

Information Communication Technology Tax Reforms and Tax Compliance in Rwanda Case of Rwanda Revenue Authority in Gasabo District

Daniel Twesige¹, Faustin Gasheja², Jonas Baryandama³ and Uwamahoro Alexis⁴

¹ University of Rwanda

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Abstract

The purpose of this study was to examine the contribution of ICT tax reforms in the tax compliance in Rwanda Taking Gasabo district as the case study. Objective: The objectives of the study were to assess the various ICT tax reforms and their contribution on tax compliance in Rwanda and to establish a relationship between ICT tax reforms and tax compliance in Rwanda. Descriptive and explanatory research design was used. The study population comprised of 128 employees of RRA from which 56 were selected using the Yemen's formula. Data was collected from both primary and secondary sources using questionnaire and documentation. The findings from the survey revealed that ICT tax reforms have contributed significantly on the tax compliance in Rwanda. The results further revealed a strong relationship between ICT tax reforms and tax compliance in Rwanda. The researchers recommended that although, a strong relationship between variables were identified, ICT tax reforms only contributes 56

Index terms— ICT, tax reforms, tax compliance.

1 Introduction

ax revenue is very important for every government in the world as it enables the government to acquire assets and to cater for other operating expenses. More importantly, tax revenues enable the governments to reduce over dependence on foreign debts and grants to finance its operation.

Effective tax collection is to minimize revenue losses by detecting and preventing external tax evasion, i.e. smuggling, and as well all other forms of evasion. Several causes to revenue losses are encountered such as understatement of sales, omission of some transaction in recording, tax evasion and others to minimize the tax liability. Generally, organizations perform a fraud risk assessment and evaluate related internal control in revenue loss detection and control for better revenue generation (Ndungu, 2013). When the Revenue protection system is unable to detect and prevent such practices a lot of taxes remain uncollected and it can cause huge losses in tax revenues of the government (Land, 2004).

Due to increased need of increasing the tax base, many governments and other public sector organizations invested billions of money in information communication technology in order to provide better delivery services to its citizens and offer more effective government management. Ideally, online billing service is nothing but the process of delivery of bills and invoices in the electronic mode. The electronic billing system is also widely accepted by various government organizations for the benefit of people at large. The electronic billing system can be used to transact with a particular service provider or in general with all the service providers utilized by the user. While it is true that online billing has many advantages it also has some disadvantages. Some of the advantages of the electronic billing system include; The online billing services are one of the least expensive forms of billing when compared to the traditional billing, the electronic billing system also is absolutely hassle free as

43 one can protect the bill with the help of password and can be opened only by the recipient. The electronic billing
44 also provides a great advantage of saving time and effort that are normally lost in a traditional billing system.

45 All tax authorities have limited resources; lower than they need to ensure compliance with the obligations
46 of each taxpayer owing tax. Consequently, effective tax administration requires that the tax be collected in a
47 way that builds confidence among taxpayers and demonstrates that the system is working properly. This is why
48 the tax authorities must rely on a Methodology for determining the most rational allocation of resources (Horn,
49 2013).

50 Several administrations have adopted information technology in their quest to combat noncompliance a case in
51 point is the introduction of EBM in order to curb the value-added tax (VAT) payable on sales. The introduction
52 of EBM typically requires considerable effort and has costs both for the administration and for the taxpayers
53 that are affected by the requirements of the new rules. Despite their widespread use, and their considerable cost
54 (Nchoe, 2003).

55 **2 a) Problem Statement**

56 The expansion of the tax base in Rwanda is increasingly recognized as an important policy goal, as an increase
57 in domestic revenue sources promises to reduce aid dependence and reduce dictionary consequences of taxes on
58 externally traded goods. E-filing is one of advanced e-governance system adopted in developed countries. This
59 technology in billing has been adopted in Rwanda since August 2013 and ever since its adoption, there has been
60 a considerable expansion of tax base.

61 Ndayisenga and Shukla (2016) found out that both electronic tax management system which consist of Tax
62 Payment System, Mobile Tax Payment System and electronic Billing Machine System contributes to timely
63 tax payment and reduced operational cost for both RRA staffs and clients. According to RRA (2014) before
64 introduction of EBM, revenue collection using e-filing and e-payment was low and tax administration weak and
65 this made the revenue collection authority fail to meet the targets. But after introduction as revealed by IMF
66 (2014) the use of EBM has made considerable contribution across the country in terms raising the numbers of
67 tax payers and increasing revenue collection. However, we cannot tell whether the achievements at national level
68 reflect the reality in decentralized government entities specifically in Gasabo district due to lack of empirical
69 evidence on it.

70 **3 b) Objectives of the Study**

71 i. To assess the contribution of ICT tax reforms in tax compliance in Rwanda. ii. To establish a relationship
72 between ICT tax reforms and tax compliance in Rwanda.

73 c) Research Hypotheses i. ICT tax reforms have contributed significantly to the tax compliance in Rwanda.
74 ii. There is a significant relationship between ICT tax reforms and tax compliance in Rwanda.

75 **4 II.**

76 **5 Theoretical and Conceptual Framework**

77 This section provides a theoretical and conceptual framework of the literature that relates to the study variables.

78 **6 a) Theoretical review**

79 The theories which anchored this study include the following

80 **7 i. Fiscal exchange theory**

81 The theory suggests that the presence of government expenditures may encourage tax compliance from the
82 taxpayers. Tax compliance among society increases with perception of the availability of public goods and
83 services being developed in relation to the tax paid (Moore, 1998). It suggested that government can increase
84 tax compliance by providing goods and services that citizens prefer in a more efficient and accessible manner,
85 emphasizing that taxes are necessary for the receipt of government services. Accordingly, taxpayers are concerning
86 with what they are getting in return for their tax payments in the form of public services. In this perspective,
87 taxation and the provision of public goods/services become catalysts to taxpayer in compliant to the tax paid
88 (Horn, 2013).

89 This theory is more practical and acceptable because, it advocates individual willingness to comply without
90 direct coercion. Furthermore, it serves the government from high collection costs resulting from enforcement
91 measures. According to this theory it can be said that whatever much the government or administrative authority
92 adopt modern systems of collecting tax, the effectiveness of tax/revenue collection depends on the public services
93 provided by the government to the tax payers ii.

94 **8 Social influences theory**

95 Human behavior in the area of taxation is influenced by social interaction in the same way as other forms of
96 behavior Compliance behavior towards the tax systems may therefore be affected by the behavior of an individual's

97 reference groups such as relatives, neighbors, and friends. If a taxpayer knows many people in his group who
98 evade taxes, his commitments to comply will decline. On the other hand, social relationships may also help
99 motivate individuals to comply and shy away tax evasion behavior in fear of the social sanctions imposed once
100 discovered (Samson, 2012).

101 This theory to a large extent, support the fiscal exchange theory also noted that the society with government
102 advocating good governance has better chances to comply with laws and orders including tax laws might create a
103 tax payment culture among the society members. The implication of this theory is that in paying tax; behavior
104 or culture of the society concerned intervene the processes. Therefore, for the government to attain 'big results'
105 in tax collection there is the need for the tax collection agencies to carry out aggressive tax compliance campaigns
106 that will assist in shaping behaviors of community members to become enthusiastic/keen in paying tax ??Snavel,
107 1990).

108 **9 iii. Effective tax collection theory**

109 The standard theory of optimal taxation posits that a tax system should be chosen to maximize a social welfare
110 function subject to a set of constraints. The literature on optimal taxation typically treats the social planner as
111 a utilitarian: that is, the social welfare function is based on the utilities of individuals in the society (Slemrod,
112 2010). In its most general analyses, this literature uses a social welfare function that is a nonlinear function
113 of individual utilities. Holtzman (2007) states that tax collection is the value of the tax payer's own time and
114 resources along with any out of pocket costs paid to the tax preparers and other advisors, invested to ensure
115 collection with the laws and also stated that tax collection is the provision of tax information at the proper time
116 and ensuring returns accurately report tax liability.

117 Gideon and Alouis (2013) wrote that an efficient national revenue collection system is the hub of every public
118 administration system and the cornerstone of sound fiscal management. It enables governments to finance budget
119 deficits from domestic sources, thus dissuading recourse to offshore sourcing.

120 Tax collection can either be through voluntary tax collection or involuntary tax collection. Voluntary tax
121 collection involves obeying the tax laws without any state enforcement actions that leads to maximizing revenues
122 because administration costs are low in both the economic and psychic sense. The government wastes little
123 money and time in collecting the tax and tax payers suffer little alienation in parting with their money (Onoja
124 & Iwarere, 2015).

125 **10 b) Conceptual review i. ICT tax reforms**

126 Digitalization of the tax system has been a major concern of many countries. In August 2013, legislation was
127 introduced in Rwanda, to assist firms' book-keeping, to level the playing field amongst all retailers, and, most
128 importantly, to reduce tax evasion for value added tax (VAT). This legislation, announced in Ministerial Order
129 002/13/10, and the accompanying Commissioner General (CG) rules. All the reforms in Rwanda's tax base system
130 were aimed at improving tax collections, administrations, and above all tax compliance. In a bid to improve
131 tax compliance, Rwanda Revenue Authority (RRA) decided to opt for electronic tax management system which
132 includes e payment, e filling and electronic tax education in order to improve on tax collection in the country.
133 These tax reforms include the EBM, online declaration and payment and online tax registration.

134 Naibei & al, (2011) conducted a study to find out reasons for the adoption of Electronic Fiscal Devices in
135 tax collection in Kenya. Interviews and questionnaires were used as the main instruments for data collection.
136 Primary and secondary data were collected and analyzed. From the findings of the study, the most common stated
137 reasons for adoption of this new system of tax collection were to secure sales information followed by enhancing
138 tax compliances. Also the findings indicated that the system was introduced so as to reduce invoice fraud in
139 Kenya which was being conducted before. The study recommended that, the effective use of these machines in
140 tax collection will remove the day to day conflicts between the taxpayers and the government particularly the
141 tax authority.

142 Naibei, et al, (2011), conducted a study on the purpose of assessing the impact of use of Electronic Tax
143 Registers (ETRs) on Value Added Tax (VAT) compliance among private business firms in Kisumu city, Kenya.
144 Results revealed that effective and regular use of ETR has a significant impact on the Value Added Tax (VAT)
145 compliance. Based on the research findings the study concluded that use of ETR has a significant impact on VAT
146 compliance in Kenya. However, the study also recommended that the government needed appropriate strategies
147 to overcome challenges which may face the users of ETRs machines.

148 Yalemtesfa (2011) conducted a study on the importance of using EBM to increase revenue collection in
149 Ethiopia. The findings from the study indicated that, the use of EBM reduce the operation cost of the government
150 that was incurred to collect VAT as well as improve the business income of taxpayers. Also the study indicated
151 that while EBM improving the efficiency and effectiveness of government operations also provides timely and
152 accurate tax information to businesses and increases the availability of electronic tax filing. The study concluded
153 that introduction of EBM helped to decreases tax evasions and need to create enough awareness and strong regular
154 audit follow up to get those fruit full benefit of using EBM. The study recommended that creating awareness
155 of the people by newspapers, pamphlets, with attractive radio and television programs is very important in
156 eliminates the tax evasions and can enhance the efficiency of the ERCA.

19 A) ASSESSMENT OF THE CONTRIBUTION OF EBM IN GASABO DISTRICT

11 ii. Tax compliance

According to (OECD, 2010), the extent to which compliance (e.g. filing, reporting and payment) has been improved as a result of revenue body activities would clearly be an indication of a revenue body's effectiveness. There are four basic tax compliance obligations of citizens and businesses that generally speaking must be administered by all revenue bodies in accordance with their respective tax laws: to register for tax purposes; to file tax returns on time (i.e. by the date stipulated in the law); to correctly report tax liabilities and to pay taxes on time. The independent variable which is ICT tax reforms is measured by EBM reforms, online declaration and payment and online registration. These have got a direct effect on tax compliance which is measured by tax revenue.

12 III.

13 Research Methodology a) Research design

This study used descriptive and cause research design. Descriptive research design was used to describe ICT tax reforms. Cause research design was used to establish the relationship between ICT tax reforms and tax compliance in Gasabo district.

14 b) Population of the study and Sample size

The target population for this study included employees of RRA Gasabo branch. The total number of population used in this study was 128 employees of RRA in Gasabo district and 5 representatives of tax payers in Gasabo district. Yamane's (1967) formula was used to calculate sample sizes. $n = \frac{N}{1 + N(e)^2}$ Where n is the sample size, N is the population size and e is the level of precision.

15 (0.1) n c) Sampling techniques

Stratified random sampling is a method of sampling that involves the division of a population into smaller groups known as strata. In stratified random sampling, the strata are formed based on members' shared attributes or characteristics. This implies that sample size of each categories of tax collectors and tax auditors was selected by using stratified random sampling techniques. Among 128 employees of RRA in Gasabo, the researcher selected only 56 employees from different department which included 8 officers in charge of tax collection and tax audit in large tax payers, 31 officers in charge of tax collection and tax audit in Small & medium and 7 officers in charge of tax collection and tax audit in each sector of Gasabo district in each sector of Gasabo district

16 d) Methods of data collection

To get this information the researcher went on field and collect raw data from the employees of RRA. In this study, questionnaire was used to collect primary data. The primary data was based on the research objectives of the study. Secondary data is the data that is already in existence and found in published reports, books and internet (Saunders et al., 2007) and may be used by researcher for their studies (Krishnaswami and Ranagnatham, 2006). In this research, the secondary data was collected from reviewing existing from reports at RRA Gasabo Branch

17 e) Data analysis

The data were analyzed by using both descriptive statistics and inferential statistics such as Pearson's correlation was used to analyze the data. The data was then analyzed using descriptive statistics such as frequencies, percentages, mean and standard deviation. Findings were presented using tables for further analysis and to facilitate comparison. Inferential statistics through the use of multiple regression model was used were used to establish the relationship between the study variables. The independent variables were measured by EBM, Online declaration and payment (ODP), online tax registration (OTR). On the other hand, tax compliance was measured by tax revenue (TR) $TR = F(EBM, ODP, OTR)$ $TR = \beta_0 + \beta_1 EBM + \beta_2 ODP + \beta_3 OTR + \epsilon$

18 Result and Discussion

This section presents the findings of the study, the analysis and interpretation of the results Findings were derived from the questionnaires to employees of RRA Gasabo branch. It attempts to analyze data generated from the study which include qualitative and quantitative information collected from the respondents.

19 a) Assessment of the contribution of EBM in Gasabo district

The study sought to find out the appreciation of respondents on electronic billing machine adopted by RRA in the aims of facilitating tax collection in Gasabo district. The results indicated that 1.8% of respondents strongly disagreed, 3.6% of respondents disagreed, 7.1% of respondents were neutral whereas 10.7% of respondents agreed and the majority 76.8% of respondents strongly agreed that EBM is important because its standardization of

209 the tax payment and was rated with very high mean of 4.57; (SD = 0.91) which implies that respondents have
210 heterogeneity perception on this assertion.

211 The findings show that 1.8% of respondents strongly disagreed, 7.1% of respondents disagreed, 3.6% of
212 respondents were neutral whereas 14.3% of respondents agreed and the majority 73.2% of respondents strongly
213 agreed that EBM is automation of the tax payment and was rated with very high mean of 4.53; (SD = 0.97)
214 which implies that respondents have heterogeneity perception on this assertion.

215 The findings illustrated that 1.8% of respondents strongly disagreed, 3.6% of respondents disagreed while 26.8%
216 of respondents agreed and the majority 67.9% of respondents strongly agreed that EBM is used in computerization
217 of tax collection and was rated with very high mean of 4.55; (SD = 0.83) which implies that respondents have
218 heterogeneity perception on this assertion. The findings illustrated that 12.5% of respondents disagreed and 3.6%
219 of respondents were neutral while 14.3% of respondents agreed and the majority 69.6% of respondents strongly
220 agreed that EBM is used to records sales and controller and was rated with very high mean of 4.41; (SD = 1.04)
221 which implies that respondents have heterogeneity perception on this assertion.

222 The findings indicated that none of respondents disagreed or strongly disagreed whereas 21.4% of respondents
223 agreed and the majority 78.6% of respondents strongly agreed that EBM is used in integration of the tax system
224 with other government systems and rated with high mean 4.79 and homogeneity standard deviation equal to 0.41
225 this implies that respondents have the same view regarding to EBM is used in integration of the tax system with
226 other government systems.

227 The findings show that none of respondents disagreed or strongly disagreed whereas 19.6% of respondents
228 strongly agreed and the majority 80.4% of respondents agreed that EBM bring innovation in the tax payment and
229 rated with high mean score 4.2 and standard deviation equal to 0.40 which implies that homogeneity perception.

230 The results from the table above indicated that 12.5% of respondents disagreed and 3.6% of respondents were
231 neutral while 14.3% of respondents agreed and the majority 69.6% of respondents strongly agreed that clients
232 pay tax easily from any business location by use of electronic billing machine: This was indicated by a very high
233 mean of 4.41 and a heterogeneity standard deviation of 1.04.

234 The results show that 3.6% of respondents disagreed, 1.8% of respondents were neutral while 5.4% of
235 respondents agreed and the majority 89.3% of respondents strongly agreed that clients produce invoice easily by
236 use of electronic billing machine and was rated with very high mean score of 4.80 and (SD = 0.64) . This implies
237 that respondents have heterogeneity perception.

238 The results show that 62.5% of respondents strongly agreed that electronic billing machine has made
239 communication easy with clients and rated with very high mean score of 4.27 and (SD=1.12) Hence respondents
240 have heterogeneity perception on how EBM services has made communication easy with clients. This findings
241 are in the line with Geetha and Sekar(2012), One of the most important advantages of a billing and currency
242 counting machine is that it saves a lot of time and manual efforts. Productivity can be easily increased with
243 these machines. A billing machine proves to be advantageous in producing the sum totals for various money
244 transactions and to generate the bills faster and accurately.

245 The findings indicated that 3.6% of respondents strongly disagreed, 3.6% of respondents disagreed and 14.3%
246 of respondents were neutral whereas 14.3% of respondents agreed and the majority 64.3% of respondents agreed
247 that EBM has make taxation service more assured than conventional method and was rated with high mean
248 score 4.32 and standard deviation equal to 1.08 implies that heterogeneity perception response.

249 The results show that 73.2% of respondents strongly agreed that electronic billing machine system has made
250 tax auditing/accountability easier and was rated with very high mean score 4.57 and SD= 0.83 implies that
251 heterogeneity perception responses that tax auditing/accountability become easier.

252 The results show that 73.2% of respondents strongly agreed that electronic billing machine system has made
253 tax auditing/accountability easier and was rated with very high mean score 4.57 and SD= 0.83 implies that
254 heterogeneity perception responses that tax auditing/accountability become easier.

255 The results show that 3.6% of respondents disagreed, 1.8% of respondents were neutral whereas 16.1% of
256 respondents agreed and the majority 78.6% of respondents strongly agreed that EBM has made tax service more
257 accessibility and available and was rated with very high mean score 4.7 and SD= 0.69 implies that heterogeneity
258 perception responses that EBM has made tax service more accessibility and available. The tax payers said that
259 they used to have problems of keeping records for tax assessment before using EBM. But now with EBM, it is
260 easy, simple and fast. The bad part about it is that I do not like to pay too much tax to the government". The
261 comment above clearly shows that the EBM is beneficial and what is required is education to the tax payers
262 about its benefits for the country at large.

263 The overall view of respondents on electronic billing machine services was rated with very high mean score 4.52
264 which implies a strong evidence of the existence of the fact and standard deviation of 0.81 great than 0.5 which
265 implies that respondents have heterogeneity perception on the use of electronic billing machine in Gasabo district.
266 From the findings quoted in the above passage permitted researcher to share the same views of respondents on
267 the fact that EBM are adopted and used in Gasabo as mean of collecting VAT but remains some doubt because
268 all respondents did not have the same view as indicated above. This was due to the analysis on what efficacy the
269 EBM is expected to provide on ease of tax-collection. In fact, the understanding for the necessity is one but also
270 the willingness to use EBM is another issue. To this perspective, participants to the study asserted that as EBM
271 use is still new means of tax-clearance while changes is a process, they continue enforcing sensitizations on both

272 sellers to use EBM and any buyer to request an invoice of EBM until this will be implemented to all services.
 273 Yet, in optimist's views, the respondents accept that the numbers of those who use EBM is increasing consider
 274 the period that this new means of paying taxes has been integrated in Rwanda.

275 **20 b) On line declaration and payment**

276 The study sought to assess the contribution of online tax declaration and payment on tax compliance in Gasabo
 277 district. The findings show that 1.8% of respondents disagreed while 5.2% of respondents agreed and the majority
 278 92.9% of respondents strongly agreed that all registered taxpayers file their returns on time and this statements
 279 was rated and has very high mean core equal to 4.89; SD=0.45). This implies that respondents have homogeneity
 280 perception responses.

281 The findings show that none of respondents disagreed or strongly disagreed and 10.7% of respondents were
 282 neutral whereas 8.9% of respondents strongly agreed and the majority 87.5% of respondents agreed that the
 283 system is able to track taxpayers who do not file their returns and this statements was rated and has high mean
 284 core equal to 3.98; SD=0.45). This implies that respondents have homogeneity perception responses on above
 285 statements.

286 The findings indicated that 1.8% of respondents strongly disagreed whereas 10.7% of respondents strongly
 287 agreed and the majority 87.5% of respondents agreed that taxpayers are able to declare and pay actual taxes on
 288 time and was rated with high mean score 4.05 and standard deviation equal to 0.52 implies that heterogeneity
 289 perception response.

290 The findings show that none of respondents disagreed or strongly disagreed whereas 7.1% of respondents
 291 strongly agreed and the majority 92.9% of respondents agreed that taxpayers are able to keep records, file
 292 returns and pay tax on time without intervention of tax officials and this statements was rated and has high
 293 mean core equal to 4.93; SD=0.26). This implies that respondents have homogeneity perception responses on
 294 above statements.

295 The findings show that none of respondents disagreed or strongly disagreed and 1.8% of respondents were
 296 neutral whereas 35.7% of respondents strongly agreed and the majority 62.5% of respondents agreed that
 297 taxpayers who do not file their returns are followed up and has high mean core equal to 4.34; SD=0.51). This
 298 implies that respondents have heterogeneity perception responses on above statements.

299 The findings show that 1.8% of respondents disagreed and 3.6% of respondents were neutral while 14.3% of
 300 respondents agreed and the majority 80.4% of respondents agreed that all taxpayers are aware of the consequences
 301 of delay or non remittance of tax and this statements was rated and has high mean core equal to 4.73; SD=0.62).
 302 This implies that respondents have heterogeneity perception responses on above statements.

303 The results demonstrated that 3.6% of respondents disagreed and 1.8% of respondents were neutral while 5.4%
 304 of respondents agreed and the majority 89.3% of respondents agreed that all taxpayers disclose income earned
 305 for tax purpose and this statements was rated and has high mean core equal to 4.80; SD=0.64). This implies
 306 that respondents have heterogeneity perception responses on above statements.

307 The overall view of respondents on the level of tax compliance in Gasabo district was rated at very high
 308 mean score 4.53 which implies there is strong existence fact and standard deviation equal to 0.49 which implies
 309 that respondents have the same view regarding to the level of tax compliance in Gasabo district was very high
 310 in Gasabo district via using electronic billing machine. These findings are in the line with Kakembo, (2007),
 311 revealed that tax compliance is

312 **21 Global Journal of Management and Business Research**

313 Volume XIX Issue IV Version I Year 2019 () significantly positively related to revenue collection. Mutuality
 314 one of the components of relational norms was also found to be significantly related to tax compliance. He said
 315 Intention to pay taxes is also significantly positively related to attitudes and tax compliance which would help to
 316 increase on domestic revenue. Therikildsen, (2004) said that the act of tax counseling improves on tax compliance
 317 of tax payers, hence increasing performance in revenue collection in a country. He found out that the objective of
 318 tax counseling is to assist taxpayers in matters related to tax and encourage the voluntary submission of accurate
 319 tax returns and payment of taxes. Generally, tax counseling offices provide advice on the interpretation and
 320 application of tax laws, procedures for filing returns and applications.

321 Regarding the aspect of tax maximization RRA indicated that, the introduction of EBM has improved tax
 322 collection to make revenue available for carrying government services. The RRA official said; it is much easier to
 323 identify who did not pay tax or use the device since we monitor each device separately and identify problems.
 324 We can see all users of the devices through the device mac address. We normally see taxpayers who fail to use
 325 the device properly. However for those not registered we cannot monitor their tax payment behaviour." They
 326 however remarked that there are still a lot of tax payers that are not fully using the EBM to maximize tax
 327 collection. In contrast, tax payers merely commented and accepted that it is a government procedure or duty to
 328 increase tax collection. One of a tax payer reported that; "we pay tax but we don't see any changes in social
 329 services, we see officials gaining and we continue to suffer as a community.

330 After that we understand the position of participants to the study on how they perceive the awareness of
 331 taxpayers to use EBM in their service and in line of verifying the achievement of our second objective, researcher

332 further consulted the services of RRA, especially in the Department of EBM and asked recorded data on the
333 improvement has be done in the tax-collection since the EBM has been integrated. In addition, these recorded
334 data permit the researcher to attain the main aim of the research topic in ensuring whether really the use of EBM
335 for the taxpayers has contributed to the increase of tax collection. For adequacy of data we asked this question;
336 "Please show us how the taxes have increased from 2012 to 2016 through the use of EBM."The recorded data
337 have been represented in the following table according the period of our research. The findings are consistent
338 with Naibeiet al. ??2011) found that the most common stated reasons for adoption of this new system of tax
339 collection were to secure sales information followed by enhancing tax compliances and also the findings indicated
340 that the system was introduced so as to reduce invoice fraud in Kenya which was being conducted before.

341 **22 c) Online tax registration in Gasabo district**

342 The study sought to assess the level of tax registration in Gasabo district. The respondents were asked where
343 agreed or disagreed with the statements regarding tax registration. The results from the respondents were
344 summarized in the table below. The results indicated that the majority 80.4% of respondents strongly agreed
345 that every taxpayer identified is always registered with (Mean =4.64 and standard deviation of 0.94), 67.9% of
346 respondents strongly agreed that a quick check is done on taxpayers to establish if they are correctly registered
347 with (Mean =4.34 and standard deviation of 1.20), 69.6% of respondents strongly agreed that the ranking of
348 eligible tax payable is based on taxpayer's income with (Mean =4.54 and standard deviation of 0.83), 71.4% of
349 respondents strongly agreed that tax offices are effective in identifying and registering all potential taxpayers with
350 (Mean =4.54 and standard deviation of 0.89), 61.8% of respondents strongly agreed that identification methods
351 are effective in registering all potential taxpayers with (very high Mean =4.48 and standard deviation of 0.85),
352 78.6% of respondents strongly agreed that All registered tax payers are followed up to find out if they are active
353 with (very high mean =4.46 and standard deviation of 1.19), 71.4% of respondents strongly agreed that all
354 taxpayers' basic information are collected and recorded on a timely basis with (very high mean score =4.29 and
355 standard deviation of 1.33) and finally 73.2% of respondents strongly agreed that taxpayers are able to register
356 without intervention of tax officials. with (Mean =4.55 and standard deviation of 0.91). The overall view on
357 respondents on the level of tax registration in Gasabo district was very high with mean score 4.48 which implies
358 a strong evidence of the existence of the fact and standard deviation was 1.01 which implies that respondents
359 have heterogeneity perception on the level of tax registration in Gasabo district. The RRA official said; it is
360 much easier to indentify who did not pay tax or use the device since we monitor each device separately and
361 identify problems. This findings is consistent with RRA (2017), said that the aim of RRA in introducing EBM
362 is to increase the registration of all taxpayers in the national database and the issuing of a national PIN for
363 everybody. If the political will exists that all taxpayers or even all citizens should be registered under national
364 PINs, incentives have to be created to encourage people to register with the national tax authorities The table
365 above indicated tax revenue by tax type in Rwanda, the results indicated that VAT has been increased after
366 introducing electronic billing machine in Rwanda where in 2012/2013, VAT was199.7(30.6%) out of total revenue;
367 In 2013/2014, VAT was 259.1(33.9%) out of total revenue. In 2014/2015, VAT was 286.2(33.3%) out of total
368 revenue. In 2015/2016, VAT was equal to 323.2(32.8%) out of total tax revenue in Rwanda while in 2016/2017,
369 VAT was equal to 352.4 (32.4%) out of total tax revenue in Rwanda. This implies that after implementation
370 of electronic billing machine VAT has been increased over the last five years. The results show that 56% of
371 the variation in the tax compliance is caused by ICT tax reforms. This shows that there is strong relationship
372 between ICT tax reforms and tax compliance. The test on the strength of the model to be able to predict tax
373 revenue shows that the model is statically significant since the P-value is less than 5%. This therefore means
374 that the independent variables can statistically predict the tax compliance. 7 show the strength of each variable
375 in the predication of the dependent variable. The result shows that all variables are statistically significant since
376 their P-values are less than 5%. The results further revealed that there is positive relationship between EBM,
377 online tax declaration and payment and on line tax registration and tax compliance.

378 **23 Relationship between ICT tax reforms and tax compliance**

379 **24 V. Conclusion and Recommendations a) Conclusion**

380 The findings established that ICT tax reforms contributes to timely tax payment and reduced operational cost
381 for both RRA staffs and clients. The system has also made clients pay tax from any business location, has made
382 communication collaboration between tax payers easier, has made tax auditing/accountability easier and lastly
383 has increased Revenue collection. Analyses of the relationship between ICT tax reforms and tax compliance have
384 indicated a strong relationship. However, the results indicated that ICT tax reforms only contribute 56% on the
385 tax compliance. Therefore, ICT tax reforms are not complete measures of tax compliance other factors which
386 enhances tax compliance should be considered.

387 **25 b) Policy Recommendations**

388 The researcher has come up with the following recommendations in order to support electronic tax management
389 system and revenue collection in Rwanda i. Other factors such as tax education and tax penalties should be

25 B) POLICY RECOMMENDATIONS

390 employed to enhance tax compliance since ICT tax reforms only contributes 56% on the tax compliance. ii. RRA
 391 should employ skilled personnel with more experience on network management in order to ensure the reliability
 392 of network and a need to train the taxpayer on the use ICT in the tax management. iii. RRA management should
 keep on upgrading their e tax technology in order to have an up to date system for effective service delivery ^{1 2}

1

	SD	fi	%	fi	D	N	%	fi	%	fi	A	%		
Standardization of the tax payment	1	1.8	2		3.6	4	7.1	6		10.7	43	76.8	4.57	
Automation of the tax payment	1	1.8	4		7.1	2	3.6	8		14.3	41	73.2	4.54	
EBM is used in computerization of tax collection	1	1.8	2		3.6	0	.0	15	26.8	38	67.9	4.55		
EBM is used in integration of the tax system with other government systems	0	.0	0		.0	0		12	21.4	44	78.6	4.79		
To bring innovation in the tax payment	0	.0	0		.0	0		45	80.4	11	19.6	4.20		
Clients check tax statement easily from any business location by use of EBM	0	.0	7	12.5	2	3.6		8		14.3	39	69.6	4.41	1.0
Clients produce invoice easily by use of EBM	0	.0	2	3.6	1	1.8		3					5.4	
EBM is used to records sales and controller	0	.0	7	12.5	2	3.6		8		14.3	39	69.6	4.41	1.0
Electronic billing machine system has made tax auditing/accountability easier	0	.0	3	5.4	3	5.4		9		16.1	41	73.2	4.57	
EBM has made communication easy with clients	2	3.6	3	5.4	8	14.3	8			14.3	35	62.5	4.27	1.1
EBM has make taxation service more assured than conventional method	2	3.6	2	3.6	8	14.3	8			14.3	36	64.3	4.32	1.0
EBM has made tax service more accessibility and available	0	.0	2	3.6	1	1.8		9		16.1	44	78.6	4.70	
Overall mean on use of EBM														4.52
														0.81
														Source:
														Pri-
														mary
														data,
														2019

Figure 1: Table 1 :

393

¹Information Communication Technology Tax Reforms and Tax Compliance in Rwanda Case of Rwanda Revenue Authority in Gasabo District

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47

	SD	D		N		A		SA		Mean St.	
fi	%	fi	%	fi	%	fi	%	fi	%	fi	%

Figure 2: Table 4 . 7 :

3

	SD	D		N		A		SA		Mean St.		
fi	%	fi	%	fi	%	fi	%	fi	%	fi	%	
Every taxpayer identified is always registered.	3	5.4	0	0.0	0	0.0	8	14.345	80.4	4.64	.94	
A quick check is done on taxpayers to establish if they are correctly registered.	3	5.4	5	8.9	0	0.0	10	17.9	38	67.9	4.34	1.20
The ranking of eligible tax payable is based on taxpayer's income.	0	0.0	3	5.4	3	5.4	11	19.6	39	69.6	4.54	.83
Tax offices are effective in identifying and registering all potential taxpayers.	1	1.8	2	3.6	3	5.4	10	17.9	40	71.4	4.54	.89
Identification methods are effective in registering all potential taxpayers.	0	0.0	4	7.1	1	1.8	15	26.8	36	64.3	4.48	.85
All registered tax payers are followed up to find out if they are active.	4	7.1	2	3.6	2	3.6	4	7.1	44	78.6	4.46	1.10
All taxpayers' basic information are collected and recorded on a timely basis.	4	7.1	5	8.9	2	3.6	5	8.9	40	71.4	4.29	1.30
Taxpayers are able to register without intervention of tax officials.	1	1.8	3	5.4	1	1.8	10	17.9	41	73.2	4.55	.91
Overall mean											4.48	1.00

[Note: Source: Primary data, 2019]

Figure 3: Table 3 :

4

Revenue	2012/2013		2013/2014		2014/2015		2015/2016		2016/2017	
	(Rwf bn)	%								
PAYE	174.1	26.7	185.9	24.3	205.4	23.9	229.7	23.3	257.7	23.70
Profit tax	105.2	16.1	122.2	16.0	150.7	17.5	159.3	16.1	190.5	17.50
VAT	199.7	30.6	259.1	33.9	286.2	33.3	323.2	32.8	352.4	32.40
Excise tax	99.8	15.3	110.4	14.5	120.6	14.0	138.1	14.0	134.2	12.30
Import duty	48.2	7.4	57.9	7.6	63.5	7.4	75.1	7.6	76.5	7.00
Other	25.0	3.8	27.9	3.7	32.7	3.8	61.3	6.2	75.6	7.00
Total revenue	651.9	100	763.4	100	859.1	100	986.7	100	1.086.8	100

Source: RRA, report (2012-2017)

Figure 4: Table 4 :

25 B) POLICY RECOMMENDATIONS

5

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.748 a	.560	.450	6.72758

Figure 5: Table 5 :

6

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	454.176	1	454.176	8.345001	a
	Residual	90.521	5	18.104		
	Total	544.697	6			

- a. Predictors: (Constant), EBM, online declaration and payment, online registration
- b. Dependent Variable: Tax revenue

Figure 6: Table 6 :

7

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	.494	.116		4.758	.002
EBM	.907	.260	.427	3.488	.030
Online declaration and payment	.365	.154	.249	2.370	.050
Online registration	3.476	1.087	.455	3.198	.037

[Note: a. Dependent Variable: Tax revenue Results in table]

Figure 7: Table 7 :

- 394 [Mmanda ()] *A presentation on introduction of electronic fiscal device in Tanzania*, P Mmanda . 2014. Dar es
395 salaam,Tanzania.
- 396 [Fu et al. ()] 'Acceptance of electronic tax filing'. J R Fu , W Chao , C K Farn . *Information and Management*
397 2006. 43 (1) p. .
- 398 [Anna ()] *Adoption of tax e-filing: A conceptual paper*, A Anna . [http://www.academicjournals.org/
399 ajbm/pdf/pdf2010/May/Azmi%20and%20Kamarulzaman.pdf](http://www.academicjournals.org/ajbm/pdf/pdf2010/May/Azmi%20and%20Kamarulzaman.pdf) 2009.
- 400 [Aguti ()] *Application of E-tax system and efficiency in tax administration unpublished dissertation Makerere*
401 *University*, J Aguti . 2011. Kampala Uganda.
- 402 [Fellows and Liu ()] *Basics of qualitative research techniques and procedures for developing grounded theory*, A
403 Fellows , Y Liu . 2003. London: Sage Publications.
- 404 [Holtzman ()] 'Challenges in achieving transparency, simplicity and administering of United States tax code'. Y
405 Holtzman . *Journal of management development* 2007. 126 (5) p. .
- 406 [Nawaz ()] 'Challenges of Malawi revenue collection'. M Nawaz . *Interdisciplinary Journal of Contemporary*
407 *Research In Business* 2010. 3 (1) p. .
- 408 [Ozgen ()] 'Classification of electronic tax services and comparison of tax management systems in the European
409 countries'. Ozgen . *Journal of Faculty of Economics and Administrative sciences* 2012. 1 (6) p. .
- 410 [Kenneth ()] *Conceptual and methodology challenge*, L Kenneth . 2005. Toronto. University of Toronto
- 411 [Cooper and Schindler ()] D R Cooper , P S Schindler . *Business research methods*, (New York) 2011. McGraw-
412 Hill. (11th ed)
- 413 [Baingana ()] *Corporation tax administration and revenue performance Uganda Revenue*, E Baingana . 2011.
414 Authority in Eastern Uganda Makerere University
- 415 [Land ()] 'Developing capacity for tax administration'. A Land . *European Centre for development policy*
416 *management (ECDPM)*, (Kigali, Rwanda) 2004.
- 417 [Agrawal ()] *E filing of returns: The Chartered Accountant*, M Agrawal . 2006. May 1567-1573.
- 418 [Ndayisenga and Shukla ()] 'Effect of electronic tax management system of tax collection in Rwanda: Case
419 study of Rwanda Revenue Authority (RRA)'. Emmanuel & Ndayisenga , Jaya Shukla . *International journal*
420 *of Business & management* 2016. 2 (1) p. .
- 421 [Onoja and Iwarere ()] 'Effects of tax audit on revenue generation'. L M Onoja , H Iwarere . *Journal of Good*
422 *Governance and Sustainable development in Africa* 2015. 8 (1) p. .
- 423 [Rra ()] *Electronic Billing Machines: a boon, not a burden*, Rra . 2014. Kigali, Rwanda: Fountain Publishers.
- 424 [Clive ()] *Enhancing transparency in Tax administration in Madagascar and Tanzania. Tanzania: Belfer Centre*
425 *for Science and International affairs*, G Clive . 2011.
- 426 [Atawodi and Ojeka ()] 'Factors that affect tax compliance among small and medium in North Central Nigeria'.
427 O W Atawodi , S A Ojeka . *International Journal of Business and Management* 2012. p. .
- 428 [Agola ()] *Firmlaunches tax-compliant cash register*, E Agola . <http://www.ippmedia.com> 2010.
- 429 [Ndungu ()] *Forum on tax administration: Guidance and specifications for tax compliance of business and*
430 *accounting software*, A Ndungu
431 OECD. . 2013. 2010. Paris. 40. (The effect of internal controls on revenue generation. Nairobi: University of
432 Nairobi)
- 433 [Samson ()] *History of taxation*, D Samson . 2012. Alabama USA: Kluwer Academic Publishe.
- 434 [Weru ()] 'Impact of strategic change: Introduction of electronic tax register for enhancement of tax collection at
435 Kenya Revenue Authority'. M Weru . *Nairobi: International Journal of Social Sciences and Entrepreneurship*
436 2013. 2 (3) p. .
- 437 [Abiola and Asiweh ()] 'Impact of tax administration on government revenue'. J Abiola , M Asiweh . *International*
438 *Journal of Business and Social Science* 2012. 3 (8) p. .
- 439 [Duke ()] 'Impediments of electronic commerce as a tax revenue facilitator'. J Duke . *International Business*
440 *Research* 2013. 1 (1) p. .
- 441 [Abdul and Idris ()] 'Implementing electronic tax filing and payments in Malaysia'. A Abdul , I Idris . *Academic*
442 *Research International* 2012. (3) p. .
- 443 [Mlitwa ()] *Integration of e-learning system into academic programmes in modern universities: A South African*
444 *Perspective*, N W B Mlitwa . 2011. Cape Town. p. .
- 445 [Keen et al. ()] M Keen , J Toro , K Baer , V Perry , J Norregaard , J Ueda . *Current Challenges in Revenue*
446 *Mobilization: Improving Tax Compliance. Staff Report*, 2015. p. .
- 447 [Okello ()] *Managing income tax compliance through self-assessment*, A Okello . 2014. p. . (IMF Working Paper)

25 B) POLICY RECOMMENDATIONS

- 448 [Nicholas ()] T Nicholas . *Taxation in Kenya (Principles and Practices)*, (Nairobi, Kenya) 2003.
- 449 [Dixon ()] *Online declaration tax returns is now the norm, but some still swear by paper returns*, T Dixon .
450 45/1289. 2012.
- 451 [Murray ()] 'Online declaration tax returns is now the norm, but some still swear by paper returns'. T D Murray
452 . *Journal* 2012. 2012scientific. 2 (3) p. .
- 453 [Slemrod ()] 'Optimal taxation and optimal tax systems'. J Slemrod . *The Journal of Economic Perspectives*
454 2010. 1 (4) p. .
- 455 [Donoghue and Rabin ()] 'Optimam taxation framework'. O Donoghue , Ted , Matthew Rabin . *Quarterly*
456 *Journal of Economics* 2006. 116 (1) p. .
- 457 [Rathus and Nevid ()] *Psychology and the challenges of life*, S Rathus , J Nevid . 1987. Forth Worth, TX: Holt,
458 Rinehart and Winston, Inc. (Forth Edition)
- 459 [Kothari ()] *Research methodology, methods and techniques*, C Kothari . 2006. New York: Willey Eastern Ltd.
- 460 [Sekaran ()] *Research methods for business. A skill building approach*, U Sekaran . 2003. New Delhi: John and
461 Sons, Inc. (3rd Ed)
- 462 [Saunders et al. ()] M Saunders , Lewis , A Thornhill . *Research methods for business student*, (New York) 2007.
463 Prentice Hall. (2th ed)
- 464 [Kumar and Gupta ()] 'Study of taxpayer's perception of adopting a personal tax e filing system in Malaysia'. S
465 Kumar , S Gupta . *Journal of Internet Banking and Commerce* 2008. 19 (2) p. .
- 466 [Nchoe and Johnson ()] *Survey of benefits and challenges of electronic billing and payments in the Kenya power*
467 *and lighting company' unpublished dissertation from University of Nairobi library*, P Nchoe , Johnson . 2003.
468 Nairobi, Kenya.
- 469 [Tax collection report in Rwanda Rwanda revenue authority ()] 'Tax collection report in Rwanda'. [http://](http://www.onlineservices.rra.gov.rw)
470 www.onlineservices.rra.gov.rw Rwanda revenue authority, (Kigali, Rwanda) 2013. 6 p. 00P.
- 471 [Ngotho and Kerongo ()] *Tax competencies, compliance costs and income tax compliance among SMEs in Kenya*,
472 & Ngotho , Kerongo . 2014. Nairobi, Kenya. Jon Kenyatta University
- 473 [Andreoni ()] *Tax compliance. Working paper*, H Andreoni . 2006. University of Wisconsin.
- 474 [James et al. ()] 'Tax law improvement in Australia and the UK: the need for a strategy for simplification'. A
475 James , R Simon , I Wallschutzky . *Fiscal Studies* 2007. 18 (4) p. .
- 476 [Gideon ()] 'Tax practitioners and the electronic filing system: an empirical analysis'. Gideon , Alouis . *Academy*
477 *of Accounting and Financial Studies Journal Morris* 2013. 126 (5) p. .
- 478 [Paepe and Dickinson ()] *Tax revenues as a motor for sustainable development. Paris: Organization for Economic*
479 *Development and Cooperation*, G D Paepe , B Dickinson . 2014. OECD.
- 480 [Rra ()] *Tax statistics in Rwanda fiscal year 2015/16*, Rra . 2016. Kigali, Rwanda.
- 481 [Horn ()] 'Taxation of e-commerce'. P Horn . *Journal of American Academy of Business* 2013. 2 (2) p. .
- 482 [Lymer and Oats ()] *Taxation: policy and practice*, A Lymer , L Oats . 2009. Birmingham: Fiscal Publications.
483 (16th ed)
- 484 [Wasao ()] 'The Effect of online tax system on tax compliance among small taxpayers in east of nairobi tax
485 district, Kenya' unpublished dissertation from university of Nairobi Library, Nairobi Kenya 55. Yamane,
486 Taro'. D Wasao . *Statistics: An introductory analysis*, (New York) 2014. 1967. Harper and Row. (2nd Edition)
- 487 [Magutu ()] 'The Effectiveness of electronic tax registers in processing of value added tax returns African'. O
488 Magutu . *Journal of Business & Management* 2010. 4 (2) p. .
- 489 [Muwonge ()] *The Influence of electronic filing system on tax compliance and tax collection*, H Muwonge . 2011.
490 Kampare, Uganda. unpublished book from Makerere University
- 491 [Gupta ()] 'The journey of e-filing of income tax returns in India'. M Gupta . *International Journal of Research*
492 *in Commerce and Management* 2012. 2 (6) p. 180.
- 493 [Imf ()] *VAT refunds. A review of country experience*, Imf . WP/05/218. 2015.