EFFECT OF EXCISABLE GOODS MANAGEMENT SYSTEM ON EXCISE TAX REVENUE COLLECTION IN THE COAST REGION OF KENYA.

BY

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DECLARATION

Declaration by Candidate

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

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DEDICATION

This document is devoted to my family for ethical help, their steady support and showing extraordinary commitment during my study. I specifically dedicate it to management of Kenya Revenue Authority for the recent efforts in improving the tax filling process and the foundation being laid for future prosperity of Kenyan tax payer.

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ABSTRACT

The Coast Region has estimated that KRA loses 4.7 litres for every five-litre bottle to the unscrupulous dealers, excise stamps are swapped. It was in the background of this statement that researcher sought to establish the effect of the excisable goods management system on the excise tax revenue collection in the Coast Region. The specific objectives of the study was to determine the effect of product marking, tracking and tracing, and product authenticity on excise tax revenue collection in the Coast Region. To provide the basis of the study, the theory of reasoned action, technological determinism theory and dynamic capabilities theories was be used. The research used explanatory research design. Data collected was primary data sources using structured questionnaires. The target population of the study consisted of 838 participants involved with the EGMS. The sample size of 271 participants was determined using a scientific formula based on stratified and random sampling technique. The study employed descriptive and inferential statistics for data analysis. The hypotheses were tested using multiple linear regression models. The results revealed that Product Marking ($\beta_1=0.127$, $p<0.05$), excisable goods tracing and tracking ($\beta2=0.218$, $p<0.05$) and Product authenticity ($\beta_3=0.173$, $p<0.05$) significantly and positively influence excise tax collection. The study concluded that product marking, tracing and tracking, and product authenticity matters in excise revenue collection in the Coast region. The implication to policy formulation is that there is need to improve on product marking by ensuring that they work in collaboration with manufacturers of these products on the adoption of latest tracking gadgets that cannot be easily tampered with. This will prevent the tax evasion by the various manufacturers especially bottling companies in the region. The research suggested that future studies be conducted through longitudinal studies to determine the success of the system on revenue collection over time.The analysis indicated that independent variables could only explain 84% of the revenue collection on the excisable goods, which implied there were additional factors which could explain revenue collection; hence future studies should identify these factors.

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DEFINITION OF TERMS

Excisable Goods Management System: Is a system designed aimed to safeguard excise tax revenue through application of excise stamps which has security feature (KRA, 2019).

Excisable Goods Tracing: It involves the process of determining the current and past locations of excisable goods (Ross, 2017).

Excisable Goods Verification: This involves authentication of goods from a manufacturer, importer, distributor, retailer or any other person involved in the supply chain of excisable goods before admitting the goods in their premises (Grant Thornton, 2017)

Product Marking: This involves the affixation and printing on excisable goods in accordance with excise duty act of 2015 (KRA, 2019).

Revenue Collection: Can be defined as the funds received by any organization (Gitaru, 2017).

Product Authenticity This involves a Smartphone application that allows end consumer verify a product. (Kippra, 2020

ABBREVIATIONS/ACRONYMS

COBWMAS: Coast Bottled Water Manufacturers Association

EGMS: Excisable Goods Management System

EMCS: Excise Movement and Control System

KAM: Kenya Association of Manufacturers

KRA: Kenya Revenue Authority

RMCD: Royal Malaysian Customs Department

TAM: Technology Acceptance Model

TRA: Theory of Reasoned Action

TSO: Tax Service Office

UNECE: United Nations Economic Commission for Europe

VAT: Value Added Tax

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter presents the background, the statement of the problem, research objectives, hypotheses, significance, and the scope of the study.

1.1 Background of the Study

Various economies globally have introduced regulations on excise stamp fees to be charged on excise stamps for different types of excisable goods. The purpose of these stamps would be to deter counterfeiting, facilitate any persons in the supply chain to authenticate the stamps and excisable goods, enable accounting for the production of excisable goods manufactured or imported and facilitate tracking of the stamps and excisable goods along the supply chain. The use of computerized systems in excise duty collection involves the use of information and communication technologies (ICT) in providing records, in real-time, the movement of tobacco, alcohol, and energy products for which excise duties have still to be paid (UNECE, 2012).

In Europe, the excise duty system covers the following products: tobacco, electricity, energy products, alcohol and alcoholic drinks. However, more significant losses are from the illegal trade with these products, as they are taxed with a very high excise duty hence there is immense smuggling and illegal trade in all EU member states which impacts both VAT and excise duty gap (Blackburn, Bose &Capasso, 2012). In 2010, the European Commission introduced Excise Movement and Control System (EMCS) with the purpose of creating a paperless administration, speeding up the release of guarantees when goods arrive at their destination, simplifying procedures for traders with a standardised electronic system for the whole EU, ensuring the secure movement of excise goods for which duty has still to be paid with pre-dispatch

checks on traders and combating fiscal fraud with real-time information and checks on goods being moved under duty-suspension (European Commission, 2019).

The expansion of the illegal market to the eastern borders of the EU has been driven by an increase in excise duty on cigarettes with subsequent price rises. The total consumption of illegal excisable products in the EU is about 56.6 billion Euros (KPMG, 2015). The percentage of illicit cigarette market was 29.3% of the excisable products in 2014 in Latvia ranking the country the highest in illegal excisable product consumption in the EU (KPMG, 2015). The smuggling activities of excisable products involving cigarettes have caused a great loss to tax revenues in the country. Various factors can negatively affect the amount of excise duty, for example, the tax rate, the fairness of taxes, the penalty rate, the influence of peers and tax agents (Sinnasamy, Bidin& Ismail, 2015).

In Malaysia, the excise duty imposed on imports and locally manufactured goods as stated in Section 6 of Excise Act 1976. This duty is used as a mechanism to alter the trend of public consumptions or social engineering (Delipalla, 2019). Tax non-compliance on excise duty comprising of cigarettes, liquor and imported vehicles were quite rampant compared to other commodities such as tiles, tyres and electric appliances. Despite the various transformation programs introduced by the Royal Malaysian Customs Department (RMCD) to improve excise duty collection, prior statistical evidence indicates the increase of tax non-compliance among importers as taxpayers. For instance, the additional excise duty detected from illegal trade and smuggling offences cases were quite high. In the year 2012, RM358.56 million (4,810 cases), RM374.63million (5,070 cases) in 2013 and RM360.29million (4,254 cases) in 2014 (RMCD Annual Report, 2012-2014). Due to the increase of tax non-compliance, tax revenue collected is less than the expected actual tax.

Excise duty varies among Southern African countries due to differences in revenue potential (smuggling, price elasticity and size of tax base) and different degrees of concern about the externalities associated with alcohol. Different country patterns of excise taxation often reflect domestic features and do not easily lend themselves to cross-country comparisons (Beukes & Van-der-schuren, 2017). South Africa for instance applies a transparent excise duty rate structure that differentiates between excisable goods in accordance with benchmarks determined in 2002 and adjusted in 2012. The total consumption tax burden (excise duties plus VAT) as a percentage of the weighted average retail selling price for wine, clear beer and spirits were set at 23%, 33%, and 43% respectively in 2002. Budget 2012 increased the target tax burden for beer and spirits to 35% and 48% respectively. Excise duties were increased above inflation since 2002/03 to achieve and maintain the targeted indirect tax burdens (Bird & Wallace, 2016).

In Tanzania, excise duty amendment in excisable items intends to protect the Tanzanian currency. The rates amended are in accordance with the prevailing inflation rate. However, changes have been prescribed under Finance Act 2018. The buoyancy of excise tax in the country has been higher than elasticity, implying that discretionary changes have enhanced revenue collection. In Tanzania, excise duty ranks third (after income tax and VAT) in terms of revenue generation. Besides being an important source of revenue, excise duty has been cheap in principle to administer, and is potentially efficient, especially when applied to goods that cause negative externalities or face price inelastic demand (Osoro, Mpango & Mwinyimvua, 2013).

In Uganda, excise tax system has not been broad-based as VAT. Only a few items such as alcoholic and processed soft drinks and petroleum products are subject to excise duties. There are two types of excise duties, namely, *ad valorem* excise duty

which is expressed as a percentage of the retail price of a good and a flat rate excise duty, which is imposed on the physical quantity of a given good. The contribution of excise duties in indirect domestic taxes has gradually declined.

Excise taxes are an important source of revenue in most developing countries including Kenya. Excise taxes constitute a significant proportion of revenue in Kenya, between 1980 and 2018; excises in Kenya yielded an average of 3.1 per cent of GDP (KIPPRA, 2020).

In Kenya there has been lots of complaints from the market, especially taxpayers who were selling legitimate products, that, there had been people who had been undercutting them in the market. This is by introducing products that had not been tax compliant, undercutting them by selling at much lower prices. So in order to address this issue, we there was need to come up with a mechanism that enables the revenue authorities to identify and interdict those products. Number two, illicit trade has had an immense impact on tax revenues. (KRA, 2017)

When people sell products into the market without paying taxes, they undercut our legitimate taxpayers who are declaring and paying all their taxes, now what happens is that when the market shrinks for them, revenue also shrinks for the tax authority (OECD, 2017).

1.1.1 Coastal Region

Locally, excise duty is imposed on both goods and services including mobile telephony services, cars, wine, polythene bags (of a particular specification), cigars and cigarettes, soft drinks, beer and spirits and among others. It was previously administered under the Customs & Excise Act 2010, however, effective 1 December 2015; the tax is administered under the Excise Duty Act 2015. Pursuant to Kenya's

Excise Duty Act 2015, both the Cabinet Secretary and the Commissioner General of the Kenya Revenue Authority are empowered to adjust excise duty rates. Further, the Act empowers the Commissioner General to adjust specific excise duty rates annually because of inflation. The first inflation adjustments were introduced on 1 August 2018 by the Commissioner General via Legal Notice 164 which was later annulled in September 2018 by the National Assembly due to insufficient public participation (EY, 2019).

In 2017, Excisable Goods Management System (EGMS) was gazetted under Legal Notice No. 48. The system was aimed to safeguard excise tax revenue through product marking by application of excise stamps which has security features. The tax is applicable to beer, spirits, tobacco, wine and most recently soft drinks and mineral water (KAM, 2017). By 30th July 2019, KRA had installed 42 EGMS equipment out of the 46 automated juice and water production lines. EGMS is designed to have minimum impact to the efficiency of manufacturers' production lines and it has redundancies that allow production to continue in the case of lack of connectivity to KRA (KRA, 2019).

In the Coast region, in towns like Mombasa, Voi, Garsen, Kwale and Kilifi there had been a lot of complaints from the market, especially taxpayers who had been selling legitimate products, that there had been people who had been undercutting them in the market. This was by introducing products that had not been tax compliant, undercutting them by selling at much lower prices destroying positive competition. So in order to address this issue, the Kenya Revenue Authority had to come up with a mechanism for product tracing that enables us to identify and interdict those products (KRA, 2019).

In addition, this illicit trade has had an impact on tax revenues in the Coastal region. When people sell products into the market without paying taxes, they always undercut the legitimate taxpayers who have been declaring and paying all their taxes, now what happens is that when the market(manufacturers and importers) shrinks for them, revenue also eventually shrinks for the tax authority.(UNCTAD,2018).

Illegal plastic bottled sodas mainly from Uganda and Tanzania have been found to sell in the border districts of Hoima, Lungalunga for those from Tanzania, and Busia, Bungoma and Trans-Nzoia for those that come from Uganda. Bottled water is mainly an internally generated and sold product, there have been very little imported. Illegal bottled water mainly sells through unstamped products. The bottled water has been selling without a stamp and a few of them have been identified to have fake stamps. (KRA, 2017).

1.2 Statement of the Problem

Collecting taxes and fees is a fundamental way for countries to generate public revenues that make it possible to finance investments in human capital, infrastructure, and the provision of services for citizens and businesses (World Bank, 2015). Preliminary analyses estimate the financing gap for achieving the Sustainable Development Goals for developing countries at about $2.5 trillion annually (UNCTAD, 2014). Many countries are still struggling to collect sufficient revenues to finance their own development. Countries collecting less than 15% of GDP in taxes must increase their revenue collection in order to meet basic needs of citizens and businesses. This level of taxation is an important tipping point to make a state viable and put it on a path to growth. As of 2018, 48% of IDA/Blend countries and 69% of FCS countries fall below this 15% baseline (IDA, 2018)

Making it easier to pay taxes improves competitiveness. Overly complicated tax systems are associated with high levels of tax evasion, large informal sectors, more corruption, and less investment (Inter-American Center of Tax Administration, 2019). Modern tax systems should seek to optimize tax collections while minimizing the burden on taxpayers to comply with tax laws. There is a need to ensure that the tax system is fair and equitable. Governments need to balance goals such as increased revenue mobilization, sustainable growth, and reduced compliance costs with ensuring that the tax system is fair and equitable (IDA,2018). Fairness considerations include the relative taxation of the poor and the rich; corporate and individual taxpayers; cities and rural areas; formal and informal sectors, labor and investment income; and the older and the younger generations.

The Kenyan excise duty regime at present is very low, with low revenues from excisable goods, only contributing to about 4.5% of the GDP and have income inelasticity for nearly negative one (Muthoni, 2017). According to the seventh corporate plan 2018/19 – 2020/21, excise duty revealed a compliance gap of 15.2 percent for the year 2017/18. The actual revenue estimated by the seventh corporate plan is as follows: 2017/18 Kshs. 167,968, 2018/19 Kshs. 218,960, 2019/20 Kshs. 241,131 and 2020/21 Kshs. 276, 305.KRA (2019) further reported that excise stamps as a control tool was vain as unscrupulous manufacturers have sought the schemes aimed at defeating the system. Due to these schemes, KRA has lost billions of shillings. (KRA, 2019)

Before the implementation of the EGMS, there was stamps counterfeiting, inadequate market surveillance – due to inadequate surveillance equipment and manpower and lack of automated excise stamps control system – leading to difficulties in tracking (KRA, 2019). Excisable goods management system was implemented to safeguard

excise tax revenue through application of excise stamps which have security features. The system was further aimed to combat dumping and illicit trade by importers and manufacturers of excisable goods, account for the production and to serve as proof that duty has been paid on the item to which a stamp has been affixed (KRA, 2019). For example, Coast Bottled Water Manufacturers Association (COBWMAS) (2020) based within the Coast region has estimated that KRA loses 4.7 litres for every five-litre bottle to the unscrupulous dealers, excise stamps are swapped. Previous studies have mainly focused on excise duty on specific products but ignored the application of information communication technology.

The implementation of the EGMS was expected to not only increase the level (i.e. average or mean) of excise revenue but also alter the trend (i.e. slope or growth rate) of excise tax revenue increases for the targeted excisable goods such as cigarettes and cigars. This was plausibly to be accompanied by a decline in the volume of illicit products. If there is no significant increase in excise revenue following the introduction of the EGMS, this could be indicative of missed opportunities to maximize the impact of the EGMS on excise revenue. It could further suggest the need to address factors constraining the successful implementation of the system (KIPPRA, 2020).

1.3 Research Objectives

1.3.1 General Objectives

The main objective of the study was to establish the effect of excisable goods tax management system on excise tax revenue collection among taxpayers in the Coast region.

1.3.2 Specific Objectives

The study will be guided by the following specific objectives:

i. To determine the effect of product marking on excise tax revenue collection in the Coast region.

ii. To determine the effect of tracking and tracing on excise tax revenue collection in the Coast region.

iii. To determine the effect of product authenticity on excise tax revenue collection in the Coast region.

1.4 Research Hypotheses

i. H_{01}: There is no significant effect of product marking of excisable goods on excise tax revenue among taxpayers in the Coast region

ii. H_{02}: There is no significant effect of tracking and tracing excisable goods on excise tax revenue collection among taxpayers in the Coast region.

iii. H_{03}: There is no significant effect of Product Authenticity of excisable goods on the excise tax revenue collection among taxpayers in the Coast region.

1.5 Significance of the Study

This study was meant to fill up the knowledge gap by explaining the effect of EGMS on excise tax revenue collection in the Coast region. Those researchers, who had wanted to establish why excise duty had been very narrow especially on the manufacturing sector, found this paper useful. This had been mostly because EGMS constructs (product marking, excisable goods verification and excisable goods tracing) positively and significantly affects revenue collection on excisable goods in the Coast region.

This study was useful to the Kenyan Government. Despite the manufacturing sector growing at a very fast rate in Kenya, the collection of excise duty from this sector had been a great challenge and the gains have been dwindling with time. The study also concluded that EGMS has enabled KRA to take control the manufacturers' production process of excisable goods for the compliance of the excise duty act and protection of revenue

The study was supposed to aid in policy making by the government which may help improve compliance levels of excise tax payment by the taxpayers implementation of EGMS allows for attainment of revenue targets for KRA and EGMS has improved service delivery on the revenue collection at KRA and hence extra revenue has been acquire. This was to help the government raise more domestic revenue from tax collection which will be used in realizing the government goals.

Still, the government of Kenya was to find this research study useful because a collection of respondent's opinion and the researcher's recommendation will provide appropriate insights on the way forward in approaching matters that pertains to electronic tax systems.

This study will provide results that were to discuss this problem diagnosing the ways in which the government would enforce on manufacturers of excisable goods as well as importers so that they remain compliant.

The study would be useful to retailers and business traders who will have the opportunity to understand various techniques they will be expected to follow while fulfilling the electronic tax systems requirements being enforced by the State. The information therefore will create a basis for the traders to find the reasons as to why they are required to willingly comply with tax requirement.

Other policy makers in different parts of the world may borrow from the findings of this research when seeking solutions to similar problem in their countries.

This research study was to be considered useful by other researchers to understand the basis of improving their approach to undertaking varied research studies. The study findings will also act as reference material for future research in relation to electronic tax systems among the business owners.

1.6 Scope of the Study

This study focussed on the effect of EGMS on excise tax revenue collection within the Coast region since its inception in 2017/18 to 2021/22, whereby employees' of KRA tax offices, registered manufacturers and importers had been targeted with three objectives that are related to the main objective of the study. Especially in those regions within the Coastal County headquarters, where these products are highly manufactured as this will facilitate comparative analysis of the system implementation among these regions.

The geographical context of the study was to be the Coast Region mostly coastal towns of Mombasa, Kwale, Voi, Tana River and Lamu. As such the staffs of the KRA offices and tax payers in the Coast region will be involved in the study. The study involved collecting information from all officers, manufacturers and importers within the said region. The target respondents will be selected as they will one day benefit from the increased excise tax revenue from the increased efficiency of the Excise goods Management system.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

The aim of this chapter is to gain considerable insight into earlier literature and comprehend the theories that underlie this study. It outlines the empirical review theoretical review, critique of the existing literature relevant to the study, summary, and conceptual framework.

2.2 Review of Concepts

2.2.1 Concept of Excise Tax Revenue Collection

Excise taxes are taxes levied on specific goods such as alcohol, tobacco, fuel and luxury goods, and also on activities such as gambling. Hence they are sometimes colloquially known as 'sin taxes'. They are indirect (collected by someone other than the government), often levied at the point of sale and included in the price of a product or activity. They can be applied to either domestically-produced or imported goods. (Action Aid, 2018).An excise tax is also a levy applied selectively on particular goods and services. Such levies are applied for a variety of reasons, the main one being their ability to raise substantial revenue for government at relatively low administrative or compliance costs. Excise taxes are mainly levied at relatively high rates on a few commodities, which are produced by a few large producers.

The main characteristic of such commodities is that they tend to have a low own-price elasticity of demand. This implies that there is minimum shifting of consumer purchases when prices change and thus very high tax rates can be applied. This coupled with strict administrative controls by tax authorities normally results in substantial tax revenue (Okello, 2001). The other reason for the imposition of these selective taxes is to correct for negative externalities arising from the consumption of

the taxed products (KRA, 2019). The consumption of certain products, e.g. smoking cigarettes or excessive drinking of beer and other alcoholic beverages, is harmful not only to the individual consuming the product but also to society at large, both in the short-run and in the long-run. In such cases, market forces produce distorted prices, which exclude the cost to society of consuming these commodities and hence result in higher consumption. The outcomes produced by the market forces then need to be corrected for these negative externalities (Aghion, Akcigit, Cage& Kerr, 2016). The relatively high taxes imposed on these products are, therefore, meant to ensure that individuals internalize the cost to society of their consuming these products. Finally, excise taxes are applied to improve the vertical equity of the tax system. Levying them on commodities that can be described as being luxuries that are consumed in higher proportions by higher-income individuals normally does this (Okello, 2001). Excise taxes are also used to promote equity by spending the collected revenue on employment-generating and poverty alleviation programmes, which benefit low-income groups (World Bank, 2018).

Some doubts, however, have been raised about the use of excise taxes to meet the objectives stated above. The basic argument is that these selective taxes, and particularly those on cigarettes, are regressive; consumption of such items is relatively greater as a percentage of income at the lower income levels than at higher (Due 1988) (IMF, 2001) .In addition, given the addictive nature of some of these products, the taxes may not be effective in reducing negative externalities. If consumption of these products is fairly insensitive to changes in relative price, the more significant impact of imposing high taxes on them will be a reduction of real income for those who consume them in spite of the higher price, rather than a reduction in consumption. (McClure and Thirsk, 1979). McLure and Thirsk conclude that

sumptuary taxes fail to achieve their commonly stated ends - the discouragement of consumption of potentially harmful products - and render attainment of society's equity goals more difficult. This line of argument, however, is not entirely accurate since internalizing an external cost does not necessarily mean reduced consumption. An excise tax can offset a negative externality with or without reducing consumption, depending on the price elasticity of demand. Notwithstanding the above concerns, excise taxes remain the best alternative for goods that have to be taxed at relatively higher rates for one reason or the other.

Tax revenue collection is defined as the revenues collected from taxes on income and profits, social security contributions, taxes levied on goods and services, payroll taxes, taxes on the ownership and transfer of property, and other taxes. Total tax revenue as a percentage of GDP indicates the share of a country's output that is collected by the government through taxes. It can be regarded as one measure of the degree to which the government controls the economy's resources.

The tax burden is measured by taking the total tax revenues received as a percentage of GDP. This indicator relates to government as a whole (all government levels) and is measured in Kenya Shillings and percentage of GDP.

2.2.2 Concept of Excisable Goods Tax Management System (EGMS)

System automation is the use of electronics and computer controlled devices to assume control of processes. System automation ensures smooth running of processes and increases rate of productivity by improving efficiency and effectiveness. Usage of computer programs, programmed gadgets such as electronic cash registers and mobile phone allocations are the common fronts of system automation in the financial activities.

System automation in financial transactions was also introduced to reduce hard cash and hence limit the rate of cash transactions. One of the other benefits of system automation is the accurate recordings which makes tracking of transactions very easy. Automated processes are also easy to use with minimal training needs to the users.

All excise systems across the world are slightly different in terms of commodities and services taxed the manner of taxation, the rates of excise and the taxing point. However, the basic objectives of an excise system are universal in that all excise duties due and payable should be properly brought to account and paid by the due date. (OECD, 2014).

The EGMS system has three key components: factory flow labelling and verification system; hand-held scanner that allows operators in the supply chain to verify authenticity of the product; and Smartphone application that allows end consumer verify product authenticity.

(KIPPRA, 2020).

This capability of EGMS together with the stationing of KRA officers at firms that generate the most excise revenue was expected to curtail under declaration of actual production levels of excisable goods. Additionally, the rollout of EGMS, supported by enhanced market surveillance by KRA officers and authentication capabilities along the supply chain was expected to address other forms of illicit trade, including counterfeits and cross border smuggling due to increased possibilities of detection. (KRA 2019)

The implementation of the EGMS was expected to not only increase the level (i.e. average or mean) of excise revenue but also alter the trend (i.e. slope or growth rate) of excise tax revenue increases for the targeted excisable goods such as cigarettes and

cigars. This was plausibly to be accompanied by a decline in the volume of illicit products. If there is no significant increase in excise revenue following the introduction of the EGMS, this could be indicative of missed opportunities to maximize the impact of the EGMS on excise revenue (KIPPRA 2020)

Manner of Affixing Excise Stamps.

Excise stamps are expected to be affixed on excisable goods in the following manner specified by the Commissioner (KRA, 2017):

- In case of locally manufactured goods, at the production facility immediately after packaging; or
- In the case of imported goods, at a place approved by the Commissioner within five days of the clearance for importation of the goods for home use.

Excise stamps on imported excisable goods to be affixed at the production facility in the exporting country may be allowed in accordance with such conditions as the Commissioner might specify. In addition, the Commissioner can upon the application by the manufacturer or importer, permit digital stamps to be printed by the System on each package and in a visible place with indelible security ink to enable the authentication of, tracking and tracing of, and production accounting for excisable goods.

Transfer of Excise Stamps

Transfer of excise stamps held in stock by a manufacturer or importer of excisable goods to another manufacturing or importing unit owned by the same manufacturer or importer is permitted subject to the prior approval of the Commissioner. Transfers carried out without the commissioner's approval is deemed as an offence.

The commissioner is required to prescribe the procedure and conditions for transfer and accounting of the excise stamps.

Duty Free Goods

Packages of duty free or export excisable goods specified in the Regulations are required to bear distinct markings to enable the goods to be trackable and traceable.

In addition, the Regulations make it a requirement for any material wrapping package for wholesale purposes to have the following printed on it:

- In the case of exports, the country of final destination;
- In the case of excisable goods for consumption in Kenya, "For Use In Kenya";
- In the case of excisable goods for sale to duty-free shops, or Diplomatic shops, "Duty Free";
- In the case of excisable goods for consumption by Kenya Defence Forces, "Kenya Defence Forces" and,
- In the case of excisable goods for consumption by National Police Service, " National Police Service"

2.3 Theoretical Perspectives

To provide the basis on the effect of excisable goods management system on revenue collection, the study relied on the following theories and models: theory of social determinism, dynamic capabilities theory and theory of reasoned action.

2.3.1 Theory of Social Determinism

According to the proponents of this theory, it is the human race which shapes technology and not vice versa, because technologies are continually reinterpreted by users and given new, often unexpected trajectories. While the internet was first used

as a communication and information searching engine, it has now developed to other uses including E- business, marketing media and social interactive media. (OECD, 2019).The central premise of this theory that (Mackenzie & 25 Wajeman, 1999) refer to as the 'social shaping of technology' (SST), was that what matters is not technology itself, but the social or economic system in which it is embedded. Their view provides an antidote to what they call "naïve Technological Determinism" and caution that those who have not recognized the ways in which technologies are shaped by social and economic forces have not gotten very far.

They dismiss the theory of Technological Determinism as mere "technological politics" that has fascinated historians, philosophers, and political scientists. Bijker and Law also make a forceful argument that the idea of 'pure' technology is nonsense. Technologies always embody compromise. Political, economics available raw material all of these are thrown into the melting pot whenever an artefact is designed or built. Technologies do not, we suggest, evolve under the impetus of some necessary inner technological or scientific logic. They are not possessed of an inherent momentum. If they evolve or change, it is because they have been pressed into that shape. (William & Edge, 1996) hold the same view and posit that organizational, political, economic and cultural factors do influence the design and implementation of technology. The above arguments do suggest that it is not only technology that affects society, but that social factors do affect technology as well

2.3.2 Theory of Reasoned Action

The theory originates from social psychology, and it is an exceptional case of the Theory of Planned Behaviours (TPB) (Ajzen, 2010). (Fishbein and Ajzen, 1975) developed TRA to define the connections between the beliefs, attitudes, norms, intentions, and behaviours of individuals. The Theory assumes that a man's conduct is

controlled by the individual's behavioural intention to perform it and the intention itself is dictated by the individual's attitudes and his or her subjective norms towards the behaviour. The subjective norm alludes to "the individual's discernment that many people who are important to him think he ought to or ought not to perform the behaviour being referred to" (Ajzen, 2010). As indicated by the theory of reasoned action the individual behaviour is motivated by behavioural objectives and these are a function of an individual's attitude toward the behaviour and subjective standards encompassing the performance of the behaviour.

TRA can be applicable when studying manufacturers of excisable goods conduct in relation to EGMS in the sub-county. To encourage adoption and compliance of EGMS, KRA can take advantage of user participation and involvement of taxpayers during sensitization and whenever modifications are made to the system (Githinji & Mwaniki 2014). As indicated by (Kanungo & Bagchi, 2010) the study has inferred that TRA can be utilized for studying the use of systems in the collection of various taxes and duties and their research discoveries likewise demonstrated that the model explains user behaviour compared to other models.

2.3.3 Dynamic Capabilities Theory

The DCT was initially introduced by David Teece and Gary Pisano in 1994. Dynamic capabilities, by contrast, refer to "the capacity of an organization to purposefully create, extend, or modify its resource base" (Helfat et al., 2007). The basic assumption of the dynamic capabilities framework is that core competencies should be used to modify short-term competitive positions that can be used to build longer-term competitive advantage. In the past successful companies pursued a "resource-based strategy which was grounded on the ideas of the "Resource Based View" which attempted to explain that the source of competitive advantage lies within

a company's ability to manage internal resources (Das & Teng, 2010; Teeceand Pisano, 1994). The argument is that because some resources can be specific to firms and are not easily imitated, firms differ in terms of their resource base. This inimitability is essentially what leads to competitive advantage (Das & Teng, 2010).

The DCT sets out to explain how competitive advantage is achieved. Teece *et al.* (2017) argues that successful companies in the global market place are able to demonstrate timely responsiveness to market dynamics and speedy product innovation. Additionally, successful companies are able to effectively coordinate and redeploy internal and external competence (Teece *et al.,* 2017, p. 515). The use of EGMS has allowed KRA to attain a wide range of benefits including reduced cycle time and cost, improved accuracy, better coordination with manufacturers of excisable goods, and reduced smuggling of these products (Barua *et al*., 2011; Frohlich, 2012; Mishra *et al*., 2017; Rai & Tang, 2010).

2.4 Empirical Review

2.4.1 Relationship between Product Marking and Excise Tax Revenue Collection

This involves the affixation and printing on excisable goods in accordance with excise duty act of 2015 (KRA, 2019). All packages of excisable goods including those meant for duty free, exports and other excisable goods are required to bear distinct markings to enable the goods to be traceable (KRA, 2019). In addition, the regulations make it a requirement for any material wrapping the package for wholesale purposes to have the following printed on it: the country of final destination, for use in Kenya, duty free, Kenya Defence Forces and National Police Service (Grant Thornton, 2017). Products markings on excisable goods offer additional benefits – which are important in the fight against the growing global problem of illicit trade – the issue of tax stamp use has now become the subject of international policy (Reconnaissance International,

2012). In the European Union, the process of product marking enforcement on excisable goods varies among Member States. Penalties typically include a fine and in some circumstances imprisonment.

However, if the product is not regarded as an imminent safety risk, a manufacturer is often given an opportunity to ensure that the product is made to conform to the applicable legislation rather than being required immediately to take the product off the market (Morrison & Foester, 2018).The effectiveness of product marking on excisable goods will depend on both the wider anti-illicit strategy and the scheme detail. Product marking on excisable goods can only be effective as a means of curbing illicit consumption and protecting tax revenues if effective monitoring, control and enforcement measures are also put in place, and if tax rates and business costs are not so high as to incentivise illicit consumption at the expense of the legitimate industry. It is possible for product marking on excisable goods to help contain illicit trade in alcohol, and associated tax losses; this is far from guaranteed without considering a multitude of other factors including careful design, implementation and consideration of the specifics of a market and its influences (Euromonitor International, 2015).

Godden and Allen (2017) opined that in many jurisdictions, product marking on excisable goods has been introduced as a mechanism of revenue control, intended to reduce illicit activity and tax evasion. Godden and Allen (2017) further demonstrated that, product marking on excisable goods will not work in isolation. In particular, their effectiveness relies on two things: a carefully considered and well-structured wider excise duty policy; and the existence of a credible and well-resourced information and enforcement regime. Indeed, if the duty is well-designed and enforcement is sufficiently robust, then potentially costly product marking on excisable goods could

easily be avoided altogether, with little revenue impact. It follows that governments considering introducing a new stamp scheme should examine whether alternative policies could achieve the same aims at a lower cost.

2.4.2 Relationship between Tracking and Tracing and Excise Tax Revenue Collection

It involves the process of determining the current and past locations of excisable goods (Ross, 2017).KRA has put in place track and trace systems through EGMS to enable licensed manufacturers and importers to order, pay for and activate the stamps, and the Authority to approve orders and analyse activity. KRA also set up a Market Surveillance Unit, with 100 officers recruited in 2014, on the way to a target of 300. New systems and devices enable these officers, as well as manufacturers, distributors and retailers, to validate stamps, and tens of millions of shillings-worth of illicit products, including spirits, have since been seized and destroyed. Advertising campaigns are run, and consumers can validate stamps using smart phones, and report suspicious products via a hotline (Kenya Revenue Authority, 2014).

Excisable goods tax evasion and avoidance can diminish the effectiveness of excise duty system, because they generally make these products more affordable, thus stimulating demand. In addition, they deprive the government of tax revenue (Ross, 2017). The track and trace system requires high-speed broadband internet and a reliable telecommunication network. KRA officials are equipped with handheld devices known as SM45. This device reveals hidden photo-magnetic line embedded in the stamp and transmits real-time data such as the date of issue, the producer's name, the product category, and the brand to the central server. These devices can also be used offline for authentication of the stamp and for tracking and tracing of the stamp. In 2016, KRA released an appknown as the KRA Stamp Checker, which allowed the

public to verify the genuineness of both cigarettes and alcohol using mobile phones (Dennis, 2016).

Ross (2017) conducted a literature review on the tracking and tracing of tobacco products in Kenya. Where statistics from KNBS were analysed, government reports, online articles conference proceedings were reviewed. The study concluded that tracking and tracing of excisable goods was vital to create a permanent association between the product and the code/stamp, which is rendered unusable upon its first use, and to expand enforcement beyond KRA by facilitating the participation of the public and retailers/distributors. The official enforcement units conduct frequent checks and can get evidence of violation on the spot without a requirement for additional authentication. The study recommended that the system needs to be monitored and reviewed continuously for performance to ensure its robustness and stability and to deal with possible mutation of tax evasion schemes. Limited human involvement in daily operations and data security prevents errors and system manipulation.

2.4.3 Product Authenticity and Excise Tax Revenue Collection

Kenya's EGMS has capabilities that facilitate use of digital excise stamps to verify products along the supply chain, giving the end consumers an opportunity to establish the authenticity of products through a quick response code using a Smartphone application. The EGMS system has three key components: factory flow labelling and verification system; hand-held scanner that allows operators in the supply chain to verify authenticity of the product; and smart phone application that allows end consumer verify product authenticity. This involves authentication of goods from a manufacturer, importer, distributor, retailer or any other person involved in the supply chain of excisable goods before admitting the goods in their premises (Grant

Thornton, 2017).Validation and verification of excisable goods requires importers or manufacturers of excisable goods to install production accounting systems on the production line as per Excise Duty Act of 2015 (KRA, 2019).

The new regulations provide sufficient light for verification and authentication of the excise stamps. If there is a discrepancy between the declared and verified imports or manufactured excisable goods, the unused stamps shall be returned and refunded within 90 days (Deloitte, 2017). EGMS allows for quick verification of the legality of a product at any point in distribution. Excisable goods distributors and retailers have a device that allows for verification of all excisable products before accepting them into their outlets (Dennis, 2016). Inspection and verification procedures of excisable goods describes a systematic approach to the verification of imported consignments of plants, plant products and other regulated products, identifying the key areas that must be taken into consideration when determining compliance with the excise and customs regulations of the country. Inspection and valuation are important to understand as duty under central excise is payable on different criterion. The first step involves identifying the excisable goods; the next step is the correct classification of the goods and finally the computation of the duty payable on the excisable goods (HM Revenue and Customs, 2016).

Stamps embedded with a means of electronic communication may help the authorities identify legitimate product in the distribution chain and enable verification by consumers. In contrast, tax stamps are regarded by the industry as easy to counterfeit. In addition, the industry concurs with journalists' reports suggesting that a black market exists allowing smugglers and counterfeiters to get hold of genuine stamps, and that genuine original bottle, bearing genuine stamps, have been found to have

been refilled. So, while consumers can check the validity of stamps by visiting a website, this is not sufficient to guarantee the legitimacy of a product (Godden & Allen, 2017).

2.5 Conceptual Framework

A conceptual framework is a postulated model which classifies the study variables into dependent and independent variables and highlights the relationship between them (Bryman& Bell, 2015). For this study the dependent variable will be revenue collection while the independent variable will be excisable goods management system which has been divided into four components including product marking, excisable goods tracing and verification plus Product Authenticity. The conceptualized relationship between the variables of interest is as shown in;

Independent Variables   **Dependent Variable**

Product Marking

- Unique Serialized Code

- Multi-Level Survey

- Anti-Tampering

Excisable Goods Tracing

- Industry Standards Compliance

- Interoperable Open Architecture

Excise Tax Revenue Collection

Target Achievement
Service Delivery
Duty Compliance

Product Authenticity

- Smart phone Application

- Evidence Management

Control Variables

- Organization Type
- Work Experience
- Number of Employees
- Level of Education

Figure 2.1: Conceptual Framework
Source: Researcher 2022

2.6 Research Gap

Complementary efforts in inter-agency collaborations locally and across jurisdictions

enhance the effectiveness of track and trace system. Priority countries for inter-agency

collaborations are usually those that are either source or destination for products prone

to illicit trade, especially bordering jurisdictions. For example, cooperation agreement

initiated between the Brazilian and the Paraguayan governments on areas of sharing both public and confidential data related to illicit trade proved to be useful in cross border flows of illicit tobacco. In Turkey, there is established close cooperation among the revenue authority, and the ministries in charge of justice, economy, foreign affairs and internal affairs.

Policy initiatives to increase fines on illicit trade corroborate the effectiveness of track and trace system. This was one of the initial challenges faced by Turkey, as slow prosecution and low penalties dampened the gains from introduction of track and trace system. The review also suggests the importance of independent estimates of illicit trade in tobacco products. While there is a general indication that illicit trade in tobacco products decline after introduction of track and trace system largely based on observable variables such as level of legal sales of licit cigarettes and tobacco tax revenues, the exact magnitude by which illicit trade in tobacco products decline remains a challenge. The study finally recommends that the government should re-visit and review some custom and excise tax laws and regulations that are repugnant to the performance of the custom and excise tax system.

Even as KRA gears to expand the system to other goods, a key recommendation to improve the implementation of the EGMS is the need to work out compliance avenues that are more convenient. These include upgrading online capability of the system and enhanced collaboration among relevant government agencies including the Kenya Revenue Authority, the Anti-counterfeit Authority, and the Kenya Bureau of Standards, especially on efforts towards enhanced market surveillance of product stamps and control of illicit trade. The initiative can leverage on the collaborative platform articulated in the National Action Plan and Implementation Framework to Combat Illicit Trade 2019-2022.

Chesire (2018), the study failed to establish how excise taxes affect the consumption of excisable products and how there is a shift especially to unregulated products in the case of alcohol where it is cheaply available. It was evident that majority of the previous studies have focused on the excise duty on a specific product. In addition, some empirical studies have been conducted to examine the effect of custom and excise duties on economic growth in both developed and developing countries, but one common feature of these empirical studies is lack of consensus among the scholars. Most studies have therefore reached substantially different conclusions on the relative impact of custom and excise duties on economic growth. This study is motivated by three developments. First, by the inconsistency in existing empirical evidences. Secondly, lack of existence of studies on the application of ICT systems such as EGMS on revenue collection, thirdly by the wide knowledge gap occasioned by the paucity of empirical literature on Kenya.

CHAPTER THREE

RESEARCH METHODOLGY

3.0 Overview

This chapter discussed the methodology used to achieve research objectives. The chapter addressed the following sub-sections: research design, target population, sample size and sampling techniques, data collection instruments, data collection procedures and data analysis and processing.

3.1 Research Design

The plan, structure and strategy of investigation defined a research design. (Kombo & Tromp, 2006) described a research design to involve those studies concerned with describing the characteristics of a particular individual or group of people and is used to provide correlation between the variables of interest. The research design that was used in this study was an explanatory research design.Explanatory research is a method established to explore phenomena that have not before been researched or adequately explained. Its primary goal is to notify us about where we may get a modest bit of information. With this strategy, the researcher obtained a broad notion and use research as a tool to direct them more quickly to concerns that may be addressed in the future. Its purpose was to discover the why and what of a subject under investigation. In short, it is a type of research design that is responsible for finding the *why* of the events through the establishment of cause-effect relationships. This research work is for investigating the effect of EGMS on excise tax revenue collection in the Coast region.

3.2 Target Population

Target population is defined as the universe or the entire group of persons or elements from which samples are taken (Kombo & Trump, 2006). The target population

represents subjects or elements possessing common observable characteristics that conform to a given specification theory of sampling. The targeted groups were people and businesses using and interacting with the EGMS System in the Coast region, in towns like Mombasa, Voi, Garsen, Kwale and Kilifi this because there had been a lot of complaints from the market, especially taxpayers who had been selling legitimate products, that there had been people who had been undercutting them in the market. This was by introducing products that had not been tax compliant, undercutting them by selling at much lower prices destroying positive competition. So in order to address this issue, the Kenya Revenue Authority had to come up with a mechanism that enables us to identify and interdict those products (KRA, 2019).

The target population of this study was from 838 individuals from KRA offices within the Coast region in County headquarters of Mombasa, Kwale, Voi, Kilifi, Garsen, Lamu, taxpayers both registered manufacturers and registered importers who had been involved with EGMS within the Coast region as per information obtained from Malindi TSO since the lists could be accessed from a merged database. The research was concentrated in Tax service offices in Kilifi and Mombasa.

Table 3.1: Target Population.

Category	Mombasa	Kilifi	Total
KRA Employees	57	26	83
Registered Manufacturers	457	274	727
Registered Importers	22	6	28
Total			**838**

Source: KRA, Malindi TSO, 2020.

The views from the different people would give a wholesome understanding on the effects of EGMS on excise tax revenue collection within the Coast region. The study was expected to yield rich data that can lead to important recommendations in practice.

3.3 Sampling Procedure

It is the technique adopted by the research in selecting items for the sample. This may as well define the number of items to be included in the sample. Stratified random sampling was used to stratify the sample of the population into employees of KRA, registered manufacturers, and registered importers. A stratified random sampling was employed to obtain a suitable unit representative of analysis. Stratified random sampling is a variant of random sampling, which allow subgroups to be studied in greater detail(Marshall, 1996). This is because of the heterogeneity of the population and all respondents were all to have equal opportunity of participation.

This study assumed a 95% confidence interval and error level of 0.05. The sample size was calculated by the formula advanced by(Yamane, 1967):

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

Where:

n= sample size

N= target population

e= level of precision

The sample size was therefore calculated as elaborated below.

$$n = \frac{838}{1 + 838(0.05)^2}$$

$$n = 271$$

The calculated sample was proportionately distributed as shown in table 3.2

Table 3.2: Sample Size

Item	Total Population	Proportion	Sample Size
KRA employees	83	0.099	27
Registered Manufacturers	727	0.868	235
Registered Importers	28	0.033	9
Total	**838**		**271**

Source: Research, 2020

3.4 Data Types, Collection Instruments and Procedure

The study used both primary data and secondary data. Data that is obtained from the questionnaire is regarded as the most effective way that researchers or writers can collect qualitative data that can be measured in numbers (Collis & Hussey, 2014). A closed ended structured questionnaire was used to collect primary data. The close-ended questions provided a variety of possible responses for the respondent to choose from and provide uniformity of answers hence easy to code and analyse. Most of the Secondary data for this project was sourced from international established books and journals that present academic research. The statements and the reference of this project are only got from the recognized reports. Secondary data played an important part of building knowledge to be able to develop a solid background on effects of the Excisable goods management system on excise tax revenue collection in the Coast region.

3.4.1 Data Collection Procedure

The study employed questionnaires to collect data from key stakeholders. Before the collection of data, the researcher ensured that the questionnaire was valid and reliable.

Thereafter, the researcher sorts for a research permit from the National Commission for Science, Technology and Innovation (NACOSTI). Once approval was granted, the researcher sort respondents consent to participate in the research. To improve the response rate, the study put into consideration the research ethical issues. The researcher explained to the respondent the importance of the study and assured them of the confidentiality and anonymity of their identities before administering the questionnaires.

A total of 271 questionnaires were prepared and distributed to: KRA employees; registered manufacturers; and registered importers. Due to the current prevailing corona virus pandemic, to mitigate the issue of non-response, follow-up was done by phone calls and SMS. However, some of the respondents still failed to return the questionnaires. A total of 195 questionnaires were returned and well answered which was 71.96% response rate, while 63 questionnaires were not returned completely, and 13 questionnaires returned incomplete. Thus, the total of 76 questionnaires did not form part of the data used in the analysis of this study.

3.5 Reliability and Validity

3.5.1 Data Reliability

Reliability tests the degree to which measures are free from error (Tavakol & Dennick, 2011). For this study, Cronbach's alpha coefficient was computed. Cronbach's alpha, α coefficient has been the subject of considerable methodological and analytical attention(Cortina, 1993). As per the recommendations of Hundleby and Nunnally (1968), the study aimed to achieve reliability alpha of between 0.7 for acceptable and α 1for excellent to prove the reliability of the research instrument.

3.5.2 Data Validity

Validity is the extent to which the scores from a measure represent the variable they are intended to (Eccleston, 1996). Several ways may be used to estimate the validity of a test including content validity, face validity, construct validity, and criterion-related validity. Creswell (2014)defines content validity as the extent to which the questions on the instrument and the scores from these questions represent all possible questions about the content. It ensures that the questionnaire includes adequate set of items that tap the concept. This study adopted content validity.

3.5.3 Pilot Testing

According to Hassan et al. (2006), it refers to a small test on research protocols, data collection instruments, sample recruitment strategies, and other research techniques in preparation for a larger study. The technique that was used by the study was simple random sampling where each element of the population had equal probability of being selected for the sample. For survey, small set of respondents, 25% of the intended sample size of 271 respondents, were contacted and interviewed to determine their feedback of the questions asked. The respondents selected for the pilot exercise did not form part of the population under study. The information obtained was then subjected to descriptive and inferential statistical data analysis techniques. Questions not well captured were adjusted accordingly. The pilot test helped determine if the questions are well understood by the respondents and if they offered reliable and valid information for this study.

3.6 Data Analysis

Data was analyzed through descriptive and inferential statistics analysis techniques. The relationship between the variables was analyzed using the Statistical Package for

the Social Sciences (SPSS) version .21. SPSS software automatically generated descriptive statistics such as means, standard deviation, percentages, frequency and range which was used to describe the respondent's opinions on the effects of excisable goods management system on the excise revenue collection in Coast region. The general summary displayed the descriptive statistics such as mean, percentiles, and standard deviations. In description of the variables, tables and figures were applied.

3.6.1 Analytical Model

The study used a multiple regression model to investigate the relationship between the dependent and independent variables. Multiple regression is a useful means of representing decision outcomes, makes relatively few statistical assumptions and is robust to the statistical assumptions that are made (Hosmer et al., 2015).The multiple linear regression equation was presented as:

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

Where Y= Excise tax revenue collection (Dependent Variable)

X_1 = Product Marking (Independent Variable)

X_2= Excisable Goods Tracing (Independent Variable)

X_3= Product Authenticity (Independent Variable)

β_0 is the constant term (Y-intercept), whilst β_1, β_2, β_3 are the slope coefficients for each explanatory variable. Each regression coefficient represents the change in Y relative to a one-unit change in the respective independent variable. ϵ is the model's error term, also known as the residuals.

3.7 Assumptions of Multiple Regression Analysis

The multiple linear regression analysis makes several key assumptions. Prior to conducting the analysis, data was checked to ensure that the assumptions were not violated. These assumptions are normality, linearity, multicollinearity, and heteroscedasticity.

3.7.1 Normality Test

Normality test is used to determine whether a data set resembles the normal distribution(Amata, 2017). A visual representation of the distribution of test results determines whether it conforms to the bell-shaped normal curve. The normality test was done using the Kolmogorov-Smirnov test and the Shapiro-Wilk test. For both tests, the null hypothesis is retained if the probability value was greater than 0.05, implying the data is normally distributed

3.7.2 Linearity Test

The linearity test is a requirement in the correlation and linear regression analysis. Good research in the regression model there should be a linear relationship between the independent variable and dependent variable. Therefore, linearity implies the degree level to which a change in the dependent variable is related to a change in the independent variables(Hair et al., 2010). The relationship between each of the predictor for the independent variable and dependent variable could be linear. Linearity was tested using Pearson correlation to check the correlation among the variables of this study.

3.7.3 Multicollinearity

Multicollinearity occurs when the independent variables are correlated. Barnor (2014) stated that when two or more independent variables are linearly dependent on each

other, one of them should be included instead of both since it increases standard errors thereby making the results biased. Multicollinearity was assessed using Variance Inflation Factor and Tolerance values. If the VIF value lies between 1-10, then there is no Multicollinearity whereas if the VIF <1 or > 10, then there is Multicollinearity (Pallant, 2010).

3.7.4 Heteroscedasticity.

Heteroscedasticity is as a term used to describe the situation when the variance of the residuals from a model is not constant. Heteroscedasticity is a violation of the multiple regression analysis. Homoscedasticity was examined by visualizing scatter plots and partial regression plots for individual variables (Pallant, 2010). This means the dependent variable scores have the same dispersion/variability around the regression line through them, to mean they have equal spread. Outliers defined as cases that have a standardized residual value of more than 3.3 Or less than -3.3 was checked (Tabachnick & Fidell, 2007). This assumption was checked by visual examination of a plot of the standardized residuals (the errors) by the regression standardized predicted value.

3.9 Operationalization and Measurement of the Study Variables

The Table3.3 gives an outline of the dependent and independent variables and how they were measured and reviewed. Effects of Excisable goods management system on excise revenue tax collection in the Coast region was operationalized using product marking, excisable goods tracing and product authenticity.

Table 3.3: Operationalization and Measurement of the Study Variables

Variables	Indicators	Source/Author	Data collection instrument	Measurement scale	Types of Analysis
Independent Variable					
Product Marking.	Unique serialized code	KRA. (2017)	Questionnaire	Ordinal scale – 5-point Likert scale	Multiple Regression Analysis
	Multi-level survey Anti-tampering.				
Excisable goods tracing	Industry standards compliance	Ross(2017)	Questionnaire	Ordinal scale - 5-point Likert scale	Multiple Regression Analysis
	Interoperable Open Architecture.				
Product Authenticity	Smart phone application.	Deloitte (2017)	Questionnaire	Ordinal scale - 5-point Likert scale	Multiple Regression Analysis
	Evidence Management				
Dependent Variable					
Excise Tax revenue collection	Target Achievement	KRA. (2017)	Questionnaire	Ordinal scale - 5-point Likert scale	Multiple Regression Analysis
	Service Delivery Duty Compliance.				

Source: Research, 2020

3.10 Ethical Considerations

The research ensured that all respondents were given free will to participate and contribute voluntarily to the study. The research also adhered to appropriate conduct in relation to the rights of the respondents. A verbal consent was sought from the respondents. In addition, the research ensured that necessary research authorities are consulted before commencement of the study. In addition, all forms of plagiarism were avoided through proper referencing of all sources.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.0 Overview

This chapter presents the response rate, demographics, descriptive statistics, diagnostics tests, inferential analysis, multiple regression analysis, hypothesis testing and discussion of the findings of the study. The findings were presented in two approaches which are; descriptive analysis and inferential analysis.

4.1 Response Rate

A total of 271 questionnaires were distributed to KRA employees, registered manufacturers, and registered importers. However, some of the respondents did not return the questionnaires or returned incomplete questionnaires. A total of 195 questionnaires were returned and well answered which was 71.96% response rate, while 76 questionnaires were not returned or returned incomplete. This is in agreement with Mugenda & Mugenda (2003) that for analysis and reporting, a response rate of 50% is adequate; 60% is good and 70% and over is excellent. This is summarized in table 4.1.

Table 4.1: Response Rate

Response	Frequency	Percentage
Returned	195	71.96%
Returned incomplete	13	4.80%
Unreturned	63	23.24%
Total	**271**	**100%**

Source: Research, 2020

4.2 Demographics

This section presents result on demographic characteristics of the respondents.

4.2.1 Organization type

The results shown in the table 4.2 shows that majority of the respondents representing 83.59% were registered manufacturers followed by KRA employees (11.79%) and registered manufacturers (4.62%).

Table 4.2: Organization

	Frequency	**Percent**	**Cumulative Percent**
KRA Employees.	23	11.79	11.79
Registered Manufacturers	163	83.59	95.38
Registered Importers	9	4.62	100.00
Total	195	100.00	

Source: Research, 2020

4.2.2 Work Experience

In order to obtain informed responses that were necessary in reinforcing the objectives, the study sought to establish the respondents work experience.The study found that the majority of the respondents (35.4%) indicated that they have worked for their respective organization between 16-20 years followed by (21.5%)11-15 years, (20.5%) 6-10years,(15.4%) more than 20 years and (7.2%) 1-5years. Therefore, the responses obtained from them were considered informed and adequate for the study as shown in table 4.3.

Table 4.3: Wok Experience

	Frequency	Percent	Valid Percent	Cumulative Percent
1-5 years	14	7.2	7.2	7.2
6-10 years	40	20.5	20.5	27.7
11-15 years	42	21.5	21.5	49.2
16-20 years	69	35.4	35.4	84.6
more than 20 years	30	15.4	15.4	100
Total	195	100	100	

Source: Research, 2020

4.2.3 Number of Employees

In order to obtain informed responses that were necessary in reinforcing the objectives, the study sought to establish the number of employees in the organisation. The study found that the majority of the organisations indicated that they had work force of between 51-100 employees (65.1%) followed by 11-50 employees (26.7%)and only 8.2% had a workforce of more than 100 employees. Therefore, the responses obtained from them were considered informed and adequate for the studyas shown in table 4.4.

Table 4.4: Number of Employees

	Frequency	Percent	Valid Percent	Cumulative Percent
11-50 employees	52	26.7	26.7	26.7
51-100 employees	127	65.1	65.1	91.8
more than 100 employees	16	8.2	8.2	100
Total	195	100	100	

Source: Research, 2020

4.2.4. Level of Education

The results shown in the table 4.5 shows that majority of the respondents representing 56.9% were diploma holders followed by masters holders (21.0%), undergraduate holders (15.9%) and finally PhD holders (6.2%). Therefore, the responses obtained from them were considered informed and adequate for the studyas shown in table 4.5.

Table 4. 5: Education

	Frequency	Percent	Valid Percent	Cumulative Percent
Diploma	111	56.9	56.9	56.9
Undergraduate	31	15.9	15.9	72.8
Masters	41	21	21	93.8
PhD	12	6.2	6.2	100
Total	195	100	100	

Source: Research, 2020

4.3 Descriptive Statistics

It refers to statistics that was used to describe the basic features of the data. They provided simple summaries about the sample and measures used to tell us something about the data.

4.3.1 Product Marking.

On the first objective, the respondents were asked to indicate the extent in which they agree with the various statements on product marking in relation to revenue collection. The following scale was used: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=strongly Agree.

Table 4.6: Product Marking

Opinion Statements	Mean	SD
EGMS allows for creation of unique serials for excisable goods	4.0645	.95333
Unique serialization facilitates the traceability of excisable goods	3.9032	.88544
Multi-level survey through EGMS offers unique approach to understanding contextual and individual determinants to excise duty	3.0430	1.03119
EGMS allows for the multi-level survey of data concerning manufacturers of excisable goods	3.1828	1.02094
Product marking prevents anti-tampering of excise stamps by the illicit excisable goods manufacturers.	3.3118	1.12268
Overall	**3.5011**	**1.00271**

The analysis showed that the respondents strongly agreed that EGMS allows for creation of unique serials for excisable goods with (M=4.0645; SD=0.95333). They also agreed that unique serialization facilitates the traceability of excisable goods with (M=3.9032; SD=0.88544) and they agreed that product marking prevents anti-tampering of excise stamps by the illicit excisable goods manufacturers with (M=3.3118; SD=1.12268).

They also agreed that EGMS allows for the multi-level survey of data concerning manufacturers of excisable goods with (M=3.1828; SD=1.02094) and they also agreed that multi-level survey through EGMS offers unique approach to understanding contextual and individual determinants to excise duty with (M=3.0430; SD=1.03119). The overall mean of 3.5011 and standard deviation of 1.00271 implied that majority of the respondents agreed that product marking of excisable goods affects revenue collection and there was a high variation from the mean since the standard deviation was greater than 1. These findings were in tandem with that of Reconnaissance

International (2012), who opined that products markings on excisable goods offer additional benefits – which are important in the fight against the growing global problem of illicit trade – the issue of tax stamp use has now become the subject of international policy.

4.3.2 Product Authenticity

The respondents were further asked to indicate the extent in which they agree with the various statements on the effect of excisable goods verification on the revenue collection. The following scale was used: 1=Strongly Disagree, 2=Disagree, 2.5=Neutral, 4=Agree and 5=Strongly Agree.

Table 4.7: Product Authenticity.

Opinion Statements	Mean	SD
EGMS has reduced the risk associated with smuggling of excisable goods due to strict verification	2.5806	1.07666
EGMS has optimized the verification process of excisable goods at KRA	2.9785	1.34309
EGMS has improved the execution time of the validation and verification of excisable goods in the organisation	2.6667	1.16408
The system allows storage and retaining of information during the verification and validation of excisable goods which can be referred at a later date	2.8495	.97742
The evidence stored in the system during the verification is reliable and relevant for decision making	2.8387	1.11599
Overall	**2.7828**	**1.33543**

It was evident that the respondents were neutral that EGMS has optimized the verification process of excisable goods at KRA with (M=2.9785; SD=1.34309) and they were also neutral that the system allows storage and retaining of information during the verification and validation of excisable goods which can be referred at a

later date with (M=2.8495; SD=0.97742). They were further neutral that the evidence stored in the system during the verification is reliable and relevant for decision making with (M=2.8387; SD=1.11599) and they were neutral that EGMS has improved the execution time of the validation and verification of excisable goods in the organisation with (M=2.6667; SD=1.16408). They were finally neutral that EGMS has reduced the risk associated with smuggling of excisable goods due to strict verification with (M=2.5806; SD=1.07666). The overall mean of 2.7828 and standard deviation of 1.33543 implied that majority of the respondents were indifference on the relationship between excisable goods verification and revenue collection in Coast region KRA offices and there was a strong variation from the mean since standard deviation was greater than 1. These findings to an extent cognate with the findings ofHM Revenue and Customs (2016), who opined that inspection and verification procedures of excisable goods describes a systematic approach to the verification of imported consignments of plants.

4.3.3 Excisable Goods Tracing.

The respondents were further asked to indicate the extent in which they agree with the various statements on the effect of excisable goods tracing on revenue collection. The following scale was used: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree.

Table 4. 8: Excisable Goods Tracing.

Opinion Statements	Mean	SD
EGMS compels manufacturers of the excisable goods to comply with industrial standards	2.9032	1.10399
Interoperability of EGMS allows the system to accept and provide services from other systems	3.3548	.95149
Interoperability of the tracking system allows consumers of excisable goods to check the genuineness of these products.	3.2043	1.09900
EGMS provide real time location of the excisable good	4.0753	.08400
The system automatically collects data and retain them for up to 24 months	2.9355	.96466
Overall	**3.1918**	**.84063**

The respondents strongly agreed that EGMS provide real time location of the excisable good with (M=4.0753; SD=0.08400). They agreed that interoperability of EGMS allows the system to accept and provide services from other systems with (M=3.3548; SD=0.95149) and they agreed that interoperability of the tracking system allows consumers of excisable goods to check the genuineness of these products with (M=3.2043; SD= 1.0990). The respondents were neutral that access to computers is required for taxpayers to file tax returns through the tax platforms with (M=2.9032 and SD=1.10399) and they were neutral that the system automatically collects data and retain them for up to 24 months with (M=2.9355; SD=0.96466). The overall mean of 3.1918 and standard deviation of 0.84063 implied that majority of the respondents agreed that excisable goods verification affects revenue collection and there was a low variation from the mean since standard deviation was less than 1. These findings support the study by Ross (2017), who opined that tracking and tracing of excisable goods was vital to create a permanent association between the product and the code/stamp, which is rendered unusable upon its first use, and to expand

enforcement beyond KRA by facilitating the participation ofthe public and retailers/distributors

4.3.4 Revenue Collection

On the dependent variable, the respondents were asked to indicate the extent in which they agree with the various on revenue collection, in terms of EGMS. The following scale was used: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree.

Table 4.9: Revenue Collection

Opinion Statements	Mean	SD
Implementation of EGMS allows for attainment of revenue targets for KRA	3.7692	1.06281
EGMS has improved service delivery on the revenue collection at KRA and hence extra revenue has been acquired	3.7949	1.39886
EGMS has allowed KRA to administer fines and penalties to manufacturers for failing to pay their duties	4.1538	.93298
EGMS facilitates the implementation of excise duty act of 2015 on the penalties and penalties administered on the duty offenders	3.8718	1.00471
EGMS has enabled KRA to take control the manufacturers production process of excisable goods for the compliance of the excise duty act and protection of revenue	4.1795	.82308
Overall	**3.9538**	**1.0445**

The analysis showed that the respondents strongly agreed that EGMS has enabled KRA to take control the manufacturers production process of excisable goods for the compliance of the excise duty act and protection of revenue with (M=4.1795; SD=0.82308) and they strongly agreed that EGMS has allowed KRA to administer fines and penalties to manufacturers for failing to pay their duties with (M=4.1538; SD=0.93298). They agreed that EGMS facilitates the implementation of excise duty

act of 2015 on the penalties and penalties administered on the duty offenders with (M=3.8718; SD=1.00471) and they agreed that EGMS has improved service delivery on the revenue collection at KRA and hence extra revenue has been acquired with (M=3.7949; SD=1.39886). Finally, they agreed that Implementation of EGMS allows for attainment of revenue targets for KRA with (M=3.7692; SD=1.06281). The overall mean of 3.9538 and standard deviation of 1.0445, implied that majority of the respondents agreed that EGMS affects revenue collection on excisable goods in KRA offices in the Coast region and there was strong variation from the mean since standard deviation was greater than 1, which cognates with the findings of KNBS (2016), who reported that cigarette and cigar excise tax revenue increased by 20% (7% in real terms) from 2013 to 2015 , while excise tax collection on beer and wine/spirits increased by 16% (6% in real terms) and 103% (36% in real terms) during the same period.

4.4 Test of Regression Assumptions

The research conducted various diagnostic tests. This section presents the results of the normality test, linearity test, multicollinearity test and heteroscedasticity test.

4.4.1 Normality Test

Statistical procedures are based on the assumption that data follows a normal distribution. The normality tests establish the extent of normality of the data by detecting existence of skewness or kurtosis or both. Shapiro-Wilk and Kolmogorov-Smirnov tests are the two used to indicate normality of data based on the p-values. The Shapiro-Wilk and Kolmogorov-Smirnov test both examine if a variable is normally distributed in some population. But why even bother? Well, that's because many statistical tests -including ANOVA, t-tests and regression- require the **normality assumption**: variables must be normally distributed in the population.

For the two tests, the null hypothesis is rejected if the p-value < .05 implying the data is not normally distributed whereas null hypothesis is accepted if the p-value > .05

Table 4.10: Normality Test

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Unstandardized Residual	.085	195	.062	.985	195	.291
Standardized Residual	.085	195	.062	.985	195	.291

a. Lilliefors Significance Correction

Source: Research, 2020

It is clear from table 4.10 that the residuals were normally distributed as the p-values .062 and .291 were greater than the threshold point of 0.05 at 95% confidence level. Therefore, the assumption of normality was not violated, and it confirmed the hypothesis that data was collected from a normally distributed population.

4.4.2 Linearity Test.

The test for linearity for the three independent variables was conducted to check whether a linear relationship existed between the dependent variables and all the three independent variables. The results are indicated on table 4.11.

Table 4. 11: Linearity Test.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.877	4	3.469	165.178	.000
	Residual	3.991	190	.021		
	Total	17.867	194			

a. Dependent Variable: Excise revenue collection.
b. Predictors: (Constant), Product Marking, Excisable goods tracing, Excisable goods verification.
Source: Research, 2020

The ANOVA results in table 4.11 show F-value of 165.178 which is significant at $p<0.05$. This signifies a model is statistically significant and that there is a linear

relationship between the dependent and independent variables. Therefore, the assumption of linearity was not violated.

4.4.3 Multicollinearity Test

Multicollinearity refers to a situation in which two or more explanatory variables in a multiple regression model are highly linearly related. It occurs when high correlation exists between the predictor variables leading to unreliable estimates of regression coefficients. This leads to strange results when attempts are made to determine the extent to which individual independent variables contribute to the understanding of dependent variable (Creswell, 2014).To test for multicollinearity the study adopted Variance Inflation Factor (VIF) approach. This study adopted the rule of thumb for VIF value of 10 as the threshold. The VIF values of greater than 10 would indicate presence of multicollinearity.

Table 4. 12: Multicollinearity Test.

Variable	Tolerance (1/VIF)	VIF
Product Marking	.489	2.045
Excisable Goods Tracing	.547	1.827
Product Authenticity	.546	1.832
Mean VIF		**1.90133**

Source: Research, 2022

From the results indicted in the table 4.12, the average Variance Inflation Factor (VIF) of 1.90133 was established which is between 1 and 10. The tolerance value was also greater than 0.1 implying that the problem of multicollinearity was eliminated.

4.4.4 Heteroscedasticity Test

Heteroscedasticity occurs when the variance of the error term is not constant. The test was examined by visualizing scatter plot.
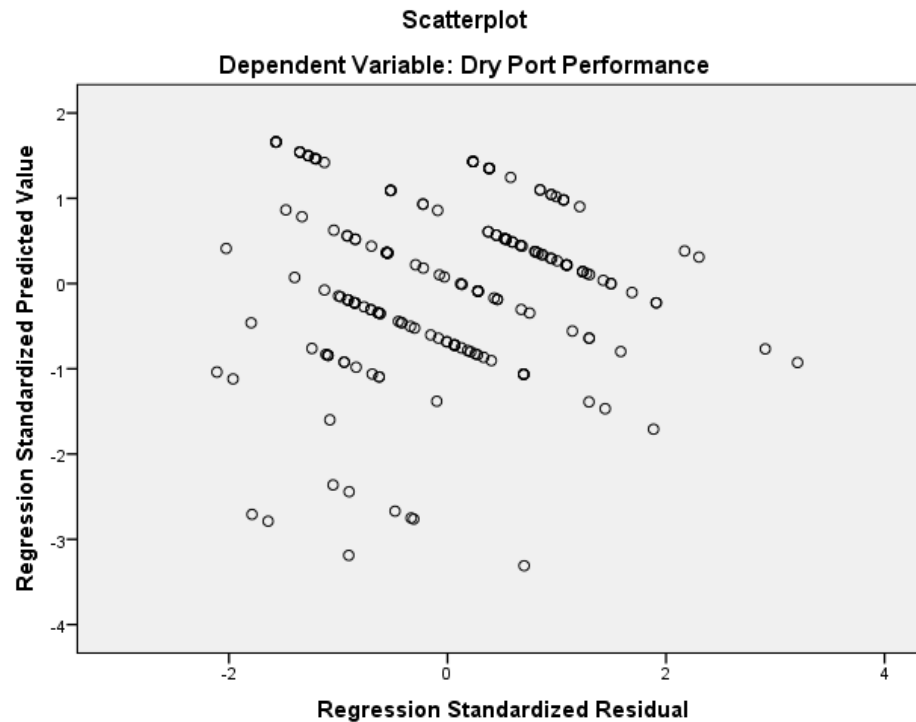
Figure 4.2: Scatter Plot for **Heteroscedasticity Test**

From the scatter plot above, the dependent variable scores have the same dispersion around the regression line through them, to mean they have equal spread, Outliers, are cases that have a standardized residual value of more than 3.3 Or less than -3.3.Therefore, the assumption of Heteroscedasticitywas not violated

4.5 Inferential Analysis

To assess respective strengths and direction of relationships between the independent and dependent variables, Pearson correlation analyses was performed. The variables were computed with the aid of the Statistical Package for Socials Sciences. The study also conducted multiple regression analysis in order to determine the effect of the various independent variables on the dependent variable and hence test the hypotheses of the study.

4.5.1 Correlation Analysis.

Pearson correlation analysis was carried out to test the theoretical proposition regarding relationships among the independent (EGMS) and dependent variables (Revenue Collection).The correlation matrix indicated that there was a positive significant correlation between product marking and revenue collection on excisable goods (r = 0.688, P=0.000< 0.01). This means that there is a strong significant relationship between product marking and revenue collection on excisable goods. This supports the findings of Euromonitor International (2015), where it was reported that product marking on excisable goods can be used in protecting tax revenue.Excisable goods tracing positively revenue collection on excisable goods in Coast region. The correlation of excisable goods tracing and revenue collection was also positively significant (r = 0.721, P =0.008< 0.01).This cognate with the findings of Ross (2017), who opined that excisable goods tracing improves government tax revenue. Excisable goods verification positively predicts revenue collection on excisable goods. The relationship is strong and positive; meaning enhancing excisable goods verifications would lead to positive improvement on revenue collection. The correlation of excisable goods verification and revenue collection was positively significant (r = 0.909, P=0.002< 0.01). This corroborates with the report by KRA (2017), who reported that validation and verification of excisable goods provide sufficient light on the authentication of excise stamps thus improving revenue.

Table 4.13: Pearson Correlation.

Variables	Y	X_1	X_2	X_3
Excise Tax Revenue Collection (Y)	1			
Product Marking (X_1)	0.688**	1		
Excisable Goods Tracing (X_2)	0.721**	0.681**	1	
Product Authenticity (X3)	0.909**	0.644**	0.699**	1

** Correlation is significant at 0.01

4.6 Hypothesis Testing

To determine the influence of the independent variables on the excise tax revenue collection, the study tested hypotheses using the multiple linear regression models. The results are presented in Table 4.14. The model summary indicated that the value of adjusted R-square of the model was 0.840 which implies that the independent variables contributed 84% of the total variation in the excise tax revenue collection. This represents a significant amount of variation and shows that the model is adequate in explaining the variation in excise tax revenue collection as shown by an F-value of (165.178) with a p-value of 0.000.

Hypothesis 1 predicted that there is no significant effect of product marking on excise tax revenue collection. The results showed that product marking has a positive and significant effect on *excise tax revenue collection (β_1= 0.127, $\rho<0.05$)*, thus hypothesis 1 was rejected. This implied that, improved product marking increases collection of excise tax.

Hypotheses 2 predicted that there is no significant effect of product tracking and tracing on excise tax revenue collection. The results showed that product tracing has a positive and significant effect on *excise tax revenue collection (β_2=0.218, $\rho<0.05$)*, thus hypothesis 2 was rejected. This implied that, improved product tracking and tracing increases collection of excise tax.

Hypotheses 3 predicted that there is no significant effect of product authenticity on excise tax revenue collection. The results showed that product authenticity has a positive and significant effect on *excise tax revenue collection (β_2=0.173, $\rho<0.05$)*, thus hypothesis 3 was rejected. This implied that, improved product authenticity increases collection of excise tax.

Table 4. 14: Regression Results

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	1.083	0.266	1.041	4.071	0.000
Product Marking	0.127	0.062	0.114	2.037	0.048
Product Tracing	0.218	0.077	0.336	2.741	0.009
Product Authenticity	0.173	0.057	0.122	3.045	0.004
Model Summary					
R-Square	0.851				
Adjusted R-Square	0.840				
F-Statistic	165.178				
Sig.	0.000				

Source: Researcher, 2022

4.7 Discussion of the Findings

From the above regression model, the study found out Product Marking, excisable goods tracing, Product Authenticity enhances the excise revenue in the Coast region. The three independent variables that were studied explain a substantial 84% variation in excise revenue as represented by Adjusted R squared (0.84).

The first hypothesis stated there is no significant effect of product marking of excisable goods on excise tax revenue among taxpayers in the Coast region. There was actually a relationship. Godden and Allen (2017) opined that in many jurisdictions, product marking on excisable goods has been introduced as a mechanism of revenue control, intended to reduce illicit activity and tax evasion. Godden and Allen (2017) further demonstrated that, product marking on excisable goods will not work in isolation. In particular, their effectiveness relies on two things: a carefully considered and well-structured wider excise duty policy; and the existence of a credible and well-resourced information and enforcement regime. Indeed, if the

duty is well-designed and enforcement is sufficiently robust, then potentially costly product marking on excisable goods could easily be avoided altogether, with little revenue impact

The second hypothesis stated there is no significant effect of product tracing of excisable goods on excise tax revenue among taxpayers in the Coast region.In that regard, Ross (2017) conducted a literature review on the tracking and tracing of tobacco products in Kenya. Where statistics from KNBS were analysed, government reports, online articles conference proceedings were reviewed. The study concluded that tracking and tracing of excisable goods was vital to create a permanent association between the product and the code/stamp, which is renderedunusable upon its first use, and to expand enforcement beyond KRA by facilitating the participation of the public and retailers/distributors. The study recommended that the system needs to be monitored and reviewed continuously for performance to ensure its robustness and stability and to deal with possible mutation of tax evasion schemes.

The third hypothesis stated there is no significant effect of product authenticity of excisable goods on excise tax revenue among taxpayers in the Coast region. It is worth noting that,Stamps embedded with a means of electronic communication may help the authorities identify legitimate product in the distribution chain and enable verification by consumers. In contrast, tax stamps are regarded by the industry as easy to counterfeit. In addition, the industry concurs with journalists' reports suggesting that a black market exists allowing smugglers and counterfeiters to get hold of genuine stamps, and that genuine original bottle, bearing genuine stamps, have been found to have been refilled. So, while consumers can check the validity of stamps by

visiting a website, this is not sufficient to guarantee the legitimacy of a product (Godden & Allen, 2017).

4.7.1 Effect of Product Marking on Excise tax Revenue collection in the Coast region.

The first objective of the study was to determine the effect of Product Authenticity on excise tax revenue in the Coast region. The study found that Product Authenticity had a positive and significant effect on excise tax revenue in the Coast region. This was supported by the descriptive statistics results of the study with the majority of the respondents having agreed that product marking had affected excise tax revenue as indicated by the mean score of **3.5011**. The results of the correlation analysis also indicate that there is a significant positive correlation between product markingand excise tax revenue in the Coast region(r=0.688, p=0.000).The study established that the beta value for product marking was β_1=0.127, p-value (.048) <0.05 implying that product marking positively and significantly influenced excise tax revenue in the Coast region. This falls in tandem with the findings of the study by Godden and Allen (2017), as sighted on the literature review of this research project.

4.7.2 Excisable Goods Tracing on Excise Tax Revenue in the Coast Region.

The second objective of the study was to determine the effect of excisable goods tracing on excise tax revenue in the Coast region. The study found that excise goods tracing had a positive and significant effect on excise tax revenue in Coast region. This was supported by the descriptive statistics results of the study with the majority of the respondents having agreed that excisable goods tracing had affected excise tax revenue as indicated by the mean score of **3.1918.** The results of the correlation analysis also indicate that there is a significant positive correlation between excisable goods tracing and excise tax revenue(r=0.721, p=0.008).Also, from the multiple

regression analysis, it was established that the beta value for excisable goods tracing was $\beta_2=0.218$, p-value (.009) <0.05 implying that excisable goods tracing positively and significantly influenced the excise tax revenue in the Coast region. From the empirical literature, the studies by Ross (2017) and Dennis (2016)had similar findings on the relation of infrastructure as their independent variable to the dependent variable as used on both studies.

4.7.3 Product Authenticity on Excise Tax Revenue in the Coast Region.

The third objective of the study was to determine the effect of product authentication excise tax revenue in the Coast region. The study found that product authenticity had a positive and significant effect on excise tax revenue in the Coast region. This was supported by the descriptive statistics results of the study with the majority of the respondents having agreed that product authenticity had affected excise tax revenue as indicated by the mean score of **2.7828.** The results of the correlation analysis also indicate that there is a significant positive correlation between product authenticity (excisable goods verification) and the excise tax revenue in the Coast region (r=0.909, p=0.002). Furthermore, the results of the multiple regression analysis in the study also established that there existed a significant positive relationship between product authenticity and excise tax revenue in the Coast region as indicated by $\beta_3=0.173$, p-value (.04) <0.05. This showed that product authenticity and significantly influenced excise tax revenue in the Coast region. The study done by Godden& Allen, (2017.)

Table 4.15: Summary of Hypothesis Testing.

Hypothesis	P-value	Conclusion
Ho_1: Product Marking has no significant effect on excise tax revenue in the Coast region	0.005	Reject Ho_1
H_{02}: Excisable Goods tracing has no significant effect on excise tax revenue in the Coast region.	0.000	Reject Ho_2
Ho_3: Product Authenticity has no significant effect on excise tax revenue in the Coast region.	0.044	Reject Ho_3

Source: Research, 2020

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents summary of the findings as per the specific objectives, conclusion and recommendation on the effect of EGMS on the revenue collection on excisable goods in the Coast Region. The chapter finally provides suggestions of future studies on the field of taxation.

5.2 Summary of Findings

5.2.1 Product marking and excise tax Revenue Collection

On the first objective, it was determined that product marking significantly and positively affects revenue collection on excisable goods in Coast region. The study further determined that an improvement in product marking would lead to improvement on revenue collection on these goods. It was also determined that EGMS allows for creation of unique serials for excisable goods and unique serialization facilitates the traceability of excisable goods. The study also determined that multi-level survey through EGMS offers unique approach to understanding contextual and individual determinants to excise duty and EGMS allows for the multi-level survey of data concerning manufacturers of excisable goods. Finally, on this objective it was revealed that product marking prevents anti-tampering of excise stamps by the illicit excisable goods manufacturers.

This was supported by the results of the multiple regression analysis also supported this finding by revealing that product marking had a significant and positive influence on revenue collection as indicated by $\beta_1=0.127$, p-value (.005) <0.05. This implied that a unit change in Product marking would lead to a change in the excise tax revenue collection of by 0.127 units.

5.2.2 Product Tracing and excise tax Revenue Collection

On the second objective, it was determined that excisable goods tracing significantly and positively affects revenue collection on excisable goods in Coast region. The study also established that an improvement excisable goods tracing would lead to an increase in revenue collection on the excisable goods. The study also determined that EGMS compels manufacturers of the excisable goods to comply with industrial standards and interoperability of EGMS allows the system to accept and provide services from other systems. The study further determined that interoperability of the tracking system allows consumers of excisable goods to check the genuineness of these products and EGMS provide real time location of the excisable good. Finally, on this objective, it was established that the system automatically collects data and retain them for up to 24 months.

This was supported by the descriptive statistics results of the results of the multiple regression analysis also supported this finding by revealing that excisable goods tracing had a significant and positive influence on the excise tax revenue collection as indicated by $\beta2=0.218$, p-value (.009) <0.05. This implied that a unit change in excisable goods tracing would lead to a change in excise tax revenue collection by 0.218 units.

5.2.3 Product authenticity and Excise tax Revenue Collection

On the final objective, it was also determined that excisable goods verification significantly and positively affects revenue collection. The analysis further showed that an improvement in excisable goods verification would significantly contributes to an increase in revenue collection on excisable goods in the Coast region. The study further found out that EGMS has reduced the risk associated with smuggling of excisable goods due to strict verification and EGMS has optimized the verification

process of excisable goods at KRA. The study also determined that EGMS has improved the execution time of the validation and verification of excisable goods in the organisation and the system allows storage and retaining of information during the verification and validation of excisable goods which can be referred at a later date. The study finally, determined that the evidence stored in the system during the verification is reliable and relevant for decision making.

This was supported by the descriptive statistics results of the study that the results of the multiple regression analysis also supported this finding by revealing that capacity of personnel had a significant and positive influence on performance of the dry port as indicated by $\beta3=0.173$, p-value (.004) <0.05. This implied that for a unit change in product authenticity would lead to a change in the excise tax collection by 0.173 units.

5.3 Conclusion

Based on the study analysis and findings, this study concludes that EGMS constructs product marking positively and significantly affects revenue collection on excisable goods in the Coast region. Products markings on excisable goods offer additional benefits – which are important in the fight against the growing global problem of illicit trade – the issue of tax stamp use has now become the subject of international policy (Reconnaissance International, 2012).Godden and Allen (2017) further demonstrated that, product marking on excisable goods will not work in isolation. In particular, their effectiveness relies on two things: a carefully considered and well-structured wider excise duty policy; and the existence of a credible and well-resourced information and enforcement regime. Indeed, if the duty is well-designed and enforcement is sufficiently robust, then potentially costly product marking on excisable goods could easily be avoided altogether, with little revenue impact. It

follows that governments considering introducing a new stamp scheme should examine whether alternative policies could achieve the same aims at a lower cost.

The study further that concluded that tracking and tracing of excisable goods was vital to create a permanent association between the product and the code/stamp, which is rendered unusable upon its first use, and to expand enforcement beyond KRA by facilitating the participation of the public and retailers/distributors. The official enforcement units conduct frequent checks and can get evidence of violation on the spot without a requirement for additional authentication. The study recommended that the system needs to be monitored and reviewed continuously for performance to ensure its robustness and stability and to deal with possible mutation of tax evasion schemes. Limited human involvement in daily operations and data security prevents errors and system manipulation.

It can be concluded that stamps embedded with a means of electronic communication may help the authorities identify legitimate product in the distribution chain and enable verification by consumers. In contrast, tax stamps are regarded by the industry as easy to counterfeit. In addition, the industry concurs with journalists' reports suggesting that a black market exists allowing smugglers and counterfeiters to get hold of genuine stamps, and that genuine original bottle, bearing genuine stamps, have been found to have been refilled. So, while consumers can check the validity of stamps by visiting a website, this is not sufficient to guarantee the legitimacy of a product (Godden & Allen, 2017).

It can be further concluded that implementation of EGMS allows for attainment of revenue targets for KRA and EGMS has improved service delivery on the revenue collection at KRA and hence extra revenue has been acquired. The study also revealed

that EGMS has allowed KRA to administer fines and penalties to manufacturers for failing to pay their duties and EGMS facilitated the implementation of excise duty act of 2015 on the penalties and penalties administered on the duty offenders. The study also concluded that EGMS has enabled KRA to take control the manufacturer's production process of excisable goods for the compliance of the excise duty act and protection of revenue. The study finally, concludes that information about taxpayers can easily be accessed thus improving ways in which revenue targets can be attained.

5.3.1 Policy, Theoretical and Managerial Implication

The effectiveness of product marking on excisable goods will depend on both the wider anti-illicit strategy and the scheme detail. Product marking on excisable goods can only be effective as a means of curbing illicit consumption and protecting tax revenues if effective monitoring, control and enforcement measures are also put in place, and if tax rates and business costs are not so high as to incentivise illicit consumption at the expense of the legitimate industry. It is possible for product marking on excisable goods to help contain illicit trade in alcohol, and associated tax losses; this is far from guaranteed without considering a multitude of other factors including careful design, implementation and consideration of the specifics of a market and its influences (Euromonitor International, 2015).

Excisable goods tax evasion and avoidance can diminish the effectiveness of excise duty system, because they generally make these products more affordable, thus stimulating demand. In addition, they deprive the government of tax revenue (Ross, 2017). The track and trace system requires high-speed broadband internet and a reliable telecommunication network. KRA officials are equipped with handheld devices known as SM45. This device reveals hidden photo-magnetic line embedded in the stamp and transmits real-time data such as the date of issue, the producer's name,

the product category, and the brand to the central server. These devices can also be used offline for authentication of the stamp and for tracking and tracing of the stamp. In 2016, KRA released an app known as the KRA Stamp Checker, which allowed the public to verify the genuineness of both cigarettes and alcohol using mobile phones (Dennis, 2016).

The official enforcement units conduct frequent checks and can get evidence of violation on the spot without a requirement for additional authentication. The study recommended that the system needs to be monitored and reviewed continuously for performance to ensure its robustness and stability and to deal with possible mutation of tax evasion schemes. Limited human involvement in daily operations and data security prevents errors and system manipulation.

5.4 Recommendation of the Study

Based on the findings of the study, the researcher makes the following recommendations for practical and policy action by the concerned authorities:

1. To address issues of monitoring and tracking of excisable goods, there is need for KRA to ensure that they work in collaboration with manufacturers of these products on the adoption of latest tracking gadgets that cannot be easily tampered with. There is also need for KRA to hire more staff to ensure excisable goods and the production processes of these products are adequately assessed before being released for export or local market usage. This will prevent the tax evasion by the various manufacturers especially bottling companies in the region.

2. To mitigate risks associated with excise duty collection, there is need for KRA to ensure that they upgrade their software frequently to minimise incidences of

networks being jammed. This will ensure that declaration of products will not be shifted to manual methods.

3. To improve on the revenue collected on the excisable goods, there is need for KRA management to discipline employees found engaging in collusion and manipulation of stamps with manufacturers. This may be undertaken through training of both traders and its employees on the need for accountability and transparency during declaration of good and making duties and payments.

4. To improve on the EGMS, there is need for KRA to ensure that all their clearance process is digitized through the system. This will reduce paperwork and delays associated with manual process that have not yet been transformed, since the adoption of the system

5.5 Limitations of the Study

Chesire (2018), the study failed to establish how excise taxes affect the consumption of excisable products and how there is a shift especially to unregulated products in the case of alcohol where it is cheaply available.

It was evident that majority of the previous studies have focused on the excise duty on a specific product. In addition, some empirical studies have been conducted to examine the effect of custom and excise duties on economic growth in both developed and developing countries, but one common feature of these empirical studies is lack of consensus among the scholars.

Most studies have therefore reached substantially different conclusions on the relative impact of custom and excise duties on economic growth. This study is motivated by three developments. First, by the inconsistency in existing empirical evidences. Secondly, lack of existence of studies on the application of ICT systems such as

EGMS on revenue collection, thirdly by the wide knowledge gap occasioned by the paucity of empirical literature on Kenya.

5.6 Suggestions for Further Studies

The researcher established the link between EGMS and revenue collection on excisable goods in the Coast region, hence similar study can be undertaken in other KRA offices, especially in those regions, where these products are highly manufactured as this will facilitate comparative analysis of the system implementation among regions. Future studies should also conduct a longitudinal study to determine the success of the system on revenue collection over time. The analysis indicated that independent variables could only explain 84% of the revenue collection on the excisable goods, which implied there was additional factors which could explain revenue collection, hence future studies should identify these factors, which were not incorporated in this study.

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APPENDICES

Appendix I: Introduction Letter

Appendix II: Questionnaire

Instructions

Kindly fill your response in the space provided or tick (√) as appropriate. All the information provided here will be considered private and confidential for the purpose of this research ONLY.

SECTION A: General Information

1. Level of education

Secondary ( ) College ( )

Degree ( ) Postgraduate ( )

2. Have you ever interacted with KRA?

Yes ( )   No ( )

3. How long have you interacted with EGMS?

_____

SECTION B: Study Variables

Product Marking

Please indicate the extent in which you agree with the following statements in relation to revenue collection. Use the following scale: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree and SA=Strongly Agree.

Opinion Statements	SD	D	N	A	SA
EGMS allows for creation of unique serials for excisable goods					
Unique serialization facilitates the traceability of excisable goods					
Multi-level survey through EGMS offers unique approach to					

	SD	D	N	A	SA
understanding contextual and individual determinants to excise duty					
EGMS allows for the multi-level survey of data concerning manufacturers of excisable goods					
Product marking prevents anti-tampering of excise stamps by the illicit excisable goods manufacturers.					

Excisable Goods Tracing

Please indicate the extent in which you agree with the following statements in relation to revenue collection. Use the following scale: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree and SA=Strongly Agree.

Opinion Statements	SD	D	N	A	SA
EGMS compels manufacturers of the excisable goods to comply with industrial standards					
Interoperability of EGMS allows the system to accept and provide services from other systems					
Interoperability of the tracking system allows consumers of excisable goods to check the genuineness of these products.					
EGMS provide real time location of the excisable good					
The system automatically collects data and retain them for up to 24 months					

Excisable Goods Verification

Please indicate the extent in which you agree with the following statements in relation to revenue collection. Use the following scale: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree and SA=Strongly Agree.

Opinion Statements	SD	D	N	A	SA
EGMS has reduced the risk associated with smuggling of excisable goods due to strict verification					
EGMS has optimized the verification process of excisable goods at KRA					

	SD	D	N	A	SA
EGMS has improved the execution time of the validation and verification of excisable goods in the organisation					
The system allows storage and retaining of information during the verification and validation of excisable goods which can be referred at a later date					
The evidence stored in the system during the verification is reliable and relevant for decision making					

Revenue Collection

Please indicate the extent in which you agree with the following statements. Use the following scale: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree and SA=Strongly Agree.

Opinion Statements	SD	D	N	A	SA
Implementation of EGMS allows for attainment of revenue targets for KRA					
EGMS has improved service delivery on the revenue collection at KRA and hence extra revenue has been acquired					
EGMS has allowed KRA to administer fines and penalties to manufacturers for failing to pay their duties					
EGMS facilitates the implementation of excise duty act of 2015 on the penalties and penalties administered on the duty offenders					
EGMS has enabled KRA to take control the manufacturers production process of excisable goods for the compliance of the excise duty act and protection of revenue					

Appendix III: Letter from KESRA

Kenya School of Revenue Administration

KENYA REVENUE AUTHORITY
ISO 9001:2015 CERTIFIED

REF: KESRA/NBI/036

27th April 2022

TO: WHOM IT MAY CONCERN

RE: REQUEST FOR RESEARCH DATA

HABEL SULUBU MBARU- REG. NO.: KESRA105/0112/2016

This is to confirm that the above named is a student at Kenya School of Revenue Administration (KESRA) Nairobi Campus pursuing Masters in Tax and Customs Administration.

The named student is undertaking Research on TOPIC: **"Effect of system automation on excise tax revenue collection in Malindi Town."**

The purpose of this letter is to request your good office to assist the above student with the information to enable him work on his project.

Your support to KESRA in this regard will be highly appreciated.

Thank you.

Dr. Marion Nekesa, PHD,
Head Academic Research
KESRA

2 8 APR 2022
DEAN OF STUDIES
KENYA SCHOOL OF REVENUE ADMINISTRATION
ACADEMIC AFFAIRS DIVISION

Tulipe Ushuru, Tujitegemee!

Appendix IV: NACOSTI Research License