

**EFFECT OF AUTOMATION ON CUSTOMS REVENUE  
PERFORMANCE IN KENYA:**

**A CASE STUDY OF SIMBA 2005**

**NEWTON KARUMBA MAINA**

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AGRICULTURE AND TECHNOLOGY.**

**2018**

## DECLARATION

I hereby declare that this research project is my original work and my own effort and that it has not been submitted to other institution of higher learning for any academic purposes.

Signature.....

Date.....

**Newton Karumba Maina**

**HDB 336-C016-4303-/2016**

This project has been submitted for examination with my approval as university supervisor

Signature .....

Date .....

**Mr. Kimani Kangethe**

**Kenya Revenue Authority**

## **DEDICATION**

This research project is dedicated to my beloved family, my parents and my colleagues for their understanding, unreserved support and encouragement.

## **LIST OF ABBREVIATION AND ACRONYMS**

<b>ANOVA</b>	Analysis of Variance
<b>BOFFIN</b>	Bishops Office Freight Forwarders Integrated Network
<b>EAC</b>	East African Community
<b>CSD</b>	Customs Service Department
<b>DC</b>	Developing Countries
<b>DPC</b>	Document Processing Center
<b>GDP</b>	Gross Domestic Product
<b>IDF</b>	Import Declaration Fee
<b>ICT</b>	Information and Communications Technology
<b>KIPPRA</b>	Kenya Institute for Public Policy Research and Analysis
<b>KNBS</b>	Kenya National Bureau of Statistic
<b>KRA</b>	Kenya Revenue Authority
<b>NSE</b>	Nairobi Security Exchange
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>OTPR</b>	Office of Tax Policy Research
<b>PDL</b>	Petroleum Development Levy
<b>PIN</b>	Personal Identification Number
<b>RARMP</b>	Revenue Administration Reform and Modernization Program
<b>RML</b>	Road Maintenance Levy
<b>R &amp; D</b>	Research and Development
<b>SARS</b>	South Africa Revenue Services
<b>USA</b>	United States of America
<b>VAT</b>	Value Added Tax

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## **DEFINITION OF TERMS**

**Automation:** The technological upgrade undertaken by Kenya Revenue Authority as part of his strive to increase tax collection.

**Manifest Management System (MMS):** Is implemented by KRA as an add on to Simba 2005 management system to allow KRA to compare the bay plan filed by the port of origin with the Ship manifest to determine whether there is wrong declaration of content.

### **Automated Payment System.**

This is one of the functions found in simba, that allows, only fully paid entries to be released.

### **Automated Declaration.**

This is also a function found in simba 2005,that allows the clearing agents to declare the contents of the consignment the helping clear,without visiting any office of doing paperwork,the just log into the system and do it by themselves.

### **Automated Entry Lodgment.**

A function of Simba 2005 ,with an Electronic Entry Lodgment System, which resulted in the efficiency, and effectiveness of various customs processes. Consequently, Custom Brokers can now lodge their entries, query entries statuses and pay duties over the Internet resulting in improved and enhanced customs revenue collections.

### **Automated Documents Processing.**

This resulted after the replacement of the long room (manual system that was semi-automated) with Document Processing Centre (DPC) which facilitate operations on 24-hour basis .This shortened the transaction processing time and maximizing customs revenue collection

## ABSTRACT

Customs revenue growth is the main administrative approach for customs taxation in developed countries and the premise of this study is to investigate the effect of the implementation of Simba 2005 system on custom revenue performance in Kenya. Simba 2005 system is a web-based application that gives taxpayers the convenience of lodging entries online tax payments from the comfort of their homes or offices. Descriptive research design was used in order to ascertain reliability of data collected to describe the relationship between the variables of interest in the study and consequently test the research hypothesis. This study collected secondary data, secondary data was obtained from published material and information from other sources such as annual reports and published data from KRA and KIPRA before and after the implementation of Simba 2005. The research obtained quantitative data. Regression analysis was employed in data analysis with aid of the Statistical Package for Social version 23 Sciences (SPSS) package. Descriptive statistics included percentages and measures of central tendency (mean and standard deviation). The motive of the introduction of Simba 2005 system is an increase in the efficiency of customs revenue collection and revenue growth for the tax authority; however, the most importance object is the need to ensure stable customs revenue growth without having an unacceptable detrimental effect on the other key characteristics of a well-designed tax system. According to prior studies on this topic, one of the main facilitating factors in achieving these aims is the development of the level of a high efficient tax system and expanding trade facilitation. Census sampling of all the 14 customs revenue collected on Simba 2005 was used for the study. The variables for this study were automated payments system, declaration, entry lodgments and document processing. The study findings established that there was a significant increase in the customs revenue performance after the implementation of a Simba 2005 system in 2005. prior to the introduction of the new system the average collections of revenue were low after which they increased significantly afterwards. The overall regression estimation of the model is significant at 5% level of significance. It indicates that the model is significant in explaining the relationship between the automated payment system, declaration, and document processing and customs revenue performance at a 5% level of significance.

The results from the analysis indicates that automated payment system, declaration, entry lodgment and document processing are significant in explaining customs revenue growth at significance of 0.02. These finding are corroborated by findings on automated customs system on revenue collection by Sani (2009) in a study conducted in Nigeria that found that automated tax system reduced costs, saved time, improved accuracy, improved reliability and quality of services and eventually led to improved customs revenue collection and trade facilitation hence significant growth in customs revenue performance.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of the Study**

Kenya introduced the Simba 2005 with the hope that this would, among other things, enhance customs revenue collection, improve tax administration, and reduce revenue leakages and collection costs. Efficient and effective revenue collection is a key driver for tax revenue growth, hence financing development and strengthening good governance (Development Bank 2015). Information technology (IT) has a great potential to improve revenue collection by automating processes, better servicing taxpayers and increasing compliance.

Historically, in Kenya before the implementation of Simba 2005 entries and payments were filled in manually. This process had many loopholes resulting in revenue leakages thereby denying KRA intended revenue collection performance. Taxation is one of the important elements in managing national income, especially in developed countries and has played an important role in civilized societies since their birth thousands of years ago (Oats 2009). In every jurisdiction, tax authorities are empowered to collect revenue from taxpayers. There is an increasing need by the government to collect much revenue by way of taxes to face the increasing financial expenditures budgeted by the country. Automated systems have been proven capable of introducing massive efficiencies to business processes that can result in increased revenue collections (Zhou and Madhikeni 2013)

Early efforts to modernize tax information systems of developing countries through projects financed by international development agencies always present a mix of special challenges (Heseltine, 1998). Because of these challenges Simba 2005, which represent the central role and fuels almost all daily operations of modern customs Administrations anywhere in the world was introduced by KRA. However, customs administrators in many developing countries still have to cope with paper-based, largely manual information systems – or, at

best, with data systems supported by very limited, outdated and inadequate computer hardware and software.

Customs automation has a positive effect on the cost of tax administration, efficient document processing and effectiveness of revenue collection. In Addition, automation of process at revenue collection points has a positive effect on the tax clearance time (Haughton and Desmoulins, 2001). Automation of Tax-Information Processing System does not require high equipment cost, but rather helps to ease the burden of over-staffing, high re-engineering cost confronted by among other government institutions.

Increased focus on areas of greater revenue risk would form a major part of the strategy of any revenue authority, which relies on a self-assessment system. In order to curb tax evasion, revenue authorities make use of data base programs to assist with case selection. A data base is a research tool which combines data from various revenue information systems and identifies areas of risk to be investigated by the audit section Dramod ( 2004). External data base programs from other Government or non-Government agencies are also used, such as those of the Registrar of Companies, the Deeds Office, and others. As such, automation of tax collection system has a great impact on the level of revenue collection in any economy (de Wulf and Sokol, 2005).

With the today's ever growing knowledge based world, providing public services are heavily depend on information and communication technologies. The online information-processing avenue has simply become the basic information communication and sharing area of the future (UNCTAD, 2008). While information technologies provide austerity at an important level, they also improve the quality of the public service. One of the important application area related to the use of information technologies in the public services is taxation. Electronic tax return, payment systems and tax automation systems generated in

this area gain an increasing importance because of their ability to increase collections. Electronic tax management applications firstly started in the USA, and then spread in other developed and developing countries.

Increased focus on areas of greater revenue risk would form a major part of the strategy of any revenue authority, which relies on a self-assessment system. In order to curb tax evasion, revenue authorities make use of data base programs to assist with case selection. A database is a research tool, which combines data from various revenue information systems and identifies areas of risk to be investigated by the audit section (Dramod, 2004).

Ling (2008) says that many studies around the world have shown taxpayer's resistance to the use of automation process and this was very evident during the implementation of Simba 2005 and even recently during the implementation customs electronic cargo tracking systems and I Tax rolls out in the recent past by KRA, hence a big challenge to the authorities. According to Yılmaz (2014) many in the international donor community supporting tax reforms had assumed that automation would reduce tax compliance costs for taxpayers. However their survey evidence from investment climate work conducted by the World Bank Group shows that this is not necessarily the case and this is evident from the KRA case of late many taxpayers have come with new methods of trying to beat the I Tax system and Simba 2005. This is aided through the use of fake invoices and reducing the age of imported cars or false entries of information to reduce their tax liability.

### **1.1.1 Concept of Customs Revenue Performance**

The term customs revenue means the following: (1) Assessing and collecting customs duties (including anti-dumping and countervailing duties and duties imposed under safeguard provisions), excise taxes, fees, and penalties due on imported merchandise, including classifying and valuing merchandise .According to a 2008 report by KRA, the Simba 2005

system has been at the center of customs modernization in Kenya and has facilitated the automation of about 90% of operations at customs, thereby doing away with the requirement for tax payers to physically visit KRA due to the web based characteristics of the system. As a result, over the recent years a lot of gains have been realized with customs revenue rising from KShs.96 billion in financial year 2003/04 to KShs. 443 billion in 2016/2017 financial year.

Customs recorded strong growth in 2016/2017 at 14.9 percent compared to a four-year average of 14.7 percent, attributed largely to tighter enforcement measures through among others, bench marking of cargo values to address undervaluation, greater use of scanners, and, stricter application of cargo auction processes.

### **1.1.2 Simba 2005**

Because of the many problems with BOFFIN, KRA management viewed substantial reform and automation as the only effective course of action especially within customs. In the end, executives at the KRA agreed to focus automation efforts on the customs department and to delay improvements to the authority's system. The reform team's aim was to replace BOFFIN and thereby both modernize the trade process for all of Kenya's border entry sites and automate tasks previously done manually. Due to lack of reliable customs system, which was also cited by IMF besides other bodies, KRA sought to go forth and implement the SIMBA system in 2005. Systems that were running parallel to the SIMBA system were - TRADE-X which is the Customs clearance management module. LEUK provided an interlinking between Customs agents and shipping line agents; it was replaced with the Manifest Management System (MMS).PAYBOX links the banks with the customs department, which was replaced with payment gateway system and ORBUS module, which facilitated electronic contact between Customs and Customs agents, Ship agents, carriers as well as regulatory government agencies. In the same spirit of embracing technological

advancement, another set of automation so as match out with newer requirement.

The Electronics Container Tracking Systems (ECTS) was adopted. This is both hardware and software, the hardware included seals to be affixed in every good that are to be transported on transit to neighboring countries. This was done since a lot of tax evaders were using transit goods for dumping. A valuation database was also implemented in-order to ensure that under valuation of imported goods was eradicated. Lastly, a strive towards the regional integration of the northern corridor in line with the ECTS that has already taken place in early 2017 and the awaiting of the implementation of the Integrated Customs Management System (ICMS) which will be an upgraded SIMBA is likely to take place early next year, portrays the spirit of the organization of keeping tandem with the technological upgrades in order to meet emerging need but this study will focus on Simba 2005 system.

### **1.1.3 Target group**

Target group for this study were clearing agents, KRA staff, government tax policy experts and Kenya revenue authority who will benefit from the efficiency and effectiveness of the system in custom general operations.

### **1.2 Problem Statement**

KRA Simba 2005 system was introduced by Kenya Revenue Authority to increase customs revenue collection, administration, avail services to the taxpayers and clearing agents all the time from anywhere, reduce costs of compliance and improves customs revenue growth. However, customs tax revenue growth levels remain low and tax collections are below the targets set by National Treasury in collaboration with Kenya Revenue Authority. Despite the increasing need to increase customs revenue collection and enforcement so as to provide public services, and the introduction of electronic tax systems in most countries across the

global divide, developing countries like Kenya, still face the challenges of low customs revenue collection` and customs administration.

Muita (2011) argued that automation of tax systems are rapidly replacing paper -based tax reporting systems. Promising many advantages over the traditional method of hard copy tax entries lodgments and documents processing, these systems promise faster process, lower costs and increased efficiency there by resulting into higher customs revenue growth. The main objective of Customs process automation is liberalization of the market thereby attracting foreign direct investment. It resulted a reduction in the rates that customs authority charge on different types of transactions. Since the formation of KRA, the collection of customs revenue has grown continuously. In addition, administration of taxes has been strengthened. However, the customs revenue has continued to fall below target. This has resulted to an increase in government borrowing thereby affecting negatively on economic growth.

The Kenyan budget has continued to increase and hence there is need to establish whether customs reforms have been important in increasing revenues. This study, therefore, seeks to fill the knowledge gap by answering the research question; how is the effect of automation on customs revenue performance in Kenya?

Most of the studies which have been done on related topic as stated above, have taken place in developed countries where majority of taxpayers and clearing agents appreciate the need for customs tax compliance and efficiency. Even though a number of studies have been done in Kenya about Simba 2005 and other factors none has ever considered the main process, which has been automated as payment system, document processing, automated declaration and automated entry lodgment as other major factor in contribution to customs revenue collection performance. This therefore, leaves a gap since the researcher believes that

whatever success KRA has had in the last ten years should be attributed to reforms. The study therefore, sought to fill this gap in knowledge by looking at the adoption of automation as strategic tool in enhancing tax customs revenue collection.

### **1.3 General Objective of the Study**

The general objective of the study was to establish the effect of automation on customs revenue performance in Kenya

#### **1.3.1 Specific Objectives of the Study**

The specific objectives of this study were to:

- i. Establish the effect of automated payment system on customs revenue performance in Kenya
- ii. Establish the effect of automated declaration on customs revenue performance in Kenya.
- iii. Establish the effect of automated entry lodgment on customs revenue performance in Kenya.
- iv. Establish the effect of automated document processing on customs revenue performance in Kenya.

#### **1.4 Research Questions**

- i. How is the effect of automated payment system on customs revenue performance in Kenya?
- ii. How is the effect of automated declaration on customs revenue performance in Kenya?
- iii. How is the effect of automated entry Lodgment on customs revenue performance in Kenya?
- iv. How is the effect of automated document processing on customs revenue performance?

### **1.5 Significance of the Study**

The study enabled statistical interpretation of the probability of the theory and other back up information about the theory, the practical empirical effect of the study on how automation specifically the Simba 2005 effect on customs revenue performance in comparison with other previous KRA customs revenue collection systems like Boffin prior to the automation of customs process.

The government will use information obtained from the study as a basis for policy formulation on revenue collection in KRA and other government agencies in order to improve customs revenue collection performance for economic growth and in the formation of strategies to promote an enabling environment for their tax compliances. The findings of the study will assist KRA management to determine the main barriers to revenue growth and establish proper and adequate mechanisms to be adopted to ensure success of the program and revenue administration. The academia and student of taxation will also use the report for the advancement of their knowledge gaps and further their future research on areas of customs revenue growth and effect of automation on customs revenue collection processes.

### **1.6 Scope of the study**

Though there are some studies which have been done on related topics as stated above, in developed countries where majority of taxpayers and clearing agents appreciate the need for customs tax compliance and efficiency, none has ever considered the main process. Our study focused on that, which is, the automated payment system, document processing, automated declaration and automated entry Lodgment as other major factor in contribution to customs revenue collection performance.

## **1.7 Limitations of the Study**

It is evident that this study has a number of limitations. First, this study is unable to determine all other factors that may affect customs revenue performance, the study concentrated only on the mentioned four variables, thereby leaving other external micro economic variables and customs administrative reforms contributing to custom revenue growth, because this would have been time consuming and make the collection of data from sources lengthy, hence low response rates would potentially have occurred.

Improved survey measures of revenue performance and various potential custom revenue growth determinants such as free cross border movement of goods, regional political stability, economic growth, tariffs and trade facilitation that could improve the reliability of the empirical results and further reduce the risk of measurement error. This study was unable to include those variables at the same time. Therefore, to balance this issue, two approaches direct and hypothetical questions might be needed in the future.

The types of approaches used in customs revenue performance measuring t (i.e. by using secondary might provide limited results, and different research designs such as interviews or an experiment could produce different results

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

In this chapter, the empirical and theoretical literature detailing this study is discussed. The empirical studies on the effect of automation on customs revenue performance in different countries show that there is a positive relationship between automation of custom processes and revenue performance.

#### **2.2 Theoretical Review**

There are three theories which guided this study. The theories included; Expediency Theory (Anyafo, 1996; Bhartia, 2009), Economic Theory and Technological Determinism Theory.

##### **2.2.1 Expediency Theory.**

This theory asserts that every tax proposal must pass the test of practicality. It must be the only consideration weighing with the authorities in choosing a tax proposal. Economic and social objectives of the state as also the effects of a tax system should be treated irrelevant Anyafo (1996).The same findings were confirmed by other tax scholars .Bahrti (2009) also noted that any tax system propped by government should take into consideration social and economic objected to be achieved by that tax system. There are pressures from economic, social and political groups. Every group tries to protect and promote its own interests; authorities are often forced to reshape tax structure, and systems to accommodate these pressures. In addition, the administrative set up may not be efficient to collect customs revenue at a reasonable cost of collection and ensure the required adequate customs revenue performance. Taxation provides a powerful set of policy tools to the authorities and should be effectively used for remedying economic and social ills of the society such as income inequalities, dumping of counterfeit product and regional disparities.

### **2.2.2 Economic Theory**

The basic point advanced by theorists of this school is that the rational taxpayer's main goal is to maximize their financial position. They will continuously attempt to evade taxes whenever the benefits from tax delinquency outweigh the risk of detection, punishment and demurrage cost imposed by Simba 2005 for non-compliance, a cordoning to (Ellingham and Sanmo 1972). This theory explains that rate of customs revenue growth will be directly related to Simba 2005 system this is because of ease of detection of undervaluation and mis-declarations of imports by the system. Gutierrez (2008) supported the theory in on his emphasis on the applications of automation in customs revenue growth. The standard economic analysis thus concludes that since compliance decisions are based on an assessment of costs, benefits and systems used by the tax system, high probabilities of detection for non-compliance, large penalties of detection for non-compliance and large penalties for discovered violators through post clearance audit would encourage greater compliance, hence maximizing customs revenue growth rate.

### **2.2.3. Technological Determinism Theory**

Technological determinism (TD), is a reductionist theory and states that technology is a social structure or a force which drives change. TD changes the organizational culture, structure, reporting line, norm and many other aspects including the modes of operations. The two main hypothesis that technological determinism depends are; a belief that the technical base of a society is the fundamental condition affecting all patterns of social existence ,belief that technological change is the single most important source of change in a society hence this would have an impact on customs revenue enhancement. Critics like (Chandler, 2000)states that other than technological issue other factors have driving forces and some of them include political issues, class interests, economic pressures, educational background, general attitudes and others. TD has also had a long and controversial history in the social

sciences in general and in organization studies in particular. Critics of TD argue variously that technology itself is socially determined, that technology and social structures co-evolve in a nondeterministic, emergent process, or that the impact of any given technology depends mainly on how it is implemented which is in turn socially determined. Given the proliferation of new technologies in modern capitalism, the TD debate is continually renewed. Holnike (2005) also supported the above theory in automated tax administration structure.

### **2.3 Critique of the existing literature.**

Several studies both locally and internationally has been done on the role Information Technology plays in customs revenue collection because of automation customs environment. It may support the entire clearance process - from lodging, acceptance and processing of cargo and goods declarations for import, export and transit, payment of applicable duties and taxes, to release of the goods from Customs control. Customs automation offers new possibilities to administrations such as pre-arrival processing and automated release of securities and guarantees. It can also facilitate the use of risk management and risk-based selectivity and the collection of data for reporting external trade statistics this is according to study carried by UNECE (2012). Wilson (2007) estimated that all countries could benefit from Customs that are more efficient administration procedures, with the greatest benefits accruing to those countries with the most efficient Custom administrative procedures. Wilson et al., (2004) found a significant positive relationship between trade flow and port efficiency, Customs environment, regulatory environment and service sector infrastructure.

Tax payment system, which facilitate prompt payment of all taxes, is a critical concern of all nations because it is positively associated with revenue generation and economic growth, International Monetary Fund (2007).According to (Berida,2008).IT based lodgment benefits clearing Agents by lowering unit operational costs and total cost burdens enough to

make them more competitive with their large counterparts, the manpower required to undertake import procedures is lessened, financial outlay is reduced by the shorter wait, and uncertainty is eliminated with online information about the status of entries and bureau of Customs announcements hence on the other hand enhancing Customs revenue collection. Electronic Lodgment allows registered clients to use any computer with internet connectivity, making it easily accessible. Prior to this, importers/brokers had to go to the ECC for lodgment or be EDI or DTI enabled. Electronic Lodgment now makes it easier and cheaper for all importers/brokers, regardless of size to file entries. Since small importers account for over half of the 800,000 import entries lodged annually, the number benefiting from electronic lodgment is substantial (KIFWA,2009).

Automated Customs Operations System (ACOS), the first IT -based system that sought to automate the entire cargo clearance chain, was initiated in 1997.By 1998, almost all segments of cargo clearance were fully automated with the system running at all major ports in the world(Gulane,2007).Systems and procedures are re-engineered in the following ways: processes are automated to reduce intervention in 80 percent of transactions, controls are positioned at points where they would be most effective without obstructing business, remote facilities are provided for lodging declarations, paperless and cashless processes are introduced, certain operations are privatized, and finally agencies participating in the system are linked electronically (Parayno,2004)

Abiola and Asiwah (2012) did a study on the impact of Information technology on government revenue in a developing economy using a case study of Nigeria. The study looked at the information technology on Nigeria Tax administration and its capacity to reduce tax evasion and generate revenue for development desire of the populace. The study found among other things that increasing tax revenue is a function of effective

enforcement strategy and efficient information system employed by a tax revenue authority, which is the pure responsibility of tax administration. Changes tariff rates and other fees are accurately accommodated. Inconsistency and errors in duty calculation have been eliminated. Reconciliation of payment is now provided on demand. Management and activity reports are all easily generated and made available through the implementation of data warehousing tools. Collection points no longer require cashiers, and long queues have been eliminated

Recent studies associate a significantly positive role of automation on containing the high cost, time inefficiency and ineffective manual procedures of tax administration and revenue collection, corruption, delays and computing errors (Vasudeva, 2007); Peled (2000); Zineldin (2007). These scholars posit that automation is an avenue to efficiency and effectiveness in terms of clearance time and cost of revenue collection.

Sigey (2010) researched on “the impact of automation as a structural change strategy on customs clearing procedures at Kenya Revenue Authority”. Using the study, He Sought to find out and explain the actual “impact of automation on clearance procedures in the customs service department of the KRA”. Sieyès findings indicated that automation of clearance procedures in the local tax department greatly enhanced operational usefulness and productivity, increased employees’ professionalism and productivity, reduction of operational costs and improved governance. The study recommended that the KRA management should think about the safety of the system in regards to manipulation, which can be a significant danger to the organization and to the Kenyan Government as a whole.

According to Sani (2009) automation system helps to improve revenue collection. They are based on the electronic payment system through applications such as toll revenue collection, automatic fare collection, bus revenue system and parking system. Additionally by

automating revenue collection, service providers have better audit trail since all transactions captured can be detailed by time, whom and where. This prevents revenue loss through abuses as all moves are recorded electronically. Automation also allows huge transactions to be handled efficiently, According to him, automating revenue collection is especially critical within the revenue collection agencies, which requires fast and efficient output, as there will always be a tradeoff between control and operational needs.

Automation or computerization of Customs functions can improve efficiency and effectiveness and remove many opportunities for corruption. Automation can also increase the level of accountability and provide an audit trail for later monitoring and review of administrative decisions and the exercise of official discretion. Where possible automated systems should be configured in such a way as to minimize the opportunity for the inappropriate exercise of official discretion, face-to-face contact between Customs personnel and clients and the physical handling and transfer of funds (Revised Arusha Declaration.2003).

### **2.3.1 Automated Payment System.**

This added feature was made possible by the integration of the KRA Simba 2005 system, Cargo Processing, CCRS and appointed commercial banks thus making the system faster and more accessible and only allowing fully paid entries to be released. There was further reduction of processing time, reconciliation of payments with entries processed, the reduction of queries at collections points there by enhancing customs revenue collections .The initial computerization added enhancements change in management processes and re-engineering. Automation also resulted in major benefits like increased revenue collection for the Customs Department, ease and speed with which import entries and are submitted and payment made from the convenience of Customs Brokers' offices via the Internet helping in facilitating 24 hours, 7 days per week entry lodgments.

### **2.3.2 Automated Declaration.**

The electronic Customs declarations, document processing and goods clearance brings substantial time savings and predictability to all aspects of cross-border trade and limit the room for maneuvers by traders and Customs officials alike to circumvent the system. The collection of taxes and duties is enhanced, as is the statistical database for fiscal and economic policy purposes. And finally, as part of the process of the automation of Customs, working relationships between Customs and the private sector improve. More specifically, benefits include: Faster electronic lodgment of Customs declarations, using Direct Trader Input (DTI) or other online connections; Reduced Customs clearance times and less physical examination of shipments owing to the use of risk management applications; Increased collection of duties and taxes and less fraud due to the uniform application of laws and regulations, the automated calculation of duties and taxes.

### **2.3.3 Automated Entry Lodgment.**

The introductions of the Customs Simba 2005, from a paper-based system to an electronic system, have significantly transformed the management processes relating to import, export and collection of revenue at KRA points of entry. This transformation was initiated mainly through the implementation of the Simba 2005 Electronic Entry Lodgment System, which resulted in the efficiency, and effectiveness of various customs processes. Consequently, Custom Brokers can now lodge their entries, query entries statuses and pay duties over the Internet resulting in improved and enhanced customs revenue collections.

### **2.3.4 Automated Documents Processing.**

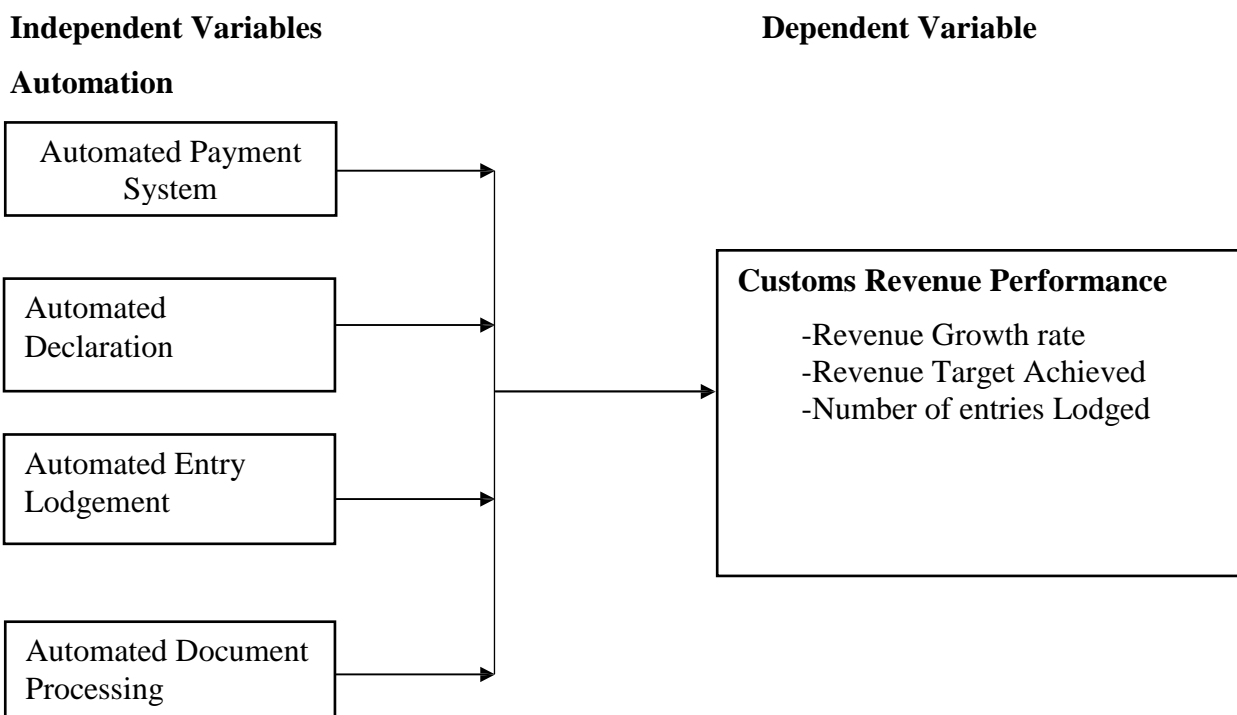
This resulted in replacement of the long room (manual system that was semi-automated) with Document Processing Centre (DPC) which facilitate operations on 24-hour basis. This shortened the transaction processing time and maximizing customs revenue collection. In addition. The use of Cargo Management Information Systems (CAMIS) which accounts for UN-declared cargo intended for Container Freight Stations (CFS) and Inland Container

Depots for clearance hence all this coupled with automated environment has actually help KRA to improve on Customs revenue collection as opposed the manual document processing which was tedious and less economical hence prone to revenue leakages.

### 2.3.5 Conceptual Framework

A conceptual framework is a systematic representation between the relationship of variables and congregative map. The conceptual framework describes the effect of automation on customs revenue performance.

**Figure: 2.4.1: Conceptual Framework**



Based on many customs revenue collection shortfalls resulting to inconsistency on customs revenue performance, it is of the opinion that Revenue Authorities should consider the use of non-monetary penalties that attach a social cost response to non-compliance behavior. Implementation of Trade X has not been without challenges. On its onset, a court barred KRA from implementing it in a case forwarded by representatives of clearing and forwarding Agents. KRA discarded the ruling and went ahead to implement the system, There was a

standoff between clearing agents and KRA leading to a pile up of documents at customs offices and creating disarray in the clearing and forwarding sector that threatened operations in industries in Kenya. Consignments at the airport, ICD and Mombasa Port incurred heavy demurrage charges. The above incidents frustrated clients as they incurred heavy losses (Central Bank of Kenya, 2007). The system was also very slow at the beginning this was because of unfamiliarity with operations of the system. The data input system had not been completely constructed and there were various entries not reaching completion electronically.

As the world in general moves upwards, computer age, Africa should step up its resources and attempt to move at the same pace with the rest of the world. Lack of sound policy initiatives, inadequate indigenous expertise and lack of funds are to blame for the slow pace at which Africa is embracing information technology. Customs procedures in many third world countries have faced an overhaul and many countries are making an effort to computerize customs procedures (Robins and Coulter 2002). Various research case studies have been carried out to determine the extent to which computerization has influenced customs clearing procedures.

#### **2.4 Summary of the Literature Review.**

The above literature has clearly established that automated payment system, automated document processing automated entry lodgment and automated declaration in Simba 2005 has direct effect on the customs revenue performance, implying that enhancing the efficiency of these modules in the Simba 2005 leads to increased custom revenue collection performance. This can help the country to realize its goals and objectives as set out in the budget and that is why the growing concern of tax administrations throughout the world is on how to simplify and improve efficiency at customs point's entry worldwide and customs revenue target achievements.

Emerging trends in the administration of taxes are that governments seek to borrow best practices like adopting technological innovations. Grant (2005) did a study on the capabilities of a firm to adapt to new technology for enhanced tax collection. The study found that only companies with high capabilities are able to realize the impact of new technology in their endeavor to meet the objective goals. Duncan (2000) further looked at the factors that facilitate the successful adoption of technology as a customs revenue enhancement tool. In his study, he concluded that three factors must be in place to realize this objective, namely: flexible Information Technology structure, competent IT skill base and strong customer orientation.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

In this chapter, the research methodologies that were followed in the study are discussed in detail. This includes the research design, sampling design, measuring instruments and data analysis.

#### **3.1 Research Design**

This study adopted a descriptive research design. According to Mugenda and Mugenda (2003), descriptive research is a process of collecting data in order to test hypotheses or to answer questions concerning the status of the subjects in the study. A descriptive study determines and reports the way things are. The choice of the descriptive study design was based on the research is interest on the state of affairs already existing in the field and no variable will not be manipulated. This study therefore was able to generalize the findings to a larger population. The focus of this study was quantitative. However, some qualitative approaches were used in gaining a better understanding and possibly enable a better and more insightful interpretation of the results from the quantitative study.

#### **3.2 Target Population**

A population refers to an entire group of individuals, events or objects having common observable characteristics (Mugenda and Mugenda, 2003). Target population for this study was made up of all the 14 customs and agency revenue items under collection jurisdiction of KRA, which were collected through Simba 2005 platform before and after the implementation of Simba 2005 system. The scope of the study will be four years prior and four years post Simba 2005.

### **3.3 Sample Design**

A sample is a small group obtained from accessible population, (Mugenda & Mugenda, 2003). The census sampling survey design covering all the 14 customs and agency revenues items collected in Simba 2005 platform were used to get appropriateness and required information concerning the customs revenue performance before and after implementation of Simba 2005.

### **3.4 Data Collection Method.**

Secondary data was collected from published annual reports and websites of the Kenya Revenue Authority, the main source being annual customs performance reports prepared by research department, KIPRA and World Bank Kenya tax revenue growth rate performance annual review reports. The secondary data provided a reliable source of the information needed to investigate the phenomenon and seek efficient ways for problem solving situations (Uma, 2003). Specifically, the data was collected from the portion expounding on corporate information, statement of KRA departmental periodical revenue growth reports and evaluations reports. The period of study was from 2013 to 2017.

### **3.5 Data Analysis**

Both quantitative and qualitative analysis data were obtained from the study. For quantitative data analysis, the statistical package for social science (SPSS 23) was used to tabulate and analyze the data. Percentages, means and frequency distribution tables were used to describe the data and the sample. Relationships between the independent and dependent variables were established by means of regression analysis- to test the relationship between the independent dependent variables.

#### **3.5.1 Model Specification**

Multiple regressions model was appropriate for this research project. This study employed the following model;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where;

Y –Customs Revenue performance

$\beta_0$  - Constant

$\beta_1, \beta_2, \beta_3$  and  $\beta_4$  - Coefficient indicating rate of change in customs revenue performance as automated payment system, automated declaration, entry lodge and document pressing changes.

$X_1$  –Automated Payment System

$X_2$  –Automated declaration

$X_3$  – Automated Entry lodgments

$X_4$  – Automated Document Processing

$\epsilon$  - Error term

### **3.6 Data Validity**

Validity is defined as the accuracy and meaningfulness of inferences, based on the research results (Joppe2000). Construct and content validity were measured by seeking the opinion of lecturers and other professionals (customs tax administration) on the adequacy of the research instruments in achieving the objectives of the study.

### **3.7 Privacy and Ethics**

The study did not impinge on the sensibilities and rights of other people. The study upheld integrity and ethical standards by maintaining confidentiality over the respondents' identity or their personal information used in the study. An ethic of care was adopted in the research to avoid the possibility of exploitation of the any stakeholders in the research according to Gibbs (2004) and Gibbs and Costley (2006). With this in mind, a number of ethical considerations were adopted for the empirical, interviews and data collections from KRA records and other sources.

## **CHAPTER FOUR**

### **DATA ANALYSIS, RESULTS AND PRESENTATION**

#### **4.1 Introduction**

This chapter addresses the data analysis and research findings on the effect of automation on customs revenue performance in Kenya and includes research variables, descriptive statistics and regression analysis. The data was collected from secondary sources, which were from KIPRA, World Customs report, KRA websites and annual customs revenue performances reports for the years 2011/2012 to 2011/2016. The data was analyzed using Microsoft Excel 2010 and SPSS 23 version.

#### **4.2. Variables**

There were two variables in the study, which included the independent variables and dependent variable.

##### **4.2.1 Dependent Variable**

The dependent variable is customs revenue performance in Kenya.

##### **4.2.2 Independent Variables**

The independent variables affecting customs revenue performance in Kenya used in establishing level of performance were four modules in the Simba 2005 system that is automated payment system, declaration entry Lodgment and documents processioning used by KRA in customs administration revenue collection?

### 4.3 Findings

Table 4.3.1 Descriptive Statistics Variables (Customs Revenue Collections in Billions Kshs)

<b>Before Simba 2005</b>	<b>Year</b>	<b>2002/2003</b>	<b>2003/2004</b>	<b>2004/2005</b>			
	<b>Collection</b>	60.6	68.8	82.3			
<b>After Simba 2005</b>	<b>Year</b>	<b>2005/2006</b>	<b>2006/2007</b>	<b>2007/2008</b>	<b>2008/2009</b>	<b>2009/2010</b>	<b>2010/2011</b>
	<b>Collection</b>	89.3	108.1	130.2	144.2	193.8	223.6
	<b>Year</b>	<b>2011/2012</b>	<b>2012/2013</b>	<b>2013/2014</b>	<b>2014/2015</b>	<b>2015/2016</b>	<b>2016/2017</b>
	<b>Collection</b>	244.2	258.7	331.8	355.2	386.1	443.6

*Source: Author 2018*

The years 2004/2005-2005/2006 saw the customs total revenue moderate increase from KES 82.3 billion to 89.3 this may have been attributed to challenges of the implementation of Simba 2005 like resistance from importer and clearing agents. From 2005/2006 onwards there has been tremendous growth with an average increment of KES. 15 billion every financial year and this has been consistent overtime an indication that Simba 2005 actual performed for the purposes it was intended for.

It is also important to highlight that substantial increases in revenue collection have been observed during periods when tax has been effective in enhancing customs revenue administration. This improved revenue collection and growth is as a result of the implementation of new improved efficient KRA tax systems like i Tax, Simba 2005, M-Service in addition to other factors like improved Tax payer's services and organization reforms. Legislation reforms like the enactment of Tax Procedure Act 2015, review of VAT Act 2015 and Excise Act to harmonize all taxes operation procedures and clearly stating other domestic taxes collected through customs Simba 2005 system.

### 4.4 Regression Analysis

Regression method helped to estimate the unknown dependent variable with the help of several known independent variables.

**Table 4.4.1 Model Summary**

Model	R	R2	Adjusted R2
1	.8476a	.7183	.2398

*Source: Author 2018*

a). Predictors: (Constant), Automated payments system, entry lodgments, declaration and document processing enhanced customs revenue collections through Simba 2005.

b). Dependent Variable: Customs revenue performance Table 4.4.1 presents the coefficients of model fitness on how the mentioned independent variables explains revenue performance by the automation of customs process through introduction of Simba 2005 and has an overall correlation with this factors of 0.7183 which is strong and positive. This means that approximately 71.83% variations from growth are explained by these variables at 5% level of significance. This indicates good fit of the regression equation used. Therefore, this is a good indication of the true position that customs revenue growth in performance can be explained by the Simba 2005 modules for this study i.e. automated payments system, entry lodgment, declaration and documents processing which facilitates and enhanced accurate and efficient revenue collection when imports and exports are declared in the Simba 2005 system.

**Table 4.4.2 Analysis of Variances**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.301	3	1.106	2.546	.2274a
2	Residual	1.266	39	0.438	0.000	
3	Total	4.567	42			

a). Predictors: (Constant),

Registration, Automated payment system, entry lodgment, declaration documents processing in and their effect in enhancing customs revenue collection through Simba 2005 as modules and capabilities of the system.

b). Dependent Variable: Customs Revenue Performance

Table 4.4.2 shows the overall significance of the regression estimation model. It indicates that the model is significant in explaining the relationship between the automated Simba 2005 capabilities at 5% level of significance. Analysis of Variance shows that f-calculated is greater than f – critical that is  $2.546 > 0.2274$ . This implies that the regression equation was well specified and therefore the co-efficient of the regression shows that there is a strong relationship between customs revenue performance and independent variable. The analysis of variance of the predictors of the model has a significance of 0.2274.

**Table 4.4.3 Coefficients**

Model	Beta	Standard Error	T	Sig
Constant	3.477	1.177	2.745	0.040
Automated Document Processing	1.376	1.848	0.681	0.821
Automated Declaration	1.429	0.729	2.017	0.465
Automated Entry lodgments	-1.243	-3.276	0.328	0.722
Automated Payment System	4.218	2.068	1.893	0.002

From table 4.4.3, the regression model therefore becomes:

$$Y_i = 3.477 + 1.376 (\beta_1 X_1) + 1.429(\beta_2 X_2) + - 1.243 (\beta_3 X_3) + 4.218 (\beta_4 X_4)$$

On table 4.4.3 the regression coefficients of the predictors (factors) are presented. Results indicate that automated payment system is the most significant in explaining increased customs revenue performance as a result introduction of Simba 2005 in customs administration processes with a significance of 0.002 which is less than a p-value of 0.05.

This therefore means that the customs revenue performance would be at 3.477 when the factors components are held at a zero constant. Automated document processing is positively related to customs revenue performance and therefore a unit increase the rate of automated document processing would lead to an increase in customs revenue performance by a factor of 1.376. However, this is not significant at 5% level of confidence. Automated declaration is positively related to customs revenue performance and therefore a unit increase of more efficient automated declaration in Simba 2005 system would lead to an increase in the customs revenue performance by a factor of 1.429 and this is significant at 5% level of significance. Automated entry lodgment is negatively related to customs revenue performance and therefore a unit increase of level of entry lodgment would result in a decrease in customs revenue performance by a factor of 1.243. However, the result is not significant at 5% level of significance. Automated payment system is positively related to customs revenue performance and therefore a unit increase in level of automated payment system would result in an increase in customs revenue by a factor of 4.218 and the results are highly significant.

#### **4.5 Interpretation of Findings**

The study findings established that there was a significant increase in the customs revenue performance after the implementation of a Simba 2005 system in 2005. prior to the introduction of the new system the average collections of revenue were low after which they increased significantly afterwards. The overall regression estimation of the model is significant at 5% level of significance. It indicates that the model is significant in explaining the relationship between the automated payment system, declaration, and document processing and customs revenue performance at a 5% level of significance.

The results from the analysis indicates that automated payment system, declaration, entry lodgment and document processing are significant in explaining customs revenue growth at

significance of 0.02. These findings are corroborated by findings on automated customs system on revenue collection by Sani (2009) in a study conducted in Nigeria that found that automated tax system reduced costs, saved time, improved accuracy, improved reliability and quality of services and eventually led to improved customs revenue collection and trade facilitation hence significant growth in customs revenue performance. Additionally, Sigei (2010) found that automation of customs processes and usage of electronic payment instruments in customs revenue collection seems to stimulate custom's business processes and accurate import declarations leading to better timely customs duty payments.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATION**

#### **5.1 Introduction**

This chapter presents the summary of key data findings, conclusions drawn from the findings highlighted and policy recommendations that were made. The objective of the study was to establish the effect of automation on customs revenue performance, a case study of KRA Simba 2005

#### **5.2 Summary**

The study examines the effect of automated payment system on customs revenue performance, the study also tried to establish how introduction of Simba 2005 could enhance accurate declaration of imports by importers, efficiency, and enhancement of document processing, faster entry Lodgment and overall increase in trade facilitation with other countries. The effect of implementation of Simba 2005 on customs revenue performance in relation to the automated payment system, declaration, entry lodgment and document processing and other several factors affecting trade facilitation was measured and regression analysis model was used to analyze the secondary data.

Administratively it is the duty of the authority to determine the best customs revenue collection system hence taxpayers ultimately have to comply with any system that is introduced, even if they are opposed to it as witnessed during the implementation of Simba 2005. Since revenue performance and trade facilitation is not absolute, levels of customs revenue performance will vary based on a variety of factors and the levels may change from year to year as the tax system, political stability across the globe, border points and economic factors change. Managing the cargo and processing of clearing documents at the port of Mombasa, Nairobi inland container deport, other points of entry and smooth movement of transit goods are the major drivers of customs revenue performance and

trade facilitation therefore any key challenges affecting these, the tax administrator have to resolve, as soon as they arise. It was further noted that without proper and efficient operations at the point of entry, makes Kenya Customs points, less competitive, hence results to loss of business to other upcoming strong ports of entry in the region like Dare Salam.

### **5.3 Conclusion**

This study breaks new ground in answering the important question of what the tax administration in Kenya can do to foster efficient customs administration processes and adequate customs revenue performance and trade facilitation in the region. The study found that use of Simba 2005 as system for KRA customs administration process and automation of customs operations are important elements in the modern tax administration and promotion of trade facilitation in the modern customs cross border trade making the importers and clearing agents interact with KRA at their convenient time. Greater customs improved and faster clearing of goods, automated payment system, document processing and declaration are believed to have a positive impact on customs revenue performance according to prior literature. The findings could be an important input, particularly to the KRA in general in designing their various future customs systems in order to enhance revenue growth and achieve the missions of its Corporate Tax Targets and enhanced trade facilitation in the region.

It can be concluded that the increase in customs revenue performance, the improved efficiency and effective operation at ports of entry, administrative efficiency, and application of fair custom laws, consistent with global customs practices will improve customs revenue performance. However, one of the main barriers in achieving adequate revenue performance and trade facilitation is the increasing pilling of transit goods as a result of bureaucracy and lack of work coordination by other actors involved. This study showed that implementation of Simba 2005 system has experienced unprecedented progress since its initiation in 2005

where some duties were lost, later the system picked up and has outperformed its intended purpose.

To answer the challenges experienced by the system and to enhance the customs loopholes associated with the Simba 2005 customs system called *iCMS* is being tested and soon will be integrated with the KRA iTax System hence this will increase efficiency and improve the integrity of the systems as human intervention will be minimal

#### **5.4 Policy Recommendation**

The primary goal of revenue authority is to collect the taxes and duties payable in accordance with the law and to do this in such a manner that will sustain confidence in the tax system and its administration and ensures intent ended revenue performance. Therefore, tax administration should have in place strategies, structures and systems to ensure efficiency at the port of entry, free movement of goods across the borders and trade facilitation. An important insight in the development and continuous improved computerization of customs administration processes. It should include a good mix of both proactive and reactive systems as well as systems that covers all aspects of efficient operation in port management through continued improved customs practices.

Since the primary function of a customs tax system is to generate and ensure a stable revenue performance and trade facilitation, the first goal of tax system must be to ensure that this function is discharged adequately. Clearly, improving the revenue performance will require a major improvement in customs tax administration, increase in the level of Simba 2005 stability throughout, reduced smuggling, illicit trade and corruption

Based on the findings of this study, we therefore recommend that KRA and Government should put in place measures that could enhance customs collection and trade facilitation such as winning clearing agents and importers confidence through improved service delivery and efficiencies at port of entries , making customs procedures simple and

transparent and improving stability of the customs automated system ,clearing agents' education; effective use of automated systems especially in the clearing system and monitoring refund claims; and strengthening tax administration including staff investigative machinery and human resource management capability. Furthermore, the fiscal policy makers in the state should re-evaluate the customs tax policy reforms and see the problematic areas so as to make room for improvement.

Customs tax law and systems by their very nature are subject to frequent changes. Every year the annual budget speech introduces new systems, laws, amend or to cancel existing one. These frequent changes can make the system confusing as well as complicate the tax system. After many a few years these changes and amendments become so many that the taxpayer find it difficult to know which system to follow. There is need therefore for the customs tax administration to undertake periodic consolidation of the tax system so that it can have all the changes compiled into one system to which both importers, clearing agents and tax administration can have easy and ready access. Tax system should be designed to leave economic behavior unaffected so as to minimize efficiency losses, associated with the system. Improvement in the customs administrative machinery of taxes, through removal of distortions, thus improved efficiency.

The Authority should also address the challenges of the Simba 2005 which include: network failure and power outages slowing down the processing of transactions; integrity of the system especially since the system is accessed through the internet; inadequate staff to handle the supplementary processes, for example, verification and release.

The tax system should not only avoid economic behavior distortion but should also yield sufficient customs revenues to fund socially useful expenditure without producing substantial inequity. A more useful guideline is that the tax system should be as neutral as possible that is, minimize discrimination in terms of tax rate that can be applied. Tax officials

should be exposed to adequate and continuous training; both at home and abroad, for a better understanding of the new iCMS and international customs tax issues, which could then be utilized, to formulate successful efficient strategies resulting to overall revenue performance and trade facilitation.

### **5.6 Suggestions for Further Studies**

Other methods of data collection instead of using secondary data i.e. interviews may provide different results. It is believed that two-way communication via an interview could produce better and meaningful results; however, non-anonymous methods such as interviews can be problematic in revealing the truth, especially when questioning respondents regarding customs administration reforms and weak areas of the Simba 2005. matters, such as failure to appropriately address the questions would harm or embarrass respondents

This study was unable to include these variables because these variables require a series of questions in order to be accurately measured. Other determinants which were not tested in this study such as political stability, influence and government policy could also be explored in the future, hence these could be included in future studies to examine their impact on the explanatory power of the models used. Further study should also be undertaken on customs legislation reforms as an environmental base for strategic position taken to generate funds, and at the same time manipulate social as well as political demands of the nation.

Due to the importance of having high efficient and effective customs system to foster greater customs revenue performance and trade facilitation, further studies should explore the areas that relate to system efficiency, staff training, and infrastructure. This will go along incorporating quality and independence of custom system void of manipulation and break down has been the case with Simba 2005 down time. Further study to examine the strengths

and weaknesses facing customs efficiency capabilities in Kenya and to provide information and recommendations to aid revenue and trade forecasting.

There is need to conduct more research, by the customs tax administration and other researchers on the suitability of various customs laws, regional integration mechanisms as well as the customs exemptions and quality services to be able to conclusively determine their role in enhancement of customs revenue performance.

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## **APPENDICES**

### **APPENDIX I: LIST OF REVENUE TAX COLLECTED ON iTAX**

- 1 DCA
- 2 IMPORT DUTY
- 3 APSC
- 4 EXERCISE DUTY
- 5 IMPORT VAT
- 6 TRANSIT TOLL
- 7 RDL
- 8 FMV
- 9 SECOND HAND MOTOR VEHICLE PURCHASE TAX
- 10 CONCESSION FEE
- 11 IDF
- 12 MOTOR VEHICLE FOREIGN PERMIT
- 13 RML
- 14 PETROLEUM DEVELOPMENT LEVY

## APPENDIX II: NOTE TO THE RESPONDENTS

To whom it may concern

18/July/2018

Dear Sir / Madam,

**Re: Introduction letter for Newton Kurumba Maina-HDB 336-C016-4303/2016**

My name is Newton Karumba Maina currently a student at Jomo Kenyatta University of Agriculture undertaking a Post graduate Diploma in Customs administration as part of meeting the graduation requirements. I am expected to undertake a research study on my area of interest. Toward this end, I am undertaking a research study on the effect of automation on Custom revenue performance in Kenya.

I am kindly requesting for your assistance in helping me to undertake this project. The information collected from this study will be used for academic purposes only. If you will require a copy of the final report, it will be availed to you

I will highly appreciate your assistance in this regard. If you need additional information, please do not hesitate to contact me.

Yours Sincerely,

**Newton Karumba Maina**