

**OPERATIONAL AND DETERRENCE DETERMINANTS OF EXCISE DUTY
COMPLIANCE IN KENYA;
A CASE OF BOTTLED MINERAL WATER PRODUCERS IN NAIROBI
COUNTY, KENYA**

SAMUEL MUIA KAKUI


**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF
MASTERS IN TAX AND CUSTOMS ADMINISTRATION IN THE SCHOOL
OF BUSINESS AND ECONOMICS
MOI UNIVERSITY**

2023

DECLARATION

Student Declaration

This research project is my original work and has not been presented to any other institution. No part of this proposal may be reproduced without prior permission of the author and / or Moi University.

Signature: -----

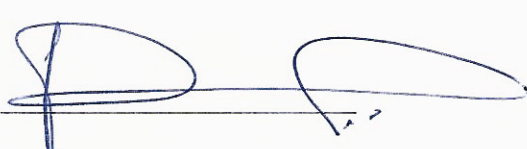
Date: 26/10/2023

SAMUEL MUIA KAKUI

KESRA/105/0040/2021

Supervisors Declaration

This research project has been submitted for examination with our approval as university supervisors.


Signature: -----

Date: 27/10/2023

Dr. Robert Odunga (PhD)

Department of Tax and Customs Administration

Kenya School of Revenue Administration

Signature: -----

Date: 11/11/2023

Dr. Stephen Bitok (PhD)

Department of Accounting and Finance

Moi University, Kenya

DEDICATION

This research project is dedicated to my Wife Evalyne Mwangeli Muia who challenges and inspires me to grow and be a better person. To my sons Elijah Muuo and Edward Mumo, my daughters Sally Museny'a and Sophie Mutheu who have been a source of strength to me, to my colleagues who have stood with me at all times and to all my fellow students who made the journey worthwhile through their team spirit and co-operation. To my University lecturers and supervisors who have guided me to have a completely different perspective towards taxation.

ACKNOWLEDGEMENT

I am thankful to God for giving me good health and strength throughout my study period. I take this opportunity to acknowledge my Supervisors Dr. Robert Odunga and Dr. Stephen Bitok whose tireless efforts have enabled me to come up with my research project that meets examination standards of Kenya School of Revenue Administration and Moi University. I acknowledge the efforts of my friends for their moral support and encouragement throughout the entire research period. Finally to the management of Kenya School of Revenue Administration that has always aimed at providing the best courses to students.

ABSTRACT

Excise duty compliance level in Kenya has been a major government concern. The Government through the Kenya Revenue Authority has implemented a number of policy and administrative reforms. KRA has aimed at increasing efficiency and boosting tax revenue collections. Excise duty has generally been limited to goods, which are luxuries or a risk to health or morals. However, over the years, this has become a key revenue earner contributing a sizable percentage of many countries national budgets. There has been a concern on the compliance levels of excise duty. Over the last five years, there has been a diminishing rate of increase year on year. The revenue from excise duty as a percentage of Kenya's GDP is way below that of many Lower middle-income countries in Africa. The general objective of this study was to examine operational and deterrence determinants of excise duty tax compliance among water manufacturing companies in Nairobi County. The specific objectives of the study was to find out the effect of the reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures, and automated product marking on excise duty compliance. The study was anchored on three theories; the Allingham and Sandmo Theory, Technology Acceptance Theory (TAT), and Benefits Theory of Taxation. The study employed explanatory research design. The target population of the study was 185 registered water producers in Nairobi County in Kenya. Primary data was used with closed ended questionnaires. The data was analyzed using descriptive and inferential statistics to determine the association between variables, with the measurement of variables based on 5-point Likert Scale. The results indicated that reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures, and automated product marking is significant with an standardized beta coefficient of $\beta_1 = 0.225$, $p = 0.001$; $\beta_2 = 0.273$, $p = 0.000$; $\beta_3 = 0.317$, $p = 0.003$; and $\beta_4 = 0.260$, $p = 0.000$. The study concluded that there was significant effect of reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures, and automated product marking on excise duty compliance. The study recommends that that KRA and the government should put in place policies and regulations that guide the overall growth of the economy and to come up with relevant and informed policies that enhance excise duty compliance. More importantly, the study recommends that KRA should put more efforts on systems automation as opposed to the monthly manual excise duty reconciliation. The study noted that future studies should be carried out to examine the effect of tax incentives on excise tax compliance among mineral water producers as well as including a moderating variable of compliance costs.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
ABSTRACT.....	v
TABLE OF CONTENTS	vi
LIST OF TABLES	x
LIST OF FIGURES	xi
ABBREVIATIONS AND ACRONYMS.....	xii
OPERATIONAL DEFINITIONS OF TERMS	xiii
CHAPTER ONE	1
INTRODUCTION.....	1
1.0 Overview	1
1.1 Background of the study	1
1.2 Statement of the Problem.....	10
1.3 Research Objectives	12
1.3.1 General objective	12
1.3.2 Specific Objectives	12
1.4 Research Hypotheses	13
1.5 Significance of the Study	13
1.5.1 Kenya Revenue Authority	13
1.5.2 The National Treasury	14
1.5.3 Water Manufacturing Companies.....	14
1.5.4 Future Researchers	14
1.6 Scope of the study.....	15
CHAPTER TWO	16
LITERATURE REVIEW	16
2.0 Overview	16
2.1 Review of concepts	16
2.1.1 Concept of Excise duty compliance	16
2.1.2 Concept of reconciliation of Excise stamps	17
2.1.3 Concept of Automation of excise duty stamps	19
2.1.4 Concept of Automated Product marking	20

2.1.5 Concept of Deterrent Measures	21
2.2 Theoretical Review	22
2.2.1 The Allingham and Sandmo Theory	22
2.2.2 Technology Acceptance Model (TAM)	23
2.2.3 Benefits Theory of Taxation.....	25
2.3 Empirical Review.....	26
2.3.1 Reconciliation of excise stamps and excise duty compliance	27
2.3.2 Automation of excise stamps and excise duty compliance	30
2.3.3 Deterrent Measures and excise duty compliance	33
2.3.4 Automated Product marking and excise duty compliance	34
2.3.5 Excise duty compliance	37
2.4 Critique of Existing Literature	40
2.5 Research Gaps.....	41
2.6 Summary of the Literature Review	42
2.7 Conceptual Framework.....	43
CHAPTER THREE	45
RESEARCH METHODOLOGY	45
3.0 Overview	45
3.1 Research design	45
3.2 Target Population.....	46
3.3 Data collection methods.....	46
3.4 Data Collection instrument	46
3.5 Data Collection Procedure	47
3.6 Pilot Study.....	48
3.6.1 Reliability of Research Instruments	48
3.6.2 Validity of Research Instruments	49
3.7 Test of Regression Assumptions.....	50
3.7.1 Normality Test.....	50
3.7.2 Multicollinearity	50
3.7.3 Autocorrelation test	51
3.7.4 Homoscedasticity Tests	51
3.8 Data analysis and presentations	51
3.8.1 The Qualitative Analysis	52
3.8.2 Empirical Regression Model	52

3.9 Measurement of Variables	53
3.9.1 Dependent Variable	53
3.9.2 Independent variables	53
3.10 Ethical Consideration.....	55
CHAPTER FOUR.....	56
DATA ANALYSIS, PRESENTATION AND INTERPRETATION	56
4.0 Introduction.....	56
4.1 Reliability of Research Instrument	56
4.2 Factor Analysis	57
4.3 Response rate	58
4.4 Descriptive Statistics.....	60
4.4.1 Reconciliation of excise duty stamps	60
4.4.2 Descriptive Statistics on Automation of excise duty stamps.....	61
4.4.3 Deterrence Measures	63
4.4.4 Automated product marking.....	65
4.4.5 Excise duty compliance	65
4.5 Statistical Assumptions.....	66
4.5.1 Normality Test.....	67
4.5.2 Multicollinearity Test	68
4.5.3 Homoscedasticity test	69
4.5.4 Autocorrelation test	70
4.6 Inferential Statistics	71
4.6.1 Multiple Regression Analysis.....	72
4.6.2 Analysis of Variance	73
4.6.3 The Overall Effect Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking on Excise duty compliance.....	74
4.6.4 Test of Hypotheses	76
4.7 Discussion of the Findings.....	77
4.7.1 Reconciliation of Excise Duty Stamps on Excise Duty Compliance	78
4.7.2 Automation of Excise Duty Stamps on Excise Duty Compliance	78
4.7.3 Deterrence Measures on Excise Duty Compliance	79
4.7.4 Automated product marking on Excise Duty Compliance.....	79

CHAPTER FIVE	81
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	81
5.1 Introduction.....	81
5.2 Summary of Findings.....	81
5.2.1 Specific Objective One: Effect of reconciliation of excise Duty stamps on Excise Duty Compliance	81
5.2.2 Specific Objective two: Effect of Automation of excise Duty stamps on Excise Duty Compliance.....	82
5.2.3 Specific Objective three: Effect of deterrence measures on Excise Duty Compliance.....	82
5.2.4 Specific Objective four: Effect of automated product marking on Excise Duty Compliance.....	83
5.3 Conclusions.....	83
5.4 Limitations of the Study.....	84
5.5 Recommendations.....	85
5.5.1 Policy Makers	85
5.5.2 Implication to Theory	86
5.6 Suggestions for Further Research	86
REFERENCES.....	87
APPENDICES	96
Appendix 1: Introductory Letter to the Research Respondents.....	96
Appendix II: Questionnaire.....	97
Appendix III: Research Letter	102
Appendix IV: NACOSTI	103
Appendix V: Plagiarism Report	103
Appendix VI: Mineral Water Producers in Nairobi.....	104

LIST OF TABLES

Table 3.1: Operationalization and Measurement of Variables	54
Table 4.1: Reliability Test.....	57
Table 4.2: Factor Analysis	58
Table 4.3: Descriptive Statistics on Reconciliation of excise duty stamps.....	61
Table 4.4: Descriptive Statistics on Automation of excise duty stamps.....	63
Table 4.5: Descriptive Statistics on Deterrence measures	64
Table 4.6: Descriptive Statistics on Product Marking	65
Table 4.7: Descriptive Statistics on Excise duty compliance	66
Table 4.8: Tests of Normality	68
Table 4.9: Multicollinearity Test	69
Table 4.10: Homoscedasticity test	70
Table 4.11: Durbin Watson test	70
Table 4.12: Correlation Analysis	72
Table 4.13: Multiple Linear Regression analysis Model Summary	73
Table 4.14: ANOVA.....	74
Table 4.15: Regression Coefficients	74
Table 4.16: Hypothesis Testing	77

LIST OF FIGURES

Figure 2.1: Conceptual Framework.	44
Figure 4.1: Response Rate	59

ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
BIR	Bureau of Internal Revenue
DOI	Diffusion of Innovation
IRB	Inland Revenue Board
ISO	International Organization for Standardization
IT	Information Technology
KESRA	Kenya School of Revenue Administration
KRA	Kenya Revenue Authority
NTA	National Tax administration
GDP	Gross Domestic Product
STO	Small Tax Payers Office
KRA	Kenya Revenue Authority
EGMS	Excisable Goods Management System
KAM	Excise Movement and Control System KAM:
KRA	Kenya Association of Manufacturers KRA: Kenya Revenue Authority
RMCD	Royal Malaysian Customs Department
TAM:	Technology Acceptance Model TRA:
TRA	Theory of Reasoned Action
TSO:	Tax Service Office
UNECE:	United Nations Economic Commission for Europe
VAT:	Value Added Tax

OPERATIONAL DEFINITIONS OF TERMS

Anti-Tampering: A security approach that hampers or prevents the reverse-engineering or modification of the software or application.

Authentication: This means to verify and confirm whether the stamps are genuine

Automated Product marking: This involves the affixation and printing on excisable goods in accordance with excise duty act of 2015 (KRA, 2017).

Automation of excise duty stamps: These are stamps embedded with a means of electronic communication may help the authorities identify legitimate product in the distribution chain and enable verification by consumers.

Control in accounting: Refers to the use of excise duty stamps for the purpose of accounting for the number of excisable goods produced.

Deter counterfeiting: The extent to which the use of excise duty stamps prohibits production of counterfeit goods.

Deterrence measures: The deterrence effect occurs when taxpayers are more compliant with taxes because they see other taxpayers being successfully prosecuted or penalized for non-compliance, and are aware of the potential penalties for nonconformity (Pindyck 2009).

Excise duty compliance: Excise duty compliance includes declaring the right amount of tax, filling the correct monthly returns in time, paying the correct amount at the right time and responding to all enquiries by the commissioner (Obiero, 2018).

Excise duty: According to the Excise Duty Act, 2015 means a duty imposed under the Excise Duty Act, 2015 on goods and services manufactured or imported into Kenya and those listed under the first schedule to the Excise Duty Act, 2015.

Level of use of stamps: Refers to the frequency of use of excise duty stamps.

License Cancellation: Refers to the action by KRA to cancel a license to manufacture of import excisable goods.

Multi-level Survey: This involves different levels where the automated product markings can be verified.

Penalties & Fines: These are monetary obligations enforced by KRA as a result of non-compliance on tax matters.

Reconciliation of Excise duty Stamps: An excise stamp is a type of revenue stamp affixed to some excisable goods to indicate that the required excise tax has been paid by the manufacturer (Nyaga, 2014). The reconciliation of the stamps is done on a month basis as a means of accountability on excise duty declaration.

Security Features: Refers to the unique features in the excise duty stamps put for security purposes.

Unique serialized code: This is an automated product marking on the packages of some excisable goods

Withdrawal of certificate: This refers to an action by KRA to recall an earlier issued Tax Compliance Certificate to a tax payer as a result of non-compliance.

CHAPTER ONE

INTRODUCTION

1.0 Overview

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

1.1 Background of the study

Excise tax, as an economic instrument, has several goals (Atkinson, 2016). Its first goal is to provide an alternative source of government revenue. Compared to income tax, excise can generate significant additional revenue at low political and economic cost (Obiero, 2018). According to Cook (2016), excise is also easier to administer because goods subject to excise are readily identifiable and the scope of the tax is usually narrow resulting in a limited number of taxpayers to control. The second goal is the application of the benefit principle of taxation, whereby tax is imposed on those who use and benefit from the goods and services.

Excise Duty compliance is the voluntary payment of taxes in accordance with the spirit of the tax laws (committed tax compliance), the payment of tax for fear of penalties and audits in line with the spirit of tax laws (capitulative tax compliance), and the paying of taxes after arranging taxpayers' activities to minimize tax liabilities by complying with tax laws (Upsa, 2017). KRA has aimed at increasing efficiency and boosting tax revenue collections. The Vision 2030 target was to increase revenues from about 16% per cent of the GDP in 2006/07 to 25 per cent of the GDP in 2017/18 and maintain that level to 2030 (Deloitte 2020).

Although the overriding objective of excise taxes in Kenya is to raise tax revenues, the performance has been weak. Excise Duty compliance level in Kenya has been a major government concern. The Government through the Kenya Revenue Authority has implemented a number of policy and administrative reforms. Excise Duty reforms have been a key component of the overall reform package, for example, implementation of excisable goods management system in 2013, widening of excise tax base to include other goods and services, and increasing of excise tax rates over the years. Despite these reforms, overall tax revenue mobilization, including excise taxation remains low. Tax revenues as percentage of GDP have stagnated below 20 per cent in the last two decades, with excise taxes averaging only 3.6 per cent of the GDP (Deloitte, 2017).

Excise duty is one of the oldest taxes levied worldwide on selected products. It has generally been limited to goods which are luxuries or a risk to health or morals. Excise taxes are discerning taxes on the sale or usage of selected goods and services, such as alcohol products and tobacco. However, over the years, this has become a key revenue earner contributing a sizable percentage of many countries national budgets. OECD (2013) explains the meaning of excise duty as a tax levied on an act, occupation, privilege, manufacture, sale, or consumption.

The use of computerized systems in excise duty collection involves the use of information and communication technologies (ICT) in providing records, in real-time, on the movement of tobacco, alcohol, and energy products for which excise duties have still to be paid . Talley (2016) suggested that excise taxes have been characterized by shifts between specific and ad valorem tax regimes. He notes that though KRA has of late embraced technology in excise duty collection, very insignificant results can be directly associated with this move.

In Malaysia, the excise duty is 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, 2017). 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.

The Malaysian taxation system comprised of direct and indirect taxes. The Inland Revenue Board of Malaysia (IRBM) administers the direct taxes. Meanwhile the Royal Malaysian Customs Department (RMCD) administers the indirect taxes. Excise duties have been the biggest contributor to the indirect taxes components (Delipalla, 2017). In 2017, excise duties contributed 6 per cent of the total government revenue. The excise duty is a mechanism to modify public consumption pattern or social engineering. However, though there has been increase in consumption of excisable goods in Malaysia, this has not caused increase in the excise duty collections (Delipalla, 2017).

Excise policy in Indonesia is constantly being reformed, especially since the Excise Act 2007 (Law No. 39) entered into force. From 2002 to 2006, the government implemented an ad valorem system by simply changing retail prices every year and leaving the ad valorem tariff fixed. From 2015 to 2016, the government used a complex hybrid system, which was a combination of the specific and ad valorem excise systems (Azubike, 2017). Later, in 2017, the government began implementing a multiple specific tax system, where specific tax rates are increased annually in a 'quasi ad valorem' system. As a result, all tax rates in the excise tariff are specific rates levied 'per stick'; however, the classification, which determines the rate, is based on a retail sales value. In 2019, the government then simplified the excise tariff

by merging the rate groups. Indonesia continues to struggle to control excise tax evasion (Rojas, 2019).

According to Berown (2018), developing countries have been leaning more towards indirect taxes than direct taxes; Indirect taxes are easier to administer. Excise tax is gaining popularity in African countries but is very controversial because of its impact on the poor. Denny, (2018), elaborate that in Mozambique, excise duty is levied on planes and boats, air vehicles without engines, and second-hand clothes, as well as tobacco and alcohol products.

In South African, the government levies excise tax to raise tax revenue and to control the consumption of such products that have potential harmful effects on society. South Africa, alcoholic products, tobacco attract excise taxes. South Africa's excise tax collections averages about 4.5 per cent of the GDP and constitutes 12 per cent of total tax revenue as opposed to a target of 16% of total tax revenue (Obiero, 2018).

In Uganda, excise tax system has not been broad-based as VAT. Only a few items such as alcoholic, 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 (Upsa, 2017).

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).

Excise duty in Kenya is an intricate tax to administer. Every single year in the Finance Act there are changes in excisable goods and services. Though the collections continue to improve each year, the levels do not match the other key taxes (Talley, 2016)

In Kenya, one can discern that excise taxes have been levied specifically for meeting the revenue requirements of the government. However, according to Osoro et al, (2013), the revenue structures of most developing countries have not been as productive as desired. Too often the growth in revenue has failed to catch up with government spending pressures, a situation that has occasioned huge imbalances between the demand and supply of public budgetary resources. These countries have then had to reform their tax structures, with the general objectives of revenue adequacy, economic efficiency, equity and fairness, and simplicity. Kenya has undertaken several tax reforms between 1980 and 2022 aiming at, among others, boosting revenue collections.

Despite these reforms, tax revenues in Kenya have remained at an average of 17 per cent of the GDP in the last 2 decades. This is below the vision 2030 target of 25 per cent of the GDP, with excise taxes constituting 3.6 per cent of the GDP. However, this is slightly above the Sub-Saharan average of 16 per cent of the GDP but way below some Lower Middle Income Countries (LMICs) in Africa such as Morocco (22%) Lesotho (30%) and Upper Middle-Income Countries (UMICs) such as

Botswana (24%), South Africa (26%) and Namibia (30%). Excise taxes as a percentage of total tax revenue averaged 13 per cent between 1980 and 2018. It portrays a consistent upward trend from an average of 8.2 per cent between 1980 and 1990, to 16 per cent between 1991 and 2000, before beginning to decline to an average of 14.3 per cent between 2001 and 2019 (Deloitte, 2020)

The good performance of excise tax between 1990 and 2000 is in part due to expansion of excise tax basket to include imports and other products such as petroleum that were previously subjected to sales tax. The performance of import duty has been worsening, it declined from an average of 18.1 per cent between 1980 and 1991 to 14.4 per cent between 1991 and 2000, to 8.2 per cent between 2001 and 2010 and eventually to an average of 6.3 per cent between 2011 and 2018. Compared to other taxes, VAT has been stable and constitute the largest share of taxes as a percentage of GDP, averaging 27.5 per cent between 1980 and 2018. Other than a decline which was experienced between 1993 and 1997 due to dropping of some products from the VAT list (like petroleum products in 1995), the performance of VAT taxes has been more stable compared to excise tax and import duty (Deloitte, 2020).

According to the Kenya Treasury Statistical Annex to budget for fiscal year 2017/2018, it is clear that in, total excise tax revenue collected amounted to Ksh 197.4 billion, contributing 2.24% of GDP (13.5% of the total tax revenue) compared to Ksh 85.7 billion (1.9% of GDP and 11.2% of the total tax revenue) collected in 2012/13 (Obiero, 2018).

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 among others. It was previously administered under the Customs & Excise Act 2010. Though there has been an increase in the amount of excise duty collected over the last five years, in some of the years, there has been a diminishing rate of increase. This means the percentage rate of change for each subsequent year has not necessarily been increasing (Rojas, 2019)

Excise Tax Stamp seeks to achieve the following objectives: Control the importation and local production of excisable goods for revenue purposes, Check illicit trading, smuggling and counterfeiting of excisable products, check under-declaration of goods, and Protect and increase tax revenue. In general, the main objective of the excise stamps is to monitor excise duty (Dennis, 2016). Over the years, the issue of counterfeiting of excise stamps has been in the limelight. Illicit trade grew with stamps easily counterfeited. Counterfeit stamps or genuine stamps affixed to counterfeit can fool consumers and endanger public health. Use of the stamps is one way that the Treasury is counting on to seal tax leakages. Ndumia, (2015) notes that the use of excise stamps improved excise duty compliance in 2014 significantly. There was however high level of counterfeited stamps continued to affect excise duty compliance.

Automation of excise duty stamps was a response of counterfeiting of the former stamps by some taxpayers. This led to stamps having specialized security design features to guard against counterfeiting as most types of paper tax stamps had been counterfeited within weeks of issue. KRA has put in place track and trace systems through EGMS to enable licenced 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 smartphones, and report suspicious products via a hotline (Kenya Revenue Authority, 2017).

Similarly, KRA introduced new generation excise stamps for all wines, tobacco, spirits, ready-to drink alcoholic drinks and beers. Obiero (2018) indicated that the use of automated stamps had no significant effect on the excise duty compliance especially on soft drinks. 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. KRA officials are equipped with handheld devices known as SM45. This device reveals a hidden photo-magnetic line embedded in the stamp and transmit 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). However, study by Ross (2017) shows that there was no significant connection between excise duty consumption and the use of the automated stamps. There has however been a debate as to whether or not the costs of stamps automation outweighs the benefits as indicated by excise duty compliance levels

Products markings on excisable goods has been a key endeavor by KRA to enhance excise duty compliance. This involves the affixation and printing on excisable goods in accordance with excise duty act of 2015 (KRA, 2017) 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. This regulations makes 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 (Thornton, 2017). Godden and Allen (2017) however noted that there was not sufficient evidence to link product marking to any increase in excise duty tax compliance.

The deterrence effect occurs when taxpayers are more compliant with taxes because they see other taxpayers being successfully prosecuted or penalized for non-compliance, and are aware of the potential penalties for nonconformity (Pindyck, 2009). Penalties typically include a fine and in some circumstances imprisonment. Mwongela (2016) notes that the fear of KRA deterrent measures is actually the highest driving force to tax compliance. He indicates that there is a significant positive relationship between deterrent measures and tax compliance.

Bottled water attracts excise duty of Ksh 6.41 per litter. Bottled water manufacturers were required from November 2019 to have excise duty stamps affixed on all bottles. Though many factors may affect the level of excise duty compliance, this study investigated the effect of reconciliation of excise stamps, automation of excise stamps, Automated Product marking and deterrent measures on the compliance of excise duty on bottled water in Nairobi County. These independent variables were specifically selected so as to test whether both automated and non-automated

variables have any significant effect on excise duty compliance and to determine which category (manual or automated) have a stronger positive effect.

1.2 Statement of the Problem

Tax compliance level in Kenya has been a major government concern. The Government through the Kenya Revenue Authority has implemented a number of policy and administrative reforms. KRA has aimed at increasing efficiency and boosting tax revenue collections. Excise Duty reforms have been a key component of the overall reform package, for example, implementation of excisable goods management system in 2013, widening of excise tax base to include other goods and services, and increasing of excise tax rates over the years. Despite these reforms, overall tax revenue mobilization, including excise taxation remains low. The Vision 2030 target was to increase revenues from about 16% per cent of the GDP in 2006/07 to 25 per cent of the GDP in 2017/18 and maintain that level to 2030. Tax revenues as percentage of GDP have stagnated below 20 per cent in the last two decades, with excise taxes averaging 3.6 per cent of the GDP. The overriding objective of excise taxes in Kenya is to raise tax revenues, but the performance has been weak (Deloitte, 2017).

Kenya loses more than Sh153 billion tax revenue annually to illicit trade, with tobacco, alcohol products and bottled mineral water among the most traded (Deloitte, 2017). The number of excise duty related cases arising from detected illegal trade and smuggling offences have been quite high. In Malaysia for instance, in the year 2016, RM 358.56 million (4,810 cases), RM 374.63 million (5,070 cases) in 2017 and RM 360.29million (4,254 cases) in 2018 (Tahar et al. 2020).

The rate of excise duty collection has been unstable over the last five years. The rate of increase has been staggering year on year where in some years, there has been a diminishing rate of increase. This means the percentage rate of change for each subsequent year has not necessarily been increasing. For instance over for the last six years, the amounts collected have been; Year 2015/2016 Ksh 140 billion, year 2016/2017 Ksh 165 billion, year 2017/2018 Ksh 168 billion, year 2018/2019 Ksh194 billion, year 2019/2020 Ksh 195 billion, and year 2021/2021 Ksh 218 Billion (Ministry of Finance Statistical annex 2020/2021). Thus, the percentage increase over the last five years has been 25%, 3%, 26%, 1% and 23% respectively. As is evident, in both years 2017 and 2020, the percentage increase in excise duty collection as compared to the previous years was less than 5%. Still, excise tax revenue as a percentage of total revenue has risen from 11.2% in 2013/14 to 13.5% in 2017/18 and eventually dropped to 12.8% in 2020/21. (KRA 2021). Therefore, this clearly shows that there is unexplained relative underperformance in excise duty in some of the years and which means the level of compliance has been fluctuating.

Though KRA has put measures to enhance excise duty compliance, the performance of this tax in Kenya in year remains low at 3.6 % of the GDP which is way below some Lower Middle Income Countries (LMICs) in Africa such as Morocco 5.2%, Lesotho 4.8% and Upper Middle-Income Countries (UMICs) such as Botswana 5.3, South Africa 4.5% and Namibia 4.1% (Deloitte,2020). There is therefore need for the government and tax authority to review its efforts to foster excise duty compliance among the taxpayers.

Previous studies have mainly focused on excise duty on specific products but ignored the application of information communication technology. For instance, Azimi (2012), studied excise duty gap on cigarettes in Latvia. The study found out that there

were significant losses in tax revenues from illegal trade of cigarettes due to the fact that there was insufficient monitoring of the movement of excisable goods leading to lots of illicit trade. Therefore, it is against this background that this study was undertaken to fill the missing knowledge gap in literature by analyzing Operational and Deterrence determinants of excise duty Compliance among water manufacturing companies in Nairobi County.

1.3 Research Objectives

The study was guided by general and specific objectives.

1.3.1 General objective

The main objective was to establish operational and deterrence determinants of Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.

1.3.2 Specific Objectives

The following were the specific objectives:

- i. To determine the effect of reconciliation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.
- ii. To evaluate the effect of automation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.
- iii. To find out the effect of deterrence measures on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.
- iv. To assess the effect of automated product marking on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.

1.4 Research Hypotheses

The research hypotheses for the study were:

H₀₁: Reconciliation of Excise Duty stamps has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.

H₀₂: Automation of excise Duty stamps has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya

H₀₃: Deterrence measures have no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya

H₀₄: Automated Product marking has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi, Kenya.

1.5 Significance of the Study

The study would be important to the following group:

1.5.1 Kenya Revenue Authority

This study will give assistance to KRA to understand the challenges the water companies face in their quest to meet their excise tax obligation. This study will help KRA to come up with policies and regulations that will enhance excise duty collection among water manufacturing companies in Kenya. It will also help KRA know the challenges facing the taxpayers. The study will be of great importance to the management of KRA in providing information on how excise stamp features, stamps' application procedure and verification of stamps affects excise stamps on monitoring tax revenue. This information can be used in the development of strategies regarding excise stamps as way of improving monitoring tax revenue at KRA. The findings will be used to determine where to invest more resources so as to accomplish the highest excise duty compliance levels.

1.5.2 The National Treasury

The study will aid in policy making by the Treasury, which will improve tax compliance from the water manufacturing companies in Kenya. This will help the government raise more domestic revenue from excise tax collection, which will be used in realizing the government goals in Vision 2030. This study will provide results that will discuss this problem diagnosing the ways in which the government can enforce on manufacturers of excisable goods as well as importers so that they remain compliant.

1.5.3 Water Manufacturing Companies

Water manufacturing companies in Kenya will understand the critical role of excise duty collection as an engine to economic development. This in return will help the manufacturers appreciate more the necessity of paying taxes as a way of helping the government offer services some of which will lead to lowering the costs of production.

1.5.4 Future Researchers

The academicians will find the report valuable in understanding one of the fastest growing sectors of the economy: water bottling industry. The study may thus add up to the existing body of knowledge in the area of compliance. The finding of the report will be used as a basis for further research on this subject. This research may reduce the need to reinvent the whole wheel every time a study on water bottling business is done. This study will provide information that can be used as a literature review in studies related to excisable goods management system and excise stamps on monitoring tax revenue at KRA.

1.6 Scope of the study

The purpose of this research project is to establish determinants of excise duty compliance among mineral water producers in Nairobi County. The study specifically looked at the effects of excise stamps, excise stamp automation, product marking and deterrence measures on excise duty compliance. This study was based on all water-manufacturing companies in Nairobi County. The study was conducted during the period April 2023 and May 2023. The target population of the study was 185 manufacturers companies of mineral water. (Kenya Bureau of Standards; November 2022). The study involved the entire population of 185 water manufacturers so no sampling technique was applied. A pilot study was undertaken on 18 respondents of Muranga County to test the reliability and validity of the questionnaire. Data was analyzed using descriptive and inferential statistics. Descriptive statistical techniques such as mode, medium, standard Deviation and frequencies and percentages was used

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This section presents a review of literature. It covers concepts, theoretical framework, empirical literature review and the conceptual framework of the study.

2.1 Review of concepts

2.1.1 Concept of Excise duty compliance

Tax compliance include the voluntary payment of taxes in accordance with the spirit of the tax laws (committed tax compliance), the payment of tax for fear of penalties and audits in line with the spirit of tax laws (capitulative tax compliance), and the paying of taxes after arranging taxpayers' activities to minimize tax liabilities by complying with tax laws (Amon, 2012). Tax compliance is typically measured in terms of tax legislation, or the extent to which taxpayers are subject to tax rules. The tax difference, or the difference between the income actually received and the amount that would be obtained if the maximum rate of 100 percent were applied, can be used to determine the rate of non-compliance. Despite the fact that Tule (2017) looked at the time dimension of compliance, they nevertheless emphasized tax evasion as the primary means of detecting tax gaps.

Bergman (2018) posits that tax compliance is what can be attributed as taxpayer's indebtedness to the State. Some factors can be attributed to the level of taxpayers' disagreement on the meaning of the tax laws. This includes their fundamental motivation to adhere to the tax code. For practical policy purposes, the definition and assessment of the tax gap are essentially simplified, as successful tax administration

encourages taxpayers to engage in the tax system's operations rather than having to comply with every facet of their tax duties. Given that tax laws can be difficult and unfriendly to deal with all possible contingencies, there is a need to supplement these laws with supporting provisions (Bevacqua, 2018).

According to Nyaga (2014) capacity is required in areas such as automation, audit, risk profiling and general skills development. The tax authority should pay more attention to tax payers' education, compliance and tax audit to give taxation process acceptable rationality. In the past, Excise Duty has been one of the tax heads that has proved a challenge and remained static in terms of growth and also was the most abused and subject to fraud. Very few taxpayers of excisable goods and services filed or declared the correct monthly tax returns hence the need to rethink outside the box. From 2011/2012 to 2015/2016 after introduction of iTax and EGMS, there is significant growth of excise Duty (KRA, 2017). According to Nyaga (2014), automation seems to have played a key role in controlling illicit and unlicensed mineral water bottlers. However, much is yet to be done to completely curb these unlicensed bottling companies because their channels of distribution are not well defined.

2.1.2 Concept of reconciliation of Excise stamps

The use of excise stamps is meant to help enhance excise duty compliance, reduce illicit trade and increase the revenue (Meyo, 2017). The stamps help monitor how business is being done and ensure everyone is paying their fair share of taxes and create a level playing ground for the stakeholders in the field. The only way to standardize the industry was by coming up with an approach that would enable KRA monitor everybody dealing in these products. The stamp cost 50 cents for water and

60 cents for the non-alcoholic. The government hopes that the manufacturers will not hike the prices of the products owing to the introduction of the excise stamps (Meyo 2017). Moving forward, KRA is anticipating having one stamp for agencies that will be recognized by the Ministry of Health, Kenya Bureau of Standard (KEBS) and KRA so as to ease the cost of doing business in Kenya.

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 among others. It was previously administered under the Customs & Excise Act 2010. Though there has been an increase in the amount of excise duty collected over the last five years, in some of the years, there has been a diminishing rate of increase. This means the percentage rate of change for each subsequent year has not necessarily been increasing (Rojas, 2019)

Excise Tax Stamp seeks to achieve the following objectives: Control the importation and local production of excisable goods for revenue purposes, Check illicit trading, smuggling and counterfeiting of excisable products, check under-declaration of goods, and Protect and increase tax revenue. In general, the main objective of the excise stamps is to monitor excise duty (Dennis, 2016). Over the years, the issue of counterfeiting of excise stamps has been in the limelight. Illicit trade grew with stamps easily counterfeited. Counterfeit stamps or genuine stamps affixed to counterfeit can fool consumers and endanger public health. Use of the stamps is one way that the Treasury is counting on to seal tax leakages. Ndumia, (2015) notes that the use of excise stamps improved excise duty compliance in 2014 significantly. There was however high level of counterfeited stamps continued to affect excise duty compliance.

2.1.3 Concept of Automation of excise duty stamps

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 (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, 2017).

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 (Delipalla, 2017). 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 (Denny, 2018). 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 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). However, study by Ross (2017) shows that there was no significant connection between excise duty consumption and the use of the automated stamps. There has however been a debate as to whether or not the costs of stamps automation outweighs the benefits as indicated by excise duty compliance levels

2.1.4 Concept of Automated Product marking

Products markings on excisable goods has been a key endeavor by KRA to enhance excise duty compliance. This involves the affixation of printing and marking on excisable goods in accordance with excise duty act of 2015 (KRA, 2017). 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, 2017). 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 (Thornton, 2017).

Product markings on excisable goods offer additional benefits, which are important in the fight against the growing global problem of illicit trade. In the European Union, the process of product marking enforcement on excisable goods varies among

Member States. Penalties for non-compliance typically include a fine and in some circumstances imprisonment. Obiero (2018) suggests that the use of product marking has yielded significant results in enhancing excise Duty compliance. Godden and Allen (2017) however noted that there was not sufficient evidence to link product marking to any increase in excise duty tax compliance.

2.1.5 Concept of Deterrent Measures

The deterrence effect occurs when taxpayers are more compliant with taxes because they see other taxpayers being successfully prosecuted or penalized for non-compliance, and are aware of the potential penalties for nonconformity. Deterrence effects, where they exist, are a form of positive externality. Thus deterrence effects of successfully prosecuting or penalising non-compliant taxpayers are a form of positive externality, provided the benefits to the community as a whole exceed the costs to the community of doing so (Pindyck 2009). For example, other taxpayers, who may be more numerous and, together, of more value in terms of potential revenue collected, perceive that they too will be prosecuted or penalized if they do not comply with the excise duty law.

According to Amon (2012) economic deterrence model basically includes variables of risk of being detected by audit and penalty structures which are greatly affected by psychological variables such as moral values and the perceptions of tax system and fairness held by taxpayers. The findings of Wilks and Pacheco (2014) indicated that intentions of taxpayer to comply were higher and intentions to evade tax were lower when the tax authorities and administrative bodies are perceived as fair and trustworthy as well as deterrence power was high. The respondents of their research indicated that they are more likely and willing to comply with tax law if authorities were fair and having higher ability to detect and penalize tax evaders. According to

their findings, the effect of authority's ability to detect and punish tax evader was significant on enforced compliance but not on voluntary compliance. The study thus indicated a high positive relationship between deterrent measures and tax compliance.

2.2 Theoretical Review

This study used three theories namely: the Allingham and Sandmo Theory, Technology Acceptance Model (TAM), and Benefits Theory of Taxation to explain the empirical relationship on factors affecting excise duty compliance.

2.2.1 The Allingham and Sandmo Theory

Allingham and Sandmo (1972) developed this Theory, arguing that the government deters tax evasion through punishments and audits. If taxpayers believe the costs of tax evasion are too low, they will prefer to break the law and avoid paying their taxes because they feel they will not be identified or audited. Taxpayers will also avoid taxes if they feel that the costs of compliance are high (Mohd et al, 2009). Taxation systems and procedures that are complicated are likely to encourage tax evasion. Taxpayers who believe the tax rate is excessive and illegal will avoid paying taxes. There is a negative association between tax evasion, likelihood of disclosure, degree of fines, and high transaction costs associated with tax legislation, according to Koumbiadis, Okpara, Pandit, and Ritsatos (2014). Income tax evasion happens when a rational and moral taxpayer optimizes predicted gains that are completely dependent on income, as Burns and Grove (2017) explain. If the agent is caught, he or she will have to pay a fine based on the amount of disguised revenue. The Theory is relevant to this study because it explains the effects of deterrent factors in Excise Duty compliance. It was used to understand the effects of the deterrent factors put in place

by the government to minimize tax evasion and the effect they have on excise tax compliance.

2.2.2 Technology Acceptance Theory (TAT)

The technology acceptance Theory is an information systems theory that models how users come to accept and use a technology. The technology acceptance Theory (TAT) is an information systems theory that models how users come to accept and use a technology. The actual system use is the end-point where people use the technology. Behavioral intention is a factor that leads people to use the technology. Technology Acceptance Theory (TAT) was developed by Fred Davis (1989) as one of the most popular research models to predict use and acceptance of information systems and technology by individual users

Technology Acceptance Theory (TAT) is one of the most frequently used models in research to know the factors that influence the adoption of e-filing system (Pratiwi, Hartanto, Gunawan & Denavi, 2018). TAT was developed to explain computer usage (Ilias, 2008). The goal of TAT is to provide an explanation of the determinants of computer acceptance that is capable of explaining user behavior across a broad range of end user computing technologies and user populations, while at the same time being both economical and theoretically justified (Davis, 1989).

Davis (1989) presented a theoretical model aiming to predict and explain ICT usage behaviour, that is, what causes potential adopters to accept or reject the use of information technology. Theoretically, TAT is based on the Theory of Reasoned Action (TRA). In TAT, two theoretical constructs, perceived usefulness and perceived ease of use, are the fundamental determinants of system use, and predict attitudes toward the use of the system, that is, the user's willingness to use the system.

Perceived usefulness refers to “the degree to which a person believes that using a particular system would enhance his or her job performance”, and perceived ease of use refers to “the degree to which a person believes that using a particular system would be free of effort” (Davis,1989). Ann and Daengdej (2021) examined why organizations apply technology in warehouse management. In their work, the authors identified factors as reliable measures to characterize attitudes towards warehouse service delivery. Factors enabling positive attitude were; less time, cost and avoiding personal interaction (categorized as relative benefits); and factors characterizing negative attitudes were experience, information quality, financial security, low stress, trust and visual appeal.

The TAT is utilized to disclose how people come to acknowledge and utilize new information technology (Zaidi et al, 2017). TAT proposes that when users (taxpayers) are given another innovation, two convictions, the apparent ease of use and the apparent usefulness decide perspectives to embrace new technologies by the users of the system (Venkatesh & Davis, 2000). In addition, TAT is being used and accepted in most of the past studies to explain the relationship between the usage perception and information technology (Moorthy et al., 2014).

TAT is the most widely used model for identifying factors contributing to technology acceptance (Tahar et al, 2020). The theory suggests that, when users are presented with a new piece of technology, several factors influence their decision about how and when they will use the technology (Atkinson 2016). Also according to TAM, individuals accept a particular system if they believe in the system. These believe is perceived usefulness (PU) and perceived ease of use (PEOU) (Azmi & Bee, 2010). In essence, TAM posits that IT adoption is affected by prior use-related beliefs (Gefen & Straub, 2000). TAT identified two such beliefs: perceived usefulness (PU) and

perceived ease of use (PEOU) (Gefen & Straub, 2000). TAT is constructed on the foundations of perceived usefulness and perceived ease of use (Cook, 2016). This theory was used to explain the effects of automation of stamps on excise duty compliance, the effects of product marking as well as the technology based deterrent measure technics currently employed by KRA. Although this is the main theory of the study, it does not clearly address the fact that tax payers comply due to fear of the deterrent measures and also the fact that tax payers are motivated more to comply when they appreciate how the taxes are used. The Allingham and Sandmo Theory as well as the Benefits Tax theory were included to address these two gaps.

2.2.3 Benefits Theory of Taxation

Chetty (2016) developed this theory and indicated that tax payers should make the least sacrifice when paying taxes which should be equal to the benefit they expect from payment of those taxes. This sacrifice can be seen in form of tax paid and the method of payment. One of the very generally accepted principles of taxation is that taxes may be levied according to the benefits derived; that is, the amount of each person's tax should correspond to the services which society renders him. Obviously, however, such a principle has, in practice, serious limitations (Chetty, 2016).

Sometimes those who are least able to pay taxes need most the state's aid. However, the state should ensure that it does not make taxpayers sacrifice much than the benefit they derive from taxes in form of huge taxes or stiff and uneconomical ways of paying those taxes. This theory will be employed in this study to evaluate whether water manufacturers obligated to comply with EGMS perceive it as a burden or as an efficient way of paying taxes. This Theory was used to understand two variables, that is, the dependent variables of Excise Duty compliance and the independent variable of the effects of compliance costs on Excise Duty payment

2.3 Empirical Review

The introduction of the new excise stamps is in line with the provisions of the Excise Duty (Excisable Goods Management System) Regulations, 2017 that requires all excisable products manufactured in or imported to Kenya, with the exception of motor vehicles, be affixed with excise stamps. The new generation stamps have enhanced security features leveraging on technology which are meant to deter counterfeiting. The security features can be verified using stamp verification tools provided to enforcement officers. Members of the public can also verify the stamps using the Soma label mobile phone app available on Google Play Store or Apple Store.

Kenya Revenue Authority (KRA) has rolled out a new generation of excise stamps for excisable goods as part of its strategy to continuously review and improve the security features of excise stamps to deter counterfeiting. The excisable products covered include alcoholic beverages, tobacco and tobacco products, water, soft drinks and juices.

Use of the stamps is one way that the Treasury is counting on to seal tax leakages (Bergman, 2018). The East African Breweries Limited (EABL) and the Kenya Wines Agencies Limited (Kwal) have now embraced the taxman's move. The Kenya Wines Agencies Limited (Kwal) is of the view that the new system would help deal a blow to counterfeiters (Jeptepkeny, 2015). "The mobile app platform, which is part of the EGMS enables the industry to ascertain authenticity of alcoholic beverages, which helps weed out parallel importers and counterfeiters," The Alcoholic Beverage Association of Kenya (Abak) draws its membership from Africa Spirits Ltd, Kenya Breweries, United Distillers and Vintners (UDV) Kenya, Kenya Wines Agency, Wines of the World and Keroche Industries.

In practice, there are two possibilities to solve the case of excise stamps. In the most common way, an importer sends excise stamps to an exporter who sticks them to the bottles/boxes and sends them as such to their destination country. A less popular solution is to send the bottles/items without excise stamps. If so, they might be stamped before receiving marketing authorization to the market, but at the same time when items are physically on the territory of a country. They shall wait in a customs warehouse until the exporter will come and personally attach the excise stamps. This second solution is possible only in a free zone, duty-free warehouse or a customs warehouse and is practical when the counterparty is still not sure about what exactly to do with the sent goods.

2.3.1 Reconciliation of excise stamps and excise duty compliance

The excise stamps will help enhance tax compliance, reduce illicit trade and will increase the revenue by approximately Sh 4 billion. For KRA to come up with a roll out date they engaged the stake holders, conducted sensitization programmers, went round the country and addressed the issues raised by the manufacturers. The stamps have helped monitor how business is being done and ensured everyone is paying their fair share of taxes and created a level playing ground for the stakeholders in the field (Meyo, 2017). The only way to standardize the industry was by coming up with an approach that would enable KRA monitor everybody dealing in these products. The stamp cost 50 cents for water and 60 cents for the non-alcoholic beverages. KRA officers would ensure that the manufacturers would not hike the prices of the products owing to the introduction of the excise stamps (Meyo, 2017).

Majority of the surveyed noted that even though there are agencies to which one can report illicit trade, there are significant barriers preventing them from doing so, with one in four people saying they fear retaliation if they report illicit trade. Kenya has one of the largest markets for fake goods and contraband in East Africa according to ACA, ranging from alcohol, electronics and pharmaceuticals to food, clothing and tobacco. To fight counterfeits, Kenya Revenue Authority has rolled out new generation of excise stamps for excisable goods. This is part of its strategy to continuously review and improve the security features of excise stamps to deter counterfeiting. The excisable products covered include alcoholic beverages, tobacco and tobacco products, water, soft drinks and juices.

Sudán (2017) conducted a study on the evolution in the role of excise tax stamps for specific consumption goods. The study used a descriptive research design and found that the key functions of any tax stamp, whatever form it takes, is to provide fiscal verification (that tax has been paid), as well as supply chain visibility and product authentication. As a result, the demands of tax stamps have become considerably more complex and one of the most striking advances is the extent to which traditional stamps are being replaced by programs combining such stamps with advanced track and trace technology, monitoring and audit systems. Because tax stamps offer these 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. The WHO Framework Convention on Tobacco Control (FCTC) and its Protocol to Eliminate Illicit Trade on Tobacco Products is likely to have a significant impact on the shape of tax stamp programs of the future. The study found that due to stamp counterfeiting, there was insignificant positive effect on excise duty compliance.

Mansour and Rota-Graziosi (2013) conducted a study on the effect of excise tax stamps on revenue mobilization in the West African Economic and Monetary Union. The study adopted a cross-sectional study design and found that the tax stamp had evolved over past decades, from a simple printed item without security (for tax collection purposes only), to a complex, multi-layered security device with integrated production monitoring, track and trace, and authentication capability. Several printing processes are used to produce tax stamps. Their value lies not so much in the technologies themselves, but in the design elements and security features that they can produce, as well as their scarcity and cost, both of which provide a significant barrier to counterfeiting. The three key security print processes for tax stamps are, offset, intaglio and, for numbering or encoding, inkjet print. In addition, silkscreen print processes are often used for applying security features such as color-shifting motifs. The study concluded that use of stamps had significant positive effect on the excise duty compliance.

Tule (2017) examined the effect of excise stamp features on revenue performance in Zambia. The study utilized a cross-sectional research design and established that tax stamps and marks are considered to be effective in the face of all types of illicit trade, and are a “high potential” solution, as they allow easier product identification and authentication. However, simple stamps– as opposed to high security stamps are considered rarely useful in addressing contraband; counterfeit versions can be created within a matter of weeks, if not days, depending on demand. Adding covert markings to tax stamps ensures that goods can be identified as counterfeit by officials, even though counterfeit brands might look authentic. Tracking and tracing is also considered a high potential solution, as it allows real-time monitoring of tobacco

product manufacture and better supply chain control. The study concluded that excise duty compliance was not influenced by use of stamps in Zambia.

2.3.2 Automation of excise stamps and excise duty compliance

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 (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, 2017).

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 (A). 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).

The introduction of the new excise stamps is in line with the provisions of the Excise Duty (Excisable Goods Management System) Regulations, 2017 that requires all excisable products manufactured in or imported to Kenya, with the exception of motor vehicles, be affixed with excise stamps. "The new generation stamps have enhanced security features leveraging on technology which are meant to deter counterfeiting," The security features that can be verified using stamp verification tools provided to enforcement officers.

Upsa (2017) conducted an evaluation of the effect of information technology usage on tax compliance in Sri Lanka and established that information technology usage is obviously important in every area in taxation to enforce compliance and minimizing the number of defaulters. IT usage of the tax authority and the taxpayers is one of the

reasons that may increase the tax compliance by way of providing timely information, better communication facilities and easy payment methods to tax payers.

Qassim, Abbas and Dhyaa (2018) examined the impact of electronic taxation on reducing tax evasion methods of Iraqi Companies Listed in the Iraqi Stock Exchange and found that the adoption of the Iraqi General Commission for Taxes (GCT) led to a reduction in tax evasion. The absence of the use of the electronic taxation system in tax work reduces tax evasion.

Olatunji & Ayodele (2017) examined the impact of information technology on tax administration in Southwest, Nigeria and the results indicated that information technology adoption improved efficiency and hence led to an increase in revenue collection. Thus, the study noted a positive correlation between information technology and tax compliance.

Gidisu (2012) examined automation system procedure of the Ghana Revenue Authority on the effectiveness of revenue collection. The study found a significant empirical contribution to analyzing tax automation and administration cost, time efficiency and effectiveness of revenue collection. The study was not restricted to excise duty but on all taxes.

Gathia (2017) conducted a study on the effect of technology on excise duty performance in East of Nairobi District and found that iTax, EGMS and the Excise Stamp had a positive effect on excise stamps on monitoring tax revenue in East of Nairobi District. This study looked at the general information technology and its effect on revenue performance. The study indicated a significant positive correlation between technology and tax compliance.

Karimi, Kimani and Kinyua (2017) examined the effect of technology and information systems on revenue collection by the county government of Embu and found that technology and information systems had a positive effect on revenue collection. However, the study noted that a revision of the County's Act and the integration of information systems in the management activities of Embu County was required for the benefits of technology to be realized.

2.3.3 Deterrent Measures and excise duty compliance

The deterrence effect occurs when taxpayers are more compliant with taxes because they see other taxpayers being successfully prosecuted or penalized for non-compliance, and are aware of the potential penalties for nonconformity. Deterrence effects, where they exist, are a form of positive externality. Thus, deterrence effects of successfully prosecuting or penalizing non-compliant taxpayers are a form of positive externality, provided the benefits to the community as a whole exceed the costs to the community of doing so (Pindyck, 2019). For example, other taxpayers, who may be more numerous and, together, of more value in terms of potential revenue collected, perceive that they too will be prosecuted or penalized if they do not comply with the excise duty law.

According to Devos (2018) economic deterrence model basically includes variables of risk of being detected by audit and penalty structures which are greatly affected by psychological variables such as moral values and the perceptions of tax system and fairness held by taxpayers. The findings of Wilks and Pacheco (2014) indicated that intentions of taxpayer to comply were higher and intentions to evade tax were lower when the tax authorities and administrative bodies are perceived as fair and trustworthy as well as deterrence power was high. The respondents of their research

indicated that they are more likely and willing to comply with tax law if authorities were fair and having higher ability to detect and penalize tax evaders. According to their findings, the effect of authority's ability to detect and punish tax evader was significant on enforced compliance but not on voluntary compliance. In the study of William et al (2018) it was found that there is a significant negative relationship between tax deterrence sanctions and tax non-compliance behavior. In their study, tax deterrence sanctions such as probability of being audited and severity of penalties are determinants of levels of non-compliance behavior such as under reporting of income and overall non-compliance.

From the research that was conducted by Ajayi (2017), it was discovered that deterrent measures in Nigeria did not significantly assist in promoting tax compliance. In contrast, strengthening taxpayers morale will help to improve compliance.

According to the findings of Ann and Daengdej (2021), it was discovered that increase of perceived detection will significantly impact taxpayer's decision to comply with the tax law, due to their fear of being audited or penalized. As a result, taxpayers will still comply with the tax law even when they are not satisfied with the tax system. Thus, the findings of Ann et al (2021) do significantly contribute to the understanding of taxpayers' behavior in relation to deterrent measures.

2.3.4 Automated Product marking and excise duty compliance

This involves the affixation and printing on excisable goods in accordance with excise duty act of 2015 (KRA, 2017). 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, 2017). 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 (Thornton, 2017).

Lu and Ting (2019) did a study In the European Union on the process of product marking enforcement on excisable goods varies among Member States. Penalties typically include a fine and in some circumstances imprisonment. The study found that, 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. The study found that Products markings on excisable goods offer additional benefits which are important in the fight against the growing global problem of illicit trade and thus have a positive effect on excise duty compliance.

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 (Meyo, 2017).

Godden & 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. They 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 concluded that the costs of product marking could not justify the insignificant effect of excise duty compliance.

Godden & Allen (2019) indicated that product markings 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, product markings 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 those genuine original bottles, bearing genuine stamps, have been found to be refilled. Therefore, while consumers can check the validity of stamps and product markings, by visiting a website, this is not sufficient to guarantee on the legitimacy of a product and that this will discourage excise duty evasion.

2.3.5 Excise duty compliance

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 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 (KRA, 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 5 lines and it has redundancies that allow production to continue in the case of lack of connectivity to KRA (KRA, 2017).

Excise duty is a tax imposed on specific local and imported goods (Azubike, 2019). Excise duty on imports is collected at the time of importation together with other import taxes like import duty and VAT (Meyo, 2017). Excise tax is also a trade tax applied to either production or sale, to domestic output or imported, with either ad

valorem or specific rates. Unlike their developed counterparts, most developing countries rely heavily on taxes to finance their budgetary expenditures. In Kenya, taxation is the single largest source of government budgetary resources (Amon, 2018). One of the striking characteristics of Kenya is that unlike many other sub-Saharan countries today, it is a high tax-yield country with a tax-to-GDP ratio of over 20 per cent (KRA 2017). The Kenya Revenue Authority (KRA) is the predominant government revenue collection agency accounting for over 96% of government ordinary revenue. KRA administers 17 revenue Acts, with the key ones (in terms of revenue importance) being Value Added Tax (VAT Cap 476), Income Tax Act (Cap 470),

East Africa Community Customs Management Act (EACCMA), The Customs and Excise Act (Cap 472) and the Traffic Act Cap 403 (Amon, 2012). The excise sector accounts for 6.6% of ordinary revenue collections in VAT, Excise and other taxes. This is therefore a critical sector for revenue mobilization.

In the last financial year, KRA collected Ksh. 62.409 Billion of Domestic Excise Revenue against a target of Ksh. 62.148 Billion, translating to a performance of 100.42%. KRA has identified various tax evasion schemes that have been utilized by some taxpayers in this sector which include: use of counterfeit excise stamps on excisable products, sale of excisable goods without stamps, sale of vatable goods without issuance of a proper tax invoice, manufacturing of excisable products without excise licenses and use of proxy companies to procure raw materials.

Kenya loses more than Sh153 billion tax revenue annually to illicit trade, according to the Anti-Counterfeits Authority(ACA), with tobacco and alcohol products among the most traded. This, even as consumers in the country remain reluctant in reporting illicit trade. According to a recent survey by Stop Crime Kenya (StoCK), four out of

10 consumers in Kenya see no point in reporting illicit trade, with a third of consumers continuing to buy counterfeit goods knowingly. StoCK is a platform campaigning against criminals who make a fortune smuggling and selling illicit goods. It has a secretariat at the Consumers Federation of Kenya (Cofek). The survey was conducted by researchers from Cofek through telephone interviews with 100 consumers in 24 counties, each.

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, 2018). 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 (Davis & Bagozzi, 1989). 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

2.4 Critique of Existing Literature

The study conducted by Ursa (2017) on evaluation of the effect of information technology usage on tax compliance was not done in a developing country but in a developed country. Besides being limited to Sri Lanka, the study looked at the general information technology. The study by Qassim et al. (2018) on the impact of electronic taxation on reducing tax evasion methods was conducted in Iraq and hence its findings are not generalizable to Kenya.

Gidisu (2018) examined automation system procedure of the Ghana Revenue Authority on the effectiveness of revenue collection. This study was conducted in Ghana and looked at automation system procedure, which is different from excisable goods management system used in excise duty. The study by Mwongela (2016) examined the effect of effects of tax reforms on customs tax productivity in Kenya. This study was however limited to Revenue Administration Reform and Modernization Program, which is different from excisable goods management system.

The study by Gathia (2017) on the effect of technology on excise duty performance in East of Nairobi looked at the general information technology and its effect on revenue performance. Karimi et al. (2017) examined the effect of technology and information systems on revenue collection by the county government of Embu. Nonetheless,

besides being limited to Embu County the study focused on the general technology and information system.

Mansour et al. (2013) conducted a study on the effect of excise tax stamps on revenue mobilization in the West African Economic and Monetary Union. The study however only narrowed its focus on excise duty stamps but did not look at added effect of automation of the stamps and use of technology in enhancing excise duty compliance. The study by Tule (2017) examined the effect of excise stamp features on revenue performance in Zambia. However, besides focusing only on the Zambia context, the study narrowed its scope on tobacco products.

2.5 Research Gaps

Various studies have been conducted on the effect of information technology on excise stamps on monitoring; these studies have been limited to specific countries, regions, and information technology projects. For instance, Olaoye and Ayodele (2016) conducted a study on the use of information technology to improve tax and revenue collection in the United States; Ursa (2017) conducted an evaluation of the effect of information technology usage on tax compliance in Sri Lanka. Mansour et al. (2013) examined the impact of information technology on tax administration in Southwest, Nigeria and Gidisu (2012) examined automation system procedure of the Ghana Revenue Authority. However, different countries around the world are characterized by different taxation policies, technology adoption and macroeconomic environments the current study was done in Kenya hence the contextual gap

In Kenya, Gitaru (2017) examined the impact of system automation on revenue collection in Kenya Revenue Authority; Gathia (2017) conducted a study on the effect of technology on excise duty performance in East of Nairobi District; Mwangela (2016) examined the effects of tax reforms on customs tax productivity in

Kenya; and Karimi, Kimani and Kinyua (2017) examined the effect of technology and information systems on revenue collection by the county government of Embu. However, the studies were limited to specific regions of the country and information technology. From the aforementioned, no study has looked at the combined effect of use of stamps, the automation of stamps, product marking and deterrent measures on excise duty compliance in Kenya thus conceptual gap.

Sudán (2017) conducted a study on the evolution in the role of excise tax stamps for specific consumption goods. The study used a descriptive research design and found that the key functions of any tax stamp, whatever form it takes, is to provide fiscal verification (that tax has been paid), as well as supply chain visibility and product authentication. The current study employed explanatory research design hence methodological gap.

2.6 Summary of the Literature Review

This study is anchored on the three theories namely: the Allingham and Sandmo Theory, Technology Acceptance Theory (TAT), and Benefits Theory of Taxation to explain the empirical relationship on factors affecting excise duty compliance. The Allingham and Sandmo Theory was used to explain the effects of deterrent factors in Excise Duty compliance. It was used to study the effects of the deterrent factors on excise duty compliance. Technology Acceptance Theory was used to provide an explanation of the determinants of technology acceptance that is capable of explaining user behavior across a broad range of end user computing technologies and user populations, while at the same time being both economical and theoretically justified.

The Benefits Theory of Taxation was used to understand two variables, that is, the dependent variables of Excise Duty compliance and the independent variable of the effects of use of stamps and products marking. The empirical literature shows that excise stamp features have an effect on excise stamps on monitoring tax revenue at Kenya Revenue Authority. In addition, the results show that stamps 'application procedure has an effect on excise stamps on monitoring tax revenue collection. Further, the literature shows that verification of stamps has an effect on monitoring tax revenue at Kenya Revenue. The literature does not show any significant effect on both stamps automation and product marking on excise duty compliance.

2.7 Conceptual Framework

Conceptual framework tries to relate the relationship between independent variables and dependent variables. In this study it establishes factors affecting excise stamp compliance in Nairobi County. The independent variables are reconciliation of excise duty stamps which was measured by Level of use stamps, Control in accounting, Deter counterfeiting and Frequency of KRA reconciliation, automation of excise duty stamps was measured by Authentication, Security Features and validation while deterrence measures was measured by Withdrawal of certificate, Penalties and fines and License Cancellation. Lastly, automated product marking was measured by Unique serialized code, Multi-level survey and Anti -Tampering devises. The dependent variable was excise duty compliance which was measured by Filing of Returns, Payment of Taxes and Paying at the right time

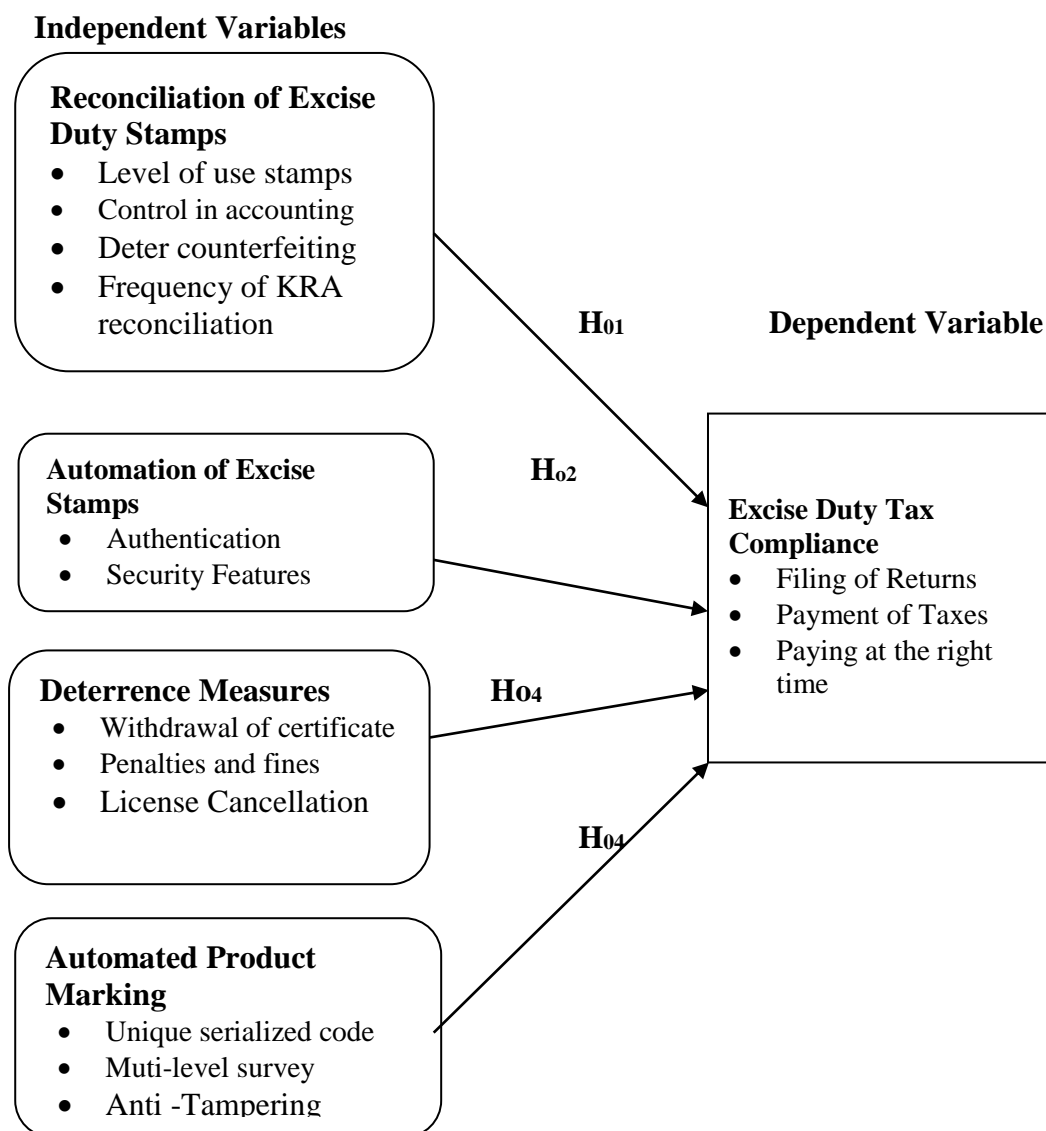


Figure 2.1: Conceptual Framework.

Source (Researcher 2023)

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

This chapter presents research methodology, which includes research design, target population, sample size and sampling techniques, data sources, types and procedures, data collection instrument, measurement of the variables, data analysis, model specification, regression assumptions and ethical considerations.

3.1 Research design

A research design is the plan and structure of investigation so conceived as to obtain answers to study objectives (Ajayi, 2017). Research design refers to the way the study is designed, that is, the method used to carry out a research. Research design is an expression of what is expected of the research exercise in terms of results and the analytical input needed to convert data into research findings. This study adopted explanatory research design. Explanatory research is a methodology approach that investigates research questions that have not previously been studied in depth. Explanatory research is often qualitative and primary in nature. The primary purpose of explanatory research is to explain why phenomena occur and to predict future occurrences. Explanatory studies are characterized by research hypotheses that specify the nature and direction of the relationships between or among variables being studied. By using explanatory research design, the researcher established the relationship among the operational variables (Mugenda 1999)

3.2 Target Population

A population is the entire gathering of elements about which extra populations are made (Denny, 2018) or is a group of the variables that is being studied (Ajayi, 2017). Mugenda and Mugenda (1999) define a target population as a comprehensive set of entities or items with some collective discernable features. Bergman (2018) described population as the entire group of individuals or items under consideration in any field of inquiry and have a common attribute. The target population of the study was 185 mineral water manufacturers licensed for excise duty (KRA, 2021) found in Nairobi county. The study targeted business owners of all 185 water-bottling companies within Nairobi County. Therefore there was no need for sampling.

3.3 Data collection methods

The study used primary data. Data was obtained from the closed structured questionnaire which is regarded as the most effective way that researchers or writers can collect qualitative data that can be measured in numbers (Ajayi, 2017). Close-ended questions allows the interviewer to limit the interviewee to a range of possible responses in line with the research context. It was used to collect primary data. The advantage of close-ended questions is that they provide a variety of possible responses for the respondent to choose from and provide uniformity of answers hence easy to code, and analyse.

3.4 Data Collection instrument

Chetty (2016) indicates that research instruments are the tools used in the collection of data on the phenomenon of the study. A questionnaire according to Mugenda & Mugenda (1999) is a list of standard questions prepared to fit a certain inquiry. In order to collect data for the study the research used questionnaires to get information

from the respondents. The study adopted a questionnaire format from Fjeldstad, (2012) which was a review of research on determinants of tax compliance.

A questionnaire (closed) that was used is an appropriate instrument for data collection and featured questions that provided quantitative data for statistical analysis. The benefits of using questionnaire is because it is an easy tool to collect data and large amount of information was collected within a shortest period. Questionnaire ensured protection of privacy of the respondents which lead to high response rate from respondents especially when the researcher allows the respondent to remain anonymous. Additionally, questionnaires allowed the researcher to address a large number of issues in a standardized way. Questionnaires I made it easy for the researcher to process results and provide useful insight into the subject's strengths, weaknesses and preferences (Chetty, 2016).

3.5 Data Collection Procedure

The researcher administered the questionnaires by use of drop-and-pick later method. Drop and pick later method was used where the respondents was away or would not be able to fill the questionnaire immediately due to time constraints. Follow-ups was made on daily basis to monitor the progress of the respondents in filling up the questionnaires. To improve the response rate, the study had put into consideration the research ethical issues. The researcher explained to the respondent the importance of the study and assure them of the confidentiality and anonymity of their identities before administering the questionnaires. The respondents was the chief accountants of the various companies. This is because it is the account department that ordinarily is involved in the stamps reconciliations, declaration of input taxes as well as the payment of taxes.

3.6 Pilot Study

Pilot test is an activity that assists the research in determining if there are flaws, limitations, or other weaknesses within the data collection instruments. It allows the researcher to make necessary revisions prior to the implementation of the study. According to Karimi et al (2017), conducting a pilot involves a few of the target population being given the questionnaires with an intention of pre-testing the questions. A pilot study was undertaken on 18 respondents of Muranga County to test the reliability and validity of the questionnaire. However, the 18 respondents did not form part of the final study to be undertaken. The 18 respondents were also not be in the target area. The pilot test sample was within the recommended range as the rule of the thumb suggests that 5% to 10% of the target sample should constitute the pilot test (Cooper & Schchilder, 2011)

3.6.1 Reliability of Research Instruments

Reliability is measure of the degree to which a research instrument yields consistent result after repeated trials (Mugenda & Mugenda, 1999). According to Sekaran & Bougie (2010) the measurement of the reliability and the validity of a data instrument help the researcher to gauge the goodness of the variables of measurement. Reliability was measured using Cronbach's Alpha coefficient which is used to measure the internal consistency of the variable measures. Factor Analysis was further used to determine the underlying dimensions of variables and to determine the key factors from a large number of variables.

Reliability in research is influenced by random error. According to Zikmund et al (2010), errors may arise from inaccurate coding, ambiguous instruction to the subjects, fatigue, interview bias etc. These errors results to inconsistencies in the

measurement, which ultimately affect the reliability of the data collected (Mugenda & Mugenda, 1999). Cronbach's Alpha which measures how well a set of items or variables, measures a single un-dimensional latent construct that is a coefficient of reliability or consistency was used for this study. Cronbach's Alpha was adopted since it was used with continuous and non - dichotomous data. In particular, it used for testing questionnaires using a Likert scale. The study employed test re-tests method to determine the reliability tool. The reliability of the questionnaires were tested using the Cronbach's Alpha correlation coefficient with the aid of Statistical Package for Social Sciences (SPSS) software.

3.6.2 Validity of Research Instruments

Validity of a research instrument assess the extent to which the instrument measures what it is designed to measure (Robson, 2011). It is the degree to which the results are truthful. Researchers should carry out a pilot study before commencing research study (McMillan, and Schumacher, 2001). Validity involves issues that the research design fully addresses, the research questions/hypotheses and the objectives the research is trying to answer and address.

The study adopted construct validity to assess the adherence of a measure to existing theory and knowledge of the concept being measured (Middleton, 2019). The researcher ensured that construct validity was achieved by ensuring test measure the concept that it is intended to measure. The researcher ensured that the method of measurement matches the variable that the researcher intended to measure. Content validity assesses the extent to which the measurement covers all aspects of the concept being measured (Middleton, 2019). To guarantee content validity, the researcher ensure that the test is fully representative of what it aims to measure.

3.7 Test of Regression Assumptions

The multiple linear regression analysis makes several key assumptions. Prior to conducting the analysis, data was checked to ensure that the assumptions was not violated. A few assumptions made when using linear regression to model the relationship between a response and a predictor. These assumptions are essentially conditions that should be met before we draw inferences regarding the model estimates or before we use a model to make a prediction. If the assumption conditions are not met, then we cannot use the model, as the accuracy was significantly reduced.

These assumptions are normality, multicollinearity, autocorrelation and heteroscedasticity.

3.7.1 Normality Test

Normality test is to determine whether a data set resembles the normal distribution (Elliott, 2007). A visual representation of the distribution of test results determines whether it conforms to the bell-shaped normal curve. The normality test will be conducted using the Kolmogorov-Smirnov test and the Shapiro-Wilk test. For both tests, the null hypothesis is retained if the probability value is greater than 0.05, implying the data is normally distributed

3.7.2 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 will be 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, 2011).

3.7.3 Autocorrelation test

This test was conducted to check whether the values of the residuals are independent and that was to ensure that the observations are independent of one another and uncorrelated. Pallant (2011) explained that The Durbin-Watson test was conducted to indicate the level of autocorrelation.

3.7.4 Homoscedasticity Tests

Homoscedasticity refers to the difference between predicted and observed values of an experiment being constant for any random variables considered. It is an important assumption based on which many statistical tests can be conducted. Homoscedasticity test results are considered more reliable owing to unbiased estimates, Meyo (2017). The assumption of linear regression is that the spread of the residual or the error term is constant across the graph and if this assumption is violated, the statistical results may not be trustworthy due to biased coefficients.

3.8 Data analysis and presentations

Data analysis is defined as a process of cleaning, transforming, and modeling data to discover useful information for business decision-making (Mugenda Mugenda, 1999). Data was analyzed using descriptive and inferential statistics. Descriptive statistical techniques such as mean and standard Deviation were used

3.8.1 The Qualitative Analysis

Qualitative data was collected through questionnaires, which was edited, and response rate calculated. The data was then categorized into different themes according to research variable and descriptive statistics such as mean, standard deviation and frequency distribution which according to Gitaru (2017) measures the point about which items have a tendency to cluster and describe the characteristics of the data collected. Qualitative data for the study was derived from the questionnaires.

3.8.2 Empirical Regression Model

In multivariate analysis, multi-linear regression model was used in explaining decision to excise duty compliance by testing variables. Multiple regression analysis measures the effects of multiple independent variables on one dependent variable. Multiple regressions was therefore adopted to measure the effects of multiple independent variables on the dependent variable and effects of multiple independent variable. Since the research was to consider the relationship between four independent variables to one dependent variable, then a Multiple linear regression was used. Regression analysis was applied in all the cases where correlation was found to exist between the independent and dependent variables. It is important to carry out regression analysis so as to establish the extent of the influence exerted on the dependent variable by the independent variable.

The regression model that was used for hypothesis testing was as follows:

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

Where:

Y = Excise duty compliance

β_0 = Constant Term

$\beta_{1,2,3}$ = Beta coefficients

X_1 = Use of excise stamps

X_2 = Automation of excise stamps

X_3 = Deterrent measures

X_4 = Product marking

ε = Error term

3.9 Measurement of Variables

This is the process of defining variables into measurable factors and ensuring that the survey items of each construct are quantified (Steimberg et al., 2019). The variables was measured using five point Likert scale of 1 – 5 where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strong agree. The study has two variables namely; dependent and independent.

3.9.1 Dependent Variable

The dependent variable is Excise Duty Tax Compliance. The variable was measured based on a five point Likert scale comprising of a mean three items validated by previous scholars (Meyo, 2017).

3.9.2 Independent variables

Independent variables were measured based on previously tested scales of Likert scale ranging from one strongly disagree to five strongly agree.

Automation of excise stamps was measured based on a mean of five items adopted from Thornton (2017), Gefen & Straub (2000), Deloitte, (2017), Dennis (2016), and Godden & Allen (2017).

Deterrence measures was measured based on a mean of five items adopted from Pindyck (2009), Devos (2013), Wilkis and Pacheco (2014), Sapiei and Eze (2014), and Thornton, (2017).Excise stamps was measured based on a mean of five items adopted from Thornton, (2017) and Gefen & Straub (2000). It was also adopted from to what extend does the EGMS has optimized the verification process of excisable

goods at KRA, Thornton, (2017) and Deloitte (2017). Product marking was measured based on a mean of five items adopted from excise duty Act of 2015 (KRA, 2019), Morrison & Foester, (2018).

Table 3.1: Operationalization and Measurement of Variables

Types of variables	Operational Indicators (Measurements)	Authors of Measurements	Data transformation process (Measurement scale)	Analysis
Independent variable Automation of excise stamps	Authentication Security features Verification Real time Validation	(Thornton, 2017). and Gefen & Straub (2000). Excise Duty Act of 2015 (KRA, 2017). To what extent does the EGMS has optimized the verification process of excisable goods at KRA, (Thornton, 2017), (Deloitte, 2017)(Dennis, 2016), (Godden & Allen, 2017).	5- point Likert scale	Regression Analysis Correlation Analysis
Deterrence measures	Withdrawal of Tax Compliance Certificate License Cancellation Penalties sand fines	(Pindyck 2009). Devos (2013), Sapiei and Eze (2014), Anyaduba and Kennedy (2012 (Thornton, 2017). Wilks and Pacheco (2014), Kenya Revenue Authority (KRA 2021).	5-point Likert scale	Regression Analysis Correlation Analysis
Reconciliation of Excise stamps	Deter counterfeiting Illicit trade Smuggling	(Thornton, 2017). and Gefen & Straub (2000). And (Excisable Goods Management System) Regulations, 2017, Excise Duty Act of 2015 (KRA, 2017) of excisable goods at KRA, (Thornton, 2017), (Deloitte, 2017, (Dennis, 2016), (Godden & Allen, 2017).	5-point Likert scale	Regression Analysis Correlation Analysis
Automated Product marking	Unique Serialized Code Multi-Level Survey Anti-Tampering	Excise duty Act of 2015 (KRA, 2017), (Morrison & Foester, 2018), Godden and Allen (2017), The Excise Duty (Excisable Goods Management System) Regulations, 2017) (Deloitte, 2017). (Dennis, 2016 (Kenya Revenue Authority, 2017).	5-point Likert scale	Regression Analysis Correlation Analysis
Dependent variable Excise duty compliance	Filling of Returns Payment of taxes Paying at the right time	Kenya Revenue Authority, 2021, Kenya Revenue Authority, 2017.		Regression Analysis Correlation Analysis

3.10 Ethical Consideration

Ethics concerns are moral principles and how people should conduct themselves in social affairs (Chetty, 2016). Before data collection, introductory letters were issued from Moi University. To ensure ethical standards are maintained in the study, consent from participants was obtained before involving them in the study. Respondents in the research study were not be subjected to coercion in any way.

The researcher incorporated integrity, honesty and maintain more of the confidentiality level of data that was be provided by individuals or identifiable participants and their anonymity. All major statements in the study was be cited to avoid plagiarism.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Introduction

This chapter details the findings and the discussions of the study. The data was collected and hence analyzed by use of descriptive statistics and inferential statistics. For descriptive statistics, the mean and standard deviation was analyzed, while for inferential statistics, regression was analyzed. The data was presented in tables and charts.

4.1 Reliability of Research Instrument

Reliability is the degree to which an instrument yields the same results each time it is put into measurement under constant conditions (Saunders et al., 2009). A reliable study is trustworthy if the appraises give similar results in different times, if same findings are got by different observers and if there is transparency in the findings of the raw data (Sekaran, 2011). Reconciliation of excise duty stamp had an alpha of 0.842, Automation of excise duty stamp had an alpha of 0.770, deterrence measures had an alpha of 0.950, Automated product marking had an a alpha of 0.793 and lastly Excise duty Compliance had an alpha of 0.901. The benchmark value of 0.7 is commonly used for the reliability whereby alpha values above 0.7 are considered acceptable and satisfactory, above 0.8 are considered good and above 0.9 are considered to reflect exceptional internal consistency (Mohajan, 2017). The Cronbach's alpha coefficient of 0.7 was used as the benchmark for this study, and all variables met the threshold.

Table 4.1: Reliability Test

Variable	N	Cronbach Alpha	Conclusion
Reconciliation of excise duty stamp	7	0.842	Reliable
Automation of excise duty stamp	5	0.770	Reliable
Deterrence measures	5	0.950	Reliable
Automated product marking	5	0.793	Reliable
Excise duty Compliance	5	0.901	Reliable

Source (Researcher 2023)

4.2 Factor Analysis

Table 4.2 reveals factor loadings which gives values over 0.5 implying linear relationship, interval to test the construct validity of the study instrument. Meyo (2017) suggested that any factor loading below 0.4 is weak and those between 0.5 and 0.6 are moderate, while values which are below 0.3, the outcomes of the factor analysis probably will not be very practical in the research. Thus, from results the entire questionnaire was able to meet a significant value in the research findings.

Table 4.2: Factor Analysis

RED	AED	DTM
APM		
Reconciliation of excise duty stamps		
Use Excise duty stamps have improved.	0.789	
Replenishing stamps by KRA is timely.	0.903	
Most manufacturers are able to pay.	0.657	
Excise stamps are not easy to counterfeit.	0.974	
Reconciliation makes it difficult for taxpayer.	0.590	
Tax station has frequently sought clarifications.	0.711	
The process of affixing excise duty stamps.	0.843	
Automation of excise duty stamps		
EGMS has improved the execution time.	0.674	
Automated stamps are effective	0.601	
Simple stamps– as opposed to high security stamps	0.720	
Automation of stamps encourages taxpayers.	0.900	
Tracking and tracing using automated stamps.	0.748	
Deterrence Measures		
Concerns for withdrawal of Tax Compliance Certificate	0.587	
Fear of License cancellation	0.690	
Concerns of Penalties and Fines	0.621	
Fears of issuance of agency notices	0.702	
Concerns of prohibition orders	0.988	
Automated Product Marking		
EGMS allows for creation of unique serials.	0.850	
Unique Product marking serialization		0.987
Automated product markings are easy		0.510
EGMS allows for the multi-level survey		0.583
The automated Product markings are not easy		0.693

Extraction Method: Principal Component Analysis

Source (Researcher 2023)

4.3 Response rate

185 questionnaires were administered to respondents from water-bottling companies within Nairobi County out of which only 162 responded. This represented an 87% response rate. Pallant (2011) suggests that an average response rate of 30% to 40% is reasonable, while recommending that a response rate of approximately 70% for most research should be the goal of researchers. Based on these assertions, this implies that the response rate for this study was adequate, thus to fulfill the main goal of the study. The response rate was enhanced by the researcher's constant follow up with the respondents to ensure they spared their time to respond to the questionnaires. The researcher's continuous assurance that the data provided by the respondents was confidential also motivated most respondents to fill in the questionnaires. Figure 4.1 illustrate the level of response rate.

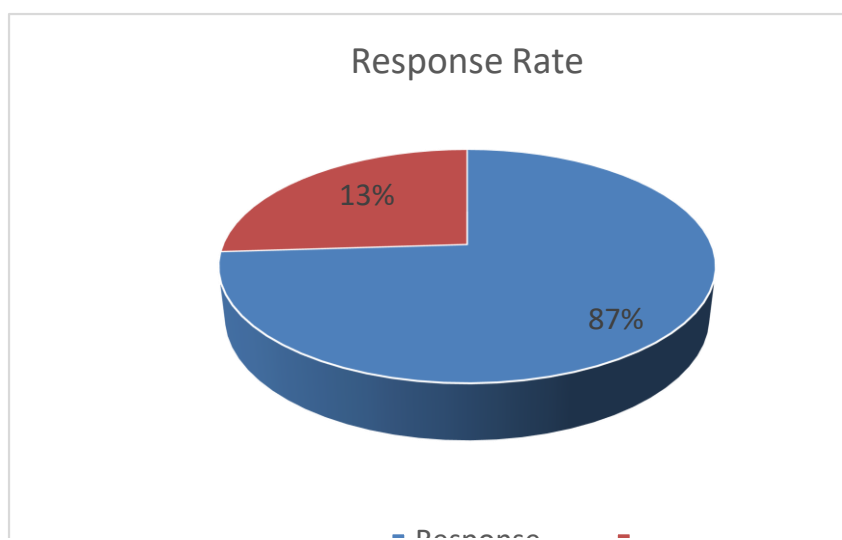


Figure 4.1: Response Rate

Source (Researcher 2023)

4.4 Descriptive Statistics

The study utilized descriptive statistics including means and standard deviations in this subsection. The collected data was coded and entered in SPSS for analysis.

4.4.1 Reconciliation of excise duty stamps

Table 4.3 results shows that Use of Excise duty stamps have improved the control and accountability of excise duty in bottled water (mean=3.22, standard deviation= 1.102). The process of replenishing stamps by KRA is timely upon request by the tax payer (mean=3.56, standard deviation= 1.109). Most manufacturers are able to pay excise duty correctly because of the use and reconciliation of excise stamps (mean=3.66, standard deviation= 1.267). Excise stamps are not easy to counterfeit and therefore serve the purpose of control (mean=3.83, standard deviation= 1.122). The monthly excise duty stamps reconciliation makes it very difficult for taxpayer to evade excise duty tax (mean=4.00, standard deviation= 0.856). My KRA tax station has frequently sought clarifications on excise duty stamps still held at our premise tax (mean=3.91, standard deviation= 1.332). The process of affixing excise duty stamps and the reconciliations is not too involving to the tax payers to make them want to consider evading tax (mean=3.61, standard deviation= 1.227).

Table 4.3: Descriptive Statistics on Reconciliation of excise duty stamps

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

	Mean	Std. Dev	Skewness	Kurtosis
Use Excise duty stamps have improved the control and accountability of excise duty in bottled water	3.22	1.102	-.016	-.560
The process of replenishing stamps by KRA is timely upon request by the tax payer	3.56	1.109	-.626	-.398
I believe most manufacturers are able to pay excise duty correctly because of the use and reconciliation of excise stamps	3.66	1.267	-.655	-.741
Excise stamps are not easy to counterfeit and therefore serve the purpose of control	3.83	1.122	-.789	-.289
The monthly excise duty stamps reconciliation makes it very difficult for taxpayer to evade excise duty tax.	4.00	.856	-.241	-1.064
My KRA tax station has frequently sought clarifications on excise duty stamps still held at our premise.	3.91	1.332	-.882	-.735
The process of affixing excise duty stamps and the reconciliations is not too involving to the tax payers to make them want to consider evading tax.	3.61	1.227	-.363	-1.359

Source (Researcher 2023)

4.4.2 Descriptive Statistics on Automation of excise duty stamps

Table 4.4 results shows that EGMS has improved the execution time of the validation and verification of excisable goods in the organization (mean=4.23, standard deviation= .646) Automated stamps are effective in the face of all types of illicit trade, and are a “high potential” solution, as they allow easier product identification and authentication (mean=4.05, standard deviation= 0.890). Simple stamps– as opposed to high security stamps– are considered rarely useful in addressing contraband; counterfeit versions can be created with little efforts (mean=3.92 standard deviation= 1.199). Automation of excise duty stamps encourages taxpayers to correctly declare production levels and thus correct excise duty amounts (mean=3.57, standard deviation= 1.219). Tracking and tracing using automated stamps is also considered a high potential solution, as it allows real-time monitoring of water manufacturing and better supply chain control (mean=4.09, standard deviation= 1.069).

Table 4.4: Descriptive Statistics on Automation of excise duty stamps
 5 = Strongly Agree 4 = Agree 3 = Neutral 2 = Disagree 1= Strongly Disagree

	Mean	Std. Dev	Skewness	Kurtosis
EGMS has improved the execution time of the validation and verification of excisable goods in the organization	4.23	.646	-.264	-.682
Automated stamps are effective in the face of all types of illicit trade, and are a “high potential” solution, as they allow easier product identification and authentication	4.05	.890	-.525	-.658
Simple stamps– as opposed to high security stamps– are considered rarely useful in addressing contraband; counterfeit versions can be created with little efforts	3.92	1.199	-.791	-.806
Automation of excise duty stamps encourages taxpayers to correctly declare production levels and thus correct excise duty amounts.	3.57	1.219	-.353	-1.370
Tracking and tracing using automated stamps is also considered a high potential solution, as it allows real-time monitoring of water manufacturing and better supply chain control	4.09	1.069	-1.264	1.042

Source (Researcher 2023)

4.4.3 Deterrence Measures

Table 4.5 results shows that Concerns for withdrawal of Tax Compliance Certificate affects excise duty compliance (mean=4.04, standard deviation= 1.080) Fear of License cancellation affects excise duty compliance (mean=3.64, standard deviation= 1.168). Concerns of Penalties and Fines affects excise (mean=3.79 standard deviation= 0.902). Fears of issuance of agency notices affects excise duty compliance (mean=4.12, standard deviation= 0.759). Concerns of prohibition orders by KRA affects excise duty compliance (mean=4.23, standard deviation= 0.718).

Table 4.5: Descriptive Statistics on Deterrence measures

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

	Mean	Std. Dev	Skewness	Kurtosis
Concerns for withdrawal of Tax Compliance Certificate affects excise duty compliance	4.04	1.080	-1.183	.780
Fear of License cancellation affects excise duty compliance	3.64	1.168	-.511	-1.035
Concerns of Penalties and Fines affects excise	3.79	.902	-.087	-.962
Fears of issuance of agency notices affects excise duty compliance	4.12	.759	-.717	.491
Concerns of prohibition orders by KRA affects excise duty compliance	4.23	.718	-.586	-.140

Source (Researcher 2023)

4.4.4 Automated product marking

EGMS allows for creation of unique serials for excisable goods (mean=3.94, standard deviation= .953) Unique Product marking serialization facilitates the traceability of excisable goods (mean=4.25, standard deviation= 0.723). Automated product markings are easy to understood by the general public and thus discourages manufacturers from evading taxes as they know the public will identity counterfeits. (mean=4.21 standard deviation= 0.700). EGMS allows for the multi-level survey of data concerning manufacturers of excisable goods (mean=4.31, standard deviation= 0.709). The automated Product markings are not easy to imitate thus preventing tampering which results to more excise duty compliance (mean=3.72, standard deviation= 0.914).

Table 4.6: Descriptive Statistics on Product Marking

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

	Mean	Std. Dev	Skewness	Kurtosis
EGMS allows for creation of unique serials for excisable goods	3.94	.953	-.839	-.085
Unique Product marking serialization facilitates the traceability of excisable goods	4.25	.723	-.912	1.116
Automated product markings are easy to understand by the general public and thus discourages manufacturers from evading taxes as they know the public will identity counterfeits.	4.21	.700	-.535	-.012
EGMS allows for the multi-level survey of data concerning manufacturers of excisable goods	4.31	.709	-.538	-.871
The automated Product markings are not easy to imitate thus preventing tampering which results to more excise duty compliance	3.72	.914	.235	-1.214

Source (Researcher 2023)

4.4.5 Excise duty compliance

Water manufacturing companies file tax returns every month (mean=4.07, standard deviation= .1.004) Water manufacturing companies declare correct monthly income (mean=4.24, standard deviation= 0.685). Water manufacturing companies file tax returns only to avoid penalties. (mean=4.31 standard deviation= 0.681). KRA has offered an enabling environment for excise duty filing (mean=4.26, standard deviation= 0.701). Most Companies file returns on time and as required by law (mean=3.78, standard deviation= 0. 834).

Table 4.7: Descriptive Statistics on Excise duty compliance

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

	Mean	Std. Dev	Skewness	Kurtosis
Water manufacturing companies file tax returns every month	4.07	1.004	-.921	-.196
Water manufacturing companies declare correct monthly income	4.24	.685	-.935	1.745
Water manufacturing companies file tax returns only to avoid penalties	4.31	.681	-.475	-.794
KRA has offered an enabling environment for excise duty filing	4.26	.701	-.408	-.906
Most Companies file returns on time and as required by law	3.78	.834	.048	-.894

Source (Researcher 2023)

4.5 Statistical Assumptions

Statistical tests rely upon certain assumptions about the variables used in the analysis.

Osoro and Mwinyimvua (2013), opine that when these assumptions are not met the results may not be valid. They further argue that this may result in a type I or type II

error, or over or under-estimation of significance or effect size(s). It is therefore important to pretest for these assumptions for validity of their results. Osoro and Mwinyimvua (2013) and Ursa (2017) observed that few articles report having tested assumptions of the statistical tests they rely on for drawing their conclusions.

According to Osborne and Waters (2014), not pretesting for these assumptions has led to a situation where there is rich literature in education and social science, but questions in to the validity of many of these results, conclusions, and assertions still exist. Testing for assumptions is beneficial as it ensures that an analysis meets the associated assumptions and helps avoid type I and II errors (Osborne and Waters, 2014; Ursa, 2017). Prior to data analysis, assumptions for normality and multicollinearity were checked.

4.5.1 Normality Test

The normality of data was tested using the Shapiro Wilk test. Thus, on the one hand, if the p value is less than the chosen alpha level, then the null hypothesis is rejected and there is evidence that the data tested are not normally distributed. On the other hand, if the p value is greater than the chosen alpha level, then the null hypothesis that the data came from a normally distributed population cannot be rejected. The null-hypothesis of this test is that the population is normally distributed. Results of the normality test are presented in Table 4.8

The normality results showed that Reconciliation of excise duty stamps had p value $.271 > 0.05$ hence the data is normally distributed. It was also established that the p value for Automation of excise duty stamps was $.065 > 0.05$, deterrence measures had p value $.182 > 0.05$, automation product marking had p value $.076 > 0.05$, While excise

duty compliance had p value $.088 > 0.05$. The results of the normality test revealed that the data was normally distributed and hence further analysis was conducted.

Table 4.8: Tests of Normality

	Shapiro-Wilk		
	Statistic	Df	Sig.
Reconciliation of excise duty	.951	162	.271
Automation of excise duty stamps	.654	162	.065
Deterrence measures	.863	162	.182
Automated product marking	.672	162	.076
Excise duty compliance	.768	162	.088

a. Lilliefors Significance Correction

Source (Researcher 2023)

4.5.2 Multicollinearity Test

Multicollinearity exists when two or more of the predictors in a regression model are moderately or highly correlated thereby limiting the research conclusions to be drawn. According to Zainodin, Noraini, and Yap (2011), multicollinearity refers to the presence of correlations between the predictor variables. In severe cases of perfect correlations between predictor variables, multicollinearity can imply that a unique least squares solution to a regression analysis cannot be computed (Obiero, 2018). According to Upsa (2017) VIF values in excess of 10 is an indication of the presence of Multicollinearity. Multicollinearity inflates the standard errors and confidence intervals leading to unstable estimates of the coefficients for individual predictors. Multicollinearity was assessed in this study using the Variance Inflation Factor (VIF) as shown in Table 4.9.

Results were presented in Table 4.9. A variance inflation factor test was conducted to test for multicollinearity of the predictors and a value less than 10 is acceptable. Reconciliation of excise duty stamps had V.I.F value of 1.029 which is less than 10 implying there is no multicollinearity. Automation of excise duty stamps had a V.I.F value of 1.087 means that there is no multicollinearity since VIF is less than 10. Deterrence measures had a V.I.F value of 1.053 means that there is no multicollinearity since VIF is less than 10. Lastly, automation product marking had a V.I.F value of 1.061 means that there is no multicollinearity since VIF is less than 10. Regression could thus be conducted to selected determinants of Excise Duty Compliance among bottled mineral water producers in Nairobi County, Kenya

Table 4.9: Multicollinearity Test

Variable	Collinearity	
	Statistics	Tolerance
Reconciliation of excise duty stamps	0.972	1.029
Automation of excise duty stamps	0.920	1.087
Deterrence measures	0.950	1.053
Automation product marking	0.940	1.061

Source (Researcher 2023)

4.5.3 Homoscedasticity test

Homoscedasticity means that the variance or spread of errors from the regression line is constant. Meyo (2017), notes that in regression, an error is how distant a point deviates from the normal line of regression. The assumption of linear regression is that the spread of the residual or the error term is constant across the graph and if this

assumption is violated, the statistical results may not be trustworthy due to biased coefficients. The results from the homoscedasticity test showed F-statistic 1.12940 p value >0.05 . The test results concluded that the assumption for homoscedasticity is not violated.

Table 4.10: Homoscedasticity test

F-statistic	1.12940
-------------	---------

Source (Researcher 2023)

4.5.4 Autocorrelation test

This test was conducted to check whether the values of the residuals are independent and that was to ensure that the observations are independent of one another and uncorrelated. Azmi and Bee (2010) explained that The Durbin-Watson test was conducted to indicate the level of autocorrelation. The statistic's value ranges from 0 to 4. Non-autocorrelation is shown by a number near 2; positive autocorrelation is indicated by a value near 0; and negative autocorrelation between independent variables is indicated by a value near 4. Results from the Durbin Watson test showed the Durbin Watson result of 1.860 which is between 1.5 and 2.5 thus this indicated no autocorrelation exists in the data set.

Numbers between 1.5 and 2.5 indicates no autocorrelation.

Table 4.11: Durbin Watson test

Model	Durbin-Watson
1	1.860

Predictors: (Constant), Reconciliation of excise stamps, automation of excise duty stamp, deterrence measures and automated product marking

Dependent Variable: Excise duty compliance

Source (Researcher 2023)

4.6 Inferential Statistics

As Curtis et al (2016) contend, correlation analysis is crucial in establishing dominance and relationships between variables, and to estimate events from existing information and data. Table below presents the Pearson correlations for the relationships between the independent variables including reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking, and excise duty compliance among water-bottling companies within Nairobi County which formed the dependent variables. From the findings, a positive and statistically significant correlation is observed between each pair of the independent variables and between the independent and the dependent variables. The correlation was established between reconciliation of excise duty stamps and excise duty compliance ($r=.617$) followed by Automation excise of duty stamps ($r=.584$) and excise duty compliance, while deterrence measures and excise duty compliance ($r=.691$) and excise duty compliance. Lastly automated product marking and excise duty compliance were also positively and significantly correlated at correlation coefficients ($r=.478$).

Table 4.12: Correlation Analysis

		EDC	RED	AED	DTM	APM
Excise duty compliance	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	162				
Reconciliation excise duty stamps	Pearson Correlation	.617**	1			
	Sig. (2-tailed)	.002				
	N	162				
Automation excise duty stamps	Pearson Correlation	.584**	.504**	1		
	Sig. (2-tailed)	.000	.001			
	N	162				
Deterrence measures	Pearson Correlation	.691**	.314**	.420**	1	
	Sig. (2-tailed)	.000	.003	.000		
	N	162				
Automated product marking	Pearson Correlation	.478**	.660**	.593	.357	1
	Sig.(2tailed)	.000	.000	.000	.000	
	N	162				

** . Correlation is significant at the 0.05 level (2-tailed).

Source (Researcher 2023)

4.6.1 Multiple Regression Analysis

Multiple regression analysis was adopted to show the level of significance of the relationship that exists between dependent variable and independent variables. The analysis shows how independent variables would affect dependent variable and to show the extent to which the chosen variables affect each other. The results are indicated in the model summary on the table 4.13. The results in Table below

indicated that Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking had a positive correlation with excise duty Compliance up to 83.4 % or ($R= 0.834$). The results reveal that Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking caused a variation of 69.5% or ($R^2=0.695$ and adjusted $R^2 =0.688$) on excise duty Compliance. This implies that the remaining 30.5 % of the change was caused by other factors not included in the model.

Table 4.13: Multiple Linear Regression analysis Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.834 ^a	.695	.688	.34271

- a. Dependent Variable: Excise duty compliance
- b. Predictors: (Constant), Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking

Source (Researcher 2023)

4.6.2 Analysis of Variance

Further ANOVA tests were conducted to determine whether the model works in explaining the relationship among variables as postulated in the conceptual model. The findings it shows an F value of 10.348 with a significance level of 0.000 which is lower than the confidence level of 0.05, hence establishing the model is statistically significant. The implication is that each independent variable contributes significantly to changes in the dependent variable excise duty compliance

Table 4.14: ANOVA

Model	Sum of Square	df	Means Squares	F	Sig.
Regression	3.561	4	.890	10.348	.000 ^b
Residual	13.585	157	.086		
Total	17.146	161			

a. Dependent Variable: Excise duty compliance

b. Predictors: (Constant), Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking

Source (Researcher 2023)

4.6.3 The Overall Effect Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking on Excise duty compliance

Regression was carried out to determine the combined influence of Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking on excise duty compliance

Table 4.15: Regression Coefficients

Model		Standardized Coefficients		Unstandardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.188	.441		4.961	.000
	Reconciliation of excise duty stamp	.225	.058	.214	3.879	.001
	Automation excise duty stamps	.273	.063	.289	4.333	.000
	Deterrence measures	.317	.084	.311	3.773	.003
	Automated product marking	.260	.042	.445	6.190	.000

Dependent Variable: Excise duty Compliance

Source: Research Data, (2023)

The regression analysis model derived from the methodology was specified as follows.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where

Y = Excise duty compliance

X₁ = Reconciliation of excise duty stamp

X₂ = Automation of excise duty stamp

X₃ = Deterrence measures

X₄ = Automated product marking

α = constants term

$\beta_1, \beta_2, \beta_3$ and β_4 = regression coefficients of X₁, X₂, X₃ and X₄

and ε = error item.

Régression Equation

$$Y = 2.188 + 0.225X_1 + 0.273X_2 + 0.317X_3 + 0.260X_4$$

The regression equation shows that the independent variables and dependent variables were statistically significant. A unit change in Reconciliation of excise duty stamp increases excise duty compliance by 0.225. A unit change in Automation of excise duty stamp increases excise duty compliance by 0.273. A unit change in deterrence measures increases excise duty compliance by 0.317. A unit change in automated product marking increases excise duty compliance by 0.260

4.6.4 Test of Hypotheses

The first hypothesis **H₀₁**: stated that reconciliation of Excise Duty stamps has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. Reconciliation of Excise Duty stamps has a positive relationship effect on excise duty compliance. The finding on Table 4.16 revealed that p value was less than 0.05, $\rho=0.001$ which implies that relationship was statistically significant therefore hypotheses is rejected.

The second hypothesis **H₀₂**: Automation of excise Duty stamps has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya Automation of excise Duty stamps has a positive relationship effect on excise duty compliance. The finding on Table 4.16 revealed that p value was less than 0.05, $\rho=0.000$ which implies that relationship was statistically significant therefore hypotheses is rejected.

The third hypothesis **H₀₃**: Deterrence measures has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya Deterrence measures has a positive relationship effect on excise duty compliance. The finding on Table 4.16 revealed that p value was less than 0.05, $\rho=0.003$ which implies that relationship was statistically significant therefore the hypotheses is rejected

The fourth hypothesis **H₀₄**: Automated product marking has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya Automated product marking has a positive relationship effect on excise duty compliance. The finding on Table 4.16 revealed that p value was less than 0.05, $\rho=0.000$ which implies that relationship was statistically significant therefore hypotheses is rejected

Table 4.16: Hypothesis Testing

Hypothesis	Objective	P-Value	Decision
H₀₁: Reconciliation of Excise Duty stamps has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.	To determine the effect of reconciliation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya	$P = 0.001 < 0.05$	Reject
H₀₂: Automation of excise Duty stamps has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya	To establish the effect of automation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.	$P = 0.000 < 0.05$	Reject
H₀₃: Deterrence measures have no significant effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya	To find out the effect of deterrence measures on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.	$P = 0.003 < 0.05$	Reject
H₀₄: Automated Product marking has no significant effect on Excise Duty Compliance among mineral water producers in Nairobi, Kenya.	To assess the effect of automated product marking on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.	$P = 0.000 < 0.05$	Reject

Source (Researcher 2023)

4.7 Discussion of the Findings

This section presents discussion of the results of various tests conducted in this research. The results of each of the hypothesis in this study was discussed

4.7.1 Reconciliation of Excise Duty Stamps on Excise Duty Compliance

The First objective of the study was to determine the effect of reconciliation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. The findings of this study was statistically significant with $\beta_1 = 0.225$ at a p value of 0.001 which is less than 0.05 the conventional probability significance level. The findings were in agreement with what Sudán (2017) conducted in a study on the evolution in the role of excise tax stamps for specific consumption goods. The study used a descriptive research design and found that the key functions of any tax stamp, whatever form it takes, is to provide fiscal verification (that tax has been paid), as well as supply chain visibility and product authentication. This study showed that the monthly reconciliation of excise duty stamps positively and significantly affect the excise duty compliance levels.

4.7.2 Automation of Excise Duty Stamps on Excise Duty Compliance

The second objective of the study was to evaluate the effect of automation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.. The findings of this study was statistically significant with $\beta_2 = 0.273$ at a p value of 0.000 which is less than 0.05 the conventional probability significance level. The findings concurred with Ursa (2017) conducted an evaluation of the effect of information technology usage on tax compliance in Sri Lanka and established that information technology usage is obviously important in every area in taxation to enforce compliance and minimizing the number of defaulters. Use of automation by

the tax authority and also the taxpayers is one of the main reasons that increase excise duty compliance. The tracking of the automated stamps and the security features have a positive significant effect on the excise duty compliance levels.

4.7.3 Deterrence Measures on Excise Duty Compliance

The third objective of the study was to evaluate the effect of automation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.. The findings of this study was statistically significant with $\beta_3 = 0.317$ at a p value of 0.003 which is less than 0.05 the convectional probability significance level. The findings agreed with the study of Sapiei and Eze (2014) where it was found that there is a significant negative relationship between tax deterrence sanctions and tax non- compliance behavior. In their study, tax deterrence sanctions such as probability of being audited and severity of penalties are determinants of levels of non-compliance behavior such as under reporting of income and overall non-compliance. In this study, it was found out that the deterrent measures, especially the concern of prohibition orders significantly affect the level of excise duty compliance.

4.7.4 Automated product marking on Excise Duty Compliance

The fourth objective of the study was to assess the effect of automated product marking on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. The findings of this study was statistically significant with $\beta_4 = 0.260$ at a p value of 0.000 which is less than 0.05 the convectional probability significance level. The findings were in agreement with Morrison & Foester (2018) did a study in the European Union on the process of how product marking enforcement on excisable goods varies among Member States. The study found that Products markings on

excisable goods offer additional benefits which are important in the fight against the growing global problem of illicit trade and thus have a positive effect on excise duty compliance. The study found out that the unique product marking serialization was key in fighting evasion of excise duty.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter presents a discussion for the summary based on the earlier established research objectives. It further discusses major study findings, conclusions and eventually provides directions in the form of recommendations.

5.2 Summary of Findings

The general objective was to establish selected determinants of Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. With regards to that, this study had sought; To determine the effect of reconciliation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya, to evaluate the effect of automation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya, to find out the effect of deterrence measures on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya, to assess the effect of automated product marking on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya.

5.2.1 Specific Objective One: Effect of reconciliation of excise Duty stamps on Excise Duty Compliance

The first objective was to determine the effect of reconciliation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. Correlation analysis showed that reconciliation of excise Duty stamps and Excise Duty Compliance are positively and significantly associated with ($r=.617$). In

addition, the Regression analysis shows there was a positive significant relationship between reconciliation of excise Duty stamps on Excise Duty Compliance with $\beta_1 = 0.225$ at a p value of 0.001 which is less than 0.05 the convectional probability significance level

5.2.2 Specific Objective two: Effect of Automation of excise Duty stamps on Excise Duty Compliance

The second objective was to evaluate the effect of automation of excise Duty stamps on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. Correlation analysis showed that automation of excise Duty stamps and Excise Duty Compliance are positively and significantly associated with ($r=0.584$). In addition, the Regression analysis shows there was a positive significant relationship between automation of excise Duty stamps on Excise Duty Compliance with $\beta_2 = 0.273$ at a p value of 0.000 which is less than 0.05 the convectional probability significance level

5.2.3 Specific Objective three: Effect of deterrence measures on Excise Duty Compliance

The third objective was to find out the effect of deterrence measures on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. Correlation analysis showed that deterrence measures and Excise Duty Compliance are positively and significantly associated with ($r=0.691$). In addition, the Regression analysis shows there was a positive significant relationship between deterrence measures on Excise Duty Compliance with $\beta_3 = 0.317$ at a p value of 0.003 which is less than 0.05 the convectional probability significance level.

5.2.4 Specific Objective four: Effect of automated product marking on Excise

Duty Compliance

The fourth objective was to assess the effect of automated product marking on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. Correlation analysis showed that automated product marking and Excise Duty Compliance are positively and significantly associated with ($r=.478$). In addition, the Regression analysis shows there was a positive significant relationship between automated products marking on Excise Duty Compliance with $\beta_4 = 0.260$ at a p value of 0.003 which is less than 0.05 the conventional probability significance level.

5.3 Conclusions

The study concluded reconciliation of excise Duty stamps have a positive effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. The study findings show that the monthly excise duty stamps reconciliation makes it very difficult for taxpayer to evade excise duty tax.

The study concluded that automation of excise Duty stamps have a positive effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. The study findings show that respondents agreed that EGMS has improved the execution time of the validation and verification of excisable goods in the organization and that the tracking and the tracing of automated stamps positively and significantly affect excise duty compliance.

On Deterrence measures the study concluded that, deterrence measures have a positive effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. The study findings show that Concerns of prohibition orders by KRA positively affects excise duty compliance. The study noted that this variable of

deterrence measures had the highest positive effect on excise duty compliance.

In regards to automated product marking the findings shows that there was positive effect on Excise Duty Compliance among mineral water producers in Nairobi County, Kenya. The respondents agreed that EGMS allows for the multi-level survey of data concerning manufacturers of excisable goods. The study also found out that the unique product marking serialization makes it very difficult for one to evade excise duty compliance.

There is however a very key observation and finding from the regression equation, that the two aspects of automation (automation of excise duty stamps and automated product marking) have a more positive effect on excise duty compliance than the manual reconciliation of excise duty stamps. Indeed the manual reconciliation of excise duty stamps has the least effect on excise duty compliance. A unit change in reconciliation of excise duty stamps increases the compliance level by only 0.225 which is below the other three independent variables. Though manual reconciliation of excise duty is more time consuming, the results show that it achieves less than the automated processes in terms of excise duty compliance. It is thus clear that more resources should be directed towards automation of the processes as opposed to the manual reconciliation processes.

5.4 Limitations of the Study

The study was limited by the unavailability of the key head of finance staff of the mineral water companies in Nairobi County, to reply to the study research questionnaires due to the slight political unrest in the city during that period. To mitigate this problem, the researcher gave a lengthy period of data collection, and made numerous phone calls to increase the response rate. There was also concern

that the respondents may not be truthful especially on the compliance aspect. This was solved by assuring the respondents that the information given would be used for research purposes only and would be treated with utmost level of confidentiality.

5.5 Recommendations

Based on the objectives of the study finding, the findings established that Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking have positive effect on excise duty compliance. The findings also revealed a statistically significant relationship between Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking on excise duty compliance.

5.5.1 Policy Makers

Therefore, this study recommends that KRA and the government should put in place policies and regulations that guide the overall growth of the economy and to come up with relevant and informed policies that enhance excise duty compliance. This will help the government raise more domestic revenue from excise tax collection, which will be used in realizing the government goals in Vision 2030. This study has provided results that will discuss this problem diagnosing the ways in which the government can enforce on manufacturers of excisable goods as well as importers so that they remain compliant. From the regression equation, it is clear that the aspect of automation has more positive effect on excise duty compliance than the manual reconciliation of excise duty stamps. Thus KRA should invest more resources on the automation rather than on the manual reconciliations as it will achieve better compliance results.

5.5.2 Implication to Theory

The findings from this study expands the frontiers of knowledge, adding to the existing literature by confirming empirically, that indeed, Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking effect on excise duty compliance. The result contributes to strengthen the literature by confirming the Allingham and Sandmo Theory, Technology Acceptance Model (TAM), and Benefits Theory of Taxation. Indeed the study does confirm the reasoning of the Technology Acceptance Model (TAM) because the findings completely indicate a significant positive relationship between use of technology and excise duty compliance.

5.6 Suggestions for Further Research

The current study focused on to establish selected determinants of Excise Duty Compliance among mineral water producers in Nairobi County, Kenya Specifically focusing on Reconciliation of excise duty stamps, automation of excise duty stamps, deterrence measures and automated product marking, thus, apart from the mentioned factors, there are other variables which the current study did not focus on. Future studies should be carried out to examine especially the effect of tax incentives on excise tax compliance among mineral water producers. The study only focused on Nairobi and therefore there is need to conduct a similar study in other parts of the country. Further research can also be done on other related products such as Soft drinks. Further research may consider to include a moderating variable like compliance costs to check the impact this will have on the relationship between the discussed variables.

REFERENCES

- Ajayi, V. O. (2017). *Primary Sources of Data and Secondary Sources of Data*. September, 1–6. <https://doi.org/10.13140/RG.2.2.24292.68481>
- Amon, I. P. (2012). *Strategic Goals of Secure IT Track & Trace Technology to Assist Governments in Enhancing Revenue Collection*. Retrieved from <http://www.wcoomd.org/>
- ANN, S., DAENGDEJ, J., & ... (2021). Factors Affecting Acceptance and Use of E-Tax Services among Medium Taxpayers in Phnom Penh, Cambodia. *Journal of Asian Finance* ..., 8(7), 79–90. <https://doi.org/10.13106/jafeb.2021.vol8.no7.0079>
- Australian Government. (2010). *What are Ethical Considerations?* Australian Government. <https://www.reference.com/world-view/ethical-considerations-de1d2de99def7636>
- Atkinson, H. (2016). *Strategy Implementation. A Role for the Balanced Scorecard?* Management Decision, Vol. 44.
- Azmi, A. A. C., Kamarulzaman, Y., & Hamid, N. H. A. (2012). Perceived risk and the adoption of tax e-filing. *World Applied Sciences Journal*, 20(4), 532–539. <https://doi.org/10.5829/idosi.wasj.2012.20.04.2403>
- Azmi, A. C., & Lee Bee, N. (2010). The Acceptance of the e-Filing System by Malaysian Taxpayers: a Simplified Model. *Electronic Journal of EGovernment*, 8(1), 13–22.
- Azubike, J. U. B. (2017). *Challenges of Tax Authorities, Tax Payers in the Management of Tax Reform Process*. The Nigerian Accountants, 1 (12), 13-14.
- Barnor, C. (2014). The Effect of Macroeconomic Variables on Stock Market Returns in Ghana (2000-2013). Retrieved from scholarworks.waldenu.edu

- Bergman, L. R. (2018). A pattern-oriented approach to studying individual development: Snapshots and processes.
- Berown, M.J. (2018). *Curbing Corruption and Promoting Transparency in Tax Administration*. Washington. National Academy Press.
- Bevacqua, A., Yu, D., & Zhang, Y. (2018). Coastal vulnerability: Evolving concepts in understanding vulnerable people and places. *Environmental Science & Policy*, 82, 19-29.
- Burns N. & Grove S. (2017). *Understanding Management Research*. 4th Edition. Philadelphia, PA: W. B. Saunders
- Chetty, P. (2016). Importance of ethical considerations in a research. In *Project Guru*.
<https://www.projectguru.in/importance-ethical-considerations-research/>
- Cook, P.J. (2016). *The Effects of Liquor Taxes on Drinking, Cirrhosis, and Auto Fatalities*. Beyond the Shadow of Prohibition. Washington, DV: National Academy Press. Berkshire. McGraw Hill.
- Cooper, D., & Schindler, P. (2011). *Business research methods* (10th ed.). New York, McGraw-Hill/Irwin
- Davis, F.D. (1986). *A technology acceptance model for empirically testing... - Google Scholar*. Massachusetts Institute of Technology. Technology Acceptance Model for empirically testing new end user information systems 14 (146-159).
- Davis, Fred D. (1987). *New measures for three user acceptance constructs: Attitude Toward Using, Perceived Usefulness, and Perceived Ease of Use* (p. 50).
- Davis, Fred D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems*, 13(3), 319–339. <https://doi.org/10.2307/249008>

- Deloitte(2017).*IKRAI indefinitely postpones implementation of IEGMS on bottled water and juice*. Retrieved from <https://www2.deloitte.com>
- Deloitte(2020).*Treasury defines shift in tax targets in the midst of the Pandemic*. Retrieved from <https://www4.deloitte.com>
- Dennis, F. (2016). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. Published by: Stable URL : <https://www.jstor.org/stable/2632151>
- Denny, M. (2018). *Excise Taxes and Imperfect Competition in the U.S. Brewing Industry*. Working paper, Department of Economics, Oregon State University.
- Devos, K.A (2013). E-filing acceptance by the individual taxpayers – a preliminary analysis. *Journal of Administrative Science*, 13(2), 1–14.
- Delipalla A.A. (2017). Analysis factor-Factor Yong Mempengaruhi Penerimaan Wajib Pajak Terhadap Penggunaan E-filing .
- Elliott AC, Statistical analysis quick reference guidebook with SPSS examples. 1st ed. London: Sage Publications; 2007.
- Fjeldstad, O.I. (2012). Peoples' View of Taxation in Africa: A Review of Research on Determinants of Tax Compliance. CMI working paper
- Gathia, IE. IM. I (2017). *Effect of Technology on Excise Duty Performance in Kenya: A Case of Nairobi District*. Retrieved from <https://www.studocu.com/en/>
- Gefen, D., & Straub, D. (2000). The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of E-Commerce Adoption. *Journal of the Association for Information Systems*, 1(1), 1–30. <https://doi.org/10.17705/1jais.00008>
- Gidisu, T. E. (2012). Automation system procedure of the Ghana revenue authority on the effectiveness of revenue collection: A Case Study of Customs Division.

Unpublished MBA Thesis, Kwame Nkrumah University of Science and Technology, 14.

Gitaru, I.G. I. (2017). *The Impact of IS System Automation on Revenue Collection in Kenya Revenue*

Authority (AIC Case Study of ISIMBA). Retrieved from https://mpra.ub.uni-muenchen.de/80343/1/MPRA_paper_80343.pdf

Godden, S.K, Allan, P.H, (2017). Perceived usefulness & perceived ease of use on the successful adoption of information systems in ... *Journals, Iosr*, 22(1),

Ilias, A., (2008). A Study of Taxpayers' Intention in Using E-Filing System: A Case in Labuan F.T s. *Computer and Information Science*, 1(2).
<https://doi.org/10.5539/cis.v1n2p110>

Jeptekeny, P. (2015). Effects of Procurement Procedures on project performance: A case study of light construction projects at Kenya Ports Authority, Mombasa. *European Journal of Logistics Purchasing and Supply Chain Management*, 3(1), 1-11.

Karimi, H., Kimani, E.M. & Kinyua, J.M. (2017). Effect of Technology and Information Systems on Revenue Collection by the County Government of Embu, Kenya. *International Academic Journal of Information Systems and IT Technology*, 12(1), 119-351

Kenya Revenue Authority (2017) Kenya Revenue Authority Online portal. Retrieval from <http://www.kra.ke/portal>

Kenya Revenue Authority (2021). *New Excise Goods Management system in Kenya*. Retrieved from <https://www.taxkenya.com/new-excise-goods-management-system-kenya/>

Koumbiadis, S, Okpara, G.H, Pandit, R, Ritsatos, W.A (2014). The impact of perceived usefulness & perceived ease of use on the successful adoption of

- information systems in ... *Journals, Iosr*, 22(1), 45–48.
<https://doi.org/10.9790/0661-2201014548>
- Kuloba, E. (2016). *Effect of procurement procedures on organizational performance: A case of moi teaching and referral hospital, Eldoret* (Doctoral dissertation, Kisii University).
- Lu, C., Huang, S., & Lo, P. (2010). An empirical study of on-line tax filing acceptance model: Integrating TAM and TPB. *African Journal of Business Management*, 4(May), 800–810. <http://www.academicjournals.org/AJBM>
- Lu, C. T., & Ting, C. T. (2013). A study of tax e-filing acceptance model: A structural equation modeling approach. *2013 IEEE/ACIS 12th International Conference on Computer and Information Science*, 273–278.
<https://doi.org/10.1109/ICIS.2013.6607854>
- Mansour, IM.I & IRota-Graziosi,IG.I (2013). *ITax Coordination, TaxI Competition, IandI Revenue Mobilization inIthe West African Economic and Monetary Union*.
 RetrievedIfromI<https://www.imf.org/external/pubs/ft/wp/2013/wp13163.pdf>
- Meyo, Elizabeth K. (2017). Factors Affecting the Adoption of e-Filing of Income Tax Returns in Kenya: A Survey. *Journal of Accounting Research & Audit Practices*, 16(1), 46–67.
- McMillan, JH and Schumacher, S. (2001). *Research in Education*. Addison Welsey Longman.
- Middleton, F. (2019). Reliability vs Validity: What’s the Difference? Scribbr.
<https://www.scribbr.com/methodology/reliability-vs-validity/>
- Mohajan, H. K. (2017). Two Criteria for Good Measurements in Research: Validity and Reliability. *Annals of Spiru Haret University, Economic Series*, 17, 59-82

- Mohd. Yusoff, Y., Muhammad, Z., Mohd Zahari, M. S., Pasah, E. S., & Robert, E. (2009). Individual Differences, Perceived Ease of Use, and Perceived Usefulness in the E-Library Usage. *Computer and Information Science*, 2(1).
<https://doi.org/10.5539/cis.v2n1p76>
- Moorthy, M. K., Samsuri, A. S. B., Hussin, S. B. M., Othman, M. S. B., & Chelliah, M. K. (2014). E-Filing Behaviour among Academics in Perak State in Malaysia. *Technology and Investment*, 05(02), 79–94.
<https://doi.org/10.4236/ti.2014.52009>
- Morrison & Foerster Study: (2018) How the Recession Has Changed Outsourcing
<https://doi.org/10.5539/cis.v2n1p76>
- Mugenda, Olive M and Mugenda, A. G. (1999). *Research methods: Quantitative and qualitative approaches*. Acts press.
- Mwongela, ID. (2016). *The Effects of ITax Reforms on Customs Tax Productivity in Kenya*. Retrieved from <http://erepository.uonbi.ac.ke>
- Ndumia, P. N., (2015). Ideal Principles for tax collection. *Imperial Journal Research* 14(8), 1183-189.
- Nyaga, J. N., (2014). Factors influencing tax revenue growth at Kenya Revenue Authority: A case of Meru station. *International Academic Journal of Economics and Finance*, 2(1), 1-15.
- Obiero H. O., (2018). *Competitive strategies applied by cement manufacturing firms in Kenya*.
- OECD. (2013). *Tax Policy Reform and Economic Growth*. OECD Tax Policy Study
- Olaoye, IC. O. I & Ayodele, IK. B. I (2016). *Impact of Information Technology on Tax Administration in Southwest, Nigeria*. *Imperial Journal of Interdisciplinary Research (IJIR)*, 12(4), 815-827.

- Olatunji, O. C., & Ayodele, K. B. (2017). Impact of information technology on tax administration in southwest. *Nigeria Global Journal of Management and Business Research: D Accounting and Auditing*, 17(2).
- Onyango, I. P. O., & Muturi, I. W. I. (2016). Effects of procurement procedures on operational performance of private institutions in Kenya: A case study of cooperative societies in Kisumu County. *International Journal of Economics, Commerce and Management*, 16(10), 855- 878.
- Osborne, J. W., & Waters, E. (2014). Four Assumptions of Multiple Regression That Researchers Should Always Test. *Practical Assessment, Research, and Evaluation*
- Osoro M, Mpango E, Mwinymvua W.S (2013). Performance Expectancy, Effort Expectancy, and Facilitating Conditions.
- Pallant, J. (2011). *A step by step guide to data analysis using the SPSS program survival manual*.
- Pratiwi, S., Hartanto, A., Gunawan, F. E., & Denavi, M. (2018). Analysis of Factors Affecting the Admission of E-Filing Systems in Jakarta. *2018 Indonesian Association for Pattern Recognition International Conference (INAPR), September 2018*, 302–306. <https://doi.org/10.1109/INAPR.2018.8627035>
- Pindyck, R. *Microeconomics* (Pearson International, 7th ed, 2009).
- Qassim, I. M. A., Abbas, I. A. S., & Dhyaa, I. A. I. (2018). The Impact of Electronic Taxation on Reducing Tax Evasion Methods of Iraqi Companies Listed in the Iraqi Stock Exchange. *Academy of Accounting and Financial Studies Journal*, 122(4), 23-45.

- Robson, C. (2011). *Real world research: a resource for users of social research methods in applied settings*.
- Rogers, E. M. (2016). *Diffusion of innovations*. Free Press.
- Rojas, C., T. (2019). *Tax Incidence When Quality Matters. Evidence from the Beer Market*. *Journal of Agricultural and Food Industrial Organization*. 9(2), 11-15.
- Ross, I.H. (2017). *Tracking and tracing tobacco products in Kenya. Preventive Medicine*, 115, S15-S18.
- Sapiei, N. S., & Eze, U. C. (2014). Determinants of tax compliance behavior of corporate taxpayers in Malaysia. *eJournal of Tax Research*, 12(2), 383 - 409
- Saunders, M., Lewis, P. and Thornhill, A. (2009) *Research Methods for Business Students*. Pearson, New York
- Sekaran, U., & Bougie, R. (2010). *Research methods for business: A skill-building approach* (5th ed.). Haddington: John Wiley & Sons.
- Steimberg, Y., Ram, J., Nachmia, R., & Eshel, A. (2019). an Online Discussion for Supporting Students in Preparation for a Test. *Online Learning*, 10(4), 117–128. <https://doi.org/10.24059/olj.v10i4.1748>
- Sudán, I.N. (2017). *The Evolution in the Role of Excise Tax Stamps for Specific Consumption Goods*. Retrieved from <https://www.ciat.org/>
- Tahar, A., Riyadh, H. A., Sofyani, H., & Purnomo, W. E. (2020). Perceived ease of use, perceived usefulness, perceived security and intention to use e-filing: The role of technology readiness. *Journal of Asian Finance, Economics and Business*, 7(9), 537–547. <https://doi.org/10.13106/JAFEB.2020.VOL7.NO9.537>
- Talley, L. A. (2016). *CRS Report for Congress. Federal Excise Taxes Imposed on Alcohol Products*. Congressional Research Reports.

- Thorntonn, G. (2017). Factors influencing excise duty e-filing usage among small and medium size entities: Does tax knowledge matters? *Jurnal Pengurusan*, 40(February 2017), 91–101. <https://doi.org/10.17576/pengurusan-2014-40-08>
- Tule,IR.I(2017).IBenchmarkingItheITaxISystemInILiberia:IAIStudyIPreparedIByItheIRevenueIGenerationIforIGovernanceIandIGrowthI(Rg3)IProject.IRetrievedIfromIhttps://www.dai.com/
- Upsa,IJ.I(2017).IANIEvaluationIofItheIeffectIofIinformationItechnologyIusageIonItaxIcomplianceIinISriLanka.IRetrievedIfromIhttp://dl.lib.mrt.ac.lk/handle/123/409
- Venkatesh, V., & Davis, F. D. (2000). Theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science*. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Wilks and Pacheco (2014), Kenya Revenue Authority (KRA, (Cherogony, 2013),
- Williams, M., Alberto, C., & Grajales, G. (2013). Assumptions of Multiple Regression: Correcting Two Misconceptions - Practical Assessment, Research & Evaluation. *Evaluación Práctica, Investigación y Evaluación*, 18(11).
- Zaidi, S. K. R., Henderson, C. D., & Gupta, G. (2017). The moderating effect of culture on e-filing taxes: evidence from India. *Journal of Accounting in Emerging Economies*, 7(1), 134–152. <https://doi.org/10.1108/JAEE-05-2015-0038>
- Zainodin H.J, Noraini A, and Yap S.J, 2011. An Alternative Multicollinearity Approach in Solving Multiple Regression Problem. *Trends in Applied Sciences Research*, 6: 12-41
- Zikmund, W.G., Babin, B.J., Carr, J.C. and Griffin, M. (2010) Business Research Methods. Cengage Learning, Mason

APPENDICES

Appendix 1: Introductory Letter to the Research Respondents

24th March 2023

Samuel Kakui

P. O. Box 235422

NAIROBI

Dear Respondent,

RE: REQUEST TO FILL THE QUESTIONNAIRE

I am a postgraduate student of Masters in Tax and Customs at Kenya School of Revenue and Administration in collaboration with Moi University, School of Business and Economics. I am currently on research work and the questionnaire has been designed to collect information on: *SELECTED DETERMINANTS OF EXCISE DUTY COMPLIANCE IN KENYA; A CASE OF BOTTLED MINERAL WATER PRODUCERS IN NAIROBI COUNTY, KENYA*

The information you provide will be used only for academic purposes and shall be kept strictly confidential.

Thank you for your cooperation.

Samuel M. Kakui.

Appendix II: Questionnaire

This questionnaire is designed to collect information on “**SELECTED DETERMINANTS OF EXCISE DUTY COMPLIANCE IN NAIROBI COUNTY**”. Kindly answer the following questions honestly and accurately as possible. The information given will be treated with a lot of confidentiality. Please do not write your name anywhere on this questionnaire.

SECTION A: RECONCILIATION OF EXCISE STAMP

Please tick (√) the extent of agreement to each of the statements provided below:

Key: *SA -Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree*

S/N	Statement					
1	Use Excise duty stamps have improved the control and accountability of excise duty in bottled water	SD	D	N	A	SA
2	The process of replenishing stamps by KRA is timely upon request by the tax payer					
3	I believe most manufacturers are able to pay excise duty correctly because of the use and reconciliation of excise stamps					
4	Excise stamps are not easy to counterfeit and therefore serve the purpose of control					
5	The monthly excise duty stamps reconciliation makes it very difficult for taxpayer to evade excise duty tax.					
6	My KRA tax station has frequently sought clarifications on excise duty stamps still held at our premise.					
7	The process of affixing excise duty stamps and the reconciliations is not too involving to the tax payers to make them want to consider evading tax.					

SECTION B: DETERRENT MEASURES

Please tick (√) the extent of agreement to each of the statements provided below:

Key: SA -Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree

	Statement	1	2	3	4	5
1	Concerns for withdrawal of Tax Compliance Certificate affects excise duty compliance					
2	Fear of License cancellation affects excise duty compliance					
3	Concerns of Penalties and Fines affects excise duty compliance					
4	Fears of issuance of agency notices affects excise duty compliance					
5	Concerns of prohibition orders by KRA affects excise duty compliance					

SECTION C: AUTOMATION OF EXCISE STAMP

Please tick (✓) the extent of agreement to each of the statements provided below:

Key: SA -Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree

S/N	Statement					
1	EGMS has improved the execution time of the validation and verification of excisable goods in the organization	SD	D	N	A	SA
2	Automated stamps are effective in the face of all types of illicit trade, and are a “high potential” solution, as they allow easier product identification and authentication					
3	Simple stamps– as opposed to high security stamps– are considered rarely useful in addressing contraband; counterfeit versions can be created with little efforts					
4	Automation of excise duty stamps encourages taxpayers to correctly declare production levels and thus correct excise duty amounts.					
5	Tracking and tracing using automated stamps is also considered a high potential solution, as it allows real-time monitoring of water manufacturing and better supply chain control					

SECTION D: AUTOMATED PRODUCT MARKING

Please tick (✓) the extent of agreement to each of the statements provided below:

Key: SA -Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree

	Statements	SD	D	N	A	SA
1	EGMS allows for creation of unique serials for excisable goods					
2	Unique Product marking serialization facilitates the traceability of excisable goods					
3	Automated product markings are easy to understand by the general public and thus discourages manufacturers from evading taxes as they know the public will identify counterfeits.					
4	EGMS allows for the multi-level survey of data concerning manufacturers of excisable goods					
5	The automated Product markings are not easy to imitate thus preventing tampering which results to more excise duty compliance					

SECTION E: COMPLIANCE ON EXCISE DUTY

Please tick (√) the extent of agreement to each of the statements provided below:

Key: SA -Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD- Strongly Disagree

	<i>Statement</i>	1	2	3	4	5
1	Water manufacturing companies file tax returns every month					
2	Water manufacturing companies declare correct monthly income					
3	Water manufacturing companies file tax returns only to avoid penalties					
4	KRA has offered an enabling environment for excise duty filing					
5	Most Companies file returns on time and as required by law					

Appendix III: Research Letter



**KENYA REVENUE
AUTHORITY**

ISO 9001:2015 CERTIFIED

PUBLIC

KENYA SCHOOL OF REVENUE ADMINISTRATION

REF: KESRA/NBI/036

6th June 2023

TO: WHOM IT MAY CONCERN

Dear Sir/Madam,

**RE: REQUEST FOR ASSISTANCE TO SAMUEL KAKUI OF
REGISTRATION NO.: KESRA105/0040/2021 UNDERTAKING
MASTERS AT KESRA**

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: *"Selected determinants of excise duty compliance in Kenya. A case study of bottled mineral water producers in Nairobi county, Kenya."*

The purpose of this letter is to request for your kind facilitation in enabling the student progress in his research project by allowing access to any relevant information and/or conduct interviews, which are relevant to the project.

Your support to the student in this regard will be highly appreciated.

Thank you.

**Damacrine Masira
Manager Academic Research,
KESRA**



Tulipe Ushuru, Tujitegeme!

Appendix IV: NACOSTI



REPUBLIC OF KENYA



**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: **384523**

Date of Issue: **30/June/2023**

RESEARCH LICENSE



This is to Certify that Mr. Samuel Kakui of Kenya School of Revenue Administration, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: SELECTED DETERMINANTS OF EXCISE DUTY COMPLIANCE IN KENYA: A CASE OF BOTTLED MINERAL WATER PRODUCERS IN NAIROBI COUNTY, KENYA for the period ending : 30/June/2024.

License No: **NACOSTI/P/23/27228**

Applicant Identification Number
384523



Director General
**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION**

Verification QR Code



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

See overleaf for conditions

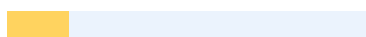
Appendix V: Plagiarism Report



Plagiarism Checker X - Report

Originality Assessment

17%



Overall Similarity

Date: Jul 12, 2023
Matches: 4417 / 26080
words
Sources: 123

Remarks: Low similarity
detected, check with your
supervisor if changes are
required.

Verify Report:
Scan this QR Code



SELECTED DETERMINANTS OF EXCISE DUTY COMPLIANCE IN KENYA;

A CASE OF BOTTLED MINERAL WATER PRODUCERS IN NAIROBI COUNTY,
KENYA

Appendix VI: Mineral Water Producers in Nairobi

Source: (Kenya Bureau of Standards; November, 2022)

1	KEVIAN (K) LTD.	94	MARA PURE DRINKING WATER
2	LIFE LINE CO. LTD	95	WATER INTERNATIONAL (K)
3	CROMBIC TOURS	96	EARNEST ENTERPRISES
4	THE ZOROS COMPANY LTD	97	BLUE WAVE COMPANY LTD
5	MAJI STORE	98	PRISTINE INTERNATIONAL LTD
6	KITHOMES LTD	99	WAHELAY LIMITED
7	AQUAFIN	100	SPARKLETTS FRESH
8	RAINBOW SPRINGS	101	RAYAN PURE WATER
9	ASTRIDE ENTERPRISES LTD	102	SLOANSQUARE LTD
10	SHELTER LINE PROPERTIES	103	STENLOIW ENTERPRISES
11	TELLYNE ENTERPRISES	104	KALIMONI GREENS
12	PREMIER WATER SOLUTIONS	105	GARAI TRADERS COMPANY
13	ABSOPURE WATER COMPANY	106	EASYMART SUPERMARKET LTD
14	CRYSTAL ROCK LIMITED	107	FULL WAYS COMPANY LTD
15	ELDOVILLE FARM LTD	108	SIMBA SPRINGS ENTERPRISES
16	GRANGE PARK/USAFI SERVICES	109	GICHOYA DEVELOPMENT CO.
17	WAFO FOODS	110	ROLINKEMS MERCHANTS E.A
18	JOSMIS SUPPLIERS	111	MILELE SPRINGS
19	KRYSTALINE MINERAL WATER	112	ROOF ARTS LTD
20	BETTER CHOICE LTD	113	LIMURU COOL INVESTMENT
21	BINGWA MILLERS AND FOOD	114	JOINDA ENTERPRISES
22	SUNSHINE MINERAL WATER	115	FAMILY HOPE SERVICES LTD THARA
23	DANMAR ENTERPRISES	116	ORCHARDS
24	MARGEO ENTERPRISES	117	FRENCY GENERAL SUPPLIES
25	CRYSTAL COOL PURE SPRINGS	118	RUNDA WATER LTD
26	ADRIAN WATER SYSTEMS LTD	119	FLOMA GENERAL SUPPLIERS
27	SAFARIMATE MINERAL WATER	120	GOLDEN FLAMES LIMITED
28	KILIMANJARO BOTTLED WATER	121	SPECIAL GATEWAY
29	MADA HOLDINGS LTD	122	CREST FOODS LIMITED
30	ULIVETO SPRINGS	123	BETHEL WATER SERVICES
31	FRESAM AGENCIES LTD	124	RIVER OAKS ENTERPRISES
32	CLEBE ENTERPRISES	125	BARIHA ENTERPRISE YATTA FOODS DRINKING WATER
33	JENTAR INVESTMENTS LTD	126	
34	LIMU BLOMEN ENTERPRISES	127	FRESH AQUA ENTERPRISES
35	MLIMANI SPRINGS	128	TSUBIS GLOBAL INVESTMENTS
36	ANCHOR FLOUR MILLERS CO	129	DOUBLE LUCK VENTURES
37	DAINLE GENERAL AGENCIES	130	BRIMA PURE DRINKING WATER
38	MAKIS SPRINGS	131	NICE SPRING WATER
39	NATURES HARVEST WATER	132	ELITE COMMERCIAL INSTITUTE
40	SPRINGS OF MBOONI HILLS	133	RUSAM LIMITED
41	MORNING DEW TRAVEL LTD	134	LAWNY SPRING ENTERPRISES
42	PALAMAT CHEMICALS	135	ABERDARE WATER LTD
43	WATERMAX FARM CO. LTD	136	AFROGREAT ENTERPRISES LTD
44	AQUAMAX TRADERS	137	HAKI ENGINEERING
45	UNIVERSAL AQUA LTD	138	PREMIER WATER SOLUTIONS
46	GUAMA MILLERS AND	139	AQUA DUE SPRINGS
47	SIMPLE LIFE TRADING CO. LTD	140	FOUNTAIN SPRINGS

48	NATURE ONE ENTERPRISES LTD	141	BAALLESONS E.A. CO. LTD
49	KIJABE SUPER SPRINGS	142	ADONEZA GENERAL SUPPLIES
50	CLASSIC SPRING MINERAL	143	HIGHLANDS DRINKS LTD
51	AQUAMIST LIMITED	144	EMAHO ENTERPRISES
52	CIANDA SPRINGS	145	AQUA CHILL COMPANY LTD
53	KENMAL ENTERPRISES	146	TOSHEKA GENERAL STORES
54	KOBA WATERS LTD.	147	HARSHIN DRILLING AND
55	BARANIKI INVESTMENTS (K)	148	KIJABE SPRINGS
56	TULASHA ENTERPRISES	149	MWAFAKA FOODS INDUSTRIES
57	KENZE ENTERPRISES LIMITED	150	WATAHAUZ ENTERPRISES LTD
58	KERINGET NATURAL WATER	151	KENIQ LIMITED
59	ENJABE ENTERPRISES	152	TRU-FIELD VENTURES
60	MOUNTAIN ROCK PURE	153	WELLS VALLEY INVESTMENTS
61	DESIRE KRYSTAL WATER	154	DASANI GENERAL SUPPLIES
62	SHIVA MOMBASA LIMITED	155	SOUTH SEAS FOOD LIMITED
63	MONTANA LIMITED	156	KILIMANJARO MIST BEVERAGES
64	ICON FOUNTAIN SPRINGS	157	FAHARI GARDENS COMPANY
65	FARRIS ENTERPRISES	158	ICONIC DELIGHTS LTD
66	WORLD TRADE LTD	159	AQUA NICE ENTERPRISES
67	MILIMANI SUBTERRANEAN	160	NOOSUYIAN WATER COMPANY
68	BOUNTY LTD	161	ADVENT CONTRACTORS LTD
69	BLUE PLASTICS AND WATER	162	KEEN METAL FABRICATORS
70	LOKICHOGIO SPRINGS	163	ELITE LODGIT LIMITED
71	MACNJERUS ENTERPRISES	164	NATURE INSPIRE
72	GITILIGINI LTD	165	COMLINES DISTRIBUTORS
73	TWIN OAKS LIMITED	166	BRIDGEMEAD LIMITED
74	AQUALEX ENTERPRISES	167	THREE SPRINGS PREMIUM
75	NAMUSYA AGENCY	168	CWAY KENYA FOODS AND
76	EXCEL CHEMICALS LTD	169	QUALITY MARKETERS
77	ALPINE COOLERS LIMITED	170	ASILI PLASTICS LIMITED
78	NAIROBI BOTTLERS LTD	171	SILVER ICE PURE WATER
79	SARK KENYA	172	EUBRINE INVESTMENT
80	PREMIER WATER SOLUTIONS	173	SKY DROP COMPANY LIMITED
81	MANANE FOODS ENTERPRISES	174	TROPICA GENERAL EBONY FOODS
82	STENRAC ENTERPRISES LTD	175	LTD
83	ENERGY FOODS LTD	176	SUNNY RIVER LTD
84	WANDOMIST SUPPLIES	177	FESTIG LTD
85	DIARIM ENTERPRISES LTD	178	INTERIOR BEVERAGES LTD
86	DUTCH WATER LIMITED	179	SHACHAH LIMITED
87	NATURES KENYA LTD	180	MODEST ENTERPRISES
88	ALL SEASONS SERVICES CO.	181	CLEAR QUEST SPRINGS
89	PENROSE ENTERPRISES	182	KLAN EAST AFRICA COMPANY
90	GRACIOUS PURE WATER	183	JEDEN COMPANY LTD
91	KAY SEVEN GROUP	184	OLBOLSATT COMPANY LTD
92	TOTAL QUALITY COMPANY	185	AMMOR EA ENTERPRISES
93	AGRI PRO-PAK LTD		

Source: (Kenya Bureau of Standards;
November, 2022)