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Effect of Electronic Tax Payment System on Tax Collection in Rwanda Revenue Authority, Rwanda

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Abstract: *The general objective of this study was to assess the effect of the electronic tax payment system on tax collection in Rwanda. This research adopted a descriptive research design. Data collection was through a structured questionnaire. The target population for this study was 546 employees located at the RRA headquarters. The sample size was 231 RRA employees. The data was coded and entered into the SPSS. Data was presented in the form of tables and figures. Key findings revealed that the level of significance was .000(b), which was less than the level of significance of 5%, and this implied that the regression model was significant in predicting the relationship between the electronic tax payment system (internet payment system, mobile tax payment system, and electronic billing machine) and tax collection in Rwanda. The F-test was 8.604, which implied that the model was statistically significant between the electronic tax payment system (internet payment system, mobile tax payment system, and electronic billing machine) and tax collection in Rwanda. The study also revealed that the internet tax payment system was an important contribution that aimed to improve tax collection in Rwanda. The outcome of this research found that the mobile tax payment system has a positive and significant effect on tax collection in Rwanda. The study concluded that electronic billing machines had a positive and significant effect on tax collection in Rwanda. This research recommended that RRA should put in place measures and policies that encourage all taxpayers to be willing to pay tax from any business location by use of EBM, as it improves tax collected by RRA.*

Keywords: *Electronic Tax Payment System, Tax Collection, Internet Tax Payment System, Mobile Tax Payment System, Electronic Billing Machine*

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1. Introduction

All the reforms in Rwanda's tax base system were aimed at improving tax collections, administrations, and, above all, tax collection. In a bid to enhance tax collection, the Rwanda Revenue Authority (RRA) decided to opt for an electronic taxation system, which includes e-payment, e-filing, and electronic tax education, in order to improve tax collection in the country (RRA, 2020).The low tax-to-GDP ratio for Rwanda shows that a lot of tax remains uncollected, despite the fact that the government has put in place a number of interventions to increase the ratio and reduce dependency on aid. These measures include taxpayer education in the form of dialogues with stakeholders, seminars, and others to mobilize tax, to reduce tax evasion, and to increase tax collection. Similarly, other measures entail adopting online facilities like e-filing and e-payment, e-clearance, e-billing machines, and online registration were introduced to simplify the process of paying taxes. This technique reduces costs and reduces time taken by taxpayers for declaration and payment of tax as well as increasing domestic revenue (Kagarama, 2020).

For a long time, tax collection has been viewed as a despised activity. However, levies are crucial since without them, there would be no funds to fund public infrastructure that aids businesses and the public to be more industrious (Awadhi, 2019). Before 1994, revenue collection was carried out by the 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 the manual system of tax administration characterized by low tax collection, delays, and poor record keeping.

As a result, this made Rwanda fail in meeting targeted budgets (RRA, 2018).

RRA (2023) states that e-filing and e-payment boost tax collection and bridge the budget gap. However, there are still challenges. For instance, some people fail to declare their property, and others are non-compliant taxpayers who may choose to keep two receipt books so they can falsify receipts. In the same vein, some traders are still hesitant to give clients tax invoices for all the items bought, and inadequate computer skills associated with electronic tax management make it a problem to achieve the targeted budget.

There exist past studies addressing aspects of tax revenue collection. For instance, Kamana's (2021) study revealed that failure by the government through the RRA to meet its annual revenue targets has necessitated the need to look for more avenues that will boost revenue generated through taxation. Kimeli (2020), on the other hand explored taxpayers' attitudes and tax compliance behavior in Kenya's small and medium enterprises specifically in Kirinyaga County. Considering that related studies highlighted above and others such as those of Mwonge (2016) and Utetiwabo and Mulyungi (2022), in an effort to enhance tax compliance and hence tax collection, the government of Rwanda introduced an e-tax system of filing and remitting tax returns. As much as the RRA has tried to achieve its tax collection targets, the tax collected is still low, and this still leads to a relatively large budget deficit. Not much research has evaluated the effect of electronic tax payment systems in reference to tax collection in Rwanda. It is upon the above problem that the researcher is prompted to analyze the effect of the electronic tax payment system on tax collection in Rwanda by the Rwanda Revenue Authority (RRA) as a case study.

The general objective of this study was to assess the effect of electronic tax payment system on tax collection in Rwanda.

Specific objectives of the study:

1. To establish the effect internet tax payment system on tax collection in RRA, Rwanda.
2. To determine the effect of mobile tax payment system on tax collection in RRA, Rwanda.
3. To assess the effect of electronic billing machine on tax collection in RRA, Rwanda.

The hypotheses of this research project were:

$H_0$1: There is no significant effect of internet tax payment system on tax collection in RRA, Rwanda.
$H_0$2: There is no significant effect of mobile tax payment system on tax collection in RRA, Rwanda.
$H_0$3: There is no significant effect of electronic billing machine on tax collection in RRA, Rwanda.

2. Literature Review

2.1. Theoretical Review

The study explored two theories namely: Technology Acceptance Model and Ability to Pay Theory

2.1.1 Technology Acceptance Model

The technology acceptance model (TAM) was originally proposed by Davis in 1986 to help explain and predict user behavior on information technology (Legris, 2018). This study adopted the Technology Acceptance Model (TAM) as the theoretical basis for analyzing and understanding the electronic tax payment system and tax collection in Uganda. The theory suggests that perceived usefulness (PU) and perceived ease of use (PEOU) of IT are major determinants of its usage. Perceived usefulness (PU) was defined as a person's belief that using a particular system would enhance his or her job performance, and perceived ease of use (PEOU) was defined as a person's belief that using a particular system would be free of effort. Both PU and PEOU jointly influence citizens' intentions. Davis (2022) asserts that the key purpose of the Technology Acceptance Model (TAM) is to provide a basis for tracing the impact of external factors on internal beliefs, attitudes, and intentions.

Behavioral intention (BI) is a measure of the strength of one's intention to perform a specified behavior. According to intention-based theories, user adoption and usage behavior are determined by the intention to use IT. It is a kind of self-prediction or behavioral expectation, indicated as one of the most accurate predictors available for an individual's future behavior (Davis, 2022). In predicting usage, the TAM model might be useful within and across organizations for evaluating applications or technologies or to make comparisons between user groups or applications. This theory is relevant to the study as it emphasizes that using a particular system enhances tax collection.

2.1.2 Ability to Pay Theory

This theory was developed by Smith and Pigou (1903): the subjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their respective abilities; that is, in proportion to the revenue that they respectively enjoy under the protection of the state. " The ability-to-pay principle requires that the total tax burden be distributed among individuals according to their capacity to bear it, considering all of the relevant personal characteristics. This is the most popular and commonly accepted principle of equity or justice in taxation, as citizens of a country pay taxes to the government in accordance with their ability to pay. It seems that if the taxes are levied on this principle as stated above, then justice can be achieved. The most suitable taxes from this standpoint

are personal levies such as income, net worth, consumption, and inheritance taxes (Wasao, 2020). The economists are not unanimous as to what should be the exact measure of a person's ability or faculty to pay. The main viewpoints advanced in this connection are as follows: Income as the Basics: Most of the economists are of the opinion that income should be the basis of measuring a man's ability to pay. It appears very just and fair that if the income of a person is greater than that of another, the former should be asked to pay more towards the support of the government than the latter. That is why in the modern tax system of the countries of the world, income has been accepted as the best test for measuring the ability to pay for a person (Muturi, 2019). The theory states that taxes need to be paid according to a taxpayer's ability to pay (Muturi, 2019). It highlights that individuals who earn more money can afford to pay more in taxes (Muturi, 2019). The theory also advances the following views on factors that determine bases for taxation, which are: ownership of property, which is the ability to pay, can be evidenced by ownership of property. Thus, it suggests that those who buy property should be taxed more, which is a nullity because ownership of property is a choice. Using expenditure as a basis for tax: Balunywa, Nangoli, and Mugerwa (2018) believe that the quantum of expenditure should determine tax. This seems absurd given that expenditure depends on factors like size of family. Use of income as a basis for tax: A widely held view is that income is the best determinant of tax (Franzoni, 2020). In the case of this study, the ability to pay tax is handled e-tax system helps to comply with tax collection by filling in the real code of the product so that the tax for the product displays correctly in the system, hence the e-tax system and tax collection for the sake of both the government and the taxpayers of RRA.

2.2 Effect of internet tax payment system on tax collection

In Uganda, Akello (2019) reported that there are challenges such as intermittent power supply and Internet outages but says the tax body has made contingency plans to ensure that the system is operational 24/7. The study has the main objective of assessing the challenges of the internet banking system. The study employed a descriptive research approach. Descriptive analysis was done using mean, median, and standard deviation, while inferential analysis was carried out using multiple regression analysis. The findings implied that the electronic filing process still confuses a lot of people because the web portal has many features, and yet most people cannot understand some tax terms. Sheikh (2020) explains that as with any new system, there have been numerous teething problems with the electronic system in Kenya. The study evaluated the numerous teething problems with the electronic system in Kenya. Causal-comparative and descriptive research designs were used. This is bound to create discrepancies in taxpayers' records, especially with regard to payment of tax obligations as well as submitting returns. The findings implied that the e-tax system lacks historical records of taxpayers. Its record keeping is a "going forward" type in that it only stores tax records of taxpayers from the time of registering for e-Tax onwards.According to Tan and Foo (2021), one of the first challenges of e-filing is security of personal data and tax data. The objective of the study was to study the challenges of e-filing, which is the security of personal data and tax data. The study was analyzed using descriptive, correlation, and regression techniques. The findings implied that risk perception could significantly influence the taxpayer's or user's intention to use it. The most widely known risk that everyone refers to is lack of internet security. Another risk that Tan and Foo (2021) talk about is the possibility that confidential personal information could be intercepted and stolen by fraudsters during transmission.Crews (2022) said that lawyers feared using e-filing due to a lack of computer knowledge, and the best way to reduce anxiety is to gain comfort with the use of e-filing systems and develop a strong network of tech-savvy assistants or peers. The objective was to analyze the effect of e-filing from the local coffee shop: a practical look into confidentiality, technology, and the practice of law. Descriptive design was employed in the study. The findings revealed that comfort can be developed with education and support. Furthermore, he encourages users to take online training that is provided by the authorities. This study recommended customer education and widespread deployment of e-payment point-of-sale terminals to merchants.

In Malaysia, Ling and Nawawi (2020) carried out a survey on integrating ICT skills and tax software in tax education. The main objective was to study the effect of integrating ICT skills and tax software in tax education. The respondents were tax practitioners, and the study aimed at establishing the necessary skills required by taxpayers to fully utilize an online tax system. The study found that three skills are needed by a taxpayer to interact well with a technology-based tax system, namely, spreadsheet software, word-processing software, and e-mail. The findings of this study have implications for the current study in that in analyzing the effectiveness of an electronic filing system, one must not ignore the mandatory skills that the users of the system need to have. He confirmed that despite the heavy investment that the Malaysian tax authority put into the new online system, only 20% of the targeted taxpayers were able to use it after three years of implementation. This was mainly attributed to a lack of necessary user skills like computer literacy; however, taxpayer behavior also played a role.Makanga (2020) did a study on the adoption of technology as a strategic tool for enhancing tax collection in Kenya. The objective of the study was to evaluate the role technology would play in Kenya to enhance tax collection among large taxpayers. The case study was based on large taxpayers, which included companies with a turnover of Kshs. 750 million and above, or government ministries and corporations. The

study found that in the fast-changing business world, technology has become part and parcel of any business growth. Either KRA or Large Taxpayers must embrace modern technology to enhance efficiency in tax collection.

2.3 Effect of mobile tax payment system on tax collection

According to Jahirul (2019), mobile tax payment systems have helped cut down on time spent screening books of accounts. The objective was to evaluate the effect of a mobile tax payment system to cut down time spent on screening books of accounts. This study used a descriptive survey design and targeted population. Questionnaires were used in data collection from the sample of 90 respondents. The study revealed that the use of a mobile tax payment system discourages some taxpayers who were fond of keeping two receipt books or not issuing tax receipts to clients, irrespective of the quantities bought, which encouraged tax evasion. Jayakumar and Nagalakshmi (2020) stated that a well-designed mobile tax payment system can lower corruption by reducing face-to-face interactions. 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 & Sekar, 2021). The mobile tax payment system is also easy, flexible, and convenient for taxpayers. Mobile tax payment systems make it possible to file returns from a taxpayer's home, library, financial institution, workplace, tax professional's business, or even stores and shopping malls.

2.4 Effect of electronic billing machine on tax collection

Ndayisenga and Shukla (2019) examined the effects of electronic billing machines on revenue collection by the Rwanda Revenue Authority because revenue collection was low and tax administration was weak, and this was believed to be due to the manual system of tax administration characterized by low tax collection, delays, and poor record keeping. This made it difficult for the Rwanda Revenue Authority to meet their targeted budgets. The objective was to evaluate the effect of electronic billing machines on revenue collection. The researcher used a descriptive method of study based on qualitative and quantitative approaches in order to get a better analysis of the study. The population size was 120, and the sample taken was 75 respondents. Both primary and secondary sources with their relevant tools, like questionnaires and documentary analysis, in order to come up with required data. In the findings, it was established that the electronic billing machine system contributes to timely tax payment and reduced operational costs for both RRA staff and clients. The system has also made clients pay tax from any business location, has made communication collaboration between taxpayers easier, has made tax auditing/accountability easier, and lastly, has increased revenue collection. Results gave the relationship between electronic billing machines and the effectiveness of revenue collection in Rwanda, whereby the respondents N is 75 and the significance level is 0.01. The results indicate that the independent variable has a high positive correlation to the dependent variable equal to .850** and the p-value is .000, which is less than 0.01. When the p-value is less than the significance level, researchers conclude that variables are correlated and the null hypothesis is rejected, leaving the alternative hypothesis. This means that there is a significant relationship between electronic billing machines and the effectiveness of revenue collection in Rwanda. We can therefore conclude that electronic billing machines contribute positively to revenue collection in Rwanda.

Harelimana and Gayawira (2020) assessed the impact of electronic billing machines on VAT compliance in small and medium-sized enterprises in Rwanda. The main challenge in the administration of value-added tax (VAT) in many countries has mainly been tax evasion by non-issuance of tax invoices, especially by small to medium taxpayers. Electronic Billing Machines (EBMs) enable revenue authorities to monitor formal business transactions and thus offer the potential to improve VAT compliance; however, because firms can choose not to issue receipts or issue false receipts, EBMs have limited benefits to VAT collections. The descriptive method was used to collect data; the data gathered was analyzed, interpreted, and presented. A sample size of 159 people grouped into medium taxpayers, small taxpayers, and staff of the RRA Musanze station was randomly selected from a population of 709 VAT-registered taxpayers located in the tax center of Musanze. Primary and secondary data were used in this research. Given the findings of this study, there is a positive relationship between the adoption of mandatory usage of EBMs and VAT compliance indicators with a correlation coefficient of 0.586. It was established that after the adoption of EBMs, the late filing and non-filing rate of VAT has reduced by 14% and 20%, respectively; timely payment of VAT liabilities has increased by 20%; reporting of sales has increased by 737 %; VAT collections have increased by 7231%; and voluntary VAT registration has increased by 346 %. To improve VAT compliance through EBMs. RRA is recommended to come up with a plan integrating EBMs within broader tax collection frameworks that create the environment that will best ensure taxpayers' voluntary compliance.

Kibuuka, Ssendagi, Nyanzi, and Buwule (2022) study investigated the relationship between electronic billing machines and revenue collection performance at the Uganda Revenue Authority (URA). A descriptive cross-sectional survey research design was utilized. Semi-structured questionnaires and interviews were used to collect data from a sample of URA employees at the head

office, Nakawa division, Kampala. Data were analyzed using the narrative, descriptive, and Pearson correlation. Findings revealed that electronic billing machines are significantly related to revenue collection performance at URA. Uganda Revenue Authority needs to continuously educate and encourage the use of electronic billing machines so that tax bills are generated faster and more accurately and consequently boost revenue collection performance.

3. Methodology

This section sets out various stages and phases that followed in completing the study. In this stage, most decisions about how research is executed and how data is gathered are made towards the completion of research. This section further describes the various methods used in the sample selection.

3.1. Research design

This research adopted a descriptive research design for collecting data through the questionnaire. The researcher also used a correlation research design to attempt to establish the relationship effect of the electronic tax payment system on revenue collection in Rwanda.

3.2 Study population and sample size

The study population was the employees of RRA headquarters. The total population of this research study was 546 employees of the RRA headquarters (RRA, 2024).

Sample size was done using Yamane's (1971) formula:

n = N/(1+N(e)2.

$n=546/(1+546(0.05)^2)$

n=231

Where:

n = the sample size

N = the population of the study, 546

e = the margin of error in the calculation, 5%

n = 231 employees of RRA headquarters.

Since the population is larger, the researcher randomly s elected 231 employees as sample respondents. The researcher used simple random sampling to select people to include in the sample. Each individual is chosen entirely by chance, and each member of the population has an equal chance of being included in the sample.

3.3 Data Collection Methods and Instruments

A questionnaire was designed to meet the need of the research under investigation and the information collected from the selected respondents. The questionnaire used a 5-point Likert scale. The 5-point scales require respondents to indicate the selected opinion for a given statement from strongly disagree to strongly agree, and the interval between each point on the scale is assumed to be equal. The researcher used the following interpretation scale: 1. Strongly Disagree, 2. Disagree, 3. Neutral, 4. Agree, and 5. Strongly Agree.

3.4 Data Analysis

Once the questionnaires were collected, they were scrutinized to ensure they were duly completed and consistent, after which they were numbered. This was followed by checking that all items were answered according to instructions given to reduce errors and maintain the validity of the data. The data was coded and entered in the SPSS. Descriptive and correlation analysis were used. Data was presented in the form of tables and figures.

Correlation analysis

The correlation analysis was developed to study and measure the statistical relationship that exists between two or more variables. When three or more variables are considered, the study deals with multiple correlations. Correlation coefficient/positive or negative The correlation coefficient takes on values ranging between +1 and -1. In correlation analysis, the purpose was to measure the strength and closeness of the relationship between each independent variable and the dependent variable.

Regression analysis

Regression is a statistical method used to determine the strength and character of the relationship between one dependent variable (usually denoted by Y) and a series of other variables (known as independent variables denoted by X).

$Y = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + -----\varepsilon$

Where;

Y = tax collection in Rwanda

α = Constant term

β1- β3= coefficients of explanatory variables

ε = Standard Error

β1,β2,β3 = Beta coefficients

X1 = internet tax payment system

X2 = mobile payment system

X3 = electronic billing machine

The test of significance being 0.05

3.5 Ethical Considerations

The research treated information from respondents with utmost confidence without disclosing the respondents' identity, and the respondents were given assurance that their responses would be used solely for the study. Consent was sought from the participants after being informed of the rationale and nature of the study to ensure voluntary participation.

4. Results and Discussion

This section presents the analysis of data collected and discusses the findings of the effect of the electronic tax payment system on tax collection in Rwanda. In this research, the respondents were employees of RRA headquarters. The statistical analysis was done, and the results were generated using the Statistical Package of Social Sciences (SPSS) version 22.0. This section consists of correlation and regression analysis. The section was meant to achieve both general and specific objectives in establishing the relationships that exist between the study variables.

4.1 Correlational analysis

The study sought to establish the relationship between the electronic tax payment system and tax collection in Rwanda. Correlation is a bivariate analysis that measures the magnitude of linear association between two variables and the direction of the association. Normally, (r) is between positive one (+1) and negative one (-1). As the (r) value goes towards 0, the relationship between the two variables is weaker. Pearson correlation (r) was used to show the relationship between the electronic tax payment system and tax collection in Rwanda. The study results are illustrated in Table 1:

Table 1: Correlations coefficient matrix

		X_1	X_2	X_3	Y	
X1= Internet tax payment system	Pearson Correlation	1				
X2= Mobile tax payment system	Pearson Correlation	.698**	1			
X3= Electronic billing machine	Pearson Correlation	.786**	.658**	1		
Y= Tax collection in Rwanda	Pearson Correlation	.844**	.824**	.684*	.464**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

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

A Pearson correlation was performed, and the result of the Pearson correlation test, as presented in Table 1, shows a strong correlation (r = 0.844**; p = 0.000 < 0.05) between internet tax payment and tax collection in Rwanda. This implies that the internet tax payment is positively correlated to the tax collection in Rwanda.

In addition, the correlation between the mobile tax payment system and tax collection in Rwanda was significant at r = 0.824**, p = 0.00 < 0.05, which implies a strong correlation between the mobile tax payment system and tax collection in Rwanda.

The result of the Pearson correlation test also showed a correlation (r = 0.684*; p = .000 < p=.000<0.05) between electronic billing machines and tax collection in Rwanda. This implies that the electronic billing machine is strongly correlated to the tax collection in Rwanda. In addition, the correlation between these two variables was significant, that is, p<0.05, implying a strong relationship between electronic billing machines and tax collection in Rwanda.

4.2 Multiple linear regression model

The researcher conducted a regression analysis to determine the change in the tax collection in Rwanda (dependent variable) because of change in the three independent variables. Regression analysis allows you to model, examine and explore spatial relationships, and can help explain the factors behind observed spatial patterns. Regression analysis is also used for prediction. This section shows the results from the data collected that helps in answering research question and achievement of objective.

Table 2. Model Summary Between Electronic tax payment system and tax collection in Rwanda

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.760[a]	.577	.550	.58009

a. Predictors: (Constant), internet payment system, mobile tax payment system, and electronic billing machine.

From the results of the analysis, the findings show that R square of 0.577 indicates that about 57.7% of variations in the dependent variable (i.e., Tax collection in Rwanda) are explained by the moderate independent variable (internet payment system, mobile tax payment system, and electronic billing machine) while .423 representing 42.3% of tax collection in Rwanda comes from other variables that are not included in the model studied. This implies that these variables are very significant and need to be factored to improve tax collection in Rwanda.

Table 3. ANOVA Between Electronic tax payment system and tax collection in Rwanda

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.651	3	2.895	8.604	.000[b]
	Residual	32.304	227	.337		
	Total	40.990	230			

a. Dependent Variable: tax collection in Rwanda

b. Predictors: (Constant), internet payment system, mobile tax payment system, and electronic billing machine.

The results of the findings above revealed that the level of significance was .000(b) which is less level of significance of 5% and this implies that the regression model is significant in predicting the relationship between electronic tax payment system (internet payment system, mobile tax payment system, and electronic billing machine) and tax collection in Rwanda. F-test is 8.604 implies that the model was statistically relationship between electronic tax payment system (internet payment system, mobile tax payment system, and electronic billing machine) and tax collection in Rwanda.

Table 4. Coefficients Between Electronic tax payment system and tax collection in Rwanda

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	2.329	1.735		1.342	.000
Internet payment system	.212	.072	.294	2.929	.004
Mobile tax payment system	.156	.059	.278	2.665	.009
Electronic billing machine	.140	.035	.408	3.966	.000

a. Dependent Variable: Tax collection in Rwanda

The Multiple regression model equation would be ($Y = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + -----\varepsilon$)
Where Y is dependent variables while X= independent variables
X1= Internet payment system, X2= mobile tax payment system, X3= electronic billing machine.

Becomes:

$Y= 2.329+ 0.294X_1+ 0.278X_2+0.408X3+1.097$

Using the regression equation above and holding all factors constant (internet payment system, mobile tax payment system, and electronic billing machine) tax collection in Rwanda. The coefficient of internet payment system was ($\beta1=0.294$, $p=0.004$, <0.05 level of significance) showed a statistically significant relationship between internet payment system and tax collection in Rwanda. The results implied that a unit increase in internet payment system would result to an increase of 0.294 units in tax collection in Rwanda. This was concurred with Sheikh (2020) explains that as with any new system, there have been numerous teething problems with the electronic system in Kenya. The findings implied that e-tax system lacks historical records of taxpayers. Its record keeping is a "going forward" type in that it only stores tax records of taxpayers from the time of registering for e-Tax onwards.

The coefficient of mobile tax payment system was ($\beta2=0.278$, $p=0.009$, <0.05 level of significance) showed a statistically significant relationship between mobile tax payment system and tax collection in Rwanda. The results implied that a unit increase in mobile tax payment system would result to an increase of 0.278 units in tax collection in Rwanda. This was supported by a study of Jahirul (2019), mobile tax payment system has helped to cut down time spent on screening books of accounts. The study revealed that the use of mobile tax payment system discourages 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.

The coefficient of electronic billing machine was ($\beta3=0.408$, $p=0.000$, <0.05 level of significance) showed that electronic billing machine has positive and significant effect tax collection in Rwanda. The results implied that a unit change in electronic billing machine would result to increase of 0.408 units in tax collection in Rwanda. This was concurred with Ndayisenga and Shukla (2019), examined the effects of electronic billing machine on revenue collection by Rwanda Revenue Authority. The system has also made clients pay tax from any business location, has made communication collaboration between taxpayers easier, has made tax auditing/accountability easier and lastly has increased

Revenue collection. Results gave the relationship between electronic billing machine and Effectiveness of Revenue collection in Rwanda.

4.3. Hypothesis testing

To test the study's three formulated hypotheses, the t statistic that tests whether a β value is significantly different from zero (H0: β =o) was considered.

4.3.1 Results for Hypothesis One

This section shows the results from the data collected that help in answering research question one, achieving objective one, and testing null hypothesis one. H01: There is no significant effect of the internet tax payment system on tax collection in RRA, Rwanda. The coefficient of the internet payment system was (β1=0.294, t=2.929, p=0.004, <0.05 level of significance) and showed a statistically significant relationship between the internet payment system and tax collection in Rwanda. Therefore, the null hypothesis one was rejected; hence, the internet payment system had a statistically significant effect on the performance of tax collection in Rwanda.

4.3.2 Results for Hypothesis Two

This section shows the results from the data collected that helps in answering research question two, achievement of objective two, and testing null hypothesis two. H02: There is no significant effect of mobile tax payment system on tax collection in RRA, Rwanda. The coefficient of mobile tax payment system was (β=0.278, t=2.665, p=0.009 < 0.05 level of significance) and showed a statistically significant relationship between mobile tax payment system and tax collection in Rwanda. Therefore, the H02 was rejected because the regression model is significant in predicting the relationship between mobile tax payment system and tax collection in Rwanda.

4.3.3 Results for Hypothesis Three

This section shows the results from the data collected that helps in answering research question three, achieving objective three, and testing null hypothesis three. H03: There is no significant effect of electronic billing machines on tax collection in RRA, Rwanda. The coefficient of the electronic billing machine was (β=0.408, t=3.966, p=.000, <0.05 level of significance) and showed a statistically significant relationship between the electronic billing machine and tax collection in Rwanda. Therefore, the H03 was rejected; hence, the regression model predicted a significant relationship between electronic billing machines and tax collection in Rwanda.

5. Conclusion and Recommendations

5.1 Conclusion

The study assessed the effect of the electronic tax payment system on tax collection in Rwanda. The study found that the electronic tax payment system (internet tax payment system, mobile tax payment system, and electronic billing machine) has a positive and significant effect on tax collection in Rwanda. Thus, the study concludes that electronic tax payment systems have a positive effect on tax collection in Rwanda.

5.2. Recommendations

Based on the findings of this study, the study recommends

1. That RRA should put in place measures and policies that encourage all taxpayers to be willing to pay tax from any business location by use of EBM because it will improve tax collected by RRA.

2. That RRA should work with the local government to encourage people to pay tax for immovable properties in Rwanda.

3. That taxpayers to always ask for EBM receipts to contribute to the revenue collection. The citizens and residents of Rwanda should also facilitate business owners to make sure that they comply with taxes and avoid tax evasion to enhance revenue collection. Citizens should also help taxpayers to pay taxes regularly for the sake of revenue and taxes.

5.3. Suggestion for Further Research

This study focused on the effect of the electronic tax payment system on tax collection in Rwanda. Hence, that gears the researcher to recommend to future researchers to conduct studies in the same field of study in the following areas.

1. To examine the effect of the electronic tax payment system on tax compliance in Rwanda

2. To assess the impact of electronic billing machines on national economic development in Rwanda.

3. To find out the effect of tax collection on the development of SMEs in Rwanda.

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