*i*TAX AND REVENUE COLLECTION BY KENYA REVENUE AUTHORITY IN WESTERN REGION, KENYA

BY

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DECLARATION

This research project is my original work and has not been submitted for a degree award at the University of Nairobi or any other University.

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DEDICATION

I would like to dedicate this project to my lovely wife Sabinah, and daughters Celine and Emmaculate for their moral support and encouragement. To my loving and caring parents, Mr. and Mrs. Oeta, I too dedicate this project to you for your inspiration. Your love for advancement of knowledge has driven me this far. I salute you.

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ABBREVIATIONS AND ACRONYMS

AIA	Appropriations In Aid
DTD	Domestic Taxes Department
ETR	Electronic Tax Register
FDI	Foreign Direct Investment
FY	Financial Year
GDP	Gross Domestic Product
ICPAK	Institute of Certified Public Accountants of Kenya
*i*Tax	Integrated Tax
IT	Information Technology
ITMS	Integrated Tax Management System
KRA	Kenya Revenue Authority
OECD	Organisation for Economic Cooperation and Development
PIN	Personal Identification Number
RARMP	Revenue Administration Reform and Modernization programme
SPSS	Statistical Packages for Social Sciences
SSA	Sub Saharan Africa
VAT	Value Added Tax

ABSTRACT

Efficiency and accountability in taxation systems has heightened the clamour for modernization of tax systems across the globe. However, despite the introduction of *i*Tax in Kenya, the Kenya Revenue Authority still continues to post revenues short of the treasury targets. The current study sought to establish the effect of *i*Tax implementation on revenue collection in Western Region, Kenya. The study employed a correlational research design which was longitudinal in nature as the study covered a period of five years. The study was guided by the following objective; to establish the effect of iTax on revenue collection in Western Region, Kenya. The current study was underpinned by The Neo-Classical theory, and the Unified Theory of Acceptance and Use of Technology. This study made use of secondary data obtained from the tax collections by KRA's western regional offices covering the periods 2012-2016 calendar years. Event study methodology was used to determine abnormal variations in revenue collected before, during and after the implementation of *i*Tax. Data gathered was coded and tabulated to facilitate analysis using quantitative statistical packages for social sciences (SPSS) version 20. Descriptive statistics included percentages and measures of central tendency. Paired t-test was used to establish any significant differences in revenue collection before, during and after the implementation of *i*Tax. The study established that *i*Tax implementation led to an increase in the variability of the revenue return for the periods during, and after the implementation of *i*Tax. In particular, *i*Tax implementation had a positive effect on the average quarterly revenue collection for the period during and after its implementation. The findings suggest no significant difference in the revenue collected in the Year 2012 (M= 1.1144 and SD=0.17161) and the year 2013 (1.1728, SD= 0.20067; t=- 1.141, p=0. 337). Nonetheless, there was a significant difference in the revenue collected before the implementation of *i*Tax (M=1.1436, SD=0.17955) and during the implementation of *i*Tax (M= 1.9126 and SD= 0.35404; t=- -7.436, p=**0.005**). In addition, there was a significant difference in the revenue collected during the implementation of *i*Tax (M= 1.9126; SD= 0.35404) and after the implementation of *i*Tax (M= 2.7182; SD= 0.29157; t=- --4.863, p=0**.017**). Furthermore, there was a significant difference in the revenue collected before the implementation of *i*Tax (M= 1.1436; SD= 0. 17955) and after the implementation of *i*Tax (M= 2.7182; SD= 0.29157; t= -15.093, p=**0.001**). There was also significant increase in abnormal revenues after *i*Tax implementation (M= 0.8460 billion; SD= 0.33091; t=7.760; p=0.004) over the period prior to its implementation (M= 0.00001; SD=0.17142. In sum, *i*Tax improves revenue collection. Revenue collection in Kenya has increased partly because of the introduction of *i*Tax as envisaged by the findings of the current study. As such, it's imperative for the Kenya Revenue Authority to develop strategies to increase the number of taxpayers who embrace the *i*Tax system through training and marketing.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Electronic tax administration systems have gained prominence in Sub Saharan Africa (SSA) in the 21st century. This has been spurred on by the need for improved efficiency and accountability in taxation systems, and inherently the adoption of information technology (IT) tax based systems (Organisation for Economic Cooperation and Development [OECD], 2009). Population growth and demands for transparency in tax administration policy has further emphasized the need for better revenue collection systems and policy in East African countries (Khadka, 2015). Electronic tax systems are designed with a need to reduce cost of tax administration, ensure ease of compliance, and provide for accuracy and equity in tax administration.

This study is anchored on two theories: the neo-classical theory, and the Unified Theory of Acceptance and Use of Technology (UTAUT) theorized by Venkatesh, Morris, Davis & Davis (2003). The neo-classical theory forms the basis of tax policy formulation insofar as it highlights the importance of the canons of taxation i.e. economy, convenience, certainty and equity as advanced by Adam Smith (Kennedy, 2012). The UTAUT model explains the behavioural aspects of human interaction with technology, hence underscores important considerations by tax authorities in effort to ensure improved revenue collections. For instance, it emphasizes the need for supportive infrastructure such as internet connectivity, an easy to use tax system as well as a system that will provide a cost advantage to the taxpayers. Effective application of technology will not only bring tax services closer to the taxpayers but also provide an incentive to enhance compliance through reduced costs and widened tax base.

In 2014, the Kenya Revenue Authority (KRA) adopted a new electronic tax administration system known as *i*Tax, thereby replacing manual filing of tax returns. This system was adopted to increase revenue collection, ease of filing and administration of taxes, and reduce costs of compliance while reducing the tax gap through eliminating

cases of non-compliance. Since introduction of *i*Tax, KRA has seen increases in tax revenue. This has grown by an average of 15% for the past 10 years. KRA collected ksh 1 trillion in revenue from taxes for the financial year (FY) 2014/2015. This excluded revenue from appropriations in aid (AIA) thus making an increase of 3.86% from FY 2013/2014 in which the authority collected ksh 963.8 billion (The National Treasury, 2015). According to mygov.ke (2016), revenue collection stood at ksh 1.1 trillion as at the end of April 2016. Despite this, KRA has failed to meet revenue targets set by the treasury. A study conducted by Institute of Certified Public Accountants of Kenya [ICPAK] (2015) states that the high targets have been set so as to meet increased expenditure requirements resulting from implementation of the 2010 constitution. The study advises revision of tax policy in order to meet set revenue targets.

1.1.1 Concept of *i*Tax

*i*Tax is a web based automated system that integrates KRA's domestic tax administration processes. It offers a simple, swift and secure means of electronic taxpayer registration, e-filing, e-payment as well as back office functionalities for KRA's Domestic Taxes Department staff (Kenya Revenue Authority, 2016). It is an integrated tax system that interlinks the tax administration procedures with the aim of making it simpler for taxpayers to comply as well as easy and less costly tax administration. The '*i*' in the word '*i*Tax' stands for integrated; it intones self-assessment as the modus operandi. *i*Tax usage will be measured by the number of active taxpayers using the system, in terms of filing returns and making payments.

*i*Tax has several key components or modules which are centered around the taxpayer, who is identified using a unique personal identification number (PIN). These components are: Taxpayer registration which aids in the registration of taxpayers; assessment processing; account management module that gives information about the taxpayer; payment processing module that makes it possible for taxpayers to generate payment slips; collection and enforcement module that is useful in defaulter identification by matching assessments and payments; and reporting and statistics module that helps in revenue report compilation (KRA, 2016).

The intended purpose of *i*Tax is to increase the speed of service delivery, enhance accountability and integrity through reduced opportunities for corruption, as well as reduce tax avoidance and evasion by utilizing its capabilities of electronic data matching and enhanced third party information, hence increased revenue collection (KRA, 2015). It does this by linking taxpayers to the revenue authority via an online platform whereby every taxpayer, be it a company or individual, has a unique identifier number known as a PIN (Personal Identification Number), which they can use to access and manipulate their tax details from anywhere in the world (Malonza, 2016).The World Bank in its seminal paper on doing business (2014) presents a case for electronic tax and payment systems. In the paper, the organization lists reduced costs and collection of quality and quantity data as a key benefit to tax authorities of implementing such systems (World Bank, 2017). Phillip and Poirier (2011) add that online tax administration makes filing of returns simpler thus reducing errors arising from manual systems.

1.1.2 Revenue Collection

Revenue collection has been defined as funds received by any organization (Gitaru, 2017). In the context of the KRA, it can be defined as the mandatory tax collections that are imposed on the citizenry. This involves collection of tax revenue from taxpayers through electronic or manual mechanisms. Sources of tax revenue are both from domestic, such as Income Tax and Value Added Tax (VAT); and customs e.g. import duty. Government also collect revenue from non-tax sources such as fees, penalties and appropriations in aid. Taxation is the largest source of revenue for the Kenya government, it accounts for over 95% of government ordinary revenue (KRA, 2015). This study will dwell on domestic tax collections, which will be measured in terms of the amount collected in Kenya shillings.

Revenue collected is important for fiscal policy and forms the source of government expenditure. In Kenya, KRA is mandated to collect revenue on behalf of the government. Since 2014, revenue collection in Kenya is done electronically through the *i*Tax platform. This system was adopted to increase revenue collection, ease of filing and administration

of taxes, and reduce costs of compliance while reducing the tax gap through minimizing cases of tax avoidance and evasion.

Since the commencement of modernization of tax systems, KRA has seen increases in tax revenue. This has grown by an average of 15% for the past 10 years. KRA collected Ksh.1 trillion in revenue from taxes for the financial year (FY) 2014/2015. This excluded revenue from appropriations in aid (AIA) thus marking an increase of 3.86% from FY 2013/2014 in which the authority collected ksh 963.8 billion (The National Treasury, 2015). According to mygov.ke (2016), revenue collection stood at ksh 1.1 trillion as at the end of April 2016. Despite this, KRA has failed to meet revenue targets set by the treasury. A study conducted by ICPAK (2015) states that the high targets have been set so as to meet increased expenditure requirements resulting from implementation of the 2010 constitution. The study advises revision of tax policy in order to meet set revenue targets.

1.1.3 *i*Tax and Revenue Collection

In the broad nature of being an electronic tax administration system, *i*Tax is a necessary tool for state building. This is insofar as it is used as a tool to enhance revenue collection by furthering the tax reform agenda of the Kenya government for increased and efficient revenue collection (KRA, 2016). Barako (2015) writes that *i*Tax is necessary in increasing efficiency in revenue collection and administration.

*i*Tax is an efficient way of managing data thus improving revenue collection and transparency in fiscal administration by KRA as explained by Kipkemoi (2015). It is a fully integrated modular system that gives control over taxpayer data. This enhances compliance especially by medium and large taxpayers in Kenya and in essence revenue collection (Malonza, 2016). Ngigi (2015) concurs that *i*Tax, as an integrated tax system, reduces instances of tax evasion by businesses in Kenya thus resulting in increased tax revenue collection. He further states that this is because once taxpayer data is captured, the system automatically flags businesses that are non-compliant in so far as filing of their tax returns. However, other Scholars such as Magu (2013) and Wasao (2014) infer that revenue collection in Kenya has increased not necessarily because of the introduction

of *i*Tax but also due to economic growth in the country, which has been at an annual average of 5% for the past 10 years (World Bank, 2017).

1.1.4 Kenya Revenue Authority

The Kenya Revenue Authority was established as an independent institution by an Act of parliament in 1995. It was previously a department under the treasury. It is headed by a Commissioner General who is appointed by the president of Kenya. The authority is charged with the collection of tax revenue in Kenya on behalf of the Kenya government. Its more specific purpose is to assess, collect, administer and enforce laws pertaining to tax revenue (KRA, 2009).

The authority operates in 5 regions namely Rift Valley, Western, Southern, Northern and Central regions of Kenya. Each region is headed by a Regional Coordinator who has customs, domestic (medium and small taxpayers), domestic (large taxpayer's office), enforcement, technical and corporate support departments under their jurisdiction. Each region has a number of KRA service centres, known as stations, under its jurisdiction. The stations are headed by Station managers, who are responsible for the activities of the staff in the stations.

KRA has, in the recent years, undertaken tax reforms aimed at effective execution of its mandate against the backdrop of ambitious treasury targets. In 2004, the Revenue Administration Reform and Modernization Programme (RARMP) commenced at KRA with the objective of achieving a fully integrated tax administration. This resulted to the inception of the first online system known as integrated tax management system (ITMS) in 2008. Though ITMS was an online system, it did not fully automate the tax administration processes hence inefficient. For instance, the taxpayers were required to present electronically generated payment slips to KRA offices for capturing upon making payments i.e. the payment gateway was not linked with the banks. This mix of online and manual processes created the inefficiencies. These coupled with public outcry for simpler system, led to the conception of *i*Tax idea in October 2011. *i*Tax was introduced in 2013 with a pilot being done in partnership with large taxpayers, to assess system capability and stability before a country wide roll out in 2014 (ICPAK, 2015).

1.1.5 Kenya Revenue Authority, Western Region

Western region is one of the five regional administrative offices of KRA. This regional office covers the entire Western Kenya, that is, the former Western and Nyanza provinces of Kenya (KRA, 2016). The region consists of three domestic taxes service centres, that is, Kisumu, Kakamega and Bungoma stations. These Domestic Taxex department (DTD) offices serve the counties of Kisii, Nyamira, Migori, Kisumu, Homabay, Siaya, Kakamega, Vihiga, Busia and Bungoma. Most taxpayers in this region are categorized as small taxpayers (Korir et al, 2015).

*i*Tax was introduced in Western Region in 2014, immediately after its country-wide roll out. First to be integrated into the platform were mid-sized tax payers i.e. businesses operating in the region. According to the authority, roll out of *i*Tax albeit successful has encountered a few setbacks due to limited internet coverage, computer literacy levels and access to electricity prevalent in the region. To overcome this, the authority has partnered with cyber cafes in small towns to assist local's access and use the service (World Bank, 2017).

1.2 Research Problem

The need for improved efficiency and accountability in taxation systems has heightened the clamour for modernization of tax systems across the globe, hence the increased adoption of electronic tax administration systems. Electronic tax systems, such as *i*Tax, are computer based revenue collection platforms that do away with the need for manual registration, filing and processing of tax returns, refunds and other tax related services. Their ultimate goal is to increase revenue collection through reducing costs associated with compliance and minimizing tax leakages. They are designed to reduce physical contact between the tax administrator and the taxpayer in order to achieve the desired effect of reducing corruption. KRA achieved country-wide roll out of the *i*Tax system in 2014, with the expectations of leveraging on this vital technology in eliminating its revenue deficits. Despite the introduction of *i*Tax, KRA still continues to post revenues short of the treasury targets. For instance, in the financial year 2014/2015 the authority collected exchequer revenue of Kshs. 1,022 billion against the treasury target of Kshs. 1,065.8 billion (KRA, 2015).

KRA's revenue collection has grown at an average of 15% in the past 10 years. The revenue collected in FY 2013/2014 stood at Kshs. 963.8 billion, which was an increase of 20.4% over that of FY 2012/2013. In FY 2014/2015, the collection increased by 12.3% over that of the FY 2013/2014 (KRA, 2015). This has been attributed to the tax reforms and modernization programme that has been undertaken by KRA, hinging on the *i*Tax platform which makes it possible for taxpayers to transact with KRA around the clock and in real time. However, this increase in tax revenue has not been enough to eliminate persistent shortcoming of revenue shortfalls experienced by KRA. The traditional last minute rush associated with manual return filing has not been avoided either, as is the case in Western Region, with taxpayers still trooping into KRA service centres on deadline days for facilitation.

Various studies have been undertaken to study the effects of online systems on tax administration. For instance, Barako (2015) agrees that *i*Tax is efficient in revenue collection. Other scholars such as Imam and Jacobs (2014) have proposed the introduction of electronic tax systems as a means of reducing revenue shortfalls resulting from corruption. Some of the studies note that supporting infrastructure such as internet connection, electricity and computers, as well as information technology literacy levels affect tax compliance, and hence revenue collection (Kiringa and Jagongo, 2017; Maisiba and Atambo, 2016; Shaupp et al.,2010). However, other studies have argued that the increase in revenue collection in Kenya is not necessarily due to the introduction of *i*Tax, but rather as a result of other factors such as the general performance of the economy (Magu, 2013; Wasao, 2014). Whereas these studies have sought to show the relationship between *i*Tax and revenue collection, most of them have adopted a descriptive approach by determining factors encouraging or discouraging compliance (Muturi and Kiarie, 2015). In essence, few studies have taken a comparative view of revenue collection in the context of Western Region before and after the implementation of *i*Tax. This study therefore sought to answer the pertinent question: How has *i*Tax impacted revenue collection in Western Region?

1.3 Research Objectives

The objective of the study is to establish the effect of *i*Tax on revenue collection in Western Region, Kenya.

1.4 Value of the Study

This study may be of importance to scholars by adding to the existing body of knowledge on leveraging technology in revenue collection. This is because it analyses the two variables of *i*Tax and revenue collection from the context of Western Region, Kenya. In addition, the study may instigate further research on the thematic area of taxation.

It may be of value to revenue administrators in assessing the impact of electronic tax administration systems on revenue collection in the western region of Kenya. This may enable administrators in this region, and in extension KRA as a whole, assess the revenue trends in this region before and after implementation of *i*Tax. This may in turn result to better decision making.

The study may also be of importance to the treasury personnel in policy creation, strategy formulation and implementation of electronic tax systems. It may offer insights into the contribution of *i*Tax technology in revenue collection. This is in light of the fact that current tax policy is not robust enough to meet revenue targets set by treasury

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter has been divided into six subsections. Subsection one introduces this chapter and the major areas to be covered. Subsection two delves into taxation theories which are pertinent to revenue collection and electronic taxation systems. Factors affecting tax revenue are discussed in subsection three. Subsection four evaluates empirical evidence from past scholars on the subject matter. The chapter concludes with a summary of the different subsections discussed.

2.2Theoretical Review

This section looks into theoretical concepts underlying revenue collection and electronic tax administration systems. The section thus looks at the Neo-Classical theory as well as the Unified Theory of Acceptance and Use of Technology.

2.2.1 Neo-Classical Theory

This is a supply side micro economic theory which explains the relationship between government policy and changes in pricing (Wolff and Resnick, 2012). According to Davidson (2015), individuals and companies provide labour and capital respectively so as to reap net wages and net profit i.e. income and profit after tax deductions. Wolff and Resnick (2012) concur that workers will give up leisure to earn an income net of taxes. However, marginal tax rates applied to extra units of income reduces the incentive to work an extra hour. The same applies to capital expenditure by companies whereby taxes applied to capital goods reduce their propensity to acquire these goods relative to earning extra units of profit.

The neo classical approach to taxation forms an antecedent for the four canons of taxation (equity, certainty, cost and convenience) theorized by Adam Smith. Chand (2008) explains that the canon of equity offers guidance on how taxes should be levied upon the different classes of society. In this canon the sacrifice born by an individual should be based on their ability to pay. Therefore, the more one's income the higher the taxes thus extolling an equitable tax burden on different individuals. The canon of certainty delves into the accuracy of the taxation system. This means that the amount due in taxes should

be known and easy to compute. The canon of cost means that the cost of collecting the tax should be less than the revenue derived from the tax itself. This ensures progressiveness in taxation policy. Lastly the canon of convenience stipulates that taxes should be collected at such a time where one is able to pay it. It should not create distortions in one's marginal propensity to spend.

Mc Bride (2012) gives an evidenced based approach to the neo-classical theory as a progressive tax theory and economic growth derived from taxation revenue. He decries that this theory stifles revenue collection by limiting consumption and income generation. This is because progressive taxes are charged on extra units of income thus acting as a disincentive to spending and production. This in effect reduces tax revenue due to limitations placed on economic growth. In essence, changes in tax affect labour supply and thus output. This in effect results in changes in taxation revenue. On the other hand, Van Parys and James (2010) look at this theory from the lens of its effectiveness in attracting investment through taxation. They opine that offering tax incentives to corporations will encourage investment thus creating tax revenue gains from increased incomes of both individuals and companies.

From an ethical perspective, Alm and Torgler (2011) found that individuals are not rational as proposed in this theory but have to be compelled to meet their tax obligation. This is because there are other underlying factors which will determine their levels of tax compliance. They propose the use of strategy to ensure compliance. In essence, the neo-classical theory forms the foundation of developing an equitable, certain, convenient and cost-effective tax system. Electronic tax systems hence ought to possess these important qualities to ensure that they offer enough incentives for the users to comply. For instance, a system that enables the taxpayers to comply from the comfort of their homes in a cost-effective manner will motivate them to voluntarily meet their tax obligations.

2.2.2 The Unified Theory of Acceptance and Use of Technology

This theory was advanced in 2003 by Venkatesh, Morris, Davis and Davis in 2003. The theory seeks to explain the link between revenue collection and adoption of electronic tax systems by the general public (Shaupp et al., 2010). It states that several behavioural facets namely: performance expectancy, effort expectancy, social influence and facilitation conditions affect the adoption of electronic systems.

Veras and Preziosi (2011) posit that the expectations by end users of availability and quality of infrastructure such as internet form the performance expectancy envisaged by the model. They further explain that effort expectancy entails the perceived ease of use and complexity of the system; the social influence includes factors such as age and gender whereas the facilitating conditions comprise the incentives given to the users of the system. In analyzing the UTAUT model, Lai (2017) explains that the performance expectancy of a technology entails five key attributes namely: the perceived usefulness of the system or technology; its ability to fit into the requirements of the job (job-fit); the relative advantage that will be gained from using the system; extrinsic motivation associated with the use of the technology; and the expected results or outcomes that will accrue from the use of the system.

This theory is of importance to this study as it guides the framework of developing and implementing electronic tax systems. It implies that for tax authorities to achieve improved revenue collections, they ought to put in place electronic tax systems that are easy to use, less costly to the users and systems that complement the existing tax system without necessarily creating additional processes and procedures. In addition, the authorities need to ensure that supporting infrastructure is in place such as internet connectivity so as to make compliance with tax laws easy and fast.

2.3Factors Affecting Revenue Collection

2.3.1 Economic Factors

Economic factors largely affect the amount of revenue tax authorities can collect in any jurisdiction. This is because many modern economies are income elastic in that government tax revenues rise with an increase in incomes of individuals and corporations as a tax base (Devereux et al., 2014). The compositions of the various sectors in an

economy do impact the level of incomes individuals and corporations get, and hence to an extent affect the revenue collections. For instance, economies that majorly depend on hard-to-tax sectors such as subsistence farming (the agrarian based economies) like Kenya tend to have a weak tax base.

The Gross Domestic Product (GDP) per capita as a ratio of tax revenue has also been found to be a factor determining tax revenue. This has been argued so by Castro and Camarillo (2014), who notes that there is a positive relationship between GDP per capita and tax revenues. In addition, Chaudhry and Munir (2010) are in agreement that economic policy which increase money supply can increase GDP of a country and in effect tax revenue. They proposed policy targeted towards controlling tax evasion and exemption as measures of increasing revenue.

Economic externalities such as foreign aid and foreign direct investment (FDI) also play a key role in deepening a county's tax revenue (Asongu, 2015). If properly utilized, foreign aid can have a positive effect on tax revenues. This is so because it creates a multiplier effect in the economy. However, Tuomi (2011) opines that FDI does not directly lead to increased tax revenues from corporate incomes. This is because most countries use tax incentives to attract such investments. On the other hand, FDI yield tax revenues from increased labour productivity thus resulting in increased taxable employment income.

2.3.2 Structural Factors

The design of the fiscal policies of nations has an impact on the amount of revenue these nations are able to amass. Addison and Levin (2014) show that the inclination towards more emphasis in indirect taxes such as VAT has a positive impact on tax revenue. Countries in Sub Saharan Africa (SSA) have continuously shifted fiscal policy with an aim of broadening their economies and in essence tax revenue.

High levels of taxation discourage consumption; thereby limiting tax revenue. This has informed the current trend in tax structures of shifting towards indirect taxes as a way of improving revenue collection. Indirect taxes would look more preferable in avoiding this situation as the tax impact and tax incidence does not fall on the same person or entity. Countries should thus aim at improving the tax systems or structures to negate the impact

of retrogressive income tax systems, loopholes in tax laws and inefficiencies in tax administration which, according to Okafor (2012), reduce the levels of tax revenue.

2.3.3 Technological Factors

Acceptance of new technology by tax payers is a key determinant of the efficacy of electronic tax filing systems in a country according to Wang (2002). He posits that the belief in system credibility, perceived usefulness of such a systems and their ease of use will determine whether the system will be quickly adopted by taxpayers. Fu et al. (2006) add that technology acceptance by taxpayers revolves around perceived security of information entered into the system and any cost saving benefits they may derive from using such a system as opposed to a manual one.

On the other hand, the use of technology can have a negative impact by creating additional administrative costs. Lumumba et al. (2010) write that despite improvements in information technology, errors in data entry result in additional costs of cross checking the data against invoices of large taxpayers so as to eliminate the discrepancies. This is not only costly but also time wasting activities. Hence, technology can be regarded as a strategic tool in the collection of revenue if it is well utilized through proper training of the users and realigning it in such a way as to fit the operations of revenue authorities (Venkatraman, 2010).

2.3.4 Social Factors

Education, life expectancy and child mortality are also important factors influencing a country's ability to raise tax revenue. This is based on the principle of tax elasticity as opined by (Stiglitz and Rosengard, 2015). The duos argue that tax revenues are income elastic. The ability to earn more income, therefore, has an impact of tax revenue. Countries that are concerned with improving their revenue bases ought to improve the social welfare of its people who are the important factors of production.

Countries with highly skilled labour force, long life expectancy and low child mortality rates have higher tax revenues than those which do not. This is because they are able to develop a highly skilled labour force who can earn higher wages. This represents the difference between developed countries such as Singapore and emerging economies such as Kenya with the later having lower tax revenue (IMF, 2016).

2.4 Empirical Review

A number of studies, both local and international, have been done linking IT to revenue collection in one way or another. Among the international studies is that conducted by Floropoulos et al (2010) on the success of taxation information systems in Greece. They sought to look at the constructs of user satisfaction, usefulness and quality of service as measures of success of information systems in tax administration. A sample of employees in the Greek tax authority was taken. Their study found that information systems enhance efficiency in tax administration and improved quality of services offered by Greek tax authorities.

Chen (2010) carried on a study on the impact of antecedents of quality on the satisfaction of taxpayers with online tax system in Taiwan. He made use of hierarchical factor analysis to support evidence of user satisfaction in online tax filing systems. The study found that information and system quality to be the key factors in determining user satisfaction in online tax systems.

Azmi et al (2016) made use of questionnaires to determine factors influencing adoption of e-filing tax systems by small and medium size businesses in Malaysia. The study made use of technology acceptance model to gauge perceived risk of adoption of e-filing systems. Samples were taken from the Malaysian public who were taxpayers. Study findings showed that a mixture of regulatory requirements and system complexity and compatibility were the main drivers to adoption of such systems.

Local studies have also been conducted on *i*Tax and revenue collection. Otieno et al (2013) studied the impact of information systems on revenue collection of local authorities in Kenya. In a survey of 1942 taxpayers and 165 tax officials, they found a high efficacy between such systems and increased revenue collection. A high correlation

was specifically observed between internal control systems and revenue collection at 0.97. They however observed change management was necessary to ensure full implementation of information systems due to resistance among local authority staff.

Barako (2015) conducted a study on the efficacy of *i*Tax on tax administration in Kenya. The study collected secondary revenue data and made use of correlational research design to establish a relationship between the variables under study. The study concluded there is a significant correlation between the revenue collected and implementation of *i*Tax. Therefore, Barako concluded that *i*Tax is efficient in revenue collection.

Maisiba and Atambo (2016) looked into efficiency in revenue collection in Uasin Gishu County using electronic tax systems. The study made use of a case study and data was collected from a sample of 102 respondents using questionnaires. The study found that despite revenue personnel being well trained on e-filing system in Kenya, there were still inherent challenges affecting adoption of *i*Tax in Kenya. These challenges were centred on ease of use of the system by taxpayers and low computer literacy levels prevalent in the country as antecedents to full adoption of electronic tax administration systems in Kenya. They recommended civic education be conducted by the KRA to increase efficacy of the system.

Tax compliance in Kenya is greatly affected by voluntary filing as observed by Kiringa and Jagongo (2017) in their study on the effects of *i*Tax on tax compliance in Makueni county of Kenya. A sample size of 316 taxpayers in the county was taken. Questionnaires were used to collect data on the impact of *i*Tax on tax compliance in this area. They found that *i*Tax system has been adopted rapidly in Kenya. However, they recommended that the KRA conduct awareness to ensure 100% compliance.

2.5 Summary of Literature Review

Several theories have been advanced to explain the development of taxation policy and its effect on the tax base. This paper looked into two of these theories notably the neo-classical theory which is a supply side micro-economic theory, and the Unified Theory of Acceptance and Use of Technology. Research has shown that tax revenues are determined by technological, economic, social and structural factors. A look at empirical

evidence shows that studies have been conducted on the adoption of e-filing systems, the level of user satisfaction with the e-filing systems, the efficacy of online tax systems on taxation revenue as well as the impact of these systems on tax compliance levels. In conclusion, most researches have looked at the qualitative aspects of compliance and adoption of e-filing systems. These have been descriptive in nature by providing reasons encouraging or discouraging adoption of such systems. Few papers, if any, have looked at the impact of e-filing systems on tax revenue before and after implementation of such systems in the context of Western Region, Kenya. This is the gap this study seeks to fill.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses in-depth the methods that were used to collect data and the process adopted in achieving the objectives of the study. The chapter looks at the research design used in conducting the study, the data collection techniques employed and lastly the methods that were employed in analyzing the data.

3.2 Research Design

The study employed a correlational research design which was longitudinal in nature as the study covered a period of five years. It sought to assess the relationship between *i*Tax and revenue collection in line with the research objectives. This is consistent with other studies such as that of Barako (2015). The study is quantitative in nature and attempts to explore existing secondary data on revenue collection in Western region of Kenya before and after the introduction of *i*Tax. Quantitative research relies on numerical data which can be subjected to statistical routine so as to infer a relationship between the variables under study. An event study analysis was used to establish any abnormal variations, if any, in the revenue collections as a result of the introduction of *i*Tax.

3.3 Data Collection

This research made use of secondary data. Data was collected through data mining. The data was obtained from tax collections by KRA's western regional offices covering the periods 2012-2016 calendar years. These tax collections were measured as amounts of revenue collected in Kenya shillings. Data on the number of active taxpayers using *i*Tax system was also collected to help measure the usage of the system. This data was obtained from the data analysis unit of Kenya Revenue Authority, Western Region. The data was captured using the secondary data capture form as the research instrument.

3.4 Data Analysis

Data gathered was coded and tabulated to facilitate analysis using quantitative statistical packages for social sciences (SPSS). SPSS was used to analyse data using descriptive and inferential statistics. Descriptive statistics included percentages and measures of central tendency i.e. mean and standard deviation. Paired t-test was used in developing inferential statistics. Analysis of the data was presented using graphs, tables and inferential statistics. This helped bring out the relationship between the variables under study.

3.4.1 Event Analysis

This involves measuring the response of an underlying instrument to the occurrence of an event (Creswell, 2014). In our case the research attempted to measure the response of revenue collected by the KRA in western region, Kenya around the time of introduction of *i*Tax, i.e. in 2014. To do this certain steps are to be followed in undertaking the event analysis. These are definition of the event, in this case introduction of *i*Tax in western region in 2014; Selection criteria i.e. what is the universe of our event which in this case is western region, Kenya; measuring normal (revenue pre-introduction of *i*Tax) and abnormal revenue (revenue that may be associated with the introduction of *i*Tax), the time horizon for measuring the effects of the event, testing procedures which were used to ascertain a relationship between the variables, presentation and interpretation of the results; and finally drawing conclusions.

*i*Tax was rolled out in western region, Kenya in 2014. The study analyzed the amount of tax collections in western region, Kenya in Kenya shillings for the period 2012-2016, i.e. two years for pre-introduction of *i*Tax (2012-2013) and two years post-introduction of *i*Tax (2015-2016).

3.4.2 Analytical Model

Analysis to determine any abnormal variations in revenue collected was conducted using event study method. Normal and abnormal revenue was determined using market models described below.

Normal revenue was determined as follows;

$E(R) = \alpha i + \beta i\ Rt$

Where E(R) = Expected revenue

Rt = Actual revenue collected at time t

αi ,βi = estimation parameters determined during the pre-event window. These parameters were determined through regression analysis involving revenue collected during the period before the introduction of *i*Tax against time t.

Actual revenue under this model was obtained from revenue data prior to introduction of *i*Tax.

Abnormal revenue was established using the formula;

$ARt = Rt - E(R)$

Where: ARt = Abnormal revenue at time t

Rt = the actual revenue at time t

t = quarterly time period

In particular, the use of this analytical model is deemed appropriate for this study due to its robustness in estimating abnormal variations in the revenue collections as a result of the introduction of *i*Tax as envisaged by previous research (Barako, 2015).

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter presents data analyzed from secondary sources, as shown in appendices III and IV, to establish the effect of *i*Tax on revenue collection in Western Region of Kenya. The chapter covers both the descriptive and inferential statistics employed in analyzing the data. The chapter concludes with the summary and interpretation of the research findings.

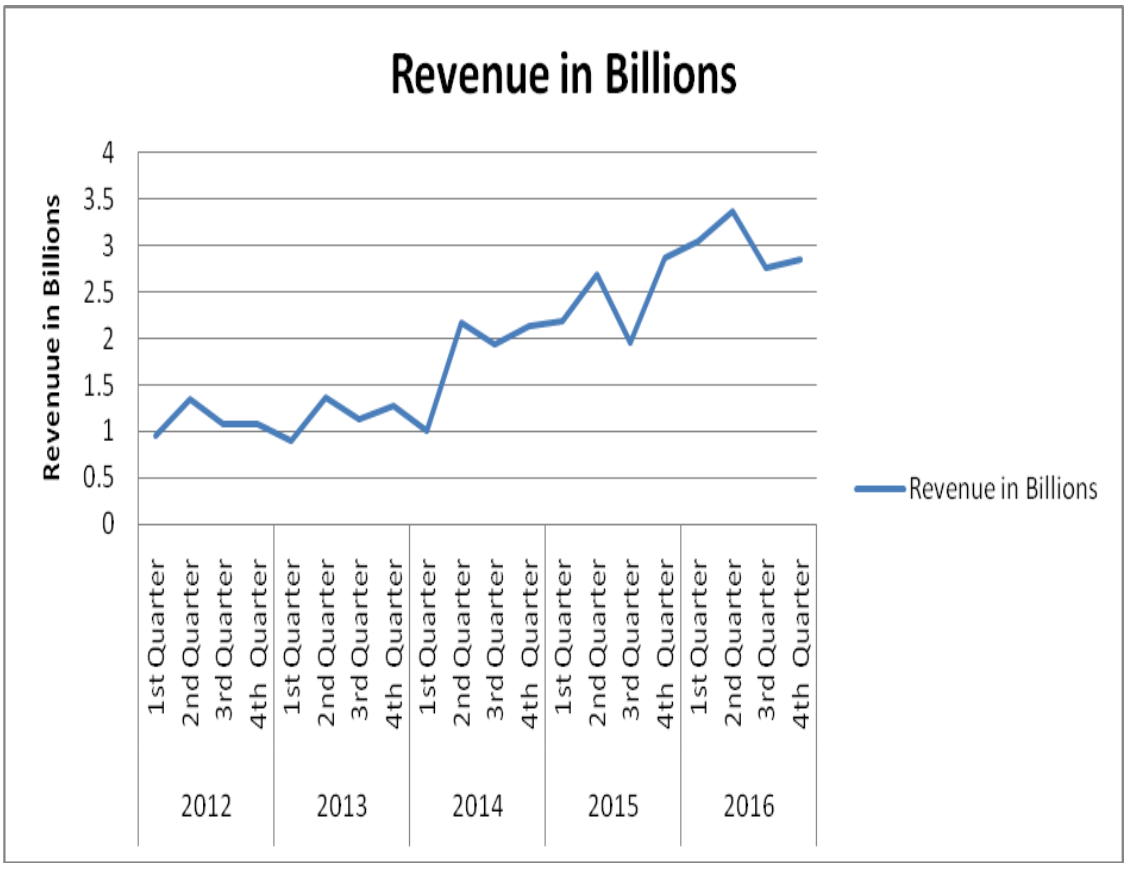
4.2 Descriptive Statistics

Quarterly revenue performance for KRA was used for the event window involving two years before, one year during and two years after the implementation of *i*Tax. In particular, the event study methodology was employed to establish the existence of abnormal revenue reaction upon the implementation of *i*Tax. Quarterly revenue returns and Average Revenue Return variability was estimated to show the revenue reaction to the implementation of *i*Tax.

4.2.1 Quarterly revenue returns

Quarterly revenue returns for the event window involving two years before, one year during and two years after the implementation of *i*Tax and was used to map the trend of revenue collection before, during and after the implementation of *i*Tax. The findings are presented in figure 4.1.

Figure 4.1; Quarterly revenue returns



Source: Author, 2017

The findings suggest that quarterly revenue collection remain stable for the event window before the implementation of *i*Tax (year 2012 and 2013). Thereafter, the revenue collection increases significantly for the event window during and after the implementation of *i*Tax (year 2014, 2015 and 2016). Furthermore, the period during and after *i*Tax implementation experiences sharp fluctuations in revenue collection as compared to the event window before the implementation of *i*Tax that is characterized by a relatively stable revenue collection. This implies that *i*Tax implementation led to the increase in revenue collection for the periods during, and after the implementation of *i*Tax.

4.2.2 Revenue Returns Variability (RRV)

The spread of the revenue collections following the implementation of *i*Tax was determined using the revenue returns variability (RRV) formula;

$RRV = AR^2_{it}/V(AR)$

where RRV_{it} = Revenue Returns Variability of revenue i in time t ; AR^2_{it} =Abnormal Return on revenue i at time t; V(AR)=Variance of Abnormal Revenue during the implementation period; and Abnormal Revenue was arrived at using the formula;

$AR = R_{it}-ER_{it}$

where AR = Abnormal Revenue; R_{it} = actual revenue i at time t; ER_it= Expected Revenue i at time t.

Average Revenue Returns Variability

The dispersion of the average revenues for the periods before, during and after *i*Tax were computed, and tabulated as shown in the table below;

Table 4.1: Average Revenue Returns Variability

	Mean	**Std. Deviation**
Before *i*Tax	4.044837	1.143479
During *i*Tax	23.15316	3.585393
After *i*Tax	97.74223	9.309571

Source: Author, 2017

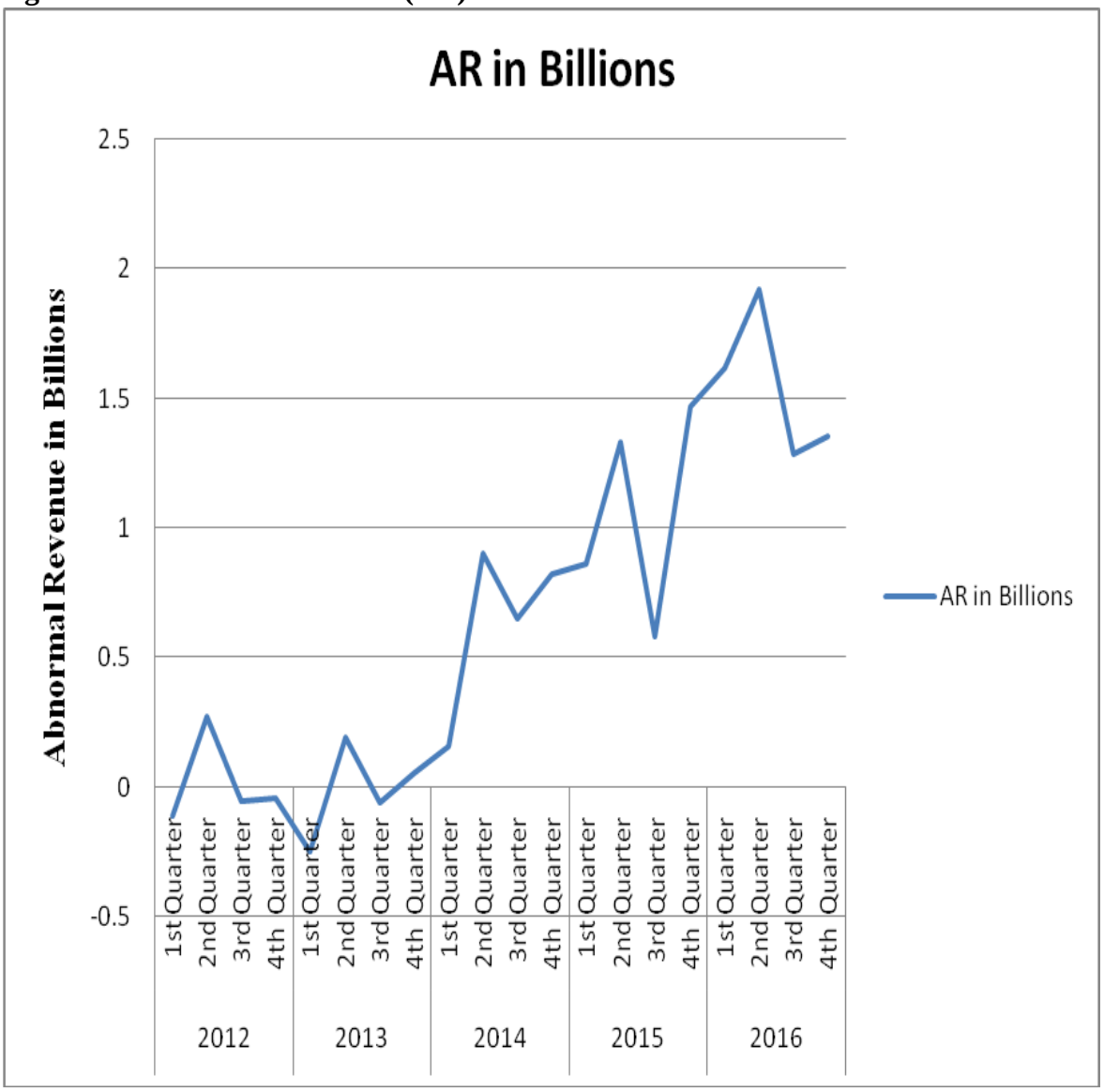
From the findings, KRA's variability of the revenue return before the implementation of *i*Tax was 4.044837 million, while the variability of the revenue return during and before *i*Tax implementation was 23.15316 million and 97.74223 million respectively. The highest average revenue variability was experienced in the period after the implementation of *i*Tax. This indicates that the introduction of *i*Tax created more potential for improved revenue collections. In addition, the standard deviation depicts a high variation in the spread of the revenue return before, during and after *i*Tax implementation with the highest variation being in the post *i*Tax introduction period.

This shows that *i*Tax implementation led to an increase in the variability of the revenue return for the periods during, and after the implementation of *i*Tax.

Abnormal Revenues Curve

The abnormal revenues for the periods prior, during and post implementation of *i*Tax were computed and a graph of abnormal revenues against time plotted as shown below;

Figure 4.2 Abnormal Revenues (AR)



Source: Author, 2017

The findings suggest a slight increase in revenue in abnormal revenue from the first to second quarter of 2012 followed by slight decline from the second quarter of 2012 to the first quarter of 2013. In addition, a slight increase in abnormal revenue is experienced in the second quarter 2013 followed by a slight decrease in the third quarter of 2013. The year 2014 to 2016 is characterized by sharp fluctuations in abnormal revenue volumes. In particular, the findings suggest a sharp increase in abnormal revenue volumes in the second quarter of 2014 followed by a slight decline in the third quarter of 2014 and a sharp increase from the second quarter of 2014 to the second quarter of 2015. Thereafter, the abnormal revenue declines sharply in third quarter of 2015. Finally, the abnormal revenue volume increases sharply from the third quarter of 2015 to the second quarter of 2016 after which it declines sharply in third quarter of 2016 and increases slightly in the last quarter of 2016. These findings suggest that the abnormal revenue volumes fluctuate before, during and after the implementation of *i*Tax implementation, nonetheless the period during and after *i*Tax implementation experiences sharp fluctuations.

4.3 Inferential Statistics

Paired sample t test was used to establish whether there was a significant difference in revenue collection based on the following paired events; Year 2012 and 2013 (Before the implementation of *i*Tax); During the implementation of *i*Tax (Year 2014) and before the implementation of *i*Tax (Year 2012 and 2013); During the implementation of *i*Tax (Year 2014) and after the implementation of *i*Tax (Year 2015 and 2016); Before the implementation of *i*Tax (Year 2012 and 2013) and after the implementation of *i*Tax (Year 2015 and 2016). The analyses of these events are discussed in detail in the subsequent sections of this chapter.

4.3.1 Revenue collection before the implementation of *i*Tax

A paired samples T test was conducted to determine if there were any significant differences in the revenue collection before the implementation of *i*Tax (Year 2012 and 2013). The findings of the univariate descriptive statistics and paired differences for the paired sample T test are presented in tables 4.2 and 4.3 respectively.

Table 4.2: Paired sample statistics for revenue collection in 2012 & 2013

	Paired Samples Statistics				
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Year 2012 Actual Quarterly Returns in billions	1.11440	4	0.17161	0.08580
	Year 2013 Actual Quarterly Returns in billions	1.17280	4	0.20067	0.10033
Pair 2	Year 2012 Abnormal quarterly Returns in billions	0.01636	4	0.17199	0.08599
	Year 2013 Abnormal quarterly Returns in billions	-0.01636	4	0.18556	0.09278

Source: Author, 2017

The findings suggests a slight increase in the average quarterly revenue collection in the year 2013 (M= 1.1728 and SD= 0.20067 billion) from (M=1.1144 Billion, SD=0.17161 billion) in the year 2012. In addition, the quarterly abnormal revenue returns reduced to (M=-0.01636 and SD=0.18556 billion) in 2013 from (M=0.01636 and SD=0.17199 billion) in 2012. The standard deviations in the two years are not far apart, implying no substantial variation in the revenue collection during the periods before the implementation of *i*Tax.

Table 4.3: Paired differences for revenue collection in 2012 & 2013

Paired Samples Test									
		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Year 2012 & 2013 Actual Quarterly Returns in Billions	-.05842	.10240	.05120	-.22136	.10453	-1.141	3	0.337
Pair 2	Year 2012 & 2013 Abnormal quarterly Returns in Billions	.032713	.10240	.05120	-.13023	.19566	.639	3	.568

Source: Author, 2017

At a 5% significance level, the findings suggest no significant difference in the revenue collected in the Year 2012 (M= -.05842 and SD=.10240) and the year 2013 (M=1.1728, SD= 0.20067; t=- 1.141, p=0. 337). In addition, the findings suggest no significance difference in abnormal revenue in the Year 2012 (M= .032713 and SD=0.17199) and the year 2013 (M=-0.01636, SD= 0.18556; t=- .639, p=.568). This indicates that there was no significant increase in the revenue collection in 2013 as compared to the year 2012.

4.3.2 Revenue collection before and during the implementation of *i*Tax

A paired samples T test was conducted to compare the differences in the revenue collection before the implementation of *i*Tax (Year 2012 and 2013) and during *i*Tax implementation (2014). The findings of the univariate descriptive statistics and paired differences for the paired sample T test are presented in tables 4.4 and 4.5 respectively.

Table 4.4: Paired sample statistics for revenue collection before & during *i*Tax implementation

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Actual Quarterly Returns Before *i*Tax implementation (Year 2012 & 2013) in Billion	1.1436	4	.17955	.08977
	Actual Quarterly Returns During *i*Tax implementation (Year 2014) in Billion	1.9126	4	.35404	.17702
Pair 2	Abnormal Quarterly Returns Before *i*Tax implementation (Year 2012 & 2013) in Billion	.00001	4	.17142	.08571
	Abnormal quarterly Returns During *i*Tax implementation (Year 2014) in Billion	.63229	4	.33365	.16682

Source: Author, 2017

The findings suggest a substantial increase in the average quarterly revenue collection during the implementation of *i*Tax (M= 1.9126 billion and SD= 0.35404 billion) from (M=1.1436 Billion, SD=0.17955 billion) before the implementation of *i*Tax. Furthermore, the results of the study suggest a huge increase in abnormal returns during the implementation of *i*Tax (M= .63229 billion and SD= .33365 billion) from (M=0.00001 Billion, SD=.17142 billion) before the implementation of *i*Tax. This is an indication that the introduction of *i*Tax in 2014 played a role in the increase of the average quarterly revenue collection for the period during its implementation (the year 2014).

Table 4.5: Paired differences for revenue collection before & during *i*Tax implementation

Paired Samples Test									
		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Actual Quarterly Returns Before *i*Tax & During *i*Tax	-.76899	.20682	.10341	-1.09809	-.43990	-7.436	3	.005
Pair 2	Abnormal Quarterly Returns Before *i*Tax & During *i*Tax	-.63229	.206818	.103409	-.961392	-.303203	-6.115	3	.009

Source: Author, 2017

The findings suggest a significant difference in the revenue collected before the implementation of *i*Tax (M=1.1436, SD=0.17955) and during the implementation of *i*Tax (M= 1.9126 and SD= .16682; t=- -7.436, p=0.005). In addition, the study established a significant difference in abnormal revenue collected before the implementation of *i*Tax (M= 0.00001, SD= 0.17142) and during the implementation of *i*Tax (M= 0.63229 and SD= 0.35404; t=- -6.115, p=0.009). This means that *i*Tax implementation had a positive effect on the average quarterly revenue collection for the period during its implementation.

4.3.3 Revenue collection during and after the implementation of *i*Tax

A paired samples T test was conducted to compare the differences in the revenue collected during and after the implementation of *i*Tax. The findings of the univariate descriptive statistics and paired differences for the paired sample T test are presented in tables 4.6 and 4.7 respectively.

Table 4.6: Paired sample statistics during & after the implementation of *i*Tax

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Actual Quarterly Returns During the implementation of *i*Tax (Year 2014) in Billion	1.9126	4	.35404	.17702
	Actual Quarterly Returns After the implementation of *i*Tax(Year 2015 & 2016) in Billion	2.7182	4	.29157	.14579
Pair 2	Abnormal Quarterly Returns During the implementation of *i*Tax (Year 2014) in Billion	.8460	4	.33091	.16546
	Abnormal Quarterly Returns After the implementation of *i*Tax(Year 2015 & 2016) in Billion	1.0596	4	.41189	.20594

Source: Author, 2017

The finding suggests a substantial increase in the average quarterly revenue collection after the implementation of *i*Tax (M= 2.7182 billion and SD= .29157 billion) from (M= 1.9126 billion and SD= 0.35404 billion) in the period during the implementation of *i*Tax. In addition, abnormal revenue collection after the implementation of *i*Tax (M= 1.0596 billion and SD= .41189 billion) increased from (M= 0.8460 billion and SD= .33091 billion) in the period during the implementation of *i*Tax. This increase in the average quarterly revenue collection can be attributed to the level of successful *i*Tax implementation.

Table 4.7: Paired differences for revenue collection during & after *i*Tax implementation

Paired Samples Test									
		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Quarterly returns During *i*Tax & After *i*Tax	-.80562	.33134	.16567	-1.33286	-.27838	-4.863	3	.017
Pair 2	Quarterly Abnormal returns During *i*Tax -& After *i*Tax	.21366	.17603	.08801	-.06645	.49377	2.427	3	.094

Source: Author, 2017

The findings suggest a significant differences in the revenue collected during the implementation of *i*Tax (M= 1.9126; SD= 0.35404) and after the implementation of *i*Tax (M= 2.7182; SD= 0.29157; t=- --4.863, p=0.017). This implies that *i*Tax implementation had an effect on the average quarterly revenue collection for the period after its implementation. However, the study indicates no significant differences in the abnormal revenue collected during the implementation of *i*Tax (M= 0.8460; SD= 0.33091) and after the implementation of *i*Tax (M= 1.0596; SD= .41189; t=2.427, p=0.094). These could be attributed to the fact that *i*Tax systems had not yet been fully embraced in totality following its implementation.

4.3.4 Revenue collection before and after the implementation of *i*Tax

A paired samples T test was conducted to compare the differences in the revenue collected during and after the implementation of *i*Tax. The findings of the univariate

descriptive statistics and paired differences for the paired sample T test are presented in tables 4.8 and 4.9 respectively.

Table 4.8: Paired sample statistics before & after the implementation of *i*Tax

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Actual Quarterly returns before iTax	1.1436	4	.17955	.08977
	Actual Quaterly returns after iTax	2.7182	4	.29157	.14579
Pair 2	Abnormal returns before iTax	.00001	4	.17142	.08571
	Abnormal returns after iTax	.8460	4	.33091	.16546

Source: Author, 2017

The findings suggest a significant increase in the average quarterly revenue collection after the implementation of *i*Tax (M= 2.7182 billion and SD= 0.29157 billion) from (M= 1.1436 billion and SD= 0. 17955 billion) in the period before the implementation of *i*Tax. In addition, the results of the study suggest a significant increase in the abnormal revenue after the implementation of *i*Tax (M= .8460 billion and SD= .33091 billion) from (M= .00001 billion and SD= .17142 billion) in the period before the implementation of *i*Tax. This signifies that the implementation of *i*Tax led to an increase in the average quarterly revenue collection for the period after the implementation of *i*Tax.

Table 4.9: Paired differences for revenue collection before & after *i*Tax implementation

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Actual Returns Before ITax and After ITax	-1.57461	.20865	.10433	-1.9066	-1.2426	-15.093	3	.001
Pair 2	Abnormal returns Before ITax and After ITax	.84596	.21804	.10902	.49901	1.19291	7.760	3	.004

Source: Author, 2017

The findings suggest a significant difference in the revenue collected before the implementation of *i*Tax (M= 1.1436; SD= 0. 17955) and after the implementation of *i*Tax (M= 2.7182; SD= 0.29157; t= -15.093, p=0.001). In addition, the results show a significant difference in the abnormal revenue before the implementation of *i*Tax (M= .00001; SD= 0.17142) and after the implementation of *i*Tax (M= 0.8460 and SD= .33091, t= 7.760, p=.004). This suggests that *i*Tax implementation had a positive effect on the average quarterly revenue collection for the period after its implementation.

4.3.5 Revenue collection after the implementation of *i*Tax

A paired samples T test was conducted to compare the differences in the revenue collection after the implementation of *i*Tax (Year 2015 and 2016). The findings of the univariate descriptive statistics and paired differences for the paired sample T test are presented in tables 4.2 and 4.3 respectively

Table 4.10: Paired sample statistics for revenue collection in 2015 & 2016

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Year 2015 Actual Returns	2.4311	4	.42270	.21135
	Year 2016 Actual Returns	3.0054	4	.27094	.13547
Pair 2	Year 2015 Abnormal Returns	1.05962	4	.41189	.20594
	Year 2016 Abnormal Returns	1.5428	4	.28882	.14441

Source: Author, 2017

The findings point to an increase in the average quarterly revenue collection in the year 2016 (M= 3.0054 and SD= 0.27094 billion) from (M= 2.4311 and SD= 0.42270 billion) in the year 2015. In addition, the findings show an increase in the abnormal revenue collection in the year 2016 (M= 1.5428 and SD= .28882 billion) from (M= 1.05962 and SD= 41189 billion) in the year 2015. This denotes some differences in the revenue collection during the year 2015 and 2016.

Table 4.11: Paired differences for revenue collection in 2015 & 2016

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Year 2015 Actual Returns - Year 2016 Actual Returns	-.57433	.40511	.20255	-1.21894	.07029	-2.835	3	.066
Pair 2	Year 2015 Abnormal Returns - Year 2016 Abnormal Returns	-.48319	.40510	.20255	-1.1278	.16141	-2.386	3	.097

Source: Author, 2017

The findings suggest no significant difference in the revenue collected in the Year 2015 (M= 2.4311 and SD= 0.42270) and the year 2016 (M= 3.0054 and SD= 0.27094; t-2.835, p=0.066). Similarly, the results of the study indicate no significant difference in the abnormal revenue in the Year 2015 (M=1.05962 and SD= 0.41189) and the year 2016 (M= 1.5428 and SD= .28882, p=.097). This signifies that though there was an increase in the quarterly revenue in 2016 in comparison to 2015, the increase was insignificant.

4.4 Summary and Interpretation of Findings

The study established that KRA's variability of the average revenue collected by western region of Kenya before the implementation of *i*Tax was 4.044837 million, while the

variegation of the average revenues during and before *i*Tax implementation was 23.15316 million and 97.74223 million respectively. The substantial increase in the variability during and after *i*Tax implementation presupposes *i*Tax's positive effect on the revenue collection. The findings of the current study thus suggests that effective implementation of *i*Tax by KRA may prove a pivotal strategy in solving the problem of persistent revenue shortfalls that has dogged it over the past years.

The findings of the current study suggest no significant difference in the revenue collected in the Year 2012 (M= 1.1144 and SD=0.17161) and the year 2013 (1.1728, SD= 0.20067; t=- 1.141, p=0.337). This denotes that there were no significant differences in the revenue collected in the two years before the implementation of *i*Tax. This has been attributed to the lack of the *i*Tax technology and modernization program in western region of Kenya in the year 2012 and 2013 as envisaged. *i*Tax system had not been rolled out in this region, hence the insignificant increase in revenue collection.

The results of this study connotes a significant difference in the revenue collected before the implementation of *i*Tax (M=1.1436, SD=0.17955) and during the implementation of *i*Tax (M= 1.9126 and SD= 0.35404; t=- -7.436, p=**0.005**). This signifies that the implementation of *i*Tax had an effect on the average quarterly revenue collection for the period during its implementation. The results of the current study are in tandem with the findings of The National Treasury (2015) which alludes that the introduction of the *i*Tax system has been characterized by increases in revenue collection. In particular, revenue collection in Kenya has grown by 15% over the last 10 years. In the financial year of 2014 and 2015, the Kenya Revenue Authority collected an estimated amount of 1 trillion Kenya shillings this is in part attributed to the implementation of the *i*Tax system.

The study established that there was a significant difference in the revenue collected during the implementation of *i*Tax (M= 1.9126; SD= 0.35404) and after the implementation of *i*Tax (M= 2.7182; SD= 0.29157; t=- --4.863, p=0**.017**). The findings

also suggest a significant difference in the revenue collected before the implementation of *i*Tax (M= 1.1436; SD= 0. 17955) and after the implementation of *i*Tax (M= 2.7182; SD= 0.29157; t= -15.093, p=**0.001**). This points to the fact that *i*Tax implementation had a positive effect on the average quarterly revenue collection for the period after its implementation.

The results of this study are consistent with the findings of Barako (2015); Imam and Jacobs (2014); Phillip and Poirier (2011). The studies concur that *i*Tax system improves revenue collection by providing an excellent data management platform, improved speed in service delivery and enhanced integrity and accountability. Hence it provides the benefits of cost reduction, improved quality and quantity of information. Nonetheless, a few studies (Magi 2013 and Wasao 2014) tend to dissent with the premise that *i*Tax implementation is attributed to increased revenue collection. According to Magi (2013) and Wasao (2014), increase in revenue collection in Kenya over the last ten years is not as a result of the adoption of *i*Tax system, but is rather associated with some external factors such as the overall performance of the Kenyan economy over the last ten years.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of findings

KRA's ability to excel in revenue collection is, to a greater extent, dependent on *i*Tax system's ability to grow Kenya's revenue collection. The study found out that the implementation of *i*Tax led to an increase in the quarterly average revenue collections for the periods during, and after the implementation of *i*Tax. It established that the highest average revenue variability was in the period after the implementation of *i*Tax with a revenue spread of as high as 97.74223 million. This study signifies that *i*Tax has a positive effect on revenue collection. However, the study found no significant differences in the revenue collection before the implementation of *i*Tax. This could be attributed to the lack of the implementation of *i*Tax during this period.

The current study also found out that there was a significant difference in the revenue collected before the implementation of *i*Tax and during the implementation of *i*Tax. Furthermore, the study established that there was a significant difference in the revenue collected during the implementation of *i*Tax and after the implementation of *i*Tax. Finally, the findings established a significant difference in the revenue collected before the implementation of *i*Tax and after the implementation of *i*Tax. This presupposes that *i*Tax implementation had a positive effect on the average quarterly revenue collection for the period during and after its implementation.

Technological innovations can be vital in tax reforms and revenue modernization initiatives. The ability of taxpayers to transact with revenue authorities around the clock from wherever they are in a cost-effective manner has proved a game-changer in revenue collection. These innovations can lead to improve the compliance level of taxpayers as

well as minimized tax leakages associated with corruption and tax evasion. The overall effect, of which, would be increased revenue collection.

5.2 Conclusion

The successful take off and eventual prosperity of an emerging economy like that of Kenya depends on how robust her revenue collection is. Tax revenue is an important tool for state building. However, infrastructural deficiencies prevalent in emerging economies, coupled with corruption and greed has made collection of revenue an uphill task. A country that directs its efforts towards minimizing these bottlenecks may make important strides towards economic independence and prosperity.

The conclusion of the study was that the implementation of *i*Tax had a positive effect on the average quarterly revenue collection for the period during and after its implementation. In particular, adoption of *i*Tax is associated with an increase in revenue collection and that the increase in revenue collection by KRA in western region of Kenya over the last 5 years is partly due to the adoption of the *i*Tax system. The study also concluded that the abnormal revenue collections fluctuated in the periods prior to the introduction of *i*Tax, during and post *i*Tax implementation, with sharp fluctuations being experienced in the post *i*Tax implementation period. The t-tests carried out on the revenue collections showed that there is significant difference between the revenue collected before *i*Tax and after *i*Tax implementation. This clearly suggests that *i*Tax increases revenue collection. It can thus be concluded that *i*Tax has a positive effective on revenue collection by KRA in Western Region, Kenya.

The effect of *i*Tax in increasing revenue collection points to the series of tax reforms and modernization programs, both structural and transformational, that have been implemented by KRA during the period of the implementation of *i*Tax in Kenya such as the continued integration of the iTax system with third party agencies such as government departments and utility firms with the aim of enhanced acquisition of quality information. These changes have been made in a bid to strengthen the *i*Tax system and

exploit its capabilities as well as provide a platform for real time interaction between the tax payers and Kenya Revenue Authority.

5.3 Recommendations for policy and Practice

The findings of the current study make significant contributions to the field of knowledge by providing valuable insights in improving and enriching the implementation of *i*Tax. In particular the result of the current study is important to the various stakeholders such as tax consultants, scholars and iTax policy makers who are interested in encouraging the full implementation of *i*Tax system

Based on the results of the current study, it's imperative for the Kenya Revenue Authority to develop strategies to increase the number of taxpayers who embrace the *i*Tax system through training and marketing. In particular, the Kenya Revenue Authority should enhance the implementation of *i*Tax in order to improve service delivery, foster integrity and accountability by reducing avenues for corruption, improving tax compliance by minimizing tax evasion through proper utilization of electronic data matching system as well as linkages with third party agencies and utility firms, thereby resulting in improved revenue collection.

The Kenya Revenue Authority should focus on full implementation the *i*Tax system by realigning all its processes with this important technology. Since the government is the single largest spender, emphasis should be put in enhancing effective integration with various government departments to net in more quality taxpayers. This will actualize its importance of sealing loopholes in revenue collection, particularly those linked to tax evasion and corruption. In addition, the Kenyan government should focus on eliminating persistent barriers in filing of tax returns by strengthening available infrastructure that affect tax compliance and revenue collection thereof.

Considering the significant contribution of *i*Tax system on revenue collection as envisaged by the findings of the current study, continuous improvement of information

technology that governs the *i*Tax system may be a decisive in guaranteeing sustainability of increased revenue collection. In this manner, the improvement of revenue collection is directly related to the progressive improvement of *i*Tax system. As such it is essential to have a constant process of technological innovations with reference to the *i*Tax system, particularly those aimed at making it easy to comply with tax laws, in order to improve revenue collection.

Adoption of new technology is typical in enhancing the efficacy of *i*Tax system. As such the *i*Tax system should be embedded in a technological platform that is reliable and generally accepted by the tax payers. In particular, the acceptance of technology by the tax payers is based on the perceived security of personal data and the cost benefit associated with the utilization of the system as compared to the manual system. As such, the Kenya Revenue Authority should embrace and improve the implementation of *i*Tax as a strategic tool for revenue collection by focusing on the training of tax payers and realigning the *i*Tax system to fit the revenue collection operations.

5.4 Limitations of the Study

The analysis of secondary data provides an opportunity to establish the relationship between study variables. Nonetheless, the nature of the summarized data obtained from the data analysis unit, western regional offices of KRA could have been limited by the power of the test to detect significant associations. In addition, data compilation errors such as additive errors could have compromised the results of the study. The current study was limited to western region which is one of the five regional administrative offices of KRA. This regional office covers the entire Western Kenya, that is, the former Western and Nyanza provinces of Kenya. However, the findings of the current study could not be generalized to other regional parts of Kenya due to perceived differentials in revenue collection over time. Finally, the analytical model employed is based on the assumption that all other factors affecting tax revenue, such as state of the economy and socio-political dynamics, were held constant throughout the period of analysis. These assumptions may not hold in real situations.

5.5 Suggestions for Further studies

In light of the findings, conclusion, recommendations and the limitations of the current study, further research are suggested to uncover the following domains in order to corroborate the findings of the current study and expand the knowledge in this area.

The current research was confined to Western Region, Kenya. Future studies should undertake a comparative or cross-cultural approach to examine whether the findings obtained in the current study are specific to the Western Region of Kenya or whether the result would be the same across other regions of Kenya or other developing countries considering the significant contribution of *i*Tax system on revenue collection as envisaged by the findings of this study.

This study examined the effects of *i*Tax on revenue collection in western region of Kenya over duration of less than 5 years. There is a need for further studies to carry out similar tests for a longer duration of time period. In addition, additional variables showing *i*Tax implementation should be employed to uphold the study‘s findings that indeed *i*Tax affects revenue collection.

In view of the imperative nature of implementing a high quality *i*Tax system, further studies could explore the areas underpinning the *i*Tax system such as infrastructure, technology and staff training. Such studies may also seek to answer the question on why KRA has not been able to fully integrate the *i*Tax system with its processes as well as with relevant departments. This will facilitate the integration of independence and quality of the *i*Tax system.

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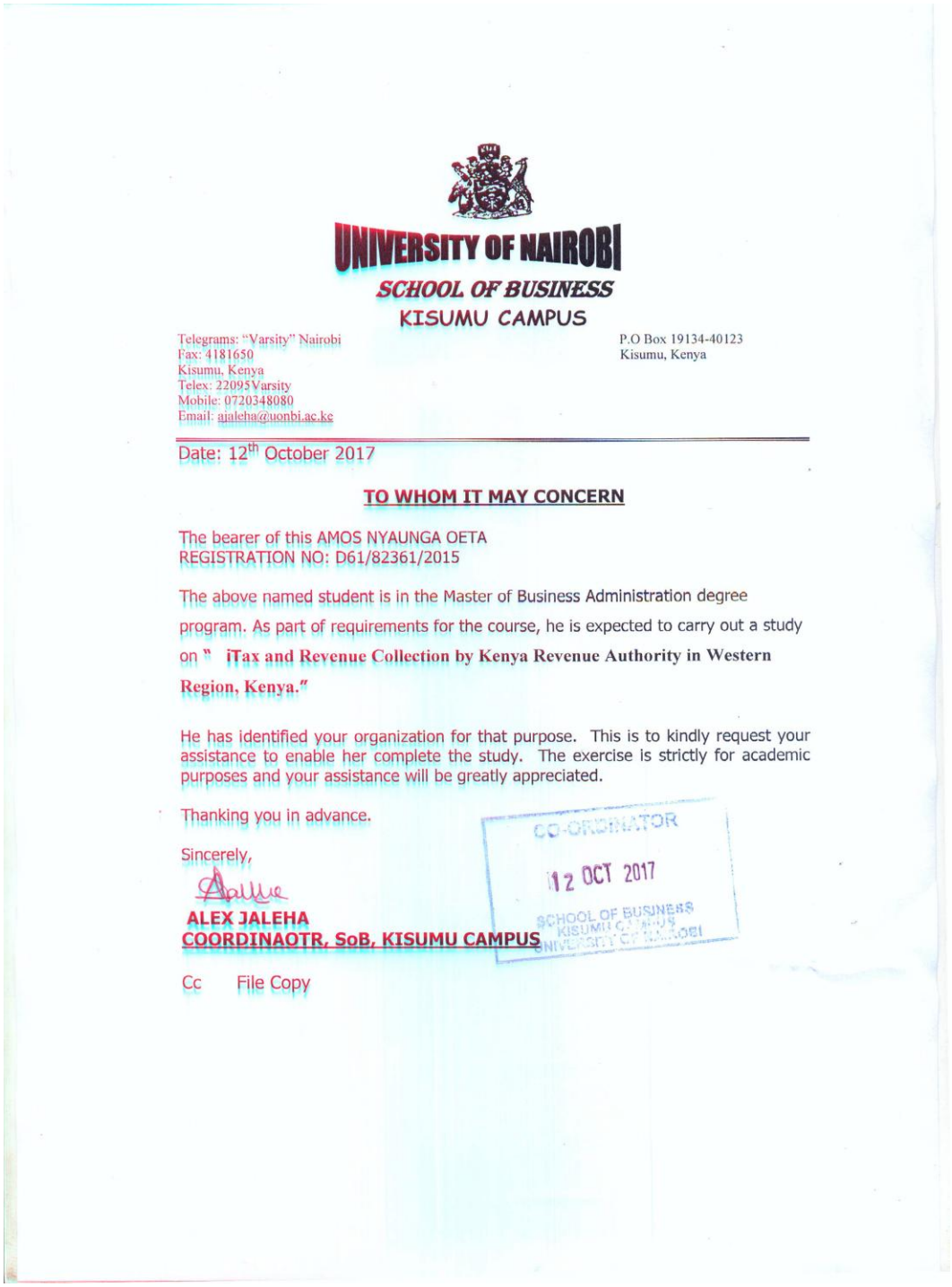
APPENDICES

APPENDIX I: LETTER OF INTRODUCTION



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Date: 12th October 2017

TO WHOM IT MAY CONCERN

The bearer of this AMOS NYAUNGA OETA
REGISTRATION NO: D61/82361/2015

The above named student is in the Master of Business Administration degree program. As part of requirements for the course, he is expected to carry out a study on " **iTax and Revenue Collection by Kenya Revenue Authority in Western Region, Kenya.**"

He has identified your organization for that purpose. This is to kindly request your assistance to enable her complete the study. The exercise is strictly for academic purposes and your assistance will be greatly appreciated.

Thanking you in advance.

Sincerely,

ALEX JALEHA
COORDINAOTR, SoB, KISUMU CAMPUS

CO-ORDINATOR
12 OCT 2017
SCHOOL OF BUSINESS
KISUMU CAMPUS
UNIVERSITY OF NAIROBI

Cc File Copy

APPENDIX II: LETTER OF APPROVAL FROM KRA

KENYA REVENUE AUTHORITY

Ref: KRA / 1003 / 4

13th October, 2017

Amos Nyaunga Oeta
Domestic Taxes Department
KISUMU.

Dear Amos,

RE: REQUEST TO CONDUCT RESEARCH PROJECT.

Reference is made to your undated letter on the above subject.

We are pleased to inform you that approval has been granted for you to collect and utilize data from KRA for your project entitled *"itax and Revenue Collection by Kenya Revenue Authority in Western Kenya." A Case study of Kenya Revenue Authority – Western Region.*

Please note that the data availed should be for academic purposes only and should be treated with utmost confidentiality.

Kindly share your findings with the Authority on completion of the study.

Yours sincerely,

Beatrice Sapuro
For: Deputy Commissioner - HR

Tulipe Ushuru Tujitegemee!
Times Tower Building
Haile Selassie Avenue, P.O. Box 48240-00100 Tel: 310900 Fax: 316872
ISO 9001:2008 CERTIFIED

APPENDIX III: RAW DATA ON ACTUAL REVENUE (KSHS)

MONTH	2012	2013	2014	2015	2016
January	344,319,779	303,761,044	442,199,714	636,443,218	1,022,527,920
February	289,693,879	302,361,993	512,651,699	697,400,139	924,770,821
March	321,302,426	300,401,922	448,249,190	862,276,688	1,098,685,925
Total	**955,316,084**	**906,524,959**	**1,403,100,603**	**2,196,120,045**	**3,045,984,666**
April	462,326,873	430,885,322	1,013,497,656	959,843,004	1,228,144,955
May	383,306,014	523,519,639	465,544,573	813,516,579	1,054,899,775
June	511,793,129	413,510,701	692,637,405	918,230,139	1,086,398,722
Total	**1,357,426,016**	**1,367,915,662**	**2,171,679,634**	**2,691,589,722**	**3,369,443,452**
July	361,314,526	277,170,699	622,164,588	608,751,154	686,969,581
August	289,537,670	363,653,191	720,774,454	788,910,714	1,125,348,435
September	406,493,182	499,425,376	600,095,610	566,383,130	945,092,493
Total	**1,057,345,378**	**1,140,249,266**	**1,943,034,652**	**1,964,044,998**	**2,757,410,509**
October	306,117,515	460,942,183	589,906,364	751,463,464	732,157,260
November	401,349,997	361,796,470	519,963,372	743,439,872	819,259,879
December	380,052,574	453,847,640	1,022,727,713	1,377,569,872	1,297,289,017
Total	**1,087,520,086**	**1,276,586,293**	**2,132,597,449**	**2,872,473,208**	**2,848,706,156**

APPENDIX IV: DATA COMPUTED AS PER THE ANALYTICAL MODEL

YEAR	QUARTER	ACTUAL REVENUE, Rt (KSHS)	EXPECTED REVENUE, ERt (KSHS.)	ABNORMAL REVENUE, ARt (KSHS)
2012	QUARTER 1	955,316,084	1,063,871,991	-108,555,907
	QUARTER 2	1,357,426,016	1,086,654,413	270,771,603
	QUARTER 3	1,057,345,378	1,109,436,835	-52,091,457
	QUARTER 4	1,087,520,086	1,132,219,257	-44,699,171
2013	QUARTER 1	906,524,959	1,155,001,679	-248,476,720
	QUARTER 2	1,367,915,662	1,177,784,101	190,131,561
	QUARTER 3	1,140,249,266	1,200,566,523	-60,317,257
	QUARTER 4	1,276,586,293	1,223,348,945	53,237,348
2014	QUARTER 1	1,403,100,603	1,246,131,366	156,969,237
	QUARTER 2	2,171,679,634	1,268,913,788	902,765,846
	QUARTER 3	1,943,034,652	1,291,696,210	651,338,442
	QUARTER 4	2,132,597,449	1,314,478,632	818,118,817
2015	QUARTER 1	2,196,120,045	1,337,261,054	858,858,991
	QUARTER 2	2,691,589,722	1,360,043,476	1,331,546,246
	QUARTER 3	1,964,044,998	1,382,825,898	581,219,100
	QUARTER 4	2,872,473,208	1,405,608,320	1,466,864,888
2016	QUARTER 1	3,045,984,666	1,428,390,742	1,617,593,924
	QUARTER 2	3,369,443,452	1,451,173,163	1,918,270,289
	QUARTER 3	2,757,410,509	1,473,955,585	1,283,454,924
	QUARTER 4	2,848,706,156	1,496,738,007	1,351,968,149