporates real-time tracking of cargo from point of loading to the point of discharge or offloading (Evans et al., 2016). It therefore provides cargo security by

preventing dumping of goods which are in transit or theft. This system monitors the cargo transiting through Kenya to neighboring countries within East African community and enhance trade competitiveness through improving security of cargo along the transit routes by eliminating security escort which was initially being used to escort the goods along the transit, (Evaristus, 2016). Cost reduction will be achieved through enhanced cargo predictability and enhanced truck turnaround time eventually leading to reduced transport expenses; enhancing cargo security and helping traders better predict goods arrival. Additionally, ECTS also reduces time wastage because it sends an alert to the officials in command when a truck remains longer than necessary in a specific place. Although Electronic Cargo Tracking System is very vital in tracing the cargos or goods on transit from one point to another, it is determined that sometimes it can lose track of some important goods on transit because it requires intensive monitoring and limit diversion. This study will target these areas to bridge the existing research gap.

2.3.3 Single Window System

This is a system which collects all the required or supporting documents for trade and determines the validity of the documents which include the documents submitted by Simba 2005 system. Single window enables importers and exporters to file trade-related records and applications that are electronically routed to public approval organizations; the system is created through attempts to simplify boundary formalities for traders and other financial operators (Protection, 2016). According to the study done in 2011, the World Bank reiterates this by emphasizing the schemes that would be helpful in connecting traders to customs and other government agencies, enabling them to make internet applications and approvals through the same channels. Efficient data systems and processes can decrease the time taken to transfer products considerably, decrease expenses and enhance company (Protection, 2016).

The general goal of the Electronic Single Window System implemented in Kenya is to promote trade internationally by declining various delays and reducing the expenses of clearing products

at the Kenyan border (Sichilima & Gikonyo, 2017). It also seeks, where appropriate, to maintain the necessary controls and collection of levies, charges, obligations and taxes on imports or exports with a single window-compliant economy. Kenya will reap from enhanced competitiveness and lower company expenses that are great for customers who have to bear the burden of shipment delays in the form of importers ' demurrage fees. Nevertheless, Single Window System also plays a critical role in enhancing trade facilitation in Kenya, it is said to be a bureaucratic process because it involves wide procedure on documentation collection and comparison of documents. This institutes a gap which this study will examine in order to determine how best this system can be improved to facilitate processing of trade documents to promote trade within trading blocs.

2.3.4 Trade Facilitation

These are the processes and controls for moving products across domestic boundaries and how this can be enhanced to decrease related cost burdens and maximize effectiveness while safeguarding legitimate regulatory goals (Grainger, 2016). Kenya's commitment to WTO principles is a key component of its financial policies. It offers all its importers and exporters with Most Favored Nation (MFN) treatment. Furthermore, Kenya is a member of EAC, IGAD, ACP/EU COMESA, EAC and OAU pursuing preferential trade agreements as a way of increasing trade flows. Some sections of the legislation have been altered by the country to conform to WTO treaties, including anti-dumping, countervailing and intellectual property. The 2002 development plan discussed the trade policy implementation, the ongoing decrease and eventual elimination of tariffs, and the government role in controlling and regulating growth in the private industry (Nyugha, 2019).

Customs department in Kenya depends on the tariff as recognized and considered the significance of trade facilitation as primary trade policy tool. The study will analyze Trade Facilitation Systems in Kenya as an important element of its trade policy, particularly with

important progress in the multiple trade treaties. Kenya is implementing all trade facilitation treaties of the WTO. These treaties include; the Agreement on Customs Assessment Rule of origin, Pre-Shipment Inspection, Procedures for Import Licensing, Trade and phytosanitary measures and Technical Barriers for Sanitary (Singh, 2017). Consequently, as a member of World Customs Organization (WCO) and is involved in various negotiations for accession to internationally applicable customs contracts including the convention and harmonized System, which forms the foundation for the classification of tariff on products traded on the global market. WCO membership helps develop best practices around the world through training custom officers, benchmarking, and networking with other global trade members and organizations, including; International chamber of commerce, UNCTAD and WTO (Singh, 2017).

Kenya has embarked on a reform and modernization project of the Customs Services Department (CRM). The main aim of this project is to transform customs into modern customs administration systems which are in line with best practices and standards accepted worldwide as outlined in WCO Revised Kyoto and WTO agreements. Trade facilitation continues to a major challenge in Kenya despite the signing of the multiple multilateral trade contracts. The current inadequacy of a legal and regulatory structure, institutional, human ability, bad ports, road facilities, rail and trade documentation process inefficiency continue to affect the company community through delays in item motion and clearance at multiple entry and departure points (Chege, 2018). This led in elevated transaction costs connected with the entire technique, which decreases Kenyan products competitiveness on the global market. With this implementation, importers are able to clear their cargos on time hence reduced congestion at the ports. Trade Facilitation deals primarily with the motion of products from loading to offloading points, it is similarly involved and may lose track on certain products terms. Second, import or export clearance times may differ depending on the products being delivered and related variables that

may cause delays, either this may or may not decrease transaction costs. This will be a challenge and a gap will be resolved by the proposed study.

2.4 Empirical Review

This is a way of gaining knowledge by means of direct and indirect observation. Empiricism values of this kind are more than other kinds also can be measured qualitatively or quantitatively. Quantifying the evidence or making sense of it in qualitative form, a researcher can answer empirical questions, which should be clearly defined and answerable with the evidence collected.

2.4.1 Integrated Customs Management System

This system is bilateral and multilateral trade of goods and services exchanged at a certain monetary value, (Provencal, 2017). Kenya government agency (KRA) in the department of customs, taxes goods flowing in and out of the country for business purposes. This is what is known as import duty or export duty, in similar term tax. The agency which is taxed with this responsibility to collect duties uses these systems to help them collect the required documents for traders in one system to enable them facilitate their transaction process faster. The system is known to customs department as importers and exporters' fraternity as ICMS that allows online submission of documents through the Internet which include; online declarations of cargo or entries (Kaibe, 2012).

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requires every personnel operating the system to acquire proper training on how to use the system efficiently without any hitches. This system is web based thus it is limited to both online declaration and payment (Djanitey, 2018). Since not all traded related activities can be applied and payment be payment online, this aspect comes out as a gap which is associated to this system which the current study aimed at bridging.

2.4.2 Electronic Cargo Tracking System

ECTs system incorporates a real-time trucking of cargo from the loading point to a place of discharge or offloading (Evans, et al. 2016). It thus provides cargo security by preventing dumping of goods which are in transit or theft. This system for monitoring cargo transiting through Kenya to neighboring countries within East African community to improve trade competitiveness through cargo security along the transit routes by eliminating security escort which was initially being used to escort the goods along the transit, (Irandu, 2016). Cost reduction is achieved through enhanced cargo predictability and enhanced truck turnaround time eventually leading to reduced transport expenses; improving cargo security and assisting traders to predict goods arrival.

According to (Evaristus, 2016), the electronic cargo monitoring system places tracking obviously in the logistics and distribution sector. However, traceability must be ensured in any part of the value-adding procedures and there are several critical traceability points where materials are portioned, split, blended, separated, shaped, boiled, turned, bored or wrapped in any manufacturing method. In a broad spectrum of apps, traceability information is also used. In addition to logistics apps, traceability information is used to assist apps for product-liability prevention, quality-and process enhancement, proof-of-quality and proof-of-origin applications, safety applications, after-sales apps, and accounting apps (Evans et al., 2016). However, it is essential to acknowledge that traceability is present, as some contributions to the literature on traceability also provide insights into traceability.

Furthermore, RECTS also reduces time wastage because it sends an alert to the officials in command when a truck remains longer than necessary in a specific place. Although electronic cargo trucking system is very vital in tracing the cargos or goods on transit from one point to another, it is determined that sometimes it can lose track of some important goods on transit because it requires intensive monitoring and limit diversion. The current study targeted these areas to bridge the existing research gap.

2.4.3 Single Window System

This system allows traders around the world (cross-border) to submit regulatory records at a single place and/or entity (Wang, 2018). Single window system is aimed primarily at simplifying and harmonizing processes linked to cross-border product movement. To meet all regulatory import, export and transit criteria, a facility enables traders to provide standardized data and records within a single-entry point. If information is electronic, only individual data sections need to be presented once (Wang, 2018). As a result, globalization of trade, cooperative procurement, manufacturing, assembly, and distribution are increasingly addressed through outsourcing, whereby comparative and competitive advantage values influence variable worldwide supply and demand. The flow of information to comply with trade formalities for import and export compliance, including public approvals, customs clearance, inspections, and licensing, are processed electronically through embedded ICT-enabled systems frequently identified as digital single window systems (ESCWA, 2011). As is progressively being experienced, single window systems can be either stand-alone functional systems or embedded single window systems at domestic or regional level. In particular, SWS may not necessarily adhere to a conventional construction model and may be intended to comply with country-specific boundary protocols. The UN /CEFACT Recommendation generally classify SWS process chains into three major models (Rogmann & Zelenska, 2017).

The single authority system's main agency is responsible for establishing an SWS and coordinating information on the logistics chain through the acquisition and dissemination of digital submissions to other governmental and cross-border authorities. The central authority is authorized to conduct chosen duties on behalf of other cross-border officials, guided by workflows and system integration. In Kenya, Ken Trade is the government agency responsible for setting up the KNESWS and forwarding to the Kenya Revenue Authority, Kenya Ports Authority, and other government agencies the trade records needed for approval. The major feature of individual automated systems is that they deliver an interface for trading-related information, collection, storage, use and dissemination (Ndonga, 2015). Customized and Border Protection Automated Commercial System (ACS) model in which traders submit information once and then forward it to data-requiring organizations. The submitted information is then transferred for risk management tasks to the Automated Targeting System (ATS) before being returned to the ACS for storage. An integrated risk management system in a SWS can considerably decrease the percentage of inspections of physical goods leading to time savings and efficiencies for traders and government agencies.

2.4.4 Trade Facilitation

Several studies have shown that a better climate for trade facilitation rises quantities of imports and exports. Gani, (2017), evaluated the relationship between export and import time, logistics facilities and international trade and discovered that time delays resulted in reduced amounts of trade and reduced the likelihood of companies entering export markets for time-sensitive products. Through these systems implemented by Kenya Revenue authority has enabled clearing and forwarding firms and importers to participate in trade due to reduction of transaction cost of goods (Martin, & Kinoti, 2017). The congestion which was being witnessed at the ports has significantly reduced. This has been enhanced through automation of customs systems.

Customs department in Kenya depends on the tariff as recognized and considered the significance of trade facilitation as primary trade policy tool. The study will analyze Trade Facilitation Systems in Kenya as an important element of its trade policy, particularly with important progress in the multiple trade treaties. Kenya is implementing all trade facilitation treaties of the WTO. These treaties include; the Agreement on Customs Assessment Rule of origin, Pre-Shipment Inspection, Procedures for Import Licensing, Trade and phytosanitary measures and Technical Barriers for Sanitary (Singh, 2017). Consequently, as a member of World Customs Organization (WCO) and is involved in various negotiations for accession to internationally applicable customs contracts including the convention and harmonized System, which forms the foundation for the classification of tariff on products traded on the global market. WCO membership helps develop best practices around the world through training custom officers, benchmarking, and networking with other global trade members and organizations, including; International chamber of commerce, UNCTAD and WTO (Singh, 2017). The ICMS system which is automated system helps to dispensed the needs of traders to avoid physical visit to KRA and Single window system whose primary purpose is to harmonize and simplify process associated with cross border movement of good with aim of facilitating trade across border point.

2.5 Critique of the Existing Literature

The Kenyan Customs administration had maintained the outdated system (BOFFIN) up to 2005 when the adopted the new system. This system was ineffective which led to the need for the establishment of other effective custom management system. According to (Kaibe, 2012), it was at this stage that customs started searching for an embedded system architecture capable of linking all actors and records engaged in the tax and customs schemes, seeking the expertise of a variety of nations. Gani, (2017), also verified that the ineffectiveness of some custom scheme has resulted in delays in the Customs Union's laws, staffing management, institutional

disputes and ability, all of which have proved to be difficulties in this phase. Although these literatures pointed out that old custom system were ineffective, they never examined the infrastructural facilities and involvement of personnel, which has contributed in interfering with the systems thus influencing custom management processes.

Nevertheless, Ndonga's (2015) research showed that information flow to comply with trade formalities for import and export compliance includes public approvals, customs clearance, inspections, and licensing. Through integrated ICT-facilitated systems commonly recognized as single window electronic systems they are always processed electronically. The major feature of automated devices is that they provide an interface for the storage, collection, and dissemination of trading-related data. Nevertheless, the reviewed literatures have never really supported this hence; they cannot show much effect on how specific custom management systems can be used to streamline clearance operations. Finally, Ndonga (2015) carried out a research on Electronic Cargo Tracking scheme and custom logistics position tracking. However, the research found that traceability must be ensured in any part of the value-adding procedures and there are several critical traceability points, i.e. where materials are located. Gani, (2017), also evaluated the relationship between export and import time, logistics facilities and international trade and discovered that time delays resulted in reduced amounts of trade and reduced the likelihood of companies entering export markets for time-sensitive products. However, these studies never showed how lack of traceability of exports and imports as well as how delays influence trade facilitation.

2.6 Summary of the Literature Review

This study reviewed some literatures relevant to the subject of the study. It primarily begun by reviewing theories that are related to several customs systems affecting trade facilitation. For this case, the trade facilitation theory mainly focused on how to improve trading environment on the port efficiency, improved administrative procedures and better customs environment

which enhance facilitation of trade within the region. It also examined Technological Change Theory, which indicates that, the change in technology always lead to improvement of operations at work place. Therefore, by adoption of new customs systems technologies such as Integrated Customs Management System, Single Window System as well as Electronic Cargo Tracking systems are all meant towards enhancing efficiency and promoting trade facilitation.

According to the study carried out in Kenya and East Africa on the Integrated Customs Management System, which is the newer system is that this system is a bit faster in carrying out cargo clearance from the port. In the study done on Single Window System, it's essentially a trade facilitation tool whose main purpose is to harmonize and simplify processes associated with cross border movement of goods. Finally, the current study reviewed literatures which focused on the Electronic Cargo Tracking System which has invariably been associated with tracing, to form the commonly adopted concept of tracking and tracing. Lastly, the study also reviewed literatures conducted on the trade facilitation. These studies established that a good climate for facilitation of trade leads to growth in the export and import volumes.

2.7 Research Gaps

Based on the theoretical and empirical literature reviewed in this chapter, it can be seen that customs system managements are important in supporting the import and export processes, speeding up transactions, and reducing the costs involved in international trade and paper work. There are always a number of customs systems managements; however, the reviewed studies only examined three systems namely; Integrated Customs Management System, single window system, and Electronic Cargo Tracking System. The reviewed literatures mostly focused on the systems used globally and how they influence the global trade facilitation as opposed to a specific country. From the literature reviewed, there are limited studies conducted to establish the factors that influence trade facilitation by customs management department in Kenya. This

has, therefore, created a research gap for the current study on the effects of customs systems on trade facilitation in Kenya aimed to fill.

CHAPTER THREE

RESEACH METHODOLOGY

3.1 Introduction

Research methodology is the systematic theoretical analysis process of the various methods applied in the field of study for collecting information and data to help in making decision. This section dealt with the designs and methods of the study by highlighting various procedures and methods that were used to carry out the study and justification of a qualitative method of research. In addition, it also described the research design, target populations, sampling designs, technique used to select sample, sample size, data collection and a brief description of data collection procedure (Mugenda & Mugenda, 2003).

3.2 Research Design

This is a plan that answers the question to the problem by providing a solution (Cooper & Schindler, 2010). A descriptive research was used to define the phenomenon, conduct or topic being studied as it seeks to answer the following questions; 'what,' 'when' and 'how' is connected with a specific research problem or question. It also helped to collect quantifiable data that can be used to evaluate a target audience or a specific topic statistically. Therefore, descriptive research aims to conduct a description and exploration of the underlying problems, occurrences and views with significantly fewer respondents compared to quantitative research and enables for higher flexibility as it enables various modifications to be made during the study phase (Mugenda & Mugenda, 2003). It also offers a collection of information that brings fresh understanding or consciousness to the light that might otherwise have.

3.3 Target Population

A population is defined as a set of objects or people with similar features (Mugenda & Mugenda, 2003). The study will be conducted in the Department of Customs in KRA, ICD and

JKIA where most of Customs operations and coordination's of all the borders in Kenya are being controlled or coordinated. The target population for the study will be 325 Customs officers and 358 clearing and forwarding agents working in KRA, ICD and JKIA.

Table 3.1: Target Population

Target Respondents	Target population
Clearing and forwarding officers	358
Customs officers	325
Total	683

3.4 Sampling Frame

A sampling frame comprises of a list of people from which the researcher uses to obtain information about the study (Maxwell, 2012). According to (O'Mahony, 2017), claims that a sample is the list of population depiction from which the population is generalized. The sampling frame defines a set of elements from which a researcher can select a sample of the target population. Because a researcher rarely has direct access to the entire population of interest in social science research, a researcher must rely upon a sampling frame to represent all of the elements of the population of interest**.**

3.5 Sample and Sampling Technique

Sample size refers to the number of participants or observations included in a study (Gentles, 2015). According to (Mugenda & Mugenda, 2003) at least 10% of the target population is important for the study. The sample consisted of respondents from the study area. Random sampling was used to acquire an appropriate unit of analysis representative. In this research, a total of 30 percent of the 325, equivalent to 98 customs officers and 30% of 358, equivalent to 107 clearing and forwarding officers working in the ICD and JKIA were sampled for the

research. According to (Mugenda & Mugenda, 2003), an appropriate population sample ranges between 10%- 30%

Table 3.2:Sample size

Target Respondents	Target population	Percentage sample	Sample size
Clearing and forwarding officers	358	30%	107
Customs officers	325	30%	98
Total	**683**	**30%**	**165**

3.6 Research Instruments

Primary data was primary source of information. Primary data are the items initial to the issue being studied. Questionnaires were used to obtain information from the topics. The questionnaire serves four fundamental aims: to gather the relevant information, to make information comparable and analytical, to minimize bias in formulating and answering questions, and to make questions engaging and diverse. The structured questionnaire used Likert scale. Likert scale is an interval scale that specifically utilizes five anchors, with strong disagreement, neutrality, strong agreement disagreement and agreement. A Likert scale measures attitudes and behaviors using Sekaran (2015) response decisions ranging from one extreme to another. Non-probability sampling technique was used and enabled the researcher use subjective decisions in comparison with random sampling probabilistic techniques Creswell & Daly (2015). The primary reason for selecting non-probability sampling is due to restricted access to the target population as system consumers.

Furthermore, the selection of a non-probabilistic sampling is optimal in owing to time and funds limitations to fulfill the need to obtain information in the most resource-efficient and time-efficient way. This therefore requires self-selection sampling, so that the researcher does not approach the research participants directly. Rather, the participants were regarded on a

voluntary basis once the questionnaire has been made accessible to them to fill them out. Participants also were notified of the research's ethical rules and consent to the questionnaire (Zikmund, 2010).

3.7 Data Collection Procedure

Approval of the research was obtained from the department of customs studies in the Kenya school of revenue administration, the researcher then came up with a data collection schedule and visited the sections of the customs department and clearing and forwarding firms to get consent to administer the instruments. The questionnaire was divided into three sections. The first portion of the questionnaire contained multiple populations demographic issues, i.e. age bracket for participants, period of work in that department, academic skills to assess the background of multiple participants (Kothari, 2014). The second part of the questionnaire was organized to test the respondents' knowledge with respect to trade facilitation on the different scheme used at the border station. Third section had questions proving the anticipated advantages that the customer had before implementing multiple techniques, the difficulties encountered and the future expectations regarding the Kothari trade and logistics link (2014). None of the issues use the sort of ranking on the Likert scale, but rather offer the respondent a decision to disagree or agree on some constructs while commenting on the response selection. Furthermore, there will be open-ended questions that will give the respondent chance to explain their opinions and experiences.

3.8 Pilot Testing

A pilot test is a survey done before the actual survey is done (Kombo & Tromp, 2009). A pilot study assists in the determination of the reliability of the research questionnaire and ensures its validity (Cooper & Schilder, 2011). Pilot test should entail 10% of the sample population (Kothari, 2004). This equals 10 respondents participated in the pilot study conducted in Nairobi, who did not participate in the final study.

3.8.1 Reliability of the Research Instrument

Reliability is defined as a measure of how consistent a research method is (Kothari, 2014). Pretesting the questionnaire helped in gaining the reliability of the test instrument the questionnaire. The main aim of pre-test was to determine the clarity of the questions and any ambiguity removed and corrected (Creswell & Daly, 2015). A measure is assumed to have a high reliability if it produces same results under consistent conditions. In research, the term reliability means consistency or repeatability. A measure is reliable if it gave the same result over and over again. In this study the test and retest technique was used to test for reliability at the pre-testing point. Kothari (2014) states that validity indicates the degree at which an instrument measures what it is supposed to measure. Validity ensures meaningfulness and accuracy of inferences based on the research results and makes sure that analysis of the data actually represents the phenomenon under study (Creswell & Daly, 2015). Validity refers to the degree in which a test is truly measuring what it purports to measure (Mugenda & Mugenda, 2003). In this study the test and retest technique will be used in order to test for validity at the pre-testing point.

3.8.2 Validity of the Research Instrument

The degree to which a test measures what it intends to evaluate is validity. All validity evaluation is subjective views based on the researcher's judgment of using a current instrument, describing the validity and reliability of the results acquired from the instrument's previous use. There are two primary types of validity; content validity and validity building. Validity of content involves any validity policies that concentrate on the test content. Testers explore the extent to which a test is a representative sample of the content of whatever goals or requirements the test was initially intended to evaluate content validity(Kairu, 2014). A pilot study was carried out to the departments where the data will be collected. Questionnaires were then dropped to some few targeted respondents to collect their responses required in order to

determine its validity and reliability of the instrument chosen for research work. In order to collect the required data and the items not required were identified and be changed accordingly before the actual data is collected for further analysis (Mugenda & Mugenda, 2013).

3.9 Data Analysis and Presentation

This study utilized descriptive statistics for data analysis. The information gathered from the respondents were evaluated using both descriptive and variance analysis. Descriptive statistics is the word provided to information analysis that assists in meaningfully describing, displaying or summarizing information (Sekaran, 2015). The data collected was then codified and entered into a table and analyzed using frequencies and percentages collected from the Statistical Package Social Sciences (SPSS). SPSS Version 28 was used in the analysis since it has descriptive statistical characteristics to help variable reaction comparison and provide a clear indication of reaction frequencies. The SPSS version 28 also provides comprehensive information on handling capacities and various statistical routine, which can analyze tiny to very big data statistics Kothari (2011). Inferential statistics (correlations and multiple regression analysis) also provided a measure of the connection between two or more factors and to determine whether there is a connection or a cause-effect connection exists between the factors. The coefficient of correlation of the Pearson (coefficient of product moment correlation) is regularly used to measure the degree of relationship between two variables that are casually related, one dependent and the other independent (Kothari, 2011).

The information gathered ran through a model so that the factors that determine the impacts of customs schemes on trade facilitation were identified. A multivariate regression analysis was also used to determine the connection between independent variables and dependent variable. The regression analysis model took the format below:

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

Where, **Y** denotes the dependent variable

β0 denotes the unknown parameters which may represent a scalar or a vector

β1, β2, β3, denote sensitivity of Y to the independent variables X1**,** X2 and X3 respectively

X denotes the independent variables

X1 denotes Integrated Customs Management System

X2 denotes Single Window System

X3 denotes Electronic Cargo Tracking System

ε denotes an error term

Different terminologies are used in distinct areas of implementation instead of dependent and independent variables. A model of regression refers Y to X and β. According to (Sekaran, 2015), an error term is a variable that is produces a statistical or mathematical model when the model does not fully reflect the real connection between the dependent and independent variables. Also known as the residual, disturbance.

3.10 Diagnostic Tests

These are tests that determine the effect of the research design challenges leading to diagnostic accuracy (Lijmer *et al.,* 1999). Two diagnostic tests, normality and multicollinearity tests were carried out before doing the analysis of data so as to validate the findings. The normality used Shapiro-Wilk test to check for normality while VIF was done to test for multicollinearity

3.10.1 Multicollinearity Test

This is a situation where a huge correlation occurs between the autonomous variables. This situation happens in case of a multiple linear regression model hence existence of a high correlation of predictor variables leads to unrealistic regression coefficients. As a result, strange

results occurs when there is an attempt to determine how the individual variables have a significant effect on the dependent variable (Creswell, 2014). There is always decreased reliability hence confusing and misleading results as a result of multicollinearity. In this study, the test was conducted to determine whether there was existence of high correlation.

3.10.2 Normality Test

This test is usually carried out using the Shapiro-Wilk test where it finds the degree of normality by sensing the presence of skewness and kurtosis. In this case data is assumed to be normally distributed if the P-value is greater than 0.05. Normality usually assumes that the normality of the distributed mean is normal.

3.10.3 Linearity Test

This test is of importance in the regression analysis and correlation analysis. Linearity implies the level to which a change in depended variable varies with a change in the independent variable. In this research the linearity was tested using the Pearson correlation of analysis.

3.11 Operationalization of Study Variables

This process involves identity of the operations that can showcase values of the variables under the study. This is of significance to the researchers since it reduces subjectivity and reduces the reliability of the study.

Table 3.3: Operationalization of the study variables

Variables	Indicator	Sources	Data collection instruments	Measure scale	Type of Analysis
Independent	Integrated Customs Management System	Moyi & Ronge (2016)	Questionnaires	Ordinal Scale	Quantitative Regression analysis
	Electronic cargo tracking system	Freeman (2017)	Questionnaires	Ordinal Scale	Quantitative Regression analysis
	Single window system	(Protection, 2016)	Questionnaires	Ordinal Scale	Quantitative Regression analysis
Dependent	Trade facilitation	(Grainger, 2016)	Questionnaires	Ordinal Scale	Quantitative Regression analysis

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The chapter provides the findings on the study topic, effect of automation of customs system on trade facilitation in Kenya. It presents the data analysis, interpretations and presentations. This chapter is divided into various sections as per the research objectives which include; examining the effect of Integrated Customs Management system on trade facilitation in Kenya, to establish the effect of electronic cargo trucking system and determine the effects of single window system on trade facilitation in Kenya. In addition, various data are analyzed using descriptive and analysis of variance for easy interpretation of data.

4.2 Return Rate

The target population had a total of 205 respondents in this study, therefore, 205 questionnaires were issued out to the respondents. Out of 205 issued questionnaires, 165 were returned dully filled and 40 were incomplete.

Table 4.1**: Rate of Return**

Response	Frequency	Percentage
Returned	165	80.49**%**
Unreturned	40	19.51%
Total	**205**	**100%**

Table 4.1 presents the results which indicate that the questionnaire return rate was adequate for the research since out of 205 questionnaires issued, 165 were returned signifying 80.4**9%** response rate. On average, the study obtained 80.49**%** response rate from the respondents which were considered acceptable. According to Edwards *et. al.*, (2002) questionnaire returns rate above 80 percent is excellent, and this can be categorized as quite satisfying when it ranges

between 60% to 80% percent hence suitable for analysis and reporting. The study considered return rate satisfactory for use to draw inferences on the effects of automation of custom system on trade facilitation in Kenya.

4.2.1 Reliability Test

Table 4.2: Reliability and Validity Results

Variable	Cronbach's alpha	Results
Integrated Management Information System	0.775	Accepted
Single window systems	0.718	Accepted
Electronic cargo trucking system	0.769	Accepted
Trade facilitation	0.754	Accepted

4.4 Demographic Information

The section is based on the respondent who participated in the study, gender of the respondents with regards to age distribution and academic qualifications. Consequently, it presents the duration which one have stayed in a clearing and forwarding firm and how long one has been a customs officer. The table and figures below illustrate the gender distribution of various respondents, academic qualifications, age distribution and duration of existence in the department.

4.4.1 Gender Respondents'

The respondents were requested to indicate their gender. From table 4.3, findings based on the respondents' gender, showed that majority which was (59.39%) of respondents were male and the rest (40.61%) were female. This can be analyzed that in various departments of customs and Clearing and Forwading, majority of persons are male since the responses are dominated

by male. The findings were in agreement with that of Tozay (2012) which indicated that in his study; most of the participants were male counterparts.

Table 4.3: Respondents Gender Table

Gender	Frequency	Percentage
Male	98	59.39%
Female	67	40.61%
Total	165	100.00%

4.4.2 Age of the Respondents

Findings in Table 4.4, indicate that based on distribution with regards to ages, a higher percentage of the respondents (43.64%) were aged between 29 – 38 years, 24.85% between 39 – 48 years, 18.18% were aged between 18 – 28 years and 13.33% were 49 years and above. Based on this information, majority of employees in these departments are young people who are able to adopt and learn to use the new technologies being used easily. Hence this information helped us to know or to determine how efficient the employees are able to use the new system easily without much constrains to delay trade processes.

Table 4.4: Respondents Age

Age in Years	Frequency	Percentage
18 – 28	30	18.18%
29 – 38	72	43.64%
39 – 48	41	24.85%
49 and above	22	13.33%
Total	**165**	**100.00%**

4.4.3 Respondents' Years of Service

Respondents were asked to indicate the number of years they have been working in customs department in KRA and clearing and forwarding firms at JKIA, ICD. From the findings as

indicated in Table 4.5, majority of the respondents 54 (32.73%) indicated that they had been in service at the customs department between 4 – 7 years, followed by 46 (27.88%) who had been in service for 8 – 11 years, 35 (21.21%) had been in service for 12 years and above while only 30 (18.18%) respondents had been in service for 0 – 3 years. This indicated that the information on effects of automation of customs systems on trade facilitation was collected from respondents who had been in customs department and clearing and forwarding firms for a longer period of time and had experience on the impact of customs systems on trade facilitation in Kenya. Finding of the study concurred with research conducted by Ondiek, (2008) which established that most of the responses from Kenya revenue authority on the challenges in the implementation of the customs' reforms and modernization were given by the senior officers.

Table 4.5: Respondents' Years of Service

Years	**Frequency**	**Percentages**
0-3	30	18.18%
4-7	54	32.73%
8-11	46	27.88%
12 and above	35	21.21%
Total	**165**	**100 .00%**

4.4.4 Academic Qualifications

The study also sought to determine the respondents' academic qualifications. From the findings in Table 4.6, indicates that majority of the respondents, 69 (41.82%) had bachelor's degree, 17 (10.30%) had diploma, 48 (29.09%) had postgraduate diplomas, 21 (12.73%) had masters degrees and the remaining 10 (6.06%) had Doctorate. This can be analyzed that majority of the respondent had Bachelor's degree qualifications in the department of customs and clearing and forwarding signifying that they had knowledge based on the training to use various technologies used in that department thus enable them to boost the process of clearance of cargo for traders. The findings concurred with Babbie (2013) who indicated that educated

respondents were in a position of understanding what they were required to answer in a given area of study.

Table 4.6: Table of Academic Qualification

Academic qualification	Frequency	Percentage
Diploma	17	10.30%
Degree	69	41.82%
Post graduate Diploma	48	29.09%
Masters	21	12.73%
Doctorate	10	6.06%
Total	**165**	**100 .00%**

4.5 Descriptive Analysis

4.5.1 Integrated Customs Management System

This section presents the information on the types of customs systems that have been adopted by customs departments. The system in question was Integrated Customs Management System as demonstrated in table 4.7

The findings revealed that the respondents agreed (Mean =4.5812: std = 1.2196) that Integrated Customs Management System adoption hasten the cargo clearance process at the Kenya border point. The respondents agreed (Mean =4.4721; std = 0.8491) that Integrated Customs Management System reduced cost of doing business and facilitate trade it in Kenya. The findings revealed that the respondents agreed (Mean = 4.3012; std = 1.4192) that collection of duties or taxes have become easier or faster as a result of Integrated Customs Management System adopted by Kenya revenue authority in Kenya. Further the respondents agreed (Mean = 4.1741; std = 1.2031) that Through Integrated Customs Management System, there is reduction of dangerous cargo that is being diverted to the local market in Kenya. The

respondents agreed (Mean = 2.13490; std = 1.902467) that Integrated Customs Management System adoption reduce the cost of doing business to the traders (import and export).

Table 4.7 Integrated Customs Management System

Statement	N	Min	Max	Mean	Std Dev
Does the Integrated Customs Management System adoption hasten the cargo clearance process at the Kenya border point?	165	1	5	4.5812	1.2196
Does the Integrated Customs Management System reduced cost of doing business and facilitate trade it in Kenya.	165	1	5	4.4721	0.8491
Does the collection of duties or taxes have become easier or faster as a result of Integrated Customs Management System adopted by Kenya revenue authority in Kenya?	165	1	5	4.3012	1.4192
There is reduction of dangerous cargo that is being diverted to the local market in Kenya.	165	1	5	4.3622	1.2134
Does the Integrated Customs Management System adoption reduce the cost of doing business to the traders (import and export).	165	1	5	4.1741	1.2031
4.378					**1.181**

The findings implied that adoption of Integrated Customs Management System greatly improved trade facilitation due to the modules which it is structured. This was in support of the study conducted by Gitaru, 2017) which indicates that today, traders can register entries electronically remotely if they have web access and pay customs duties directly. Adoption of the Integrated Customs Management System has brought significant gains in the process of customs clearance.

4.5.2 Electronic Cargo Tracking System

It was important for the study to determine the effect that Electronic Cargo Tracking System have on trade facilitation. The findings are as depicted in table 4.6 below.

Table 4.8: Descriptive Statistics Analysis of Electronic Cargo Tracking System

Statement	N	Min	Max	Mean	Std Dev
The adoption of the Electronic Cargo TruckingSystem by customs department enable the data to be captured on the system to be shared on the real time basis resulting to reduce dumping, tax evasion, cargo theft and diversion.	165	1	5	4.3980	0.9591
The adoption of Electronic Cargo Trucking System in customs department has eliminate the paper work involved in the old ways of doing business at the border post and this makes clearance to be much faster for traders (import and export).	165	1	5	4.1730	0.9720
The quality of service to traders due to increase of service delivery as a result of adoption of the Electronic Cargo Trucking System.	165	1	5	4.6071	1.0409
Traders are now more willing to do the business with customs due to the efficiency created by the Electronic Cargo Trucking System which makes the trade to become easier without delaying their clients.	165	1	5	4.0807	0.9120
There is reduction of dangerous cargo that are being diverted to the local market in Kenya	165	1	5	4.5906	1.0820

It was important for the study to determine the effect of Electronic Cargo Tracking System on effective trade facilitation in the department of customs. The findings are as depicted in table 4.8. The study findings revealed that the respondents agreed (mean = 4.3980: std dev = 0.9591) that the adoption of the Electronic Cargo Trucking System by customs department enable the

data to be captured on the system to be shared on the real time basis resulting to reduce dumping, tax evasion, cargo theft and diversion. They were also in agreement that (mean =4.1730: std dev = 0.9720) the adoption of Electronic Cargo Trucking System in customs department has eliminated the paper work involved in the old ways of doing business at the border post and this makes clearance to be much faster for traders (import and export). The respondents also agreed (Mean =4.6071; std=1.0409) that quality of service to traders due to increase of service delivery as a result of adoption of the Electronic Cargo Trucking System had improved. The respondents did agree (mean =4.0807: std dev =0.9120) that Traders are now more willing to do the business with customs due to the efficiency created by the Electronic Cargo Trucking System which makes the trade to become easier without delaying their clients. Further the respondents agreed that (mean = 4.5906, std dev =1.0820) that there is reduction of dangerous cargo that are being diverted to the local market in Kenya on trade facilitation. This study agrees with Outcome was in line with Evans, et al. (2016) result indicating that electronic cargo tracking system enhance traceability of goods (i.e. trucking product location and progress) and qualitative traceability (i.e. associating any extra data to the products).

4.5.3 Single Window System

This study sought to assess the influence and effectiveness of Single Window System on trade facilitation. The results are presented in Table 4.9.

Table 4.9: Descriptive Statistics on Single Window System

Statement	N	Min	Max	Mean	Std Dev
Does the Single window system adopted hasten the cargo clearance process at the Kenya border point?	165	1	5	4.2023	0.9669
Does the Single window system reduce the cost of doing business and facilitate trade it in Kenya.	165	1	5	4.4203	1.2267
Does the collection of documents, duties or taxes become easier or faster as a result of the Single Window System adopted by Kenya revenue authority in Kenya?	165	1	5	4.6302	0.9109
There is reduction of dangerous cargo that are being diverted to the local market in Kenya	165	1	5	4.6121	1.0887
Does the Single Window System implemented reduce the cost of doing business to the traders import and export)	165	1	5	4.3512	1.3371

The findings on Table 4.9 show that respondents agreed that (mean = 4.2023: std dev = 0.9669) that Single window system adopted hasten the cargo clearance process, (mean =4.4203: std dev =1.2267) that Single window system reduce the cost of doing business and facilitate trade it in Kenya., (mean = 4.6302: std dev =0.9109) that collection of documents, duties or taxes become easier or faster as a result of the Single Window System adopted by Kenya revenue authority in Kenya, (mean = 4.6121:1.0887) that There is reduction of dangerous cargo that are being diverted to the local market in Kenya, (mean = : 4.3512 std dev =1.3371) that Single Window System implemented reduce the cost of doing business to the traders import and export).

4.6 Correlation Analysis

The researcher used inferential statistics to make judgments of the probability that an observed difference between groups is a dependable one or one that might have happened by chance. Additionally, the effect of the independent variables to the dependent variables was also established in through correlation analysis and a multiple linear regression.

4.6.1 Linear correlation

Table 4.10: Bivariate Linear Correlation among all Variables

		Trade facilitation	Integrated Customs Management System	Electronic Cargo Tracking System	Single Window System
Trade facilitation	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	165			
Integrated Customs Management System	Pearson Correlation	.177**	1		
	Sig. (2-tailed)	.003			
	N	165	165		
Electronic Cargo Tracking System	Pearson Correlation	.440**	.261**	1	
	Sig. (2-tailed)	.000	.000		
	N	165	165	165	
Single Window System	Pearson Correlation	.093	.171**	.158**	1
	Sig. (2-tailed)	.025	.005	.009	
	N	165	165	165	165

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

Correlation results in table 4.10 shows that there was a weak positive significant correlation between Integrated Customs Management System and trade facilitation (r=0.177, P=0.003). Correlation results also indicate a strong positive and significant correlation (r=0.440, P=0.000)

between Electronic Cargo Tracking System and trade facilitation at the port of Mombasa. Finally, the correlation results showed that there is a weak positive significant correlation (r=0.093, P=0.025) between Single Window System and trade facilitation at the port of Mombasa.

4.7 Multiple Linear Regression

The study conducted a multiple linear regression analysis in order to investigate the effects of automated customs systems on trade facilitation in Kenya. In this model, coefficients of determination explain the extent to which changes in dependent variable can be explained by the changes in the independent variables or percentage of variation in dependent variable that is explained by all three independent variables.

4.7.1 Analysis of Variance

The analysis of variance was used to determine the significance of the model. It describes the overall variance accounted for in the model. During testing of significance, P-value of equal or less than 0.05 is considered to be statistically significant. From the table 4.13 below the model has a p-value of 0.00 which was less than 0.05.

Table 4.11: ANOVA test on variances.

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	327.653	3	109.218	99.65	.003b
	Residual	146.897	161	1.096		
	Total	474.560	164			

a. Dependent Variable: Trade facilitation

b. Predictors: (Constant), Integrated Customs Management System, Electronic Cargo Tracking System, Single Window System

From Table 4.11. Analysis of Variance (ANOVA) was done to establish the fitness of the model used. The ANOVA table shows that the F-ratio (F=99.65, p=.003) was statistically significant. This means that the model used was a good fit. The above therefore imply that we

accept the three alternative hypotheses that Integrated Customs Management System, Electronic Cargo Tracking System, Single Window System have a profound effect on trade facilitation.

4.7.2 Coefficient of Determinant

The results for the model summary are presented in table 4.12

Table 4.12: Coefficient of Determinant

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.725[a]	.526	.509	1.401

a. Predictors: (Constant), Integrated Customs Management System, Electronic Cargo Tracking System, Single Window System

According to regression results in table 4.12, the regression equation between effects of automated customs systems on trade facilitation had a moderate regression. In the model summary, the R^2 is 0.526. This implies that the three variables studied explain 50.9% of variance in trade facilitation in Kenya. This means that, the other factors not considered in the study contribute 49.1% of variance in the dependent variable.

4.7.3 Multiple Regression Coefficients

The raw and standardized regression coefficients of the predictors together with their t statistics are as shown in table 4.13.

Table 4.13: Regression Weights

		Unstandardized Coefficients	Standardized Coefficients			
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	5.305	.716		7.406	.000
	Integrated Customs Management System	.117	.047	.019	2.489	.008
	Electronic Cargo Tracking System	.072	.033	.138	2.225	.027
	Single Window System	.152	.061	.114	2.492	.044

The estimates of the regression weights, t-statistics and the p-values for the relationship between effects of automated customs systems on trade facilitation in Kenya are presented in table 4.11. as $Y=5.305 + 0.019X1 + 0.138X2 + 0.114X3 + Ɛ$ clearly shows a significant positive relationship between the predictor variables and trade facilitation. The estimated coefficients show the contribution of each independent variable to the change in the dependent variable. According to the regression equation established, holding all independent factors a constant then trade facilitation will be average (5.305). This constant is significant in the model as it has p=.000 which is less than the 5% level of significance taken for this study.

4.8 Discussion of Research Findings

Regression analysis further formed a basis for answering research questions adopted in this study. This was done by considering the p values corresponding to each variable of interest

4.8.1 Integrated Customs Management System and Trade facilitation

The first objective of the study sought to investigate the effect of Integrated Customs Management System on trade facilitation in Kenya. This was established by determining Pearson correlations of refined data. The results showed that there was a weak positive significant correlation between Integrated Customs Management System and trade facilitation ($r = 0.177$, $P<0.05$). Regression analysis conducted proved that there was a positively significant effect of Integrated Customs Management System on trade facilitation as indicated by the values $\beta1 = 0.019$, $t = 2.489$, $p<0.05$. The study concludes that an increase in adoption of Integrated Customs Management System by one unit would lead to increase in trade facilitation by 0.019 units. These findings concur with that found by Moyi & Ronge (2006) in which he found out that ICMS is a key element to Kenyan Customs administration. Its authorization is usually accessed on customs officer's ability regarding different modules hence keeping records on actions performed by respective officers.

4.8.2 Electronic Cargo Tracking System

The second objective was to establish the effect of Electronic Cargo Tracking System on trade facilitation in Kenya. Pearson correlation was conducted and the findings indicated that there was a weak significant correlation between joint patrols and trade facilitation ($r=0.440$, $P<0.05$). Regression analysis was also conducted and the results showed a positively significant effect of Electronic Cargo Tracking System on trade facilitation as indicated by the values $\beta2 = 0.138$, $t = 2.225$, $p<0.05$. The study concludes that an increase in Electronic Cargo Tracking System by one unit would lead to increase in trade facilitation by 0.138 units. The finding of this study concurs with Freeman (2017), such that enabling the real time tracking of cargo on transit from the ports of entry to its final destination through a synchronized online platform that is digital.

4.8.3 Single Window System and Trade Facilitation

The study sought to establish the effect of Single Window System on trade facilitation in Kenya. Pearson correlation was conducted and the findings indicated that there was a weak positive significant correlation ($r = 0.093$, $P<0.05$). Regression analysis was also conducted and the results proved that there was positively significant effect of Single Window System on trade facilitation as indicated by the values $\beta 3 = 0.114$, $t = 2.492$, $p<0.05$. The study concludes that an increase in Single Window System by one unit would lead to increase in trade facilitation by 0.114 units.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study presents the summary of the findings, conclusions and recommendations. The findings are presented in the order of the objectives which zeroed on the effect of Integrated Customs Management System, Electronic Cargo Tracking System, Single Window System being the predictors of the effectiveness of trade facilitation.

5.2 Summary of the Findings

The study found that Integrated Customs Management System, Electronic Cargo Tracking System, Single Window System greatly have profound effect on facilitation of trade. It was also discovered that the reforms were embraced especially in the wake of Authority not meeting targets in facilitation of trade.

5.2.1 Integrated Customs Management System

The study established that the use of ICMS by customs department contributes to facilitation of trade in Kenya. The study revealed that ICMS had quite a bit been adopted well, and its adoption had brought significant gains in the process of customs clearance. Similarly, the study revealed that integrated customs management system adoption reduced the cost of doing business and facilitated trade in Kenya because through the ICMS, goods flowing in and out of the country for business purposes can easily be facilitated hence low cost incurred by traders. Furthermore, study showed that there was a reduction of dangerous cargo that were being diverted to the local market in Kenya. Lastly, findings indicated integrated customs management system adoption reduced the cost of doing business to the traders (import and export).

5.2.2 Single Window System

From the findings, the Single Window System enable and facilitates clearance of goods within the borders thus positively contributes to trade facilitation. From the findings, majority of the respondents strongly agreed that single window system allows traders to lodge the information with single body to fulfill all import and export related regulation requirements. The study established Single Window System hastens the cargo clearance process at the Kenya border point reducing the cost of doing business and facilitate trade it in Kenya. Moreover, majority of the respondents indicated that the collection of duties or taxes became easier or faster as a result of Single Window System. In addition, Single Window System has contributed to reducing dangerous cargo that are being diverted to the local market in Kenya

5.2.3 Electronic Cargo Trucking System

Findings show that in regards to Customs Systems on Trade Facilitation, the adoption of Electronic Cargo Trucking System by customs department to a great extent enable the data to be captured on the system to be shared on the real time basis resulting to reduce tax evasion, dumping, diversion and cargo theft. And this to a great extent has in customs department eliminated the paper work involved in the old ways of doing business at the border post and this makes clearance to be much faster for traders (import and export). Findings also showed that there were more benefits of using customs systems on trade facilitation and determined that there is significant reduction with regards to average lodgment time. In addition, the study established that Electronic Cargo Trucking System brings a significant reduction with regards to average cost for lodgment and for clearance as well as a significant reduction with regards to average cost of clearance.

5.3 Conclusions

The following conclusions were drawn based on the results of this research; the adoption of various systems on customs departments had a major effect on traders and clearing and

forwarding companies. All companies were compelled to have an IT system with internet connectivity to allow the electronic Customs system to be used. The average lodging time and clearance time have been significantly decreased by the electronic Customs systems. Due to the implementation of customs electronic processes, lodging costs and clearance costs have also been drastically decreased. From these findings, we can conclude that the quicker movement of products is now taking place with the implementation of various customs systems. Thus, the implementation of various customs systems has a major impact on facilitating trade in Kenya.

5.3.1 Integrated Customs Management System

The study concluded that the use of Integrated Customs Management System by customs department contributes to facilitation of trade in Kenya since it had quite been well adopted and its adoption had brought significant gains in the process of customs clearance. Its adoption also reduced the cost of doing business and facilitated trade in Kenya because through Integrated Customs Management System, goods flowing in and out of the country for business purposes can easily be facilitated hence low cost incurred by traders.

5.3.2 Single Window System

Based on the Single Window System the study concluded that it facilitates clearance of goods within the borders thus positively contributes to trade facilitation. It also allows traders to lodge the information with single body to fulfill all import and export related regulation requirements. Furthermore, Single Window System hastens the cargo clearance process at the Kenya border point reducing the cost of doing business and facilitate trade it in Kenya.

5.3.3 Electronic Cargo Trucking System

With regard to cargo trucking system, study concluded that Electronic Cargo Trucking System to a great extent enable the data to be captured on the system to be shared on the real time basis

resulting to reduce tax evasion, dumping, diversion and cargo theft. And this to a great extent has in customs department eliminated the paper work involved in the old ways of doing business at the border post and this makes clearance to be much faster for traders (import and export). In addition, Electronic Cargo Trucking System brings a significant reduction with regards to average cost for lodgment.

5.4 Recommendations

The study revealed a statistically substantial link between integrated customs management system, Cargo Tracking systems and single window system on customs trade facilitation in Kenya. From the findings,

5.4.1 Integrated Customs Management System

I recommend that KRA should emphasize more on stakeholder training on the new system implemented and any automations done on them. This will help the stockholders involved in trade such as traders, clearing agents, customs officers to gain more knowledge to the new system since technology is changing rapidly. KRA has a mandate to enhance self-declarations of goods which affects compliance. This will make customs department raise more revenue through the awareness of the new systems implemented.

5.4.2 Electronic cargo tracking System

I recommend that Cargo Tracking Systems should be adopted by customs department since it great effect on cargo accountability at the ports and on the transit routes and that E-seals ought to be subsidized to allow greater inclusion of all stakeholders and that more emphasis should be put on the use of IT in encouraging trade by all stakeholders and that customs department should prepare adequately for the introduction of fresh IT technologies.

5.4.3 Single Window system

I recommend that the single window system should be adopted by customs department since it greatly affects the accountability and efficiencies of customs administration. KRA should also invest more in this system since it has reduced clearance time at the border post hence reducing the cost of doing business. The cargo congestion experienced at the border posts has greatly reduced, hence full implementation of these system will reduce the demurrage cost to bare minimum.

5.5 Areas for further research

A research on the effect of customs electronic processes on revenue performance needs to be conducted. This research identified the advantages of implementing Vis a Vis customs electronic process as the manual lodging scheme in place prior to implementing the ICMS in Kenya. Nevertheless, as the research focused only on three specific objectives Integrated Customs Management System, Cargo Tracking systems and the Scanner Technology, other research can be carried out on the factors affecting the ICMS implementation.

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APPENDICES

Appendix I: Letter of Introduction

Ruth Jepkosgei Mutai,
P.O. Box 48240-0100,
Nairobi.

To whom it may concern,

RE: INTRODUCTION LETTER

I Ruth Jepkosgei Mutai, currently a student at Kenya School of Revenue Administration Perusing Postgraduate Diploma in Customs Administration. I am currently carry out a research on the effects of automation of customs systems on trade facilitation in Kenya. Your responses will be of great help and will be used for academic purposes only and your information will be treated with confidentiality. The questionnaire will take a few minutes of your time and all efforts will highly be appreciated.
Thank you in advance.

Sincerely,
Ruth Jepkosgei Mutai
0723787662

APPENDIX II: QUESTIONNAIRE

Instructions

Please fill in the black spaces below to your understanding. The information provided to this questionnaire will be kept confidential and will only be used for statistical purposes.

SECTION A: GENERAL INFORMATION AND BIODATA

1. Gender of the respondent

a) Male ☐ b) Female ☐

2. What is your age bracket?

a) 18-28 years ☐ b) 29-39 years ☐ c) 40-49 years ☐ d) 50-59 years ☐

3. For how long have been working in customs department?

a) 0-3 years ☐ b) 4-7 years ☐ c) 8 years and above ☐

4. What is your highest academic qualification?

a) Diploma ☐ b) Degree ☐ c) Post graduate Diploma ☐ d) Masters ☐ c) Doctorate ☐

SECTION B: QUESTIONS ON INTEGRATED CUSTOMS MANAGEMENT SYSTEM

5. Below are the statements of the effects of Integrated Customs Management System in your department. Please indicate your response to each statement in the table provided.

Key

1= strongly disagree 2=Disagree 3= Agree 4= strongly agree

Statement	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**
Does the Integrated Customs Management System adoption hasten the cargo clearance process at the Kenya border point?				
Does the Integrated Customs Management System reduced cost of doing business and facilitate trade it in Kenya.				
Does the collection of duties or taxes have become easier or faster				

as a result of Integrated Customs Management System adopted by Kenya revenue authority in Kenya?				
There is reduction of dangerous cargo that is being diverted to the local market in Kenya.				
Does the Integrated Customs Management System adoption reduce the cost of doing business to the traders (import and export).				

SECTION C: ELECTRONIC CARGO TRACKING SYSTEM

6. Below are the statements of the effects of Electronic Cargo Tracking System in Customs department. Please tick your response to each statement in the table provided.

Key

1= Strongly Agree 2=Agree 3= Disagree 4= Strongly Disagree

Statement	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**
The adoption of the Electronic Cargo Trucking System by customs department enable the data to be captured on the system to be shared on the real time basis resulting to reduce dumping, tax evasion, cargo theft and diversion.				
The adoption of Electronic Cargo Trucking System in customs department has eliminate the paper work involved in the old ways of doing business at the border post and this makes clearance to be much faster for traders (import and export).				
The quality of service to traders due to increase of service delivery as a result of adoption of the Electronic Cargo Trucking System.				
Traders are now more willing to do the business with customs due to the efficiency created by the Electronic Cargo Trucking System which makes the trade to become easier without delaying their clients.				

There is reduction of dangerous cargo that are being diverted to the local market in Kenya				

SECTION D: QUESTIONNAIRES ON SINGLE WINDOW SYSTEM

7. Below are the statements of the effects of Single Window System in Customs department. Please tick your response to each statement in the table provided.

Key

1= Strongly Agree 2=Agree 3= Disagree 4= Strongly Disagree

Statement	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**
Does the Single window system adopted hasten the cargo clearance process at the Kenya border point?				
Does the Single window system reduce the cost of doing business and facilitate trade it in Kenya.				
Does the collection of documents, duties or taxes become easier or faster as a result of the Single Window System adopted by Kenya revenue authority in Kenya?				
There is reduction of dangerous cargo that are being diverted to the local market in Kenya				
Does the Single Window System implemented reduce the cost of doing business to the traders import and export)				

SECTION E: QUESTIONNAIRES ON TRADE FACILITATIO

7. Below are the statements of the effects of Single Window System in Customs department. Please tick your response to each statement in the table provided.

Key

1= Strongly Agree 2=Agree 3= Disagree 4= Strongly Disagree

Statement	**Strongly Disagree**	**Disagree**	**Agree**	**Strongly Agree**
Significant reduction with regards to average lodgment time				

Significant reduction with regards to average cost for lodgment				
Significant reduction with regards to average time for clearance				
Significant reduction with regards to average cost of clearance				
Significant reduction with regards to average cargo diversion				
Significant reduction improvement in cargo security				

THANK YOU SO MUCH FOR YOUR TIME