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INFLUENCE OF ELECTRONIC TAX MANAGEMENT SYSTEM ON EFFECTIVENESS OF TAX COLLECTION IN RWANDA

A CASE STUDY OF RWANDA REVENUE AUTHORITY (RRA)

THESIS SUBMITTED TO THE COLLEGE OF BUSINESS AND ECONOMICS AS A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN ACCOUNTING

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DECLARATION

This research study is my original work and has not been presented to any other Institution for the award of any other degree.

Signature…… Date …….

DEDINE KAMANA

CERTIFICATE

This is to certify that this thesis entitled " Influence of electronic management system on effectiveness of tax collection in Rwanda – A case study of Revenue Authority of Rwanda is a bonafide work of Mrs. Kamana Dedine. It has been submitted for examination with my approval as University Supervisor.

Signature……. Date ……

Prof. RAMA B. RAO
Kigali

DEDICATION

This work is dedicated to my parent's Mr. and Mrs Kamana for his encouragement and assistance.

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First of all, I give glory to almighty God for his protection in health, knowledge, wisdom and determination to cover this journey.

I would like to express my special appreciation to my supervisors, **Prof. RAMA B. RAO** for valuable guidance and advice that enabled me to successfully complete this study.

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I am indebted to my family; especially my husband Mr. Safari Steven who supported me morally and endured the long period of my absence in pursuit of my studies and my children

May God bless you all!

ABSTRACT

The research purpose is to examine the effects of e filing and e payment on revenue collection by Rwanda Revenue Authority. With introduction of e-filing in 2012 it is believed that it will improve tax revenue and bridge the gap in the budget but still there are challenges associated with electronic tax management system in realizing the targets of planned budget. The researcher reviewed both theoretical and empirical literature electronic tax management on revenue collection. The researcher used descriptive method of study based on qualitative and quantitative approach in order to get better analysis of the study. The population size is 120 and 75% of respondents were interviewed. Both primary and secondary sources with their relevant tools like questionnaire and documentary analysis in order to come up with required data. The data was processed by use SPPSS software and analyzed using percentages, mean and standard deviation. The relationship between variables was established by use of Pearson correlation model. In the finding it was established that electronic tax management system was introduced especially from 2003 to 2010 tax collection low ranging from 119.1 to 385.2 respectively which was below the national budget. This implies that tax collection was not meeting the budget target hence the country was operating below the budget. In 2012 E-filing and e-taxation payment was introduced by RRA in 2012 with functioning e-filing system in place such as Mobile declaration, Electronic Single for domestic taxpayers Window (ESW) and Authorized Economic Operator (AEO) for importers and exporters (Gupta, 2012) in order to improve on tax collection and meet the targeted budget accordingly. And this was done to enable the taxpayers to deal with RRA electronically anywhere and anytime as well as to enhance tax administration to collect tax revenue in short term and as a measure to improve on tax compliance and efficiency. It offers an option to the clients to file taxes like VAT, PAYE, Excise duty and Withholding taxes electronically on RRA's website without having to visit a RRA premise especially if there is tax education, compliancy aspect is guaranteed. The system managed to raise tax collection drastically in 2012 and 2013 by 48.1% and 42.9% respectively though still they were unable to meet the target. This was believed to be due to lack of awareness among the tax payers about electronic tax management system in place and lack of skills especially among the tax payers on how to use the system. In 2014 tax collection was increased to 888.2 against the budget which was 773.9. This implies that the RRA managed to collect revenue above the budget line by 12.6%. Consequently in 2015 rev-

enue collection was about the budget by 98.1%. This implies that like stated in the hypothesis especially EBM and mobile payment system has relationship with revenue collection although internet system small relationship. Therefore it can be summarized that electronic tax management system has improved tax collection in Rwanda.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

AEO	Authorized Economic Operator
AT	Activity Theory
BI	Behaviour Intention
EBM	Electronic Billing Machine
ESW	Electronic Single for domestic taxpayers Window
GSMA	Global System for Mobile Association Technology
ICT	Information & Communication Technology
IDT	Innovation Diffusion Theory
IRB	Inland Revenue Board
IRC	Internal Revenue Service
KRA	Kenya Revenue Authority
MM	Motivational Model
MNOs	Mobile Network Operators
MPCU	Model of Personnel Computer Utilization
NUR	National University of Rwanda
PAYE	Pay As You Earn
PC	Personnel Computer
PU	that perceived usefulness
RRA	Rwanda Revenue authority
SCT	Social Cognitive Theory
SMS	Short Message Service
SN	Subjective Norm
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
URA	Uganda Revenue Authority
UTAUT	Unified Theory of Acceptance and Use of Technology
VAT	Value Added Tax

CHAPTER ONE

LITERATURE REVIEW

1.0 Introduction

Tax management has been a major challenge in most developing countries where Rwanda is inclusive. In Rwanda, before 1994, revenue collection was carried out by Department of Customs and Excise Duties, Inland Revenue and income tax in the Ministry of Finance. Revenue collection was low and tax administration weak and this was believed to be due to manual system of tax administration characterized by low tax collection, delays and poor record keeping, this made the Rwanda failed to meet their targeted budgets. Even when Rwanda Revenue Authority was established in November 1997 the problem persisted. “Tax revenues remain a sustainable source of financing for Rwanda’s development; the online tax payment system comes to address the need to reduce the cost of processing and paying taxes by taxpayers”. Therefore this chapter covers background to the study, problems statements, objective of the study (both general and specific), research questions, hypotheses, scope of the study (by subject, scope and time), significance to the study, profile of the organization being studied and organization of the study.

1.1 Background

It is impossible to think of any organization without the need of information system in their entities. Information system has helped organizations to be highly efficient and to stay competitive in its environment; therefore it has been widely used in public sector and business organizations (Gupta, 2012). Organizations invest in information system for many reasons. Business organizations for example, may invest in information system in order to reduce operating costs and to stay competitive in the market. They have shifted from traditional ways of doing business to modern technologies which offer more convenience and faster processing activities. In banking environment, traditional banking activities such as bill payments, funds transfer or even passbooks updating can be done within a few minutes.

Many governments and other public sector organizations invested billions of money in information system development in order to provide better delivery services to its citizens and offer more effective government management. Colesca and Liliana (2008) claim that an effective government management must portray less corruption, increased transparency, better delivery of government services, improved interactions with business and industry. However, there were reports that those systems were underutilized in some countries. In Malaysia, online tax payment system is provided to facilitate the taxpayers to pay their taxes electronically via the tax authority website. Yet, the taxpayers are not using the system despite of its two year existence in the community hence this needs sensitization of the users.

The expansion of the tax base in Rwanda is increasingly recognized as an important policy goal, as an increase in domestic revenue sources promises to reduce aid dependence and reduce distortionary consequences of taxes on externally traded goods. E-filing is one of advanced e-governance system adopted in developed countries. It provides convenience to tax payers for tax assessment and payment (Agrawal, 2006). Internet allows consumers or tax payers to conduct transactions within a few mouse clicks (Jahirul, 2011). This convenience can serve as a key driver for e-filing adoption especially in developing countries like Rwanda. E-filing and e-payment provides many aspects of convenience to tax payers for example tax filing can be conducted at any time, filing can be done in any location, easy use of the system, information search and other online transactions that is not available in the traditional channels.

Electronic payment and filing also offers flexibility of time, reduces calculations of errors on tax return forms to the tax payers, taxpayer privacy and security (Agawal, 2006). Furthermore e-filing also offers other benefits to the beneficiaries who are the tax authorities for example e-filing minimizes their work load and operational cost due to submission of tax returns on a paperless environment. It also reduces the costs processing, storing and handling tax return (Jayakumar and Nagalakshmi, 2006).

Table 1.1: Tax collections during 1998-June 2015

Fiscal year	Total Tax Revenues (bn)	Total National Budget (bn)	% contribution of Tax Revenues to National Budget	Gross Domestic Product(bn)
2003	119.1	252.0	47.3%	
2004	136.2	334.5	40.7%	
2005	173.5	374.2	46.4%	
2006	198.4	396.2	50.1%	
2007	247.0	528.0	46.8%	2,851
2008	344.3	623.2	55.2%	3,080
2009	188.0	392.1	47.9%	3,334
2010	385.2	899.0	42.8%	3,477
2011	473.9	984.0	48.2%	3,678
2012	574.5	1,194.2	48.1	4,027
2013	665.8	1,550.3	42.9%	4,303
2014	888.2	773.9	12.6%	4,524
2015	888.2	871.4	98.1%	4,852

(Rwanda Revenue Authority Report 2003 – 2015)

E-filing and e-taxation payment was introduced by RRA in 2012 with functioning e-filing system in place such as Mobile declaration, Electronic Single for domestic taxpayers Window (ESW) and Authorized Economic Operator (AEO) for importers and exporters (Gupta, 2012) in order to improve on tax collection and meet the targeted budget accordingly. And this was done to enable the taxpayers to deal with RRA electronically anywhere and anytime as well as to enhance tax administration to collect tax revenue in short term and as a measure to improve on tax compliance and efficiency. It offers an option to the clients to file taxes like VAT, PAYE, Excise duty and Withholding taxes electronically on RRA's website without having to visit a RRA premise especially if there is tax education, compliancy aspect is guaranteed.

All the reforms in Rwanda's tax base system were aimed at improving tax collections, administrations, and above all tax compliance. In a bid to improve tax compliance, Rwanda

Revenue Authority (RRA) decided to opt for electronic tax management system which includes e- payment, e filling and electronic tax education in order to improve on tax collection in the country. This research analyzes the effect of an electronic tax management system on tax collection in Rwanda.

1.2 Research Problem

Before 1994, revenue collection was carried out by Department of Customs and Excise Duties, Inland Revenue and income tax in the Ministry of Finance. Revenue collection was low and tax administration weak and this was believed to be due to manual system of tax administration characterized by low tax collection, delays and poor record keeping, this made the Rwanda failed to meet their targeted budgets. Even when Rwanda Revenue Authority was established in November 1997 the problem persisted as seen in Table 1.1 above.

With introduction of e-filing in 2012 it is believed that e-filing and e-payment will improve tax revenue and bridge the gap of the budget but still there challenges like unreliable network and inadequate computer skills associated with electronic tax management system making it a problem to achieve their targeted budget. It upon the above problem that is the researcher is prompted to analyze the effects of e filing and e payment on revenue collection by Rwanda Revenue Authority.

1.3 Objective of the Study

The objective of the study is sub-divided into general and specific objectives:

1.3.1 General Objectives

The general objective of this study is to analyze the effects of Electronic Tax Management System.

1.3.2 Specific Objectives

i. To analyze the effect of internet payment/filing system on tax collection in Rwanda

ii. To examine the effect of mobile payment/filing system on tax collection in Rwanda

iii. To examine the effect of electronic billing machine on tax collection in Rwanda

iv. To identify the challenges in the e-payment system adopted by RRA from employees and tax payers perspectives

v. To offer recommendations for improvement of the e-payment system to make it effective

1.4 Research Questions

This section provides the leading questions for data collections:

i. What is the effect of internet payment/filing system on revenue collection in Rwanda

ii. What is the effect of mobile payment/filing system on revenue collection in Rwanda

iii. What is the effect of billing machine on revenue collection in Rwanda

1.5 Hypotheses

Considering questions formulated in the statement of the problem, the researcher will test the following null hypothesis and hypothesis:

H0: Internet payment/filing system has no significant effect on tax collection

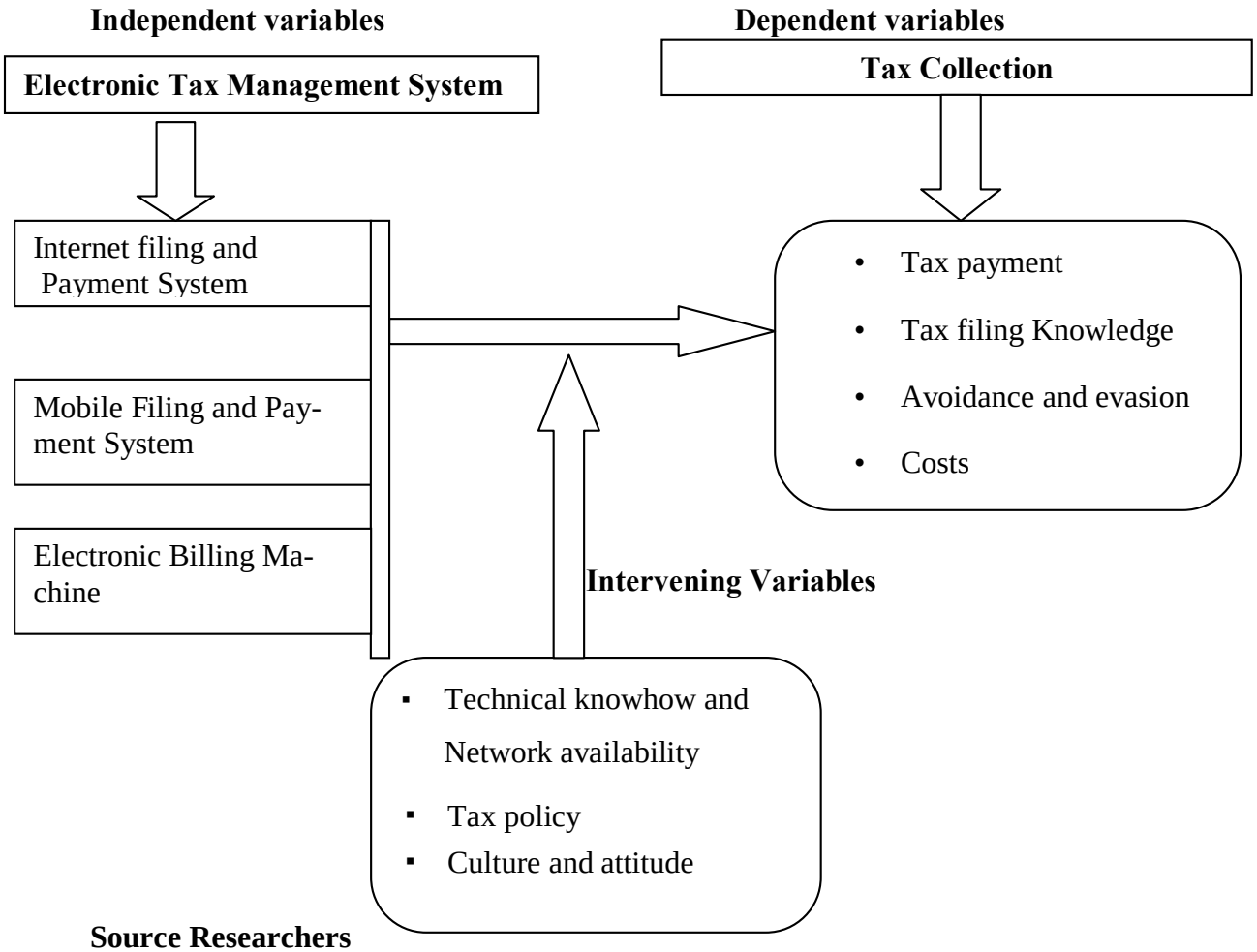
H1: Mobile payment/filing system has significant effect on tax collection

H2: Billing machine has no significant effect on tax collection

1.6 Conceptual Framework

Figure 1: Showing the relationship between the variables

Below is a conceptual frame work showing the effect Electronic Tax management System on tax collection.



Source Researchers

The researcher believes that electronic tax management system which comprises of internet payment system, mobile payment system and electronic billing machine improves efficiency in tax collection through timely payment and cost effectiveness. This depends on tax policy, network availability and people's attitude towards the system.

1.7 Significance of the Study

The research is significant to the researcher, Rwanda Revenue Authority and policy maker. The study provides researcher with knowledge of e filing and e payment and their effects on revenue collection. To Rwanda Revenue authority if they adopt the recommendation it will improve on the revenue collection hence effective and efficient service delivery in the country. To the Policy makers, they will be able to make law which will favor the use of e filing and e- payment hence promoting tax administration efficiency and effectiveness.

1.8 Scope

The scope was sub divided into subject scope, geographical and time scope.The study examined the effects of Electronic Tax Management System on Revenue collection in Rwanda. The researcher examined Electronic Tax Management System and Revenue collection in RRA for a period of three (3) years (2012 to 2015) since Electronic Tax Management System was introduced and launched in order to establish the effect of the system on Revenue collection. It focuses on the effects of e-payment system from RRA employees and also the tax payer's perspective.

1.9 Organization of the Study

The proposal comprises of three chapters.

Chapter one: General introduction

Includes background of the study, statement problem, objectives of the study, research questions, scope of the study, and significance of the study, profile of the case study and organization of the study.

Chapter Two: Literature review.

This reviews literature related to the topic and other fundamental concepts

Chapter Three: Research methodology.

It shows methodology that was used to carry out the research (sampling design and sample size, method of data collection and data processing, data interpretation and ends by outlining the limitations that the researcher has uncounted).

Chapter Four: Research findings, Analysis and interpretation

Focuses on the Research findings, Analysis and interpretation of data collected. The empirical data collected provide the basis for answering the researcher questions.

Chapter Five: findings, conclusion, and recommendations

It is composed of discussion by findings, conclusion, and recommendation

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the review of literature that has been arranged according to the themes derived from the specific objectives and research questions. This chapter looks at some works and thoughts of some scholars and writers about the variables under review. This chapter discusses literature related to the study variables and focuses on the effects of Electronic Tax Management System on Revenue collection in Rwanda. It will analyze empirical studies on the effect of e tax payment system on tax collection, effect of e tax filing system on tax collection and the challenges facing electronic tax management. Lastly it will also provide research gap and conclusion of the chapter Clients produce invoice easily by use of EBM, Clients view tax statement easily by use of EBM and EBM has made communication easy with clients.

2.1 Theoretical review

This section reviews different system theories in relationship to electronic tax management system. The theories reviewed are; Convergence Model, Activity Theory (AT), Unified Theory of Acceptance and Use of Technology (UTAUT), Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM) and Theory of Planned Behavior (TPB).

2.1.1 Convergence Theory

Convergence Model could be seen as a synthesis or aggregation of my initial theoretical models. According to Bradley (2006) have often given the convergence model the subtitle "ICT and the Psychosocial Life Environment". The convergence model is primarily a graphical illustration of ongoing changes in the Net Society. However the theoretical model goes back and synthesizes the theoretical framework in my research on psychosocial work environment and computerization, with roots back to the 1970th research and research programs during various phases of the history of computerization. Hence this article starts at the end and ends at the start. The convergence model is presented in detail in my book "Social and Community Informatics - Humans on the Net" (Bradley 2006).

Some comments to the model in the description are structured with reference to concepts in the outer circle in the figure: Globalization, ICT, Life Environment, Life Role, Effects on Humans (to the utmost right). The present Network period is very much based on the convergence and integration of processes on various levels of analysis. Converging circles graphically reflect the ongoing processes. The converging technologies are: computer technology, tele-technology and media technology. The convergence process is enforced all the time by smaller, cheaper, and more powerful technical components. In Rwanda Revenue Authority ICT is increasingly being used in almost every activity and embedded in more and more things (ubiquitous computing). Both Convergence and Interactions are important features in the model. Convergence here means a move towards a common content. Interaction means that technology interacts with the social world with values and beliefs. For the case of RRA, ICT is used for interactions between different stakeholders, there is an ongoing interaction between the "clusters of circles" which are included in four levels of analysis comprising individual (tax payers), organizational and societal (government).

Globalization*:* A convergence is occurring between Technology, Norms/Values (Economy) and Labour Market and is entitled Globalization. Values related to the economic system are a strong driver. The geographical span is changing. At present our work life is mainly based on national and international trade which will become more global. RRA accepts taxes to be filled electronically both at the local and international settings. This was exhibited especially when importers and exporter are paying taxes via internet to RRA. Electronic commerce and electronic market places are creating a strong change factor behind the structure of work life. The geographical space in the future is both global and beyond including applications of virtual reality (VR)

2.1.2 Activity Theory (AT)

AT is used as a framework for examining and transforming networks of interacting activity systems (Hardman, 2005). The activity systems transform one condition to another, hence are considered to be the instruments of re organization of activities (Engeström, 1987). The basic components of an activity system are comprised of the subject, object, mediating artefacts (i.e. tools), rules, community and division of labour (*ibid*). The subject is an individual or entity (actor or actors) from whose perspective an object is to be viewed (Daniels, 2004).

In the case of this study, actors are the Government department of Revenue Authority, provides e filing and payment hence IT is used a mediation between RRA and tax payers.

Mediation refers to the use of tools to mediate human activity (Vygotsky, 1978). The tool is the artefact to be created and transformed during the development of the activity itself (Uden & Damiani, 2007). Rules are the norms and regulations that are either implicit or explicit, but influential in the activities that take place (Engeström, 1999). The community represents groups, rules and arrangements such as the division of labor (Owen, 2008).The problem with goal implementations in a multi-level and complex activity system such as the e-filing and payment process is that it needs clear rules and guidelines across different actors if it is succeed. Whilst implicit guidelines maybe ambiguous, subject to misinterpretation and manipulation, the worst situation would a complete lack of rules or guidelines and enforcement procedures.

Rather than a predictive theory, AT is a descriptive framework, a concept and a theoretical approach or a viewpoint (Mursu*et al.*, 2007). In most instances AT is used to analyze human activity from a needs-based and goal oriented viewpoint (i.e. people are driven by needs and therefore have specific goals to achieve) (Mlitwa, 2011). Consequently it is used to understand human interaction through mediated tools and artefacts (Hashim& Jones, 2007). An activity is seen as a factor that ties the actions to the context, hence an activity is a basic unit of analysis in Activity Theory (Engeström, 1987). Since human actions derive their meaning from the context, *"actions without context are meaningless"* (Mursu, *et al*., 2007), hence actions must be viewed within a context (Leont'ev, 1978). This is a typical case of RRA in tracking the payment of taxes by use of internet, mobile and electronic billing machine which has reduced tax avoidance and evasion. This allows RRA to track the activity network especially indicating where the taxes were paid from and the amount paid in comparison to the total amount expected to be paid. The network also allows RRA to track defaulters by using sophisticated decision support system which sends warnings and penalties to the clients.

2.1.3 Unified Theory of Acceptance and Use of Technology (UTAUT)

Relatively, various theoretical models have been designed and planned to investigate technology acceptance in the information technology literature. The research model to be developed and tested in this study draws on findings from relevant prior research primarily based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh et al., 2003). UTAUT model was built upon and extends beyond the well established Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989). Vankatesh, et al. (2003) have proposed a more comprehensive model, Unified Theory of Acceptance and Use of Technology (UTAUT) model which unified the various model of information technology acceptance that integrated the elements of eight prominent models, namely Theory of Reasoned Action (TRA) (Fishbein & Ajzen 1975), Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989), Motivational Model (MM) (Davis et al., 1992, as cited in Venkatesh et al., 2003), Theory of Planned Behavior (TPB) (Ajzen, 1991), Combined TAM-TPB (Taylor & Todd, 1995), Model of Personnel Computer (PC) Utilization (MPCU) (Thompson, Higgins, & Howell, 1991), Innovation Diffusion Theory (IDT) (Roger 1995), and Social Cognitive Theory (SCT) (Bandura, 1986). Comparing UTAUT and previous models, UTAUT was able to explain 70% of technology acceptance behavior, a considerable improvement on previous models, which routinely explain over 40% of acceptance (Venkatesh et al., 2003). Therefore, UTAUT is considered an enhanced model with parsimonious and robust characteristics that could better explain the factors influencing individual's intention and usage. In detail, UTAUT contains four core determinants of intention and usage namely performance expectancy, effort expectancy, social influence and facilitating conditions. Rwanda Revenue Authority (RRA)at first experienced challenges in technology acceptance by the tax payers, but however the clients later on accepted the system especially after sansitization and government putting strict condition to abide by the tax policy of filing and payment of tax using ICT technologies of internet , mobile and electronic billing machine.

2.1.4 Theory of Reasoned Action (TRA)

Theory of Reasoned Action (TRA) (Fisbein, Ajzen, 1975) is one the first theories to explain computer usage and acceptance behavior. According to the TRA, intention to perform behavior (BI) are determined by the person's attitude (A) and subjective norm (SN) regarding the behavior in question. Attitude (A) is determined by his or her salient beliefs about the results of performing the behavior multiplied by the evaluation of those results. Salient beliefs can be obtained by taking the beliefs most frequently elicited from a representative sample of the population. SN is determined by a multiplicative function of his or her normative beliefs in RRA, i.e. perceived expectations of specific referent individuals or group, and his or her motivation to comply with these expectations or beliefs. In the beginning especially in developing countries where Rwanda is included technology adaptation was a challenge but later on with changes in global economy and competitive advantage in both small and big companies, technology is rapidly being accepted. In Rwanda currently citizens mind have been changed towards technology in industrial development and currently citizens have accepted electronic tax payment system as one of the better ways on improving tax collection in the country

2.1.5 Motivational Model (MM)

In accordance with Deci (1975), who defined intrinsic motivation as conduct, which deals with the environment, tends to motivate a person's need to feeling competent and self-determining? This intrinsic motivation will decrease if the person is not attaining enjoyment from the activities. Nevertheless, extrinsic motivation activities linked extrinsic rewards, which consequently correlated to satisfaction of primary drives of achieving goal set. For example of positive rewards, it can be money or praise or social approval or positive feedback for fitting into their social reference group. It is believed that ICT have motivated tax payers in Rwanda because now there is no need of queuing in banks and RRA offices waiting to pay tax.

2.1.6 Theory of Planned Behavior (TPB)

The TPB was proposed as an extension of TRA because of the limitation of TRA in dealing with behaviors over which people have incomplete volitional control (Ajzen, 1991). The components of behavioral attitudes and subjective norms are the same in TPB as in the TRA. The difference

is TPB has included with additional third determinant of intention, which is called the degree of *Perceived Behavioral Control*. The inclusion of behavioral control in TPB has added to the explanatory power of TPB (Mathieson 1991, Taylor and Todd 1995). Perceived Behavioral Control (PBC) refers to the perceived ease of difficulty of performing the behavior and it is assumed to reflect internal and external constraints on behavior. TPB suggests that since citizens do not have full control over their online government transactions, perceived behavioral control should become a critical component of e-government adoption. Perceived behavioral control encompasses two components namely "self efficacy" and "facilitating conditions". Self-efficacy is an individual's self-confidence in his or her ability to perform behavior (Bandura, 1982); while facilitating conditions representing the resources needed to engage in a behavior (Triandis, 1971).

Government of Rwanda through RRA applied to e-government context, behavioral control should facilitate information acquisition as the citizens have the opportunity and resources to manage such behavioral activities. Similarly, in terms of providing information to the tax payers, a sense of control over how personal information on taxes will be managed and used will be likely to affect the behavior. Under TPB model, the intention behavior is predicted by three factors: attitude towards the behavior (A), subjective norms (SN) and perceived behavioral control (PBC). General rule revealed that the more favorable the attitude and subject norm and the greater control, the stronger should be the person's intention to perform the behavior in question (Ajzen, 1991).

2.2 Empirical Review

2.2.1 Effect of Internet Tax filling/Payment System on Tax Collection

The goal of any tax authority is to establish a system of tax administration that allows for the collection of required taxes at minimum cost. A tax authority engages in many activities, such as processing returns and related information from tax payers, entering tax return data into a database, matching returns against filing requirements, processing tax payments and matching them against assessments, and issuing assessments and refunds (Geetha and Sekar, 2012). A study conducted in India shows, one way to boost a tax authority's efficiency is by expanding its use of information and communication technology. Such technology can facilitate a broad

range of services, including registering taxpayers, filing returns, processing payments, issuing assessments and checking against third-party information.

E-filing systems increase the quality and quantity of information available to tax officers, enabling them to complete transactions faster and more accurately (Jahirul, 2011). Returns filed electronically have much lower error rates than paper returns and substantially cut the need to impose penalties and other punitive measures to foster compliance. The more efficient handling provided by electronic returns allows tax officers to issue assessments and refunds more quickly, and taxpayers know right away if their returns have been accepted by the tax authorities. E-filing lowers the cost of handling returns allowing administrative resources to be reallocated to other tasks such as auditing, customer services and tracking non-compliance (Geetha and Sekar, 2012). The benefits of e-filing and e-payment systems extend to other electronic processes in the tax authority. E-filing and e-payment allow for better, safer data storage that can be used to implement a risk management system for auditing and enforcement. Automation helps establish a good system for tracking case files, which is essential for effective auditing and increases the speed and quality of data provided to auditors. In addition, a study conducted in India shows that e-filing systems are usually complemented by software that standardizes and facilitates processes for taxpayers, making compliance easier (Gupta, 2012).

Finally, well-designed electronic systems can lower corruption by reducing face-to-face interactions (Jayakumar and Nagalakshmi, 2006). To ensure that taxes are collected efficiently and reduce opportunities for corruption, a generally accepted principle is that tax authorities should not handle money directly. Ideally, tax officials should have little direct contact with taxpayers and so less discretion in deciding how to treat them (Geetha and Sekar, 2012). E-filing is also easy, flexible and convenient for taxpayers. E-filing makes it possible to file returns from a taxpayer's home, library, financial institution, work place, tax professional's business or even stores and shopping malls. With an integrated e-filing and e-payment system, taxes can be filed and paid online from any place. Singapore was one of the first economies to adopt electronic systems in its public administration. In 1992 the Inland Revenue Department was replaced by the Inland Revenue Authority of Singapore, which developed an integrated, computerized tax administration system.

The authority's first step was shifting from a hard-copy filing system to paperless imaging. Going electronic made administrative processes more efficient by freeing staff from unproductive paper shuffling, enabling better taxpayer service (Jahirul, 2011). The time needed to issue assessments dropped from 12–18 months to 3–5 between 1992 and 2000. This change allowed staff to work more on auditing and investigation. Automated standard taxation procedures also made the system less dependent on the subjective expertise of individual tax officers, reducing the potential for corruption. Return processing, auditing and payment functions were separated, and officials' attitudes toward taxpayers improved.

Chile's Internal Revenue Service was the country's first public agency to adopt on-line technology well before most other public services (Geetha and Sekar, 2012). Electronic methods were intended to facilitate tax compliance and decrease direct interaction with taxpayers. Chile is one of the few economies that have managed to approach nearly 100% use of electronic systems. Online tax returns were submitted for the first time in 1998. Chile faced several barriers at the outset of e-filing. Taxpayers had limited Internet access, and tax preparers were reluctant to use the new system because they were unfamiliar with the technology and saw it as a threat to their profession. In addition, the revenue service's information technology system could not handle the huge congestion of tax returns, especially in the few days just before the deadline. So Chile continuously upgraded its electronic system and offered prefilled electronic forms to simplify the process for taxpayers (Geetha and Sekar, 2012). The tax authority also introduced ambitious initiatives to overcome connectivity shortages by creating a public-private network of more than 880 e-filing centers, providing more than 30,000 connectivity points. In addition, it made arrangements with internet cafes so that taxpayers could use their equipment for free and trained operators at access points. It even developed a mobile training and awareness unit that traveled to different parts of the country to help people file taxes online (Jahirul, 2011). The use of technology to foster tax compliance by the United States Internal Revenue Service (IRS) shows that more developed economies also face challenges in increasing the use of e-filing. The IRS introduced e-filing of federal tax returns in 1986. Though this system predated Singapore's, it was initially less comprehensive (Jayakumar and Nagalakshmi, 2006). In fact, even though the number of electronic returns filed increased over time, the potential savings from that increase where partly offset by the ongoing use of paper filings for complex returns. But by 2012 the IRS

achieved 80% e-filing of major returns. Initially, e-filing was not entirely paper less. Until 1999 electronic filers still had to submit signed paper documents. The IRS realized that when taxpayers switched to e-filing, the time savings partly offset the costs of processing the still-large volume of signed paper documents.

In 1999 the IRS introduced an electronic option to replace signed paper documents. In addition to lowering processing costs, e-filing has cut the time required to get refunds making more taxpayers willing to file returns electronically. Seeking the benefits of electronic tax systems and reflecting the government's vision of leveraging online technology, Malaysia's Inland Revenue Board (IRB) launched its electronic system for taxes in 2004. IRB aimed to increase revenue collection by improving taxpayer services. The goal was to cut time and cost and to allow taxpayers to comply with tax obligations more easily, enabling IRB to maintain a good reputation with taxpayers even as it widened its tax base. With the new system, taxpayers can complete forms and provide needed payment details online instead of sending them by mail or taking them to a tax office. The online system was developed by IRB's information technology department (Jahirul, 2011).

IRB implemented a roaming public key infrastructure system that gives users secure access to sensitive information from any location without having to carry digital identification. The electronic system integrated tax filing and payment on one server a major advantage over manual procedures. For every tax filing or payment, taxpayers have to log in, select and complete the appropriate forms, sign and submit them digitally. An acknowledgment is received immediately. The e-filing system automatically calculates the necessary payment details. It also limits deductions that taxpayers are entitled to base on deduction rules enabling taxpayers to avoid mistakes that would result in penalties.

2.2.2 Effect of Mobile Tax Filing System on Tax collection

In Africa (and many developing countries of the world), it can be argued that the journey towards mobile money has followed a "customer centric" evolution path as opposed to a "technology centric" model of innovation observed in developed nations (Geetha and Sekar, 2012). In these regions, there has been a rapidly growing internet penetration rate and mobile

cellular network access within the last decade, trends which have been successfully harnessed in addressing existing problems. About 90% (GSMA, November 2012) of the mobile customer base in Africa purchase prepaid card vouchers using cash, from retail outlets in order to top up their mobile device call credit. MNOs run their own retail outlets as well as license independent dealers authorized to sell mobile recharge vouchers to end customers.

In 2008, it was a popular use case for students to request payment for services or gifts in form of recharge vouchers and even hold on to a collection of recharge vouchers as stored monetary value. It was also common to receive and gift recharge vouchers as birthday presents and use them for the fulfil a social obligations (Jayakumar and Nagalakshmi, 2006). Another use case that quickly became popular was the use of recharge vouchers as a medium to transfer value over huge geographical distances. Concerned consumers (lead users in this case) quickly discovered they could send "money" (recharge vouchers) to loved ones in remote villages simply by purchasing these vouchers and texting the digits via short message service (SMS) - at no extra expense. Their loved ones could either use the recharge vouchers themselves or exchange it for cash after finding an exchange partner in need (Hippel, 1986).

This provided value as it addressed several problems especially peculiar to the developing nations. First, it provided an expense-free method to exchange value for both the banked and unbanked. Next, it addressed issues related to infrastructure and transfer over wide geographic distances effectively enabling location free banking (Laukkanen & Lauronen, 2005). Furthermore, it was accessible to almost anyone and provided all of this with near instant confirmation – SMS message delivery. No alternative method of value exchange provided comparative qualities. Available options were costly, risky or inaccessible.

Consumers could either send value through risky mass transit systems (public/private transportation) or make expensive bank transfers (Jayakumar and Nagalakshmi, 2006). Even today, other factors such as sparse bank branch coverage, extended waiting times for transfers and infrastructure challenges (particularly power), still make bank transfers less desirable. Thus consumers, through innovative use cases, defined the basic structure for the most successful form of Mobile Money in the third world today. Observation of these innovative use

cases by customers provided the initial validation but building Mobile Money infrastructures. This basic structure which involves consumers with mobile devices, voucher distribution agents and MNOs has been formalized and constitutes the basic components of mobile money (Hippel, 1986).

In addition, prefilled online tax returns have been available since 2006, starting with tax payer's basic information and later extended to include their incomes and reliefs. In 2012 IRB enhanced its e-filing system by introducing smart phone filing.

2.2.3 Effect of Electronic Billing Machine on Revenue Collection

A billing machine consists of an electric typewriter, a calculator (in a modern accounting machine, a minicomputer), a programmed control device, and a unit for recording the information on an auxiliary carrier. Billing machines are used, for example, at computer consoles, in bookkeeping departments of commercial and industrial enterprises, in banks, in large warehouses, and in construction and assembly-installation directorates. The use of such machines substantially expedites the processing of accounting and financial documentation. With the development of automated control systems, billing machines have been employed as input terminals for such systems.

The various billing machine models differ in the width of the typewriter carriage (32, 45, or 62 centimeters), the set of computational operations performed, and the degree of automation. The machines are widely used in the Soviet Union (Jahirul, 2011). A device for the processing of alphanumeric documents for example, accounts, invoice-payment demands, payrolls, and construction estimates that require simple calculations, such as addition, subtraction, multiplication, division, and the computation of percentages. The machine also automatically prints the result of a processing operation on paper by means of a typewriter and simultaneously records the result on an auxiliary information carrier, such as a magnetic tape, a punch tape, or punch cards.

Monetary transactions at banks, retails stores, grocery stores, healthcare institutes and other places have been made easier with the use of a variety of machines. Billing and money counting

are two important functions involved in these transactions (Geetha and Sekar, 2012). These functions should be done fast and with accuracy to add value to the business operations. Something like billing and currency counting machine can be easily spotted at the aforementioned places. There are portable models of these machines that can be used in a variety of applications. If you have a business or service providing store that require money-related transactions to be done efficiently, learn about the working and benefits of machines in this regard.

Before the advent of modern day billing machine models and cash counters, the machines used for these purposes were purely mechanical. Today, there are electronically machines with improved functionality due to better working mechanism. In a cash counting machine, the lot containing coins or currency notes is placed in a hopper. The machine contains electronic components like rollers and sensors that count each and every coin or note in the process. Many machines are pre-programmed to perform the designated sets of functions.

One of the most important advantages of a billing and currency counting machine is that it saves a lot of time and manual efforts. Productivity can be easily increased with these machines. A billing machine proves to be advantageous in producing the sum totals for various money transactions and to generate the bills faster and accurately. However, their advantages are not limited to those already mentioned (Geetha and Sekar, 2012). Depending upon the types of features integrated with them, these machines can detect fake and counterfeit currency notes. In addition, many models are designed to find old and damaged currency notes so that they can be separated or replaced according to the users' requirements. Going further, some billing and cash counting machines can be used to count notes with different denominations separately.

Electronic Billing Machine as an independent variable it can affect the Taxation in different ways even if Taxes depending to different thing lets us take those thing as the constants, we will see how Electronic Billing Machine aims at improving tax collection and compliance, this machines are helping the government increase its tax base (Jahirul, 2011). The tools have helped cut down time spent screening books of accounts and Auditors used to spend hours investigating and going over massive documentation, but with the EBM, audits are easily conducted and by using of Electronic Billing Machines RRA is now able to catch tax evaders with less effort. The same technology is used in countries such as Sweden, Germany, Greece, Ethiopia and Kenya to

combat tax evasion because every registered machine records all transactions and indicates Value Added Taxes expected to be remitted to government coffers. The use of Electronic Billing Machines discourage some taxpayers who were fond of keeping two receipt books or non-issuing tax receipts to clients, irrespective of the quantities bought, which encouraged tax evasion.

2.3 Challenges E-tax service systems in tax administration.

Despite the positive effects of computerization on organization performance use of computers have been the source of problems that get relatively little exposure in the popular press and professional magazines Muwonge (2011) asserts. Therefore though Revenue Authorities has successfully adopted E-tax service system, some have failed to accomplish some issues, and they include the following;

2. 3.1 It is expensive.

One may have to sell out a fee to prepare and file tax online especially when one is non conversant with the information provided on net. While they are many programs that allow tax payers to file their return for free, learning how to correct how to correctly navigate the online filing process has come to with a learning curve. For others it has been more of a challenge, therefore the need for a help from a professional when doing any filing whether to file in a conversional means or electronic

2. 3.3 Increased corruption levels.

Kempaka & Muhumuza (1999) in a report, reveal that more types of taxes a firm needed to pay the higher the probability that they would pay bribes. This gives tax payers hard time to trust the revenue officials with the information required of them and this is a typical case of RRA which prompted the evolution of electronic tax management system to promote efficiency in service.

2. 3.4 Inaccessibility of internet

Not all taxpayers have access to the web, as they do so to the web portal system. Though this is a temporary issue as the evolution of the web continues, it is still a problem to the users of the portal. Therefore the current structure mainly serves in favor of taxpayers whose businesses are located in urban areas (Aguti, 2011), meaning that places without internet especially in the rural

areas may not access the E-tax services systems which is reason for the slow adoption of E-tax service system and this a typical challenge RRA face due to unreliable network which affects service delivery.

2. 3.5 Ease of use is sometimes a problem

Technology can allow access to facilities round the clock Muwonge (2011), but the web design is still complex. Therefore different user behaviors (navigation schemes) need to be learned for each E-tax services, hence the slow adoption of E-tax by RRA clients who are the tax payers.

2. 3.6 Trust, security and privacy concerns prevail.

Taxpayers are concerned with the use of the data they provide during transactions. There are cases when internet is trucked and therefore many taxpayers are scared about such information being risk to the tax payers. Therefore biases are likely to arise within complete information or incomplete knowledge. Attitudes about the tax system and perceptions of fairness are influenced by what the public actually knows about the tax system (Mukasa, 2011). This has failed to prove to the public that the information provided cannot be accessed by anyone.

2.4 Research Gap

In contrast to traditional government processes, e-Government is characterized by (1) extensive use of communication technology (2) the impersonal nature of the online environment (3) the ease of information can be collected (data-mining), processed and used by multiple parties (Warkentin, Gefen, Pavlou & Rose, 2002). However, e-Government has the implicit uncertainty of using an open technological infrastructure for transaction via the newness of the communication medium – interact with a government website. This would indirectly increase the spatial and temporal separation between citizens and government; more uncertainty and concern about the reliability of the underlying Internet and related government infrastructure interfaces. As overall these unique differences increase uncertainty and reduce perception of citizen control, imposing a barrier to e-Government adoption (Geetha and Sekar, 2012).

The goal of any tax authority is to establish a system of tax administration that allows for the collection of required taxes at minimum cost. A tax authority engages in many activities, such as processing returns and related information from taxpayers, entering tax return data into a

database, matching returns against filing requirements, processing tax payments and matching them against assessments, and issuing assessments and refunds. One way to boost a tax authority's efficiency is by expanding its use of information and communication technology. Such technology can facilitate a broad range of services, including registering taxpayers, filing returns, processing payments, issuing assessments and checking against third-party information.

E-filing systems increase the quality and quantity of information available to tax officers, enabling them to complete transactions faster and more accurately. Returns filed electronically have much lower error rates than paper returns and substantially cut the need to impose penalties and other punitive measures to foster compliance. The more efficient handling provided by electronic returns allows tax officers to issue assessments and refunds more quickly, and taxpayers know right away if their returns have been accepted by the tax authorities. E-filing lowers the cost of handling returns allowing administrative resources to be reallocated to other tasks such as auditing, customer services and tracking non-compliance. The benefits of e-filing and e-payment systems extend to other electronic processes in the tax authority. E-filing and e-payment allow for better, safer data storage that can be used to implement a risk management system for auditing and enforcement. Automation helps establish a good system for tracking case files, which is essential for effective auditing.

With introduction of e-filing in 2012 in Rwanda, it is believed that e-filing and e-payment will improve tax revenue and bridge the gap of the budget but still there are challenges associated with electronic tax management system making it a problem to achieve their targeted budget. There is no academic research conducted on the use of electronic tax payment system conducted in East and Central Africa whereby Rwanda is inclusive hence creating a gap in the research and this prompted the researcher to analyze the effects of e filing and e payment on revenue collection in Rwanda.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents the methodology that to be used in data collection in terms of research design, area of study, study population, sample selection and size, research instruments and data collection, procedure and ethical consideration, data processing and analysis and limitations of the study.

3.1 Research design

The study was a descriptive analytical design basing on both qualitative and quantitative approach. This is because quantitative research excels at summarizing large amounts of data and reaching generalizations based on statistical projections. Qualitative research on the other hand excels at story telling form the participants viewpoint, providing the rich descriptive detail that sets qualitative results into their human context. For this study, the quantitative method investigated the effects of Electronic Tax Management System on Revenue collection in Rwanda. The qualitative data collection method on the other hand investigated the extent to which the Electronic Tax Management System effects Revenue collection in Rwanda.

3.2 Target Population

All the items under consideration in any field of inquiry constitute a ‘universe’ or ‘population’. It can be presumed that in such an inquiry when all the items are covered no element of chance is left and highest accuracy is obtained (Kothari, 2004). The following categories of respondents participated in this study because of their direct relevancy with the study objectives. These included a total of 1258 people comprising of 1128 staffs from Rwanda Revenue Authority and 100 tax payers to represent the views of other tax payer on the subject under study.

Table 3.1: Sample frame

Department	Target Population	Sample	Sample Technique
CG'S OFFICE	**11**	**5**	Purposive
DCG'S OFFICE	**3**	**0**	
CORPORATE RISK MGT & MODERNISATION DPT	**32**	**10**	Random
QAD	**19**	**0**	
IT/ISD	**40**	**20**	Purposive
TPSD	**21**	**0**	
FINANCE	**76**	**40**	Random
TRAINING	**9**	**0**	
HUMAN RESOURCES DE-PARTMENT	**11**	**0**	
ADMINISTRATION & LO-GISTICS DEPT	**84**	**0**	
LEGAL & BOARD SECRE-TARIAT	**23**	**0**	
PLANNING & RESEARCH	**12**	**5**	Purposive
REVENUE INVESTIGA-TION &ENFORCEMENT	**37**	**20**	Purposive
DTD	**13**	**0**	
LTO	**65**	**0**	
SMTO	**147**	**0**	
REGIONS	**88**	**0**	
DECENTRALISED TAXES 2	**206**	**100**	Random sampling technique
CSD	**261**	**0**	
Tax payers	**100**	**100**	Random sampling technique
Total	**1258**	**304**	

Source: Rwanda Revenue Authority database

3.3 Sample Design

A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample (Kothari, 2004).

3.3.1 Sample size determination

When it is not possible to study an entire population but the population is known, a smaller sample is taken from strata by purposive and stratified sampling technique. Slovin's formula allows a researcher to sample the population with a desired degree of accuracy (Stephanie, 2013). Slovin's formular was used to calculate the sample size.

With regard to the level of accuracy, we used a confidence level of 95% as suggested by Kothari (2004), this means that there are 95 chances in 100 (or .95 in 1) that the sample results represent the true condition of the population within a specified precision range against 5 chances in 100 (or .05 in 1) that it does not. The slovin's formula is calculated as follows:

$$n = \frac{N}{1 + Ne^2}$$

Stephanie (2013)

n= Number of samples or sample size

N= Total population

e= Error tolerance

The population size of this research is 304 employees of Rwanda Revenue Authority. We take a sampling error of 5%, and then the sample size was:

n = 1258/1+1258(0.05*0.05)

n = 1258/ 1258*0.0025

n = 1258/1+3.14

n = 1258/4.14

n = 304

Therefore the sample size was 304 respondents.

3.3.1 Sampling Techniques and procedures

A list of employees was obtained from Rwanda Revenue Authority Human Resource Office and it is this list that was used to group the employee into strata (department). Then the researcher followed by random sampling technique in order to avoid bias and reduce the chances of error.

The researcher also ask the management on key supervisors, where names was provided to the researcher and screened on the parameter of performance. Some groups was purposively selected because they are directly connected to revenue collection and electronic tax management especially accountants and IT officers so that they can give us reliable information. The researcher also chose to select 100 tax payers randomly in order to represent the views of the rest of the tax payers.

Case 1: The Researcher visited RRA head office and obtained lists of from the office of human Resource. The list was obtained basing on department and professions of the staffs in order to get staffs to be used as respondents in the research. The researcher used purposive sampling technique to obtain data from the staffs because some of the staffs have more knowledge in electronic tax management hence the researcher felt that they are the right person to be selected to respond to the questionnaire. Later on the researcher proceeded to the clients and randomly selected 100 simply because the numbers respondents are many.

3.4 Data Collection Instruments

3.4.1Questionnaires

This is an important method of data collection. Judd (1991) said that a questionnaire is justifiable in data collection mainly because; it enables the researcher to collect large amount of data within a short time period, it also provides opportunity for respondents to give frank, anonymous answers. One set of questionnaire was designed for the RRA staffs; it included both open and closed ended set of questions that to be answered. The questionnaire was written in a simple and clear language for the respondent to feel free while answering. In addition to that the use of questionnaire was considered vital to the research since it provides accurate information regarding the study.

3.4.2 Documentary Analysis

The researcher reviewed literature from reports, financial statement and minutes of meetings of RRA in order to obtain reliable data on electronic tax information systems and tax revenue collection statement by RRA. This method was chosen because; it is vital in providing background information and on electronic tax information systems and tax revenue collection before primary data could be collected. Indeed, before field data is collected, a wide collection of data was collected and this was used to cross check with the primary data that is to be obtained by the field.

3.5 Validity and Reliability of Instruments

The validity of instruments was used to test validity of the instruments to be used. This includes item analysis that is carried out with the aid of the supervisor, research experts knowledgeable about the themes of the study. The process involves examining and assessing each item in each of the instruments to establish whether the item brings out what it is expected to do.

The validity of data was checked before processing the results. This helped to establish the reliability of the tools to be used in data collection. This was done by pre-testing the questionnaires using sample of 10 respondents. This process is aids correction of the mistakes and errors within the tools of data collections to verify how they are reliable to produce significant information from the field. The reliable data got, minimizes statistical errors.

3.6 Data Analysis and Presentations

The data collected was processed and analyzed using SPSS software. This involved data coding, editing and tabulation especially quantitative data. The purpose of all these is to make the information clear and understandable for other people. Qualitative and quantitative approach was used for analysis. Mean and standard deviation was used to give a clear understanding of the research interpretations for clear and easy understanding of the phenomenon studied. Relationship between the variables was established by use of Pearson correlations.

The Mean ($\overline{X}$)

According to Aggresti (2009), Mean ($\bar{x}$): is the average value calculated by adding up the values of each case for a variable and dividing by the total number of cases.

$$\overline{X} = \frac{1}{n}\sum_{i=1}^{n} xi$$

Where, $\overline{X}$ = mean; n = number total of respondents;

xi = scale value of respondent

Table 3.2: Evaluation of Mean

Mean	**Evaluation**
1.00 -2.49	Very weak
2.50 -3.49	Weak
3.50 -4.49	Strong
4.50 - 5.00	Very Strong

Source: Aggresti (2009)

Standard deviation (SD)

The standard deviation is a value which indicates the degree of variability of data. It indicates how close the data is to the mean. The formula of standard deviation is: $(S) = \sqrt{S^2}$ Where,

$$S^2 = \frac{1}{n-1}\sum_{i=1}^{n}(xi - \overline{X})^2$$

Table 3.3: Evaluation of Standard Deviation

Standard Deviation	**Level spreading**
SD<0.5	Homogeneity
SD>0.5	Heterogeneity

Source: Aggresti (2009)

Pearson Correlation test: The Pearson correlation coefficient is a very useful way to measure the statistical relationship that exists between independent and dependent variables.

Table 3.4: Evaluation of correlation

Correlation coefficient (positive or negative)	Label/positive or negative
r=1	Perfect linear correlation
0.9 < r < 1	Positive strong correlation
0.7 <r < 0.9	Positive high correlation
0.5 < r < 0.7	Positive moderate correlation
0< r < 0.5	Weak correlation
r=0	No, relationship
-1 <r = < 0	Negative relationship

Source: (Saunders, 2003)

3.7 Limitations

Like any other research, the researcher encountered some limitations like unavailability or inaccessibility of information due to professional secrecy under its performance but however it was overcome by thoroughly explaining the purpose of the research being only for academic purpose not any other purpose. Time was limited as some respondents were busy and delayed to respond to the questionnaire but it was overcome by fixing appointments and constant reminder by use of telephone and financial difficulties due up and down movement looking for information was overcome by proper budgeting.

CHAPTER FOUR

DATA ANLYSIS AND INTERPRETATION

The chapter analyzes the data collected from the field survey and presented the same data with interpretation and managerial implications. The analysis and interpretation are presented in two forms; the profile of the respondent and the analysis of the questionnaires according to specific objectives. The profile deals with the general features of the respondents along gender, education and experience.

Electronic payment and filing also offers flexibility of time, reduces calculations of errors on tax return forms to the tax payers, taxpayer privacy and security (Agawal, 2006). Furthermore e-filing also offers other benefits to the beneficiaries who are the tax authorities for example e-filing minimizes their work load and operational cost due to submission of tax returns on a paperless environment. It also reduces the costs processing, storing and handling tax return (Jayakumar and Nagalakshmi, 2006).

Table 1.1: Tax collections during 1998-June 2015

Fiscal year	Total Tax Revenues (bn)	Total National Budget (bn)	% Contribution of Tax Revenues to National Budget	Gross Domestic Product(bn)
2003	119.1	252.0	47.3%	
2004	136.2	334.5	40.7%	
2005	173.5	374.2	46.4%	
2006	198.4	396.2	50.1%	
2007	247.0	528.0	46.8%	2,851
2008	344.3	623.2	55.2%	3,080
2009	188.0	392.1	47.9%	3,334
2010	385.2	899.0	42.8%	3,477
2011	473.9	984.0	48.2%	3,678
2012	574.5	1,194.2	48.1	4,027
2013	665.8	1,550.3	42.9%	4,303
2014	888.2	773.9	12.6%	4,524
2015	888.2	871.4	98.1%	4,852

(Rwanda Revenue Authority Report 2003 – 2015)

The analysis shows that before electronic tax management system was introduced especially from 2003 to 2010 tax collection low ranging from 119.1 to 385.2 respectively which was below the national budget. This implies that tax collection was not meeting the budget target hence the country was operating below the budget. In 2012 E-filing and e-taxation payment was introduced by RRA in 2012 with functioning e-filing system in place such as Mobile declaration, Electronic Single for domestic taxpayers Window (ESW) and Authorized Economic Operator (AEO) for importers and exporters (Gupta, 2012) in order to improve on tax collection and meet the targeted budget accordingly. And this was done to enable the taxpayers to deal with RRA electronically anywhere and anytime as well as to enhance tax administration to collect tax revenue in short term and as a measure to improve on tax compliance and efficiency. It offers an option to the clients to file taxes like VAT, PAYE, Excise duty and Withholding taxes electronically on RRA's website without having to visit a RRA premise especially if there is tax education, compliancy aspect is guaranteed.

The system managed to raise tax collection drastically in 2012 and 2013 by 48.1% and 42.9% respectively though still they were unable to meet the target. This was believed to be due to lack of awareness among the tax payers about electronic tax management system in place and lack of skills especially among the tax payers on how to use the system. In 2014 tax collection was increased to 888.2 against the budget which was 773.9. This implies that the RRA managed to collect revenue above the budget line by 12.6%. Consequently in 2015 revenue collection was about the budget by 98.1%. This implies that like stated in the hypothesis especially EBM and mobile payment system has relationship with revenue collection although internet system small relationship. Therefore it can be summarized that electronic tax management system has improved tax collection in Rwanda.

4.1 Profile of the Respondents

This section analyses gender, age, educational background and experience of the respondents.

4.1.1 Gender of the respondents

Table 4.2 shows gender of the respondents.

Table 4.2 Gender of the Respondents

Gender	Number of Respondents	Percentage
Male	190	62.5
Female	114	37.5
Total	304	100.0

Source: Primary Data, 2016

Table 4.2 shows that, 62.5% are male and 37.5% female. This shows that data obtained from the respondents is free of gender bias since both male and female were represented in the reasonable proportion

4.1.2 Age structure of the respondents

Table below shows age structures of the respondents

Table 4.3: Age Structure of the Respondents

Age (Years)	Number of Respondents	Percentage to Total
21 - 30	72	23.7
31 - 40	165	54.3
41 - 50	50	16.4
51 and above	17	5.6
Total	304	100.0

Source: Primary Data, 2016

Table 4.3 shows that, 54.3% of the respondents were in the age group of between 31- 40 years, followed by 23.7% between 21 – 30, 16.4% between 41-50 and 5.6% above 51 years respectively. This implies that there was fair representation of the population as almost all classes were represented and the data provided reflected the views of the entire population and the majority of the respondents are matured which means they gave a matured view. It also reflects that RRA is having a fair representation of all age groups in its employees.

4.1.3 Educational Level of the respondents

Table 4.4 shows educational level of the respondents

Table 4.4. Educational Level of the Respondents

Education of Respondents	Frequency	Percent
Diploma	39	12.8
Degree	179	58.9
Masters	75	24.7
Professionals	11	3.6
Total	304	100.0

Source: Primary data, 2016

Table 4.4 shows that, 58.9% of the respondents have degree, 24.7% masters, 12.8% professionals like (CPA, ACCA, CIMA etc) and 3.6% diploma. This implies that the respondents are educated meaning they could read, understand and interpret questionnaires reliably. It reveals the fact that RRA has highly educated employees, which contributes to good performance. As such the data collected is believed to be reliable and was thus processed to present findings.

4.1.4 Experience Level of the Respondents

Table 4.5 shows experience of the respondents

Table 4.5 Shows experience of the respondents

	Frequency	Percent
1 - 2 years	37	12.2
2 - 3 Years	63	20.7
3 - 4 Years	81	26.6
5 years and above	123	40.5
Total	304	100.0

Source: Primary data, 2016

Table 4.5 shows that, 40.5% of the respondents had served RRA for a period of 5 years and above, 26.6% between 4 to 5 years, 20.7% between 2 to 3 years and 12.2% between 1-2 years. This implies that almost all respondents had taken reasonably enough time in service and thus the data they provided is reliable.

4.2 Effects of Internet Payment System on Tax Collection in Rwanda

This section analyses Internet Payment System and its effects on Tax Collection in Rwanda

4.2.1 Assessment of Internet Payment/filing System on Tax Collection in Rwanda

Table 4.6 describes respondent's views on Internet Payment System in Rwanda.

Table 4.6: Assessment of Internet Payment/filing System in Rwanda

	Mean	Std. Deviation	Comments
Clients pay tax easily by use desk top computers either from home or office	4.0954	.51458	Strong Heterogeneity
Clients file tax from home by use of my desk top either from home or office	4.0789	.47410	Strong Homogeneity
Clients check tax statement by use of desk top either from home or office	4.1678	.45397	Strong Homogeneity
Clients get tax knowledge by use of internet without physical appearance	4.1941	.49268	Strong Homogeneity
Clients get alert on email by use of internet	4.1941	.44332	Strong Homogeneity
Overall Summary	**4.14606**	**.47573**	**Strong Homogeneity**

Source: Primary data, 2016

Table 4.6 describes the internet payment/filing system In Rwanda and their responses were as analyzed in details as below;

Clients pay tax easily by use desk top computers either from home or office: This was indicated by a strong mean of 4.0954 and a heterogeneity standard deviation of .51458. This implies that Clients pay tax easily by use desk top computers either from home or office by use of internet. Clients file tax from home by use of desk top either from home or office: This was indicated by a strong mean of 4.0789 and a homogeneity standard deviation of .47410. This implies that Clients file tax from home by use of desk top either from home or office by use of internet.

Clients check tax statement by use of desk top either from home or office: This was indicated by a very mean of 4.0789 and a homogeneity standard deviation of .45397. This implies that Clients check tax statement by use of desk top either from home or office by use of the internet. Clients get tax knowledge by use of internet without physical appearance: This was indicated by a strong mean of 4.1941 and a homogeneity standard deviation of .49268. This implies that Clients get tax knowledge by use of internet without physical appearance. Clients get alert on email by use

of internet: This was indicated by a very strong mean of 4.1941 and a Homogeneity standard deviation of .44332. This implies that Clients get alert on email by use of internet.

Overall assessment shows that internet payment/filing system in Rwanda is strong with a mean of 4.14606 and a heterogeneity standard deviation of .47573.Thisimplies that internet payment/filing system is a tool used for tax payment in Rwanda.

4.2.2 Effects of Internet Payment System on Tax Collection in Rwanda

Table 4.7 indicates the effects of internet payment/filing system on tax collection in Rwanda

Table 4.7: Effects of Internet Payment/filing System on Tax Collection in Rwanda

	Mean	Std. Deviation	Comments
Internet payment/filing system has made clients pay tax in time	4.2632	.49066	Strong Homogeneity
Internet payment/filing system has reduced on RRA/clients operational cost	4.3224	.46815	Strong Homogeneity
Internet payment/filing system has made clients pay tax from anywhere	4.2566	.43747	Strong Homogeneity
Internet payment/filing system has made communication collaboration between tax payers easier	4.2566	.43747	Strong Homogeneity
Internet payment/filing system has made tax auditing/accountability easier	4.2895	.47556	Strong Homogeneity
Internet payment/filing system has increased Revenue collection	4.3224	.46815	Strong Homogeneity
Overall Summary	**4.2851**	**0.4629**	**Strong Homogeneity**

Source: Primary data, 2016

Table 4.7 describes the effects of internet payment/filing system on tax collection in Rwanda and their responses were as analyzed in details as below;

Internet payment/filing system has made clients pay tax in time: This was indicated by a strong mean of 4.2632 and a homogeneity standard deviation of .49066. This implies that Internet payment/filing system has made clients pay tax in time to RRA. Internet payment/filing system has reduced on RRA/clients operational cost: This was indicated by a strong mean of 4.3224 and a homogeneity standard deviation of .46815. This implies that Internet payment/filing system has reduced on RRA/clients operational cost.

Internet payment/filing system has made clients pay tax from anywhere: This was indicated by a strong mean of 4.2566 and a homogeneity standard deviation of .43747. This implies that Internet payment/filing system has made clients pay tax from anywhere. Internet payment/filing system has made communication collaboration between tax payers easier: This was indicated by a strong mean of 4.2566 and a homogeneity standard deviation of .43747. This implies that Internet payment/filing system has made communication collaboration between tax payers easier.

Internet payment/filing system has made tax auditing/accountability easier: This was indicated by a strong mean of 4.2895 and a homogeneity standard deviation of .47556. This implies Internet payment/filing system has made tax auditing/accountability easier. Internet payment/filing system has increased Revenue collection: This was indicated by a strong mean of 4.3224 and a Homogeneity standard deviation of .46815. This implies that Internet payment/filing system has increased Revenue collection.

Overall assessment shows that internet payment/filing system has improved on tax collection by RRA, this was indicated by a mean of 4.2851 and a homogeneity standard deviation of 0.4629. This implies that internet payment/filing system has improved on tax collection by RRA.

4.2.3 Relationship between Internet Payment/filing system and tax collection in Rwanda.

Table 4.8 describes the Relationship between Internet Payment/filing System and Tax Collection in Rwanda.

Table 4.8: Relationship between Internet Payment System and Tax Collection

		Internet Payment	Tax Collection
Internet Payment	Pearson Correlation	1	.809**
	Sig. (2-tailed)		.000
	N	304	304
Tax Collection	Pearson Correlation	.809**	1
	Sig. (2-tailed)	.000	
	N	304	304

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

Table 4.8 is giving the Relationship between internet payment/filing system and tax collection in Rwanda whereby the respondents N is 304 and the significant level is 0.01, the results indicate that independent variable has positive strong correlation to dependent variable equal to .809**

and the p-value is .000 which is less than 0.01. When p-value is less than significant level, therefore researchers conclude that variables are correlated. This means that there is a significant relationship between internet payment/filing system and tax collection in Rwanda. We can therefore conclude that internet payment/filing system contribute positively to tax collection in Rwanda.

4.3 Effects of Mobile Payment/filing System on Tax Collection in Rwanda

Analysis below shows assessment of Mobile Payment/filing System in Rwanda and its effects on tax collection.

4.3.1 Assessing Mobile Payment/filing System in Rwanda

Table 4.9 describes Mobile Payment/filing System in Rwanda

Table 4.9: Mobile Payment/filing System in Rwanda

	Mean	Std. Deviation	Comments
Clients pay tax easily from anywhere by use of their mobile phone	4.0987	.56592	Strong Heterogeneity
Clients file tax easily from anywhere by use of their mobile phone	4.1316	.57085	Strong Heterogeneity
Clients check tax statement easily from anywhere by use of their mobile phone	4.1382	.61927	Strong Heterogeneity
Clients get tax knowledge easily from anywhere by use of their mobile phone	4.1809	.58318	Strong Heterogeneity
Clients get alert message easily on their mobile	4.2171	.55004	Strong Heterogeneity
Overall Summary	**4.1533**	**.57785**	**Strong Heterogeneity**

Source: Primary data, 2016

Table 4.9 describes the mobile payment/filing system in Rwanda and their responses were as analyzed in details as below;

Clients pay tax easily from anywhere by use of their mobile phone: This was indicated by a strong mean of 4.0987 and a heterogeneity standard deviation of .56592. This implies that Clients pay tax easily from anywhere by use of their mobile phone especially if they have the applications on their phone and network is available. Clients file tax easily from anywhere by use of their mobile phone: This was indicated by a strong mean of 4.1316 and a heterogeneity standard deviation of .57085. This implies that Clients file tax easily from anywhere by use of their mobile phone.

Clients check tax statement easily from anywhere by use of their mobile phone: This was indicated by a strong mean of 4.1382 and a heterogeneity standard deviation of .61927. This implies that Clients check tax statement easily from anywhere by use of their mobile phone. Clients get tax knowledge easily from anywhere by use of their mobile phone: This was indicated by a strong mean of 4.1809 and a heterogeneity standard deviation of .58318. This implies that Clients get tax knowledge easily from anywhere by use of their mobile phone. Clients get alert message easily on their mobile: This was indicated by a strong mean of 4.2171 and a homogeneity standard deviation of .55004. This implies that Clients get alert message easily on their mobile.

Overall assessment shows that Mobile Payment/filing System in Rwanda is highly used by tax payers for tax collection; this was indicated by a mean of 4.1533 and a heterogeneity standard deviation of .57785. This implies that Mobile Payment/filing System is used for tax collection by RRA.

4.3.2 Effects Mobile Payment/filing System on Tax Collection in Rwanda

Table 4.10 shows the effects of Mobile Payment/filing System on Tax Collection in Rwanda

Table 4.10: Effects of Mobile Payment/filing System on Tax collection in Rwanda

	Mean	Std. Deviation	Comments
Mobile payment system has made clients pay tax in time	4.2763	.50342	Strong Heterogeneity
Mobile payment system has reduced on RRA/clients operational cost	4.3059	.48932	Strong Homogeneity
Mobile payment system has made clients pay tax from anywhere	4.1711	.52371	Strong Heterogeneity
Mobile t payment system has made communi-cation collaboration between tax payers easier	4.2829	.47259	Strong Homogeneity
Mobile payment system has made tax audit-ing/accountability easier	4.2928	.45578	Strong Homogeneity
Mobile payment system has increased Reve-nue collection	4.3092	.46293	Strong Homogeneity
Overall Summary	**4.2730**	**.484625**	**Strong Homogeneity**

Source: Primary data, 2016

Table 4.10 describes the effects of Mobile payment/filing system on tax collection in Rwanda and their responses were as analyzed in details as below;

Mobile payment system has made clients pay tax in time: This was indicated by a strong mean of 4.2763 and a Heterogeneity standard deviation of .50342. This implies that Mobile payment system has made clients pay tax in time. Mobile payment system has reduced on RRA/clients operational cost: This was indicated by a strong mean of 4.3059 and a Homogeneity standard deviation of .48932. Mobile payment system has reduced on RRA/clients operational cost.

Mobile payment system has made clients pay tax from anywhere: This was indicated by a strong mean of 4.1711 and a Heterogeneity standard deviation of .52371. This implies that Mobile payment system has made clients pay tax from anywhere. Mobile payment system has made communication collaboration between tax payers easier: This was indicated by a very strong mean of 4.2829 and a Heterogeneity standard deviation of .47259. This implies that Mobile payment system has made communication collaboration between tax payers easier.

Mobile payment system has made tax auditing/accountability easier: This was indicated by a strong mean of 4.2928 and a Heterogeneity standard deviation of .45578. This implies that Mobile payment system has made tax auditing/accountability easier. Mobile payment system has increased Revenue collection: This was indicated by a strong mean of 4.3092 and a homogeneity standard deviation of .46293. This implies that Mobile payment system has increased Revenue collection.

Overall assessment shows that Mobile Payment/filing System in Rwanda has improved on tax collection in Rwanda; this was indicated by a mean of 4.2730 and a heterogeneity standard deviation of .484625. This implies that Mobile Payment/filing System has improved on tax collection by RRA.

4.3.3 Relationship between Mobile Payment/filing System and Tax Collection in Rwanda

Table 4.11 gives the relationship between Mobile Payment/filing System and Tax Collection in Rwanda

Table 4.11: Relationship between Mobile Payment System and Tax Collection

		Mobile Payment system	Tax collection
Mobile Payment system	Pearson Correlation	1	.873**
	Sig. (2-tailed)		.000
	N	304	304
Tax collection	Pearson Correlation	.873**	1
	Sig. (2-tailed)	.000	
	N	304	304

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

Table 4.11 is giving the relationship between mobile payment/filing system on tax collection in Rwanda whereby the respondents N is 304 and the significant level is 0.01, the results indicate that independent variable has positive strong correlation to dependent variable equal to .873** and the p-value is .000 which is less than 0.01. When p-value is less than significant level, therefore researchers conclude that variables are correlated. This means that there is a significant relationship between mobile payment/filing system and tax collection in Rwanda. We can therefore conclude that mobile payment/filing system contribute positively to tax collection in Rwanda.

4.4 Effects of Electronic Billing Machine on Tax Collection in Rwanda

This section analyses Electronic Billing Machine and its effect on tax collection in Rwanda

4.4.1 Assessing Electronic Billing Machine on Tax Collection in Rwanda

Table 4.12 assesses of Electronic Billing Machine on tax collection in Rwanda

Table 4.12: Electronic Billing Machine on tax collection in Rwanda

	Mean	Std. Deviation	Comments
Clients produce invoice easily by use of EBM	4.2599	.48906	Strong Homogeneity
Clients view tax statement easily by use of EBM	4.2270	.49198	Strong Homogeneity
EBM has made communication easy with clients	4.2072	.50064	Strong Homogeneity
Overall Summary	**4.2313**	**.49389**	**Strong Homogeneity**

Source: Primary data, 2016

Table 4.12 describes the Electronic Billing Machine on Tax Collection in Rwanda responses were as analyzed in details as below;

Clients produce invoice easily by use of EBM: This was indicated by a strong mean of 4.2599 and a Heterogeneity standard deviation of .48906. This implies that Clients produce invoice easily by use of EBM. Clients view tax statement easily by use of EBM: This was indicated by a strong mean of 4.2270 and a Heterogeneity standard deviation of .49198. This implies that Clients view tax statement easily by use of EBM.

EBM has made communication easy with clients: This was indicated by a strong mean of 4.2072 and a heterogeneity standard deviation of .50064. This implies that EBM has made communication easy with clients.

Overall assessment shows that EBM in Rwanda is used for tax collection in Rwanda; this was indicated by a mean of 4.2313 and a heterogeneity standard deviation of .49389. This implies that EBM is used for tax collection by RRA.

4.4.2 Effects of Electronic Billing Machine on Tax Collection in Rwanda

Table 4.13 assesses the effects of Electronic Billing Machine on Tax Collection in Rwanda

Table 4.13: Effects of Electronic Billing Machine on Tax Collection in Rwanda

	Mean	Std. Deviation	Comments
EBM system has made clients pay tax in time	4.1875	.46071	Strong Homogeneity
EBM system has reduced on RRA/clients operational cost	4.2105	.43950	Strong Homogeneity
EBM system has made communication collaboration between tax payers easier	4.2993	.50003	Strong Homogeneity
EBM system has made tax auditing/accountability easier	4.3059	.48253	Strong Homogeneity
EBM system has increased Revenue collection	4.3717	.48406	Strong Homogeneity
Overall Summary	**4.27498**	**.47336**	**Strong Homogeneity**

Source: Primary data, 2016

Table 4.13 describes the effects of Electronic Billing Machine on Tax Collection in Rwanda and their responses were as analyzed in details as below;

EBM system has made clients pay tax in time: This was indicated by a strong mean of 4.1875 and a Heterogeneity standard deviation of .46071. This implies that EBM system has made clients pay tax in time. EBM payment system has reduced on RRA/clients operational cost: This was indicated by a strong mean of 4.2105 and a Heterogeneity standard deviation of .43950. EBM payment system has reduced on RRA/clients operational cost.

EBM payment system has made communication collaboration between tax payers easier: This was indicated by a strong mean of 4.2993 and a Heterogeneity standard deviation of .50003. This implies that EBM payment system has made communication collaboration between tax payers easier. EBM payment system has made tax auditing/accountability easier: This was indicated by a strong mean of 4.3059 and a Homogeneity standard deviation of .48253. This implies that EBM payment system has made tax auditing/accountability easier. EBM payment system has increased Revenue collection: This was indicated by a strong mean of 4.3717 and a Heterogeneity standard deviation of .48406. This implies that EBM payment system has increased Revenue collection.

Overall assessment shows that EBM System in Rwanda has improved on tax collection in Rwanda; this was indicated by a mean of 4.27498 and a heterogeneity standard deviation of .47336. This implies that EBM system has improved on tax collection by RRA.

4.4.3 Relationship between of Electronic Billing Machine and Tax Collection in Rwanda

Table 4.14 describes the Relationship between Electronic Billing Machine and Tax Collection in Rwanda

Table 4.14: Relationship between Electronic Billing Machine and Tax Collection

		Electronic Billing Machine	Tax Collection
Electronic Billing Machine	Pearson Correlation	1	.934**
	Sig. (2-tailed)		.000
	N	304	304
Tax Collection	Pearson Correlation	.934**	1
	Sig. (2-tailed)	.000	
	N	304	304

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

Table 4.14 is giving the relationship between Electronic Billing Machine and Tax Collection in Rwanda whereby the respondents N is 304 and the significant level is 0.01, the results indicate that independent variable has positive high correlation to dependent variable equal to .934** and the p-value is .000 which is less than 0.01. When p-value is less than significant level, therefore researchers conclude that variables are correlated. This means that there is a significant relationship between Electronic Billing Machine and Tax Collection in Rwanda. We can therefore conclude that Electronic Billing Machine contribute positively to Tax Collection in Rwanda.

4.5 Hypothesis Testing

Table 4.15: Hypothesis testing Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.951[a]	.905	.904	.82498

a. Predictors: (Constant), EBM, Internet payment, Mobile Payment

Table 4.16: ANOVA table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1938.347	3	646.116	949.334	.000[b]
	Residual	204.180	300	.681		
	Total	2142.526	303			

a. Dependent Variable: Tax collection

b. Predictors: (Constant), EBM, Internet payment, Mobile Payment

Source: Primary Data, 2016

Table 4.17: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.918	.528		5.532	.000	1.880	3.956
	Internet	.012	.068	.010	.176	.860	-.122	.146
	Mobile	-.388	.067	-.406	-5.767	.000	-.520	-.256
	EBM	2.411	.094	1.312	25.623	.000	2.226	2.596

a. Dependent Variable: Tax collection

4.6 Discussion of Research Findings

H0: Internet payment/filing system has no significant effect on tax collection

Hypothesis H0 proposes that Internet payment does not affect tax payment. The results indicate that Internet Payment does not have relationship with tax collection. The coefficient of determination is 0.860 which indicates that there is no relationship between internet payment and tax collection. These results provide reasonable evidence to the consistent view that, there is lack of internet accessibility in tax payment especially by small tax payers. It can also be justified that

internet infrastructure is inadequate in the country for the majority of tax payers with exception with office big companies. The beta of internet payment is 0.010 with a t-statistic of 0.176. This implies that internet payment has no impact on tax collection.

H1: Mobile payment/filing system has significant effect on tax collection

Hypothesis H0 proposes that mobile payment has significant effect on tax payment. The results indicate that mobile payment system has relationship with tax collection. The coefficient of determination is 0.000 which indicates that there is negative relationship (-.338) between mobile payment and tax collection. These results provide reasonable evidence to the consistent view that, there is network failures, inadequate knowledge in use of the platform and attitude towards the use of the system especially in transfer of money hence they prefer traditional payment system to mobile. The beta of mobile payment is -.406 with a t-statistic of -5.767. The negative coefficients mean a 1% increase in usage of mobile payment leads to a -.388% increase in tax collection and the negative t-statistic value indicates that the impact is statistically significant at 5 % test level.

H2: Electronic Billing Machine has no significant effect on tax collection

Hypothesis H0 proposes that EBM has significant effect on tax payment. The results indicate that EBM system has relationship with tax collection. The coefficient of determination is 0.000 which indicates that there is positive relationship (2.411) between mobile payment and tax collection. These results provide reasonable evidence to the consistent view that, there is most of the business have been provided with EBM machine and its mandatory to use EBM by VAT registered tax payers. It is also mandated by law that all medium enterprises should use EBM machine for effective accountability. The beta of mobile payment is 1.312 with a t-statistic of 25.623. The positive coefficients mean a 1% increase in the usage of EMB leads to a 2.411% increase in tax collection and the high t-statistic value indicates that the impact is statistically significant at 5 % test level.

CHAPTER FIVE

SUMMARY CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The chapter covers the conclusion and recommendation of the findings. Recommendations to the challenges facing the Tax Management System

5.1 Summary of findings

This section summarizes findings about each objectives in order to come up with logical conclusion

5.1.1 Effects of Internet Tax Payment System on Tax Collection

Findings on the internet Tax Payment System on Tax Collection show that tax payment is done by use desk top computers either from home or office, clients file tax from home by use of desk top either from home or office, clients check tax statement by use of desk top either from home or office, clients get tax knowledge by use of internet without physical appearance and clients get alert on email by use of internet. The respondents further stated that Internet payment/filing system has made clients pay tax in time. Internet payment/filing system has reduced on RRA/clients operational cost. Internet payment/filing system has made clients pay tax from anywhere. Internet payment/filing system has made communication collaboration between tax payers easier. Internet payment/filing system has made tax auditing/accountability easier and Internet payment/filing system has increased Revenue collection. In testing the hypothesis the results indicate that Internet Payment does not have relationship with tax collection. The coefficient of determination is 0.860 which indicates that there is no relationship between internet payment and tax collection. These results provide reasonable evidence to the consistent view that, there is lack of internet accessibility in tax payment especially by small tax payers. It can also be justified that internet infrastructure is inadequate in the country for the majority of tax payers with exception with office big companies. The beta of internet payment is 0.010 with a t-statistic of 0.176. This implies that internet payment has no impact on tax collection.

5.1.2 Effects of Mobile Payment System on Tax Collection

The finding shows that Clients pay tax easily from anywhere by use of their mobile phone, clients file tax easily from anywhere by use of their mobile phone, clients check tax statement easily from anywhere by use of their mobile phone, clients get tax knowledge easily from

anywhere by use of their mobile phone and clients get alert message easily on their mobile. The respondents further stated that Mobile payment system has made clients pay tax in time, mobile payment system has reduced on RRA/clients operational cost, Mobile payment system has made communication collaboration between tax payers easier, Mobile payment system has made tax auditing/accountability easier and Mobile payment system has increased Revenue collection. The hypothesis testing results indicate that mobile payment system has relationship with tax collection. The coefficient of determination is 0.000 which indicates that there is negative relationship (-.338) between mobile payment and tax collection. These results provide reasonable evidence to the consistent view that, there is network failures, inadequate knowledge in use of the platform and attitude towards the use of the system especially in transfer of money hence they prefer traditional payment system to mobile. The beta of mobile payment is -.406 with a t-statistic of -5.767. The negative coefficients mean a 1% increase in usage of mobile payment leads to a -.388% increase in tax collection and the negative t-statistic value indicates that the impact is statistically significant at 5 % test level.

5.1.3 Effects of Electronic Billing Machine on Tax Collection

The finding shows that clients produce invoice easily by use of EBM, Clients view tax statement easily by use of EBM and EBM has made communication easy with clients. Respondents further stated that EBM system has made clients pay tax in time, EBM payment system has reduced on RRA/clients operational cost, EBM payment system has made communication collaboration between tax payers easier, EBM payment system has made tax auditing/accountability easier and EBM payment system has increased Revenue collection. The hypothesis testing results indicate that EBM system has relationship with tax collection. The coefficient of determination is 0.000 which indicates that there is positive relationship (2.411) between mobile payment and tax collection. These results provide reasonable evidence to the consistent view that, there is most of the business have been provided with EBM machine and they are required to use it for account ability purposes. It is also mandated by law that all medium enterprises should use EBM machine for effective accountability. The beta of mobile payment is 1.312 with a t-statistic of 25.623. The positive coefficients mean a 1% increase in the usage of EMB leads to a 2.411% increase in tax collection and the high t-statistic value indicates that the impact is statistically significant at 5 % test level.

5.2 Conclusion

In conclusion it was established that before electronic tax management system was introduced especially from 2003 to 2010 tax collection low ranging from 119.1 to 385.2 respectively which was below the national budget. This implies that tax collection was not meeting the budget target hence the country was operating below the budget. In 2012 E-filing and e-taxation payment was introduced by RRA in 2012 with functioning e-filing system in place such as Mobile declaration, Electronic Single for domestic taxpayers Window (ESW) and Authorized Economic Operator (AEO) for importers and exporters (Gupta, 2012) in order to improve on tax collection and meet the targeted budget accordingly. And this was done to enable the taxpayers to deal with RRA electronically anywhere and anytime as well as to enhance tax administration to collect tax revenue in short term and as a measure to improve on tax compliance and efficiency. It offers an option to the clients to file taxes like VAT, PAYE, Excise duty and Withholding taxes electronically on RRA's website without having to visit a RRA premise especially if there is tax education, compliancy aspect is guaranteed. The system managed to raise tax collection drastically in 2012 and 2013 by 48.1% and 42.9% respectively though still they were unable to meet the target. This was believed to be due to lack of awareness among the tax payers about electronic tax management system in place and lack of skills especially among the tax payers on how to use the system. In 2014 tax collection was increased to 888.2 against the budget which was 773.9. This implies that the RRA managed to collect revenue above the budget line by 12.6%. Consequently in 2015 revenue collection was about the budget by 98.1%. This implies that like stated in the hypothesis especially EBM and mobile payment system has relationship with revenue collection although internet system small relationship. Therefore it can be summarized that electronic tax management system has improved tax collection in Rwanda.

5.2 Recommendations:

The researcher has come up with the following recommendations in order to support electronic tax management system and revenue collection in Rwanda

i. RRA and clients should subscribe to reliable internet providers for effective and efficient service delivery.

ii. RRA should employ skilled personnel with more experience on network management in order to ensure the reliability of network. (is it based on your finding – show it to me)

iii. RRA management should ensure that there is country wide training to clients on usage of various e tax applications for efficient revenue collection. For example training on mobile application and EBM usage.

iv. EBM should be provided to different business enterprises across the country for easy accessible by customers, so that quick service and convenience is maintained hence improving revenue collection. At the same time constantly serviced should be ensured in order to provide reliability of the services.

v. Constant power back up should be ensured on order to solve the problems of power interruptions and fluctuations.

5.4 Areas of further studies

Researcher has observed the following areas for further studies because they are some of the challenges facing electronic tax management in Rwanda:

i. Effects of network reliability on Electronic Tax Management

ii. Effect of technical knowhow on Electronic Tax Management

iii. Effect of attitudes and culture on Electronic Tax Management

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APPENDICES

Appendix 1: Letter of Undertaking

Dear respondent,

REF: RESEARCH INTRODUCTORY LETTER

I, am a master student at University of Rwanda (UR) College of Business and Economics in the Accounting department, I am carrying out a study on **"**the effects of Electronic Tax Management System on effectiveness of Revenue collection in Rwanda"

With reference to this project, some questions have been designed for the collection of data that will lead to the successful completion of my study. The information will strictly be for academic purposes, views on various aspect of this study will be of great value and the information you furnish in response to this questionnaire will be kept with utmost confidentiality.

Please, I kindly request you to fill these questionnaires.

Thank you for your cooperation

Appendix 2: Questionnaire

Instructions

The questionnaire is divided two: Bio data of respondents and Specific objectives

Please tick the response that you think is most appropriate to each question and indicates your response in the space provided.

Tick whichever is applicable to you:

a. BIO DATA

1. Are you Male or Female?

a. Male [ ]

b. Female [ ]

2. What is your age? (Tick appropriately)

a. 21- 30 [ ]

b. 31- 40 [ ]

c. 41- 50 [ ]

d. 51 and above [ ]

3. Educational qualification:

a. Secondary [ ]

b. Undergraduate [ ]

c. Post graduate [ ]

d. Others specify [ ]

4. How long have you been working with Rwanda Revenue Authority (RRA)?

a. 1 - 2 years [ ]

b. 2 – 3 years [ ]

c. 3 – 4 years [ ]

d. 5 years and above [ ]

SPECIFIC OBJECTIVE 1: EFFECT OF INTERNET PAYMENT SYSTEM ON TAX COLLECTION IN RWANDA

Definition of the Scale for the assessing internet payment system on tax collection in Rwanda (1 = strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree)

Assessing internet payment system	**1**	**2**	**3**	**4**	**5**
5. Clients pay tax easily by use desk top computers either from home or office					
6. Clients file tax from home by use of my desk top either from home or office					
7. Clients check tax statement by use of desk top either from home or office					
8. Clients get tax knowledge by use of internet without physical appearance					
9. Clients get alert on email by use of internet					

Definition of the Scale for the assessing the effect of internet payment/filing system on tax collection in Rwanda (1 = strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree)

Effect of internet payment system on tax collection in Rwanda	**1**	**2**	**3**	**4**	**5**
10. Internet payment/filing system has made clients pay tax in time					
11. Internet payment/filing system has reduced on RRA/clients operational cost					

12. Internet payment/filing system has made clients pay tax from anywhere					
13. Internet payment/filing system has made communication collaboration between tax payers easier					
14. Internet payment/filing system has made tax auditing/accountability easier					
15. Internet payment/filing system has increased Revenue collection					

SPECIFIC OBJECTIVE 2: EFFECT OF MOBILE PAYMENT/FILING SYSTEM ON TAX COLLECTION IN RWANDA

Definition of the Scale for the assessing mobile payment/filing system on tax collection in Rwanda (1 = strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree)

Assessing mobile payment/filing system	**1**	**2**	**3**	**4**	**5**
16. Clients pay tax easily from anywhere by use of their mobile phone					
17. Clients file tax easily from anywhere by use of their mobile phone					
18. Clients check tax statement easily from anywhere by use of their mobile phone					
19. Clients get tax knowledge easily from anywhere by use of their mobile phone					
20. Clients get alert message easily on their mobile					

Definition of the Scale for the assessing the effect of mobile payment/filing system on tax collection in Rwanda (1 = strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree)

Effect of Internet Payment/filing system on tax collection in Rwanda	**1**	**2**	**3**	**4**	**5**
21. Mobile payment system has made clients pay tax in time					
22. Mobile payment system has reduced on RRA/clients operational cost					
23. Mobile payment system has made clients pay tax from anywhere					
24. Mobile t payment system has made communication collaboration between tax payers easier					
25. Mobile payment system has made tax auditing/accountability easier					
26. Mobile payment system has increased Revenue collection					

SPECIFIC OBJECTIVE 3: EFFECT OF ELECTRONIC BILLING MACHINE ON TAX COLLECTION IN RWANDA

Definition of the Scale for the assessing electronic billing machine system on tax collection in Rwanda (1 = strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree)

Assessing electronic billing machine system	**1**	**2**	**3**	**4**	**5**
27. Clients produce invoice easily by use of EBM					
28. Clients view tax statement easily by use of EBM					
29. EBM has made communication easy with clients					

Definition of the Scale for the assessing the effect of Electronic Billing Machine system on tax collection in Rwanda (1 = strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree)

Effect of Electronic Billing Machine System on tax collection in Rwanda	**1**	**2**	**3**	**4**	**5**
30. EBM system has made clients pay tax in time					
31. EBM system has reduced on RRA/clients operational cost					
32. EBM system has made communication collaboration between tax payers easier					
33. EBM system has made tax auditing/accountability easier					
34. EBM system has increased Revenue collection					

1. What do you think could be the challenges facing electronic tax payment system?

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2. What could be the solutions to the challenges?

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Appendix 3: Work Plan

ACTIVITY	**PERIOD**
Research proposal writing and submission	October 2015 – January 2016.
Data collection	February 2016.
Data analysis /report writing	March - April, 2016.
Submission of the dissertation	May, 2016.