



Effect of Electronic Invoicing on System on Tax Compliance in Rwanda the Case Study Rwanda Revenue Authority (Rra) 2018-2021

¹Uwingabire, J. *, ²Mpakaniye, J. P.

¹Master of Taxation Student, INES-Ruhengeri, Rwanda

²Doctor, Lecturer, INES-Ruhengeri, Rwanda

Submission Date: 14th Oct. 2022 | Published Date: 26th Oct. 2022

*Corresponding author: Uwingabire, J.

Master of Taxation Student, INES-Ruhengeri, Rwanda

Abstract

A study was dispensed to look at the result of electronic invoicing system (EBM) on tax compliance and aggregation in Rwanda. The study adopted each descriptive and analytical styles, and was each qualitative and quantitative in nature. It aimed to determine measures geared toward up the utilization of EBM and determine the challenges featured by taxpayers in victimization EBM. The target population was a hundred workers coping with electronic invoicing system in Rwanda Revenue Authority. Respondents were classified into 3 strata's; twenty-five respondents operating for RIED, fifty respondents operating in EBM division and twenty-five respondents add come back unit. The findings show that purchasers pay tax simply from any business location by use of EBM. Government ought to broaden the assets by providing the fundamental infrastructure associated sanctioning a setting for a lot of firms to grow. Government ought to improve on tax administration to dam doable nonpayment, minimization, and numerous loopholes within the legal system. The govt ought to still encourage firms to spice up their compliance with tax payment.

Keywords: tax compliance, electronic request machine, invoicing.

INTRODUCTION

Globally, electronic invoicing systems have received completely different acceptance level throughout the world; some ways of electronic payments area unit extremely adopted whereas others area unit comparatively low (Rachna & Priyanka, 2013). Electronic invoicing systems area unit designed to suite each business setting. If taxpayers already own invoice process instrumentality, they have to make certain if their system is compatible with necessities, as before long as doable.

Generally, the principle for imposing taxes in any country springs from the govt responsibilities of providing social and economic product and services like public product, distribution of financial gain and wealth, social and economic welfare, and economic stability (OECD, 2014). Several governments round the world have recently introduced electronic request Machine (EBM). These devices aim to combat non-compliance with VAT by observation business transactions (IGC, 2017). an honest aggregation system is predicated on the recording of all transactions that area unit subject to taxation, generally via the utilization of electronic devices that might forestall elusion the State's interests and committing commercial enterprise fraud (Steenbergen, 2017).

Problem Statement

Rwanda Revenue Authority (RRA) aims to confirm additional economical watching of taxpayer's operations additional particularly the sales. Supported the RRA publication report in 2018, the electronic asking machine faces resistance from taxpayers fully payment of their taxes. Consistent with this report the foremost resistant sectors are bars, some hotels, and restaurants as they don't provide to all or any their consumer certified invoices returning from the electronic asking machine (RRA, 2018/19).

Non-issuance of electronic invoices in an endeavor to evade taxes additional particularly VAT. Additionally thereto, some business operators create electronic invoices containing less quantity of cash compared to what they really receive from a given dealing. This makes the work of RRA difficult as a result of while not full participation from taxpayers in recording all of their sales within the electronic asking machine, and paying all their taxes as they fall due; it's troublesome for the tax authorities to trust all the tax declared by taxpayers, (RRA Annual, 2019/20).

Research Hypotheses

The study was supported the subsequent hypotheses;

1. **HO:** there's no vital relation between electronic invoicing system and tax compliance in Ruanda.
2. **H1:** there's a big relation between electronic invoicing system and tax compliance in Ruanda.

Conceptual framework

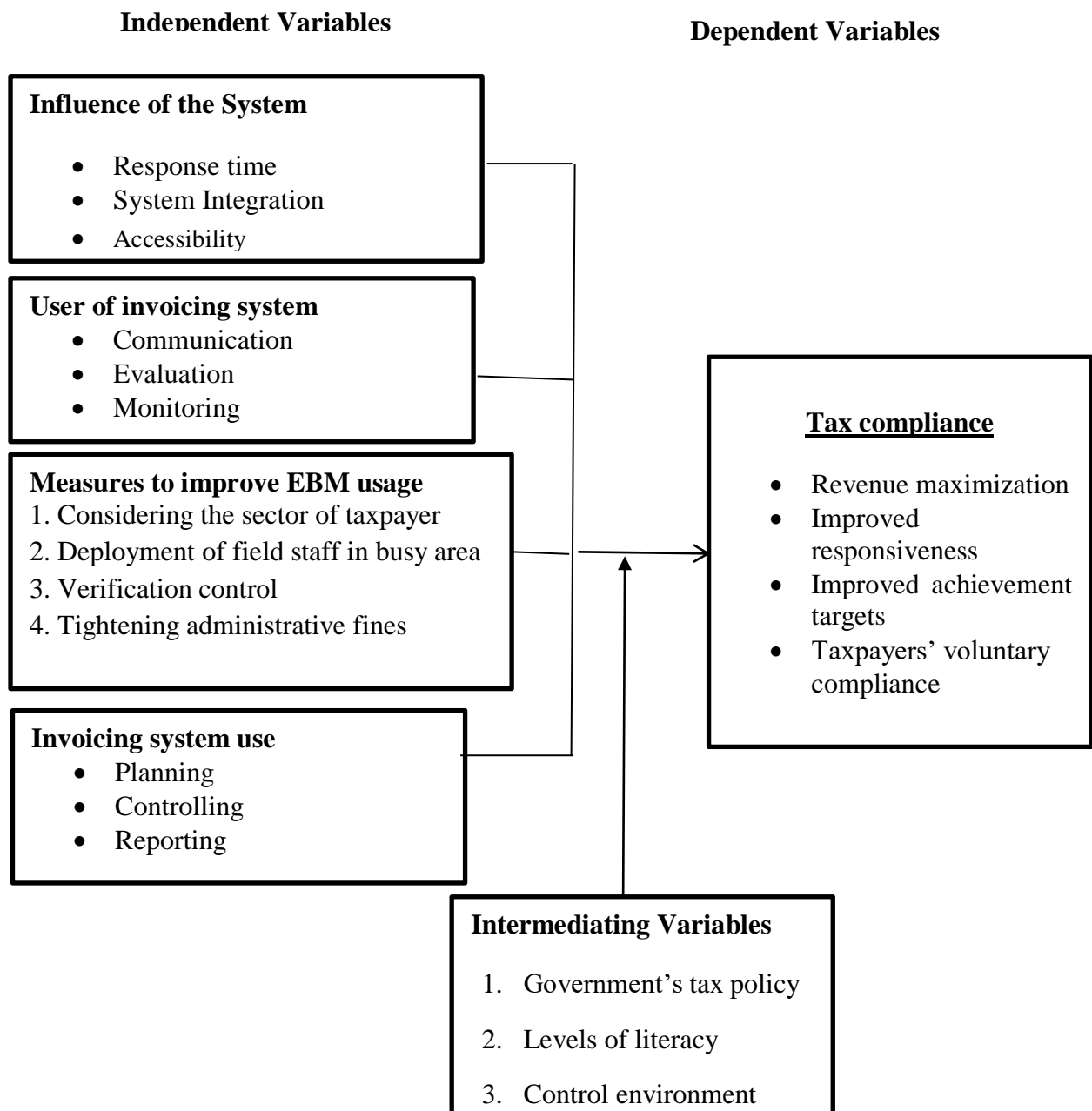


Figure 1: Conceptual framework
Source: Author, 2022

This figure one demonstrates that there's correlation between electronic invoicing system as associate degree experimental variable and tax compliance as variable quantity and also the intervening variables. The experimental variable is use electronic request machine (EBM) seen within the components like influence of the system to make sure timely response of the group action done by the utilization of EBM, to integrate the EBM soft with the prevailing computer code of the taxpayers wherever there's computability, to make sure to access EBM computer code and coaching of taxpayers the way to use its straightforward. In victimization EBM there's communication, analysis and observation of the knowledge between the tax administration and also the taxpayers. Measures to boost EBM usage includes categorizing taxpayers basing on the sector they're} operative in and the way risk is their individual sectors are, deploying of field employees within the busy space to watch EBM usage, conducting analysis to make sure that taxpayers accommodate EBM usage, verification management to solely settle for the transactions supported by EBM and alteration the executive fine. These components of the experimental variable bring impact on the variable quantity that is tax compliance seen within the components like revenue maximization, improved responsiveness, improved achievements of targets and also the level of payer voluntary compliance. The intervening variable components includes, government policy, the amount of attainment of the taxpayers and also the level of setting management by the tax administration.

LITERATURE REVIEW

Electronic Invoicing System

Electronic invoicing (also known as e-invoicing or invoicing) could be a kind of electronic request. E-invoicing ways are employed by commerce partners, like customers and their suppliers, to gift and monitor transactional documents between each other and make sure the terms of their commerce agreements are being met (Timothy, 2014).

Electronic request Machine

Electronic Billing Machine could be a device accustomed issue electronic invoices certified by African country Revenue Authority. Associate degree electronic request Machine includes of 2 parts, a licensed Invoicing System (CIS) and a Sales information Controller (SDC). If business doesn't have electronic request Machine in situ by the declared point, it may face a considerable fine. Upon the general public announcement, each business registered for VAT can got to offer a client with a special receipt issued through electronic request Machine for each sold-out smart or service. The teams of taxpayers that should have a special device put in on its premises to record each sale are going to be declared by Public Notice, as installation are going to be dispensed in phases. By finish of every section, the law can apply to each new business registered for VAT in African country (Zaburi, 2014).

Social - Psychology Models

Social - psychological science models inductively examine the attitudes and beliefs of taxpayers so as to grasp and predict human behavior (Ajzen, 1991). For an extended time, numerous students have tried to spot the assorted ways and study variables that square measure used during this model to clarify taxpayers' tax compliance. This model is of the read that taxpayer square measure a lot of involved with areas referring to their advantages and interests instead of communal ones. During this regard, if a remunerator has bigger tax angle, he's probably to work with tax authorities and be a lot of willing to pay taxes

Prospect Theory

Prospect theory explains however individuals value risk; it holds that individuals square measure risk disinclined with regard to gains however risk seeking with regard to loss (Cullis, Jones & Lewis, 2006). Consequently, the style during which a call is framed can have an effect on a person's temperament to require risks. In revenue enhancement, for instance, whether or not a difficulty is framed as a bonus for those with youngsters (such as a baby credit) or a penalty for the unfruitful can have an effect on a taxpayer's angle towards the availability. McCaffery and Baron (2005), make a case for that a remunerator are going to be a lot of willing to require risks by not yielding once the problem is framed as a loss that's a penalty from associate audit, then as a gain (a bonus from a refund). Consequently, the style during which info is communicated to a remunerator will have a significant impact on his temperament to adjust to the tax laws (Cullis et al. , 2006).

Tax Compliance Theory

At the broadest level, queries of compliance square measure questions about behavioral motivations. What leads a state, firm, or individual to act in compliance with laws? Bergman (2002) divided the fundamental logic of human activity into the logic of consequences and therefore the logic of appropriateness. The logic of consequences views actors as selecting rationally among alternatives supported their calculations of expected consequences, whereas the logic of appropriateness sees actions as supported identities obligations, and conceptions of applicable action (Saad, 2011).

Ability to Pay Theory of Taxation

This is one in all the main theories of recent taxation; it's based on the Law of decreasing utility. Sandmo (2005) determined that altogether instances so as to secure equal sacrifice, the tax formula should be in some live progressive,

within the sense that the speed of taxation per pound of financial gain grows as incomes grow. the power to pay theory of taxation has been accustomed justify the taxation system of taxation that's wide practiced across the world. it's supported the subsequent assumptions; the falling rate of utility of cash given a rise in offer, sacrifice in payment of taxes and therefore the ability to quantify the sacrifice.

Literature on tax compliance

This section focuses on the advantages of EB in relevance tax compliance. the most advantages that the study focuses on are data, communication, and validity of transactions, information integrity and confidentiality, auditability of transactions. In relevance data and communication, internal controls ought to establish, capture, process, and report applicable data, which can be monetary or operational. Security policy of the organization deals with the data and communication problems. Security policy can delineate the strategies of communications like alerts, reports, emails, or pagers. The authority to that such data ought to flow will be laid out in the protection policy (Slemrod, 2005).

Literature on electronic tax invoicing

Literature related to challenges

Despite these planned advantages of adopting e-invoicing, some researchers (Spanic et al., 2011) recommend that introducing e-invoicing is commonly advanced and dear for several corporations. However, there's no understanding regarding the challenges of adopting e-invoicing and the way corporations conceive to overcome these challenges. Therefore, this thesis tries to totally perceive the challenges that corporations face and advantages they reap whereas adapting e-invoicing, and techniques they desire overcome these challenges. moreover, this study applies multiple case study technique to research the advantages, challenges and techniques to beat challenges whereas adapting to e-invoicing in corporations. Therefore, primary information through semi structured interview form with open-ended queries from the 3 Finnish case corporations was collected to totally perceive the challenges that these corporations face and advantages they reap whereas adapting e-invoicing, and techniques they desire overcome these challenges.

METHODOLOGY

This study adopted a descriptive survey style to ascertain the result of electronic invoicing system on tax compliance in Ruanda. The study used each quantitative and qualitative approach. The study analyzed primary collected knowledge from the respondents and place confidence in questionnaires within the assortment of the first knowledge. Equally, the study used secondary knowledge concerning the result of electronic invoicing system on tax compliance in Ruanda. During this study, knowledge was collected mistreatment semi-structured form that was administered to RRA employees and a face-to-face interview was conducted to the key folks to urge depth data on the matter.

The sample size comprised forty employees from in EBM division, twenty staff operating in RIED, twenty staff operating reciprocally unit departments at RRA. This study gathered each quantitative and qualitative knowledge that was coded and analyzed mistreatment applied mathematics Package for Social Sciences (SPSS) laptop software system. The research worker checked for completeness, accuracy, consistency, word selection, expressive style and writing system errors of the analysis instruments. Whereas an author could settle for, negotiate or reject individual edits, the efforts of an editor always enhance the final product. Manual knowledge adjustment and writing was once the choice of an additional cheap price is finished by an individual. It concerned writing down, for key entry, the changes to be denote to the survey record employing a batch procedure.

RESULTS AND DISCUSSION

1) Descriptive analysis

Quantitative analysis provides a means of describing and explaining a phenomenon through a numerical system (Manly & Alberto, 2016). Given that analysis is not based on subjective interpretation but on the objective analysis of the numerical findings derived from observations, the analysis in this study began by descriptive statistics, which helped to show or summarize data in a meaningful way, and allow a simpler interpretation of data. The study used two normally general types of statistics that are used to describe data. These include measures of central tendency and measures of spread. A measure of central tendency describes the central position of a frequency distribution for a group of data for example the mode, median and mean. On the other hand, a measure of spread is a way of summarizing data to describe how the scores are spread out. To describe this, the study used range, absolute deviation, variance and standard deviation to investigate the effect of electronic invoicing system on tax compliance in Rwanda. The case study Rwanda Revenue Authority (RRA, 2018-2021).

Level of tax compliance and tax collection facilitated by electronic invoicing system in RRA

The first objective was to evaluate the level of tax compliance and tax collection facilitated by electronic invoicing system in RRA. This objective focuses on EBM improved fairness of tax, EBM reduce Level of tax burden, EBM usage depends on types of tax paid, Monitoring and evaluation (M&E), EBM help accountancy to do good financial report,

EBM helps transparency between RRA and taxpayers, EBM improved responsiveness to clients' needs, and EBM improved RRA target achievement. They were asked to indicate their level of agreement or disagreement on a five-point Likert scale ranging from 1(Strongly disagree) to 5 (Strongly agree). The findings of this analysis are presented below in Table 6.

Table 1: Respondents views on level of tax compliance and tax collection facilitated by electronic invoicing system in RRA

Statements	1	2	3	4	5	Mean	Std. Dev
Electronic invoicing system improved fairness of tax	0 (0.0%)	2 (2.7%)	7 (9.5%)	29 (39.2%)	36 (48.6%)	4.34	.764
Electronic invoicing system usage depends on types of tax paid	0 (0.0%)	1 (1.4%)	20 (27.0%)	24 (32.4%)	29 (39.2%)	4.09	.847
Monitoring and evaluation (M&E) is enhanced through electronic invoicing system	0 (0.0%)	0 (0.0%)	11 (14.9%)	35 (47.3%)	28 (37.8%)	4.23	.693
Electronic invoicing system help accountancy to do good financial report	0 (0.0%)	0 (0.0%)	9 (12.2%)	36 (48.6%)	29 (39.6%)	4.27	.668
Electronic invoicing system helps transparency between RRA and taxpayers	0 (0.0%)	6 (8.1%)	14 (18.9%)	25 (33.8%)	29 (32.9%)	4.04	.957
Electronic invoicing system has improved responsiveness to clients' needs	0 (0.0%)	4 (5.4%)	9 (12.2%)	29 (39.2%)	32 (43.3%)	4.20	.860
Electronic invoicing system improved RRA target achievement	0 (0.0%)	3 (4.1%)	8 (10.8%)	14 (18.9%)	49 (66.2%)	4.47	.848
Through electronic invoicing system tax regulations are clear and followed by taxpayers	0 (0.0%)	0 (0.0%)	10 (13.5%)	17 (23.0%)	47 (63.5%)	4.50	.726

Source: Primary data, 2022

Results in Table 1 revealed that majority of respondents 48.6% of the study participants strongly agreed with the statement that electronic invoicing system improved fairness of tax while 39.2% agreed with the statement. Majority (39.2%) strongly agreed with the statement that electronic invoicing system usage depends on types of tax paid while 32.4% just agreed with the statement. Majority (47.3%) agreed with the statement that Monitoring and evaluation (M&E) is enhanced through electronic invoicing system, while 37.8% strongly agreed with the statement. Majority (48.6%) of the study participants agreed with the statement that electronic invoicing system help accountancy to do good financial report while 39.6% just agreed with the statement. Most (32.9%) of participants strongly agreed with the statement that electronic invoicing system helps transparency between RRA and taxpayers while 33.8% agreed with the statement.

Majority (43.3%) of the study participant strongly agreed with the statement on electronic invoicing system has improved responsiveness to clients' needs while 39.2% just agreed with the statement. The findings also indicated that 66.2% of the respondents strongly agreed with the statement that electronic invoicing system improved RRA target achievement, 18.9% just agreed while 4.1% disagreed with the statement. Furthermore, Table 5 shows that 63.5% of the study participants strongly agreed with the statement that while (23.0%) agreed with the statement.

The study agrees with Natrah (2014) examined "taxpayers' views on their level of tax data and perceived complexness of the taxation system" The study any studied the "underlying reasons for noncompliance". information used for analysis enclosed phonephone interviews with thirty participants, and analyzed mistreatment thematic analysis. "Results recommend that taxpayers have inadequate technical data and understand legal system as complex". Tax data and tax complexness are viewed as causative factors towards non-compliance behavior among taxpayers.

Measures aimed to enhance the employment of EBM in sweetening of Tax compliance in Ruanda.

The second objective was to ascertain measures aimed to enhance the employment of EBM in sweetening of Tax compliance in Ruanda. Respondent's views concerning to ascertain measures aimed to enhance the employment of EBM in sweetening of Tax compliance in Ruanda are recorded in Table seven below. They were asked to point their level of agreement or disagreement on a five-point Likert scale starting from 1(Strongly disagree) to five (Strongly agree). The findings of this analysis ar given below in Table seven.

Table 2: Respondents views on measures aimed to improve the use of EBM in enhancement of Tax compliance in Rwanda

	1	2	3	4	5	Mean	Std Dev
Training of tax payers facilitates tax compliance in Rwanda	0 (0.0%)	1 (1.4%)	10 (13.5%)	28 (37.8%)	35 (47.3%)	4.31	.757
Ensuring that service providers enhances internet connectivity all over Rwanda	0 (0.0%)	1 (1.4%)	11 (14.9%)	19 (25.7%)	43 (58.1%)	4.41	.792
Power connectivity by the government to all regions in Rwanda	0 (0.0%)	0 (0.0%)	2 (2.7%)	20 (27.0%)	52 (70.3%)	4.68	.526
Sensitizing taxpayers on the importance of paying taxes using EBMS	0 (0.0%)	2 (2.7%)	12 (16.2%)	32 (43.2%)	28 (37.8%)	4.16	.794
Simplifying the steps of electronic payments of taxes using the online software	0 (0.0%)	0 (0.0%)	2 (2.7%)	20 (27.0%)	52 (70.3%)	4.68	.526

Source: Primary data, 2022

The study agrees with Natrah (2014) examined “taxpayers’ views on their level of tax information and perceived quality of the tax system” The study additional studied the “underlying reasons for noncompliance”. information used for analysis enclosed phone interviews with thirty participants, and analyzed mistreatment thematic analysis. “Results counsel that taxpayers have inadequate technical information and understand legal system as complex”. Tax information and tax quality area unit viewed as conducive factors towards non-compliance behavior among taxpayers.

Measures aimed to improve the use of EBM in enhancement of Tax compliance in Rwanda.

The second objective was to determine measures aimed to boost the employment of EBM in improvement of Tax compliance in African country. Respondent’s views concerning to determine measures aimed to boost the employment of EBM in improvement of Tax compliance in African country area unit recorded in Table seven below. They were asked to point their level of agreement or disagreement on a five-point Likert scale starting from 1(Strongly disagree) to five (Strongly agree). The findings of this analysis area unit bestowed below in Table 3.

Table 4: Respondents views on main problems faced by the usage of Electronic Billing Machines in Rwanda

	1	2	3	4	5	Mean	Std Dev
The use of EBM influences taxpayer to steal RRA	0 (0.0%)	0 (0.0%)	8 (11.4%)	15 (21.4%)	47 (67.1%)	4.56	.694
High penalty to taxpayer prevents the taxpayers to use the EBM machines	0 (0.0%)	5 (7.1%)	14 (20.0%)	24 (34.3%)	37 (52.9%)	4.43	.671
The system of using EBM has made It easy to hide some transaction	0 (0.0%)	3 (4.3%)	12 (17.1%)	12 (17.1%)	43 (61.4%)	4.36	.917
Chance of training on usage of EBM	0 (0.0%)	0 (0.0%)	8 (11.4%)	15 (21.4%)	47 (67.1%)	4.56	.694
There is lack of training on how to use of EBM in some regions of Rwanda	0 (0.0%)	2 (2.7%)	12 (16.2%)	32 (43.2%)	28 (37.8%)	4.16	.794
Low Skills of taxpayers makes them to avoid using EBM	0 (0.0%)	5 (7.1%)	14 (20.0%)	24 (34.3%)	37 (52.9%)	4.43	.671

Source: Primary data, 2022

Table 4 Shows that 67.1% of the respondents strongly agreed with the statement that use of EBM influences taxpayer to steal RRA, 21.4% just agreed while 11.4% were undecided with the statement. According to the data in table 7 EBM did not influence taxpayer to steal from RRA, since each transaction done by using EBM is saved to RRA and through to the Ministerial Order which will give the use of EBMs a legal foundation before its use can be fully enforced. This will mean that anyone who fails to acquire and properly use the EBM will be breaking the law which is punishable with a heavy fine.

Majority (52.9%) strongly agreed with the statement that high penalty to taxpayer prevents the taxpayers to use the EBM machines, while 34.3% agreed with the statement. Majority (61.4%) of the study participant agreed with the statement that the system of using EBM has made it easy to hide some transaction while 17.1% disagreed with the statement. Most (67.1%) of participants strongly agreed with the statement that Chance of training on usage of EBM while 21.4% agreed with the statement. Majority (43.2%) agreed with the statement that there is lack of training on how to use of EBM in some regions of Rwanda, while 37.8% strongly agreed with the statement. Lastly, majority (52.9%) of the study participant strongly agreed with the statement that low skills of taxpayers make them to avoid using EBM while 34.3% disagreed with the statement. The study is in line with Umoru and Anyiwneh (2013) examined the impact of electronic taxation on tax administration in Nigeria. The study used an exploratory research design. The findings indicated that electronic tax system influences tax administration. However, it is important to note that, this study did not consider the impact of electronic tax system on the tax compliance. Alm, et al. (2020) examined the new technological evolution on the tax compliance. The study found out that new technological innovations have positive correlation with tax compliance. Although this study incorporated all variables that are related to new technological innovations, the findings were based on literature review there is no statistical test of the significance of the variables on tax compliance.

Correlation Analysis

The researcher used a correlation as correlation and regression are used to analyze the extent and the nature of relationships between different variables. Correlation analysis was used to understand the nature of relationships between electronic billing machine and tax compliance.

Hyndman (2008) states that Pearson's correlation is used when one is working with two quantitative variables in a population to establish the magnitude and direction of the relationship. The possible research hypotheses are that the variables show a positive linear relationship, a negative linear relationship, or no linear relationship at all. These authors argue that Pearson's correlation coefficients indicate the extent of interdependence between two variables. The Pearson correlation coefficient, *r*, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the value of the other variable (Kombo & Tromp, 2009). A value less than 0 indicates a negative association; that is, as the value of one variable increases, the value of the other variable decreases. In this study the Pearson correlation coefficient, *r*, was used to show the degree and significance of the relationship between variables.

Table 5: Compliance level at RRA in different segments

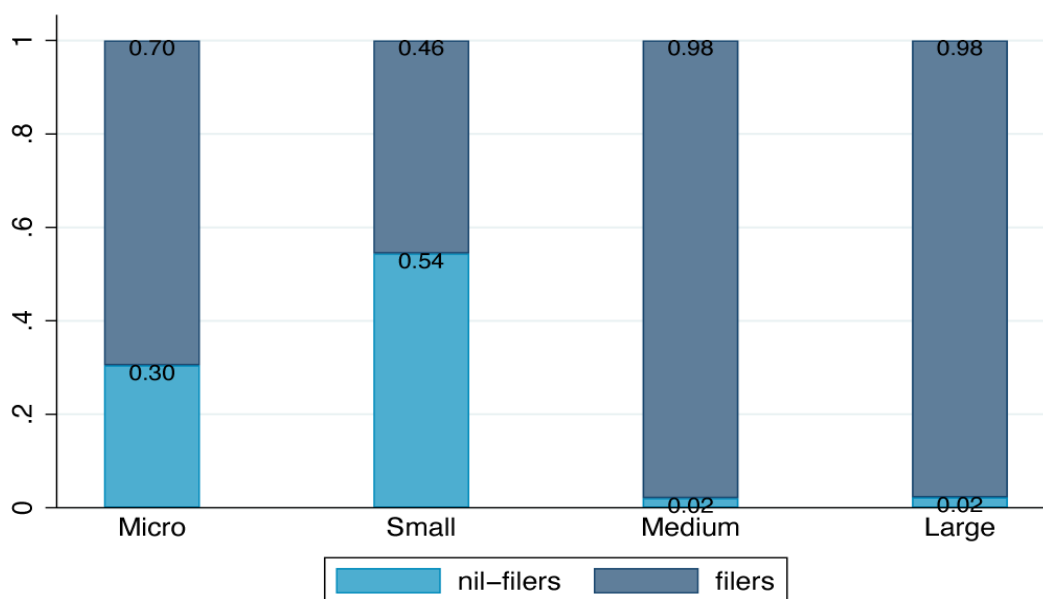


Table 1: Relationship between electronic invoicing systems and tax compliance in Rwanda

		Electronic invoicing system	Tax compliance
Electronic invoicing system	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	74	
Tax compliance	Pearson Correlation	.765**	1
	Sig. (2-tailed)	.000	
	N	74	74

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

From Table 5 findings show that there is a strong positive relationship between electronic invoicing system on tax compliance in Rwanda at RRA at a Pearson correlation coefficient $r=0.765$. Table 9 shows the correlation between electronic invoicing system and tax compliance. The researcher used Pearson correlation coefficient and found that the coefficient r equals to 0.765. The variation of Pearson Coefficient correlation is between -1 and 1. As the significant level is at 0.05 (5%), the p -value of 0.000 (i.e. 0.0%) is less than 5%. This leads to confirm that there is significant relationship between electronic invoicing system and tax compliance. The results agree with Utetiwabo, *et al.*, (2018) analyzed the effect of electronic tax system on tax compliance in Rwanda taking Nyarugenge as the case study. A correlational and descriptive research design was used. Primary data was collected using questionnaire and secondary data was collected using an on-desk research. The findings revealed a strong correlation between electronic tax and tax compliance. Like any of the above-mentioned prior studies, this study does show a factor analysis of smart taxation on the tax compliance.

Regression model

Regression analysis was done to determine the relationship between electronic invoicing systems on tax compliance in Rwanda. The case study Rwanda Revenue Authority (RRA) 2018-2021.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.801 ^a	.642	.624	.35837

Predictors: (Constant), Influence of the System, User of invoicing system, Quality of Information and Invoicing system use

Source: Primary data, 2022

Table 10 indicates results that explains the regression between electronic invoicing systems and tax compliance in Rwanda whereby 62.4% of variation in the tax compliance is explained by a unit change in electronic invoicing systems. In other words, the deficit of 37.6% is explained by other factors apart from electronic invoicing systems. The results are satisfactory through the indication of goodness of fit by the linear regression.

Table 3: ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1					
Regression	.2052 ^a	4	.410	3.399	.000 ^b
Residual	13.762	51	.121		
Total	15.813	55			

a. Dependent Variable: Tax compliance

b. Predictors: (Constant), Influence of the System, User of invoicing system, Quality of Information and invoicing system use

Source: Primary data, 2022

Result review that electronic invoicing systems is statistically significant in explaining tax compliance in Rwanda. F-test was carried out to test the null hypothesis that there is no significant relation between electronic invoicing system and tax compliance in Rwanda. The ANOVA test in Table 11 shows that the probability value (value=0.000) is less than $\alpha=0.05$

meaning that null hypothesis is rejected and conclude that there is significant relation between electronic invoicing system and tax compliance in Rwanda.

Table 4: Coefficient results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.167	.231		1.973	.106
	System	.304	.009	.444	4.104	.000
	Quality	.315	.050	1.231	4.616	.000
	User	.359	.240	.230	3.689	.000
	Use	.333	.240	.230	3.012	.000

Source: Primary data, 2022

From the data in the Table 12, the established regression equation was:

$$Y = 0.167 + 0.304 X_1 + 0.315 X_2 + 0.359 X_3 + 0.333 X_4$$

From the regression equation, it was revealed that holding Influence of the System, User of invoicing system, Quality of Information and invoicing system use to a constant zero, tax compliance would be at 0.167. A unit increase on the system would lead to increase in tax compliance by a factor of 0.304, a unit increase in quality would lead to increase in tax compliance by a factor of 0.315, unit increase in user would lead to increase in tax compliance by a factor of 0.359 and unit increase in use would lead to increase in tax compliance by a factor of 0.333

CONCLUSIONS AND RECOMMENDATIONS

The study therefore concludes that electronic invoicing systems positively to tax compliance in Rwanda. The study focused on usage of EBM for tax compliance and tried to answer the following research questions: What is the effect of electronic invoicing system on tax compliance in Rwanda? What are the main problems faced by the usage of electronic invoicing system in Rwanda? What is the relationship between electronic invoicing system and tax compliance in Rwanda? Based on the findings and conclusion, the following recommendations are hereby suggested: The most potent weapon for the government to achieve high tax revenue is, therefore, to develop robust tax reforms and implement fiscal policy measures which encourage voluntary tax compliance. Government should broaden the tax base by providing the basic infrastructure and enabling an environment for more companies to spring up. Efficient Tax Administration: Although it is clear that 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. Besides EBM assist both the taxpayers and tax administration to keep accurate and reliable database which can be retrieved any time if need arises. The government should improve on tax administration to block possible tax evasion, tax avoidance, and various loopholes in the Tax system. The government should continue to encourage companies to boost their compliance with tax payment. Lastly, Government and private organizations should systematically expand the necessary infrastructure by promoting the development of necessary technologies, recruiting experts and expanding high speed information network as this will foster a strong foundation for e-invoicing.

REFERENCES

1. Ajaz, T. and E. Ahmad. 2010. "The effect of corruption and governance on tax revenues". The Pakistan Development Review, 49(4): 405-417.
2. Ajzen, I. (1991). Theory of planned behavior. Organizational Behavior and Human Decision Processes, 50, 179-211.
3. Ali, A.S.B., Anbari, F.T. and Money, W.H. (2008). Impact of Organizational and Project Factors on Acceptance and Usage of Project Management Software and Perceived Project Success. Project Management Journal, 39 (2), 5-33.
4. Alm J., J. Beebe, M. Kirsch, O. Marian & A.J. Soled (2020). New technologies and the evolution of tax compliance. Virginia Tax Review, 39 (3): 287
5. Arvind S. (2020). Reframing Bitcoin and tax compliance. Saint Louis University Law Journal, 64 (4):1-39
6. Atawodi, W., & Ojeka, S. (2012). Factors That Affect Tax Compliance among Small and Medium Enterprises (SMEs) in North Central Nigeria. International Journal of Business and Management, 7(12), 87-96.
7. Auditor General of Rwanda. (2015). 2014/2015 Annual Report. Kigali: Government of Rwanda.
8. Babbie, E. R. (2015). The practice of social research. Nelson Education.

9. Bakar, S. S. (2014). Impact of electronic fiscal devices on value added tax collection process: The case of Tanzania Revenue Authority-Tanga City. Master's dissertation, Master of Business Administration, Nzumbe University, Morogoro, Tanzania
10. Bayer, R. & Cowell F. (2009). Tax Compliance and Firms' Strategic Interdependence. *Journal of Public Economics*, 93(2): 1131-1143.
11. Bergman, M. (2002). Who Pays for Social Policy? A Study on Taxes and Trust. *Journal of Social Policy*, 31(2): 289-305.
12. Billentis, E. (2019). The e-invoicing journey 2019-2025.
13. Byrne, B. M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Routledge.
14. Casey, P. & Castro, P. (2011). "Electronic Fiscal Devices (EFDs): An Empirical Study of their Impact on Taxpayer Compliance and Administrative Efficiency", IMF Working Paper, WP/15/73, Fiscal Affairs Department
15. Che-Azmi, A. A., & Kamarulzaman, Y. (2014). Adoption of tax E-filing: A conceptual paper. *African Journal of Business Management*, 10(1): 599-603.
16. Cohen, P., West, S. G., & Aiken, L. S. (2014). *Applied multiple regression/correlation analysis for the behavioral sciences*. Psychology Press.
17. Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
18. Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications
19. Cullis, J., Jones, P. & Lewis, A. (2006). Tax Framing, Instrumentality and individual differences: Are there two different cultures? *Journal of Economics Psychology*, 27: 304- 306
20. Devos, K. (2004). Penalties and Sanctions for Taxation Offences in New Zealand: Implications for Tax Payer Compliance and Tax Policy. *New Zealand Journal of Taxation Law and Policy*, 10(3), 212-244.
21. Eilu, E. (2018). Adoption of electronic fiscal devices (EFDs) for value-added tax (VAT) collection in Kenya and Tanzania: A systematic review. *The African Journal of Information and Communication (AJIC)*, 22, 111-134
22. Gelman, Andrew, Hal S. Stern, John B. Carlin, David B. Dunson, Aki Vehtari, and Donald B. Rubin (2013). *Bayesian data analysis*. Chapman and Hall/CRC.
23. Glaser, B. G., & Strauss, A. L. (2017). *Discovery of grounded theory: Strategies for qualitative research*. Routledge
24. Gupta M,(2012) The journey of e filing of income tax returns in India ,*International Journal of Research in Commerce and Management*, 2(6).180
25. Harelimana .B. Patrick, G. Sanyu A. & Rutungwa E. (2020). Impact of Electronic Billing Machine (EBM) on Vat Compliance among Small and Medium Sized -Enterprises in Rwanda. *Austin Journal of Business Administration and Management* 3(1). 1-12.
26. Hansen, P. (2003). *Taxing Illusions. Taxation, Democracy and Embedded Political Theory*, 16
27. Hassan, M., and W. Prichard. 2016. "The Political Economy of Domestic Tax Reform in Bangladesh: Political Settlements, Informal Institutions and the Negotiation of Reform." *Journal of Development Studies* 52 (12): 1704–21.
28. Hirvonen, K., G. Mascagni, and K. Roelen. 2018. "Linking Taxation and Social Protection: Evidence on Redistribution and Poverty Reduction in Ethiopia." *International Social Security Review* 71 (1): 3–24.
29. Hoti, E. (2015). The technological, organizational and environmental framework of IS Innovation adaption in small and medium enterprises. Evidence from research over the last 10 years. *International Journal of Business and Management*, 3(4), 1–14.
30. Hyndman, R. (2008). *Quantitative Business Research Methods*. Department of Econometrics and Business Statistics. Monash University (Clayton campus).
31. IGC (2017). Reaping the benefits of Electronic Billing Machines: using data-driven tools to Improve VAT compliance. University "Stefan cel Mare", Suceava, Romania.
32. Kangave, J., S. Nakato, R. Waiswa, M. Nalukwago, and P. Lumala Zzimbe. 2018. "What Can We Learn from the Uganda Revenue Authority's Approach to Taxing High Net worth Individuals?" Working Paper No. 72, International Centre for Tax and Development, Brighton, UK
33. Kapera, O. M. (2017). Assessment of effectiveness of electronic fiscal devices (EFDs) in tax Collection in Tanzania: A case of Arusha City Council. Master's Dissertation, Master of Business Administration, Open University of Tanzania, Dar es Salaam.
34. Kim, J. & Suh, H. (2012). "A Study on the Additional Tax Related with Electronic Tax Invoice" (in Korean). *Accounting Information Research*, 3(3), 355-382.
35. Kirchler, E. (2007). *The Economic Psychology of Tax Behavior*. Cambridge: Cambridge University Press.
36. Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford Publications
37. Kombo, D.K., & Tromp, D.L.A. (2009). *Proposal and thesis writing: An introduction*. Nairobi. Paulines Publications Arica.

38. Kornhauser, M. (2007). A Tax Morale Approach to Compliance: Recommendations for the IRS. *Florida Tax Review*, 8(6), 601-634.
39. Kothari, C. (2014). *Research methodology: Methods and Techniques*. (3rded.). New Delhi: New Age International
40. Kovacev R. (2019). Robots and Taxes. Challenges of effective taxation of artificial intelligence Automation and Robotics. *Ohio State Technology Law Journal*, 16 (1): 183 -217
41. Kumar, R. (2019). *Research methodology: A step-by-step guide for beginners*. Sage Publications Limited
42. Kuria, K., Ngumi, P. & Rugami, J. (2013). Factors affecting rental income tax compliance among landlords in Kilifi municipality in Kenya. *Prime Journal of Business Administration and Management*
43. Ling, L. M., & Nawawi, N. H. A. (2010). Integrating ICT skills and tax software in tax Education. *Campus-Wide Information Systems*, 27(5): 303-317.
44. Loo, E. C. (2016). Tax knowledge, tax structure and compliance: A report on a quasi-experiment. *New Zealand Journal of Taxation Law and Policy*, 12(2), 117 – 140.
45. Mackey, A., & Gass, S. M. (2015). *Second language research: Methodology and design*. Routledge
46. Mandari, H., Koloseni, D., Nguridada, J. (2017): Electronic fiscal device (EFD) acceptance for tax compliance among trading business community in Tanzania: the role of awareness and trust. *International Journal of Economics, Commerce and Management*, 5(3), 142-158.
47. Manly, B. F., & Alberto, J. A. N. (2016). *Multivariate statistical methods: a primer*. Chapman and Hall/CRC.
48. Mansor, M., Tayib, M. & Yusof, R.N. (2013). Tax Administration Systems: A study on the efficiency of Malaysian indirect taxes. *International Journal of Accounting, Auditing and Performance Evaluation*, 2(3), 321-43.
49. Marcuss, R., Contos, G., Guyton, J., Langetieg, P., Lerman, A., Nelson, S., Schafer, B., & Vigil, M. (2013). Income taxes and compliance costs: How are they related? *National Tax Journal*, 66(4): 833–854
50. Maseko, N. (2014). Determinants of Tax Compliance by Small and Medium Enterprises in Zimbabwe. *Journal of Economics and International Business Research*, 2(3), 48-57.
51. Mativo, P. M. (2015). Factors Affecting Utilization Of Electronic Tax Registers (Etrs) In Small & Medium Enterprise In Kenya: A Case Of Nairobi CBD. *International Journal of Economics, Commerce and Management*, 3(3), 1-25.
52. McCaffery, E. & Baron, J. (2005). *The Political Psychology of Redistribution*, 52
53. McKerchar, M. & Evans C. (2009). Sustaining Growth in Developing Economies through Improved Taxpayer Compliance: Challenges for Policy Makers and Revenue Authorities. *E Journal of Tax Research*, 7, 171–201
54. Moore, M., and W. Prichard. 2017. “How Can Governments of Low-Income Countries Collect More Tax Revenue?” Working Paper No. 70, International Centre for Tax and Development, Brighton, UK.
55. Mudiaga A. D. & O.E. Igbekoyi (2019). Electronic taxation and tax compliance among some selected fast food restaurants in Lagos State, Nigeria (Tax Payers Perspective). *European Journal of Accounting, Auditing and Finance Research*, 7(7): 52-80.
56. Mugenda, O. M., & Mugenda, A. G. (2012). *Research methods: Quantitative and qualitative approaches*. Nairobi-Kenya: Acts Press.
57. Mugenda, O.M., & Mugenda, A.G. (2013). *Research methods*. Nairobi: McMillan Publishers.
58. Mukabi, D. N. (2014). Factors Influencing Turnover Tax Compliance in the Kenya Revenue Authority Domestic Taxes Department in Nairobi County. Unpublished MA Project. University of Nairobi, Kenya
59. Mukama, D., Karangwa, J. & Hakizimana, N. (2017) “Communicating to Improve Compliance: Taxpayers’ Feedback on Message and Mode of Delivery in Rwanda”, ICTD Working Paper 59, First published by the Institute of Development Studies in March 2017, © Institute of Development Studies 2017, ISBN: 978-1- 78118-356-4
60. Naibei K. I. & E.M. Siringi (2011). Impact of electronic tax registers on VAT compliance: A study of private business firms. *African research review*, 5(1): 112 - 135.
61. Natrah, S. (2014). Tax Knowledge, Tax Complexity and Tax Compliance: Taxpayers’ View. *Procedia - Social and Behavioral Sciences* 109(2014): 1069 – 1075
62. Ndayisenga E. & S. Jaya (2016). Effect of electronic tax management system of tax collection in Rwanda: Case study of Rwanda Revenue Authority (RRA). *International journal of Business & management*, 2(1): 152- 192.
63. Niu, Y. (2011). “Tax Audit Impact on Voluntary Compliance.” *Journal of Economic and Social Measurement*, 36(4), 237-251.
64. OECD, (2014). *Tax Compliance by Design. Achieving Improved SME Tax Compliance by Adopting a System Perspective*. Paris: OECD.
65. Odongo R.O. (2016). Effects of electronic tax filing systems on compliance amongst small and Medium enterprises within Mombasa Central Business District. MBA Thesis Submitted to University of Nairobi, Kenya.
66. Orodho, A. J. (2013). *Essentials of educational and social science research method*. Nairobi: Masola Publishers
67. Ortega, D., L. Ronconi, and P. Sanguinetti. 2016. “Reciprocity and Willingness to Pay Taxes: Evidence from a Survey Experiment in Latin America.” *Economía* 16 (2): 55–87.
68. Porcano M, T. (2011). Correlates of Tax Evasion. *Journal of Economic Psychology*, 47-67.
69. Rachna P. & Priyanka, S. (2013). Issues and Challenges of Electronic Payment Systems. *International Journal for Research in Management and Pharmacy*. 2(9) 1-6

70. Rile, R. M. (2011). The cost of tax abuse; A paper on the cost of Tax evasion. Tax Justice Network:
71. Rwanda Revenue Authority [RRA]. (2013). Electronic Billing Machines: a boon,not a burden. Kigali - Rwanda: Rwanda Revenue Authority.
72. Rwanda Revenue Authority (2016). “Compliance Improvement Plan 2016 – 2017”, Government of Rwanda: Kigali
73. Rwanda Revenue Authority [RRA]. (2015). Electronic Billing Machines: a boon, not a burden.Kigali - Rwanda: Rwanda Revenue Authority.
74. Saad, N. (2011). Fairness Perceptions and Compliance Behaviour: The New Zealand Evidence. New Zealand Journal of Taxation Law and Policy, 17(1), 33-66.
75. Saldaña, J. (2015). The coding manual for qualitative researchers. Sage
76. Sandmo, A. (2005). The Theory of Tax Evasion: A Retrospective View. National Tax Journal, 54(4), 643- 663
77. Saw, K., & Sawyer, A. (2015). Complexity of New Zealand’s income tax legislation. Australian Tax Forum, 25, 213 – 244.
78. Silverman, B. W. (2018). Density estimation for statistics and data analysis. Routledge.
79. Sekaran, U., & Bougie, R. (2016). Research methods for business: A skill building approach. John Wiley & Sons.
80. Slemrod J (2015). Tax Compliance and Enforcement: New Research and its Policy Implications.Working Draft. Retrieved from <http://eml.berkeley.edu/~burch/TPC%20survey%2011-1-15.pdf>
81. Smart M (2012). The Application of the Theory of Planned Behaviour and Structural Equation Modelling in tax compliance behaviour: A New Zealand Study. Doctor of Philosophy, University of Canterbury, Christchurch
82. Spanic, D., Ristic, D. & Vrdoljak, B. (2011). An Electronic Invoicing System. 11th International Conference on Telecommunications (ConTEL), Graz, Austria.
83. Steenbergen, V. (2017). Reaping the benefits of Electronic Billing Machines: using data-driven tools to improve VAT compliance. London WC2A 2AE: The International Growth Centre, London School of Economic, and Political Science
84. Taylor, N. (2001). Understanding Taxpayer Attitudes through Understanding Taxpayer Identities. Working Paper, No 14. Centre of Tax System Integrity: The Australian National University, Canberra, Australia
85. Twesige, D., Gshejaa, F., Hategikimanaa, U., Philippe N., Yvette M. & Hitayezua I (2020). Smart Taxation (4Taxation): Effect of Fourth Industrial Revolution (4IR) on tax compliance in Rwanda. Journal of Business and Administrative Studies 12(1):1-27
86. Umoru, D. & Anyiweh (2013). Tax structures and economic growth in Nigeria: Disaggregated empirical evidence. Research Journal of Finance and Accounting, 4(2), 65-77
87. Upagade, V. & Shende, A. (2012). Research Methodology. S. Chand & Company Ltd. New Delhi, India.
88. Uteiwabo S., P. Mulyungi & O. Oluoch (2018).Effect of electronic tax system on tax compliance among small and medium tax payers in Rwanda: case study of Nyarugenge Sector. International Journal of Management and Commerce Innovations, 6(1):1169-1178.
89. Visharievsky P.V. & D.V. Chekina (2018). Robots Vs tax inspector. How the fourth industrial revolution will change the tax system. Journal of Tax Returns 4(1): 6-26
90. Walsh, K. (2012). Understanding Taxpayer Behaviour–New Opportunities for Tax Administration. The Economic and Social Review, 43(3), 451–475.
91. Wasao, D. (2014). The effect of online tax system on tax compliance among small taxpayers. Msc, Research Project University of Nairobi.
92. Ye, L., & Pelton, L. E. (2008). The impact of gender effects on consumers' perceptions of brand equity: A cross-cultural investigation. Denton, Tex.: University of North Texas.
93. Zaburi, A. (2014). Taxpayer’s perception on electronic fiscal devices (EFDs) A Case of Dar Es Salaam. Mzumbe University
94. Zeng, K., S. Li and Q. Li (2013) “The Impact of Economic Growth and Tax Reform on Tax Revenue and Structure: Evidence from China Experience”, Modern Economy, 4, 839-851