ELECTRONIC BILLING MACHINES AND REVENUE COLLECTION PERFORMANCE OF UGANDA REVENUE AUTHORITY

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ABSTRACT

The aim of the study was to investigate the relationship between electronic billing machines and revenue collection performance at the Uganda Revenue Authority (URA). A descriptive cross-sectional survey research design was utilized. Semi-structured questionnaires and interviews were used to collect data from a sample of URA employees at the head office, Nakawa division, Kampala. Data were analyzed using the narrative, descriptive, and Pearson correlation. Findings revealed that electronic billing machines are significantly related to revenue collection performance at URA. Uganda Revenue Authority needs to continuously educate and encourage the use of electronic billing machines so that tax bills are generated faster and accurately and consequently boost revenue collection performance.

Keywords: Electronic billing machines, revenue collection performance, Uganda Revenue Authority, Uganda.

1.0 INTRODUCTION

The importance of revenue collection in any country cannot be over-emphasized. It is a good and increased revenue collection that enables every government to deliver much-needed services and to service its debt (Ngotho & Kerongo, 2014). To achieve good revenue collection, every government or its agency must work hard to reduce the tax gap which is the difference between the tax amounts taxpayers pay voluntarily, and on time, and what they should pay under the law (Bird, 2010). The government also benefits by meeting the target of the tax to be collected while the tax administration attains efficiency and reduced costs in administering and collecting tax. As also noted by Ngotho and Kerongo (2014), high revenue collection is vital to promote efficiency in the service delivery and economic development of the country.

Achievements in tax compliance and tax revenue targets depend partly on taxpayers' cooperation, but also on the tax knowledge of the tax system in place (URA, 2015). The electronic tax system forms part of the revenue reforms by the Uganda Revenue Authority whose main motive is enhancing tax collections to increase tax revenues. According to Clegg & Greg (2010), the electronic tax system has been around globally, for the last 30 years. Its history began in 1986 as a small program in which only 5 taxpayers from Cincinnati, Raligh Durham, and Phoenix agreed to participate. Since then, the electronic tax system has grown to become commonplace, serving millions of taxpayers every year. The tax system provides taxpayers with a safe self-service option package, a single point of information and action, and does not require intervention by tax administration personnel (Jimenez et al…, 2013). E – taxation services are taxation services used in most countries and sometimes forced by customers.

UN report dated 13th September 2000, on improving tax administration in sub-Sahara brings out the fact that in recent years, the establishment of autonomous revenue agencies in sub-Saharan Africa has become attractive as a perceived means to sustained revenue improvement. It was first established in Indonesia in the early 1980s. The model was introduced to Ghana in 1985, followed by Uganda in 1991. Five additional autonomous agencies have been established to date and several more are in the process of being established in Sub-saharan Africa. However, their contribution to revenue performance has not been systematically assessed (Rocheleau & Wu, 2005).

Despite the established varied tax systems in Uganda, tax compliance levels remain low and tax collections are below the targets set by URA (Uganda Revenue Authority Report 2020). Further, although the effect of the electronic tax system on local revenue collection performance has been studied in various countries across the world, few research have been covered in this area by Uganda Revenue Authority. Studies on electronic billing machines do not existing in Uganda. It is not known how the electronic billing machine is used to boost revenue collection at URA. This study was therefore interested in investigating the relationship between electronic billing machines and revenue collection performance at URA.

2.0 LITERATURE REVIEW

2.1 Theoretical review

The Technology Acceptance Model (TAM) Theory of Reasoned Action's causal links to explain an individual's IT acceptance behavior. It suggests that perceived usefulness (PU) and perceived ease of use (PEOU) of IT are major determinants of its usage. PU was defined as the degree of which a person believes that using a particular system would enhance his or her job performance and PEOU was defined as the degree, which a person believes that using a particular system would be free of effort. Both PU and PEOU are jointly influence citizens' intention. Davis (1989) assert, "A key purpose of TAM is to provide a basis for tracing the impact of external factors on internal beliefs, attitudes and intentions". Behavior Intention (BI) is a measure of the strength of one's intention to perform a specified behavior. According to intention-based theories, user adoption and usage behavior are determined by the intention to use IT. It is a kind of "self-prediction" or "behavioral expectation", indicated as one of the most accurate predictors available for an individual's future behavior (Davis, 1989).

TAM incorporates additional theoretical constructs spanning social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use). In terms of social influence processes, TAM indicates that three interrelated social forces: subjective norm, voluntariness, and image will impinge an individual's opportunity to adopt or reject a new system. TAM also theorizes that subjective norms will positively influence image because important members of a person's social group at work believe that he or she should perform a behavior (e.g., using a system), then performing it will tend to elevate his or her standing within the group (Blau 1964; Pfeffer 1982). Individuals often respond to social normative influences to establish or maintain a favorable image within a reference group.

An individual may perceive that using a system will lead to improvements in his or her job performance (definition of perceived usefulness) indirectly due to image enhancement, over

and above any performance benefits directly attributable to system use. However, when individuals know more about the system's strengths and weaknesses through direct experience, the normative influence subsides. TAM regards job relevance as a cognitive judgment that exerts a direct effect on perceived usefulness. When a task, system is capable of performing and matching their job goals, people will consider how well the system performs those task, which always refers as perceptions of output quality.

Output quality used to explain significant unique variance in, perceived usefulness over and above job relevance. An effective system may fail to garner user acceptance if people have difficulty attributing gains in their job performance, especially to their use of the system. Thus, TAM theorizes that result demonstrability defined by Moore (1991) as the "tangibility of the results of using the innovation" will directly influence perceived usefulness. Empirically, there is extensive evidence accumulated over a decade that perceived ease of use is significantly linked to intention, both directly and indirectly through impact on perceived usefulness (Davis, 1989). The present study finds this theory very beneficial in that the revenue collection performance measures are used as indicators to assess the success of the country in achieving stated strategies, objectives and critical success factors.

2.2 Electronic billing machines and revenue collection performance

A billing machine consists of an electric typewriter, a calculator (in a modern accounting machine, a minicomputer), a programmed control device, and a unit for recording the information on an auxiliary carrier. Billing machines are used, for example, at computer consoles, in book keeping departments of commercial and industrial enterprises, in banks, in large warehouses, and in construction and assembly-installation directorates. These of such machines substantially expedites the processing of accounting and financial documentation. With the development of automated control systems, billing machines have been employed as input terminals for such systems (Jayakumar & Nagalakshmi, 2016).

The various billing machine models differ in the-width of the typewriter carriage (32, 45, or 62 centimeters), the-set of computational operations performed, and the degree of automation. The model VA-345M and VA-345 P machines are widely used in the Soviet Union, as well as such machines, which are manufactured in the German Democratic Republic (Jahirul, 2011). A device for the processing of alphanumeric documents for example, accounts, invoice-payment demands, payrolls, and construction estimates as addition, subtraction, multiplication, division, and the computation of percentages. The machine also automatically prints the result of a processing operation on paper by means of a type writer and simultaneously records the result on an auxiliary information carrier, such as a magnetic tape, a punch-tape, or punch card.

Monetary transactions at banks, retails store, grocery stores, healthcare institutes and other places have been made easier with the use of a variety of machines. Billing and money counting are two important functions involved in these transactions (Geetha and Sekar, 2012). These functions should be done fast and with accuracy to add value to the business operations. Something like billing and currency counting machine can be easily spotted at the aforementioned places. There are portable models of these machines that can be used in a variety of applications. If you have a business or service providing store that require money-related transactions to be done efficiently, learn about the working and benefits of machines in this regard. Before the advent of modern day billing machine models and cash counters, the

machines used for these purposes were purely mechanical. Today, there are electronically machines with improved functionality due to better working mechanism. In a cash counting machine, the lot containing coins or currency notes is placed in a hopper (Geetha and Sekar, 2012). The machine contains electronic components like rollers and sensors that count each and every coin or note in the process.

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

Electronic Billing Machine as an independent variable can affect the Taxation in different ways. Electronic Billing Machines aim at improving tax collection and compliance, and are helping the government to increase its tax base (Jahirul, 2011). The tools have helped cut down time spent screening books of accounts. Auditors used to spend hours investigating and going over massive documentation, but with the EBM, audits are easily conducted and by using of Electronic Billing Machines URA is now able to catch tax evaders with less effort. The same technology is used in countries such as Sweden, Germany, Greece, Ethiopia and Kenya to combat tax evasion because every registered machine records all transactions and indicates Value Added Taxes expected to be remitted to government coffers. The use of Electronic Billing Machines discourages some taxpayers who were fond of keeping two receipt books or non-issuing tax receipts to clients, irrespective of the quantities bought, which encouraged tax evasion.

3.0 METHODOLOGY

3.1 Introduction

This section presents how the study was conducted. It comprises of research design, study population, sample size, sampling techniques, data collection methods, data collection instruments, quality control, data Analysis, and ethical issues.

3.2 Research design

According to Kothari (2004) a research design is the arrangement of conditions for collection and analysis of data in a manner to combine relevance to the research. It is a conceptual structure within which research is conducted.

This study adopted a descriptive cross sectional survey design. This was aimed at understanding and explaining the effect of electronic billing machines on revenue collection performance. Both qualitative and quantitative methods were used because they supplement each other. The qualitative approach was mainly used to describe subjective assessments,

opinions, and behaviors of the respondents as expressed from interviews. The quantitative approach helped in generating numerical data, which was statistically manipulated to meet required objectives through descriptive statistics such as frequencies and percentages. A combination of qualitative and quantitative data helped in analyzing many findings and outcomes to create an in-depth research.

3.3 Study Population

For the purpose of this study, the target population comprised of 120 staff of Uganda Revenue Authority. These included senior managers, middle managers and other staff. (URA, Human Resource status 2022)

3.4 Sample Size

The sample size comprised of 90staff of Uganda Revenue Authority. This was determined as per Krejcie and Morgan's (1970) table of determining sample size from a given population.

Table 3.1Sample size

Category	Population	Accessible sample size	Sampling techniques
Senior managers	16	11	Purposive
Middle managers	23	17	Purposive
Other staff	81	62	Random sampling
Total	**120**	**90**	

Source: Krejcie and Morgan (1970)

3.5 Sampling technique

The researchers used purposive and simple random sampling techniques to select and obtain respondents. Here, 62 staff of Uganda Revenue Authority were randomly selected and 28senior and middle management staff were purposively chosen for key information purposes because of their positions. This helped the researchers to select the respondents depending on their knowledge, experience and opinions.

3.6 Data collection methods

This study used both quantitative and qualitative data collection methods. Quantitative data was collected using questionnaires that were filled by the middle managers and other staff and qualitative data was obtained from key informant interviews with the senior management staff. The study specifically used the survey and interview methods of collecting data.

3.7 Data Collection Instruments

The researchers used a questionnaire and interview guide to collect data from the respondents.

3.8 Questionnaire

The questionnaire was structured into sections seeking personal information, questions about the independent variable and the dependent variable. The questionnaire was supplied to 90 employees of URA. The questionnaire was used because it is the main method of data collection (Kothari, 2011) in addition to being cheap and time saving.

The questionnaire was used to collect quantitative data from the employees of Uganda Revenue Authority in accordance with the research, objective. The responses to the questionnaire were interpreted using a five point Likert mean range scale that were interpreted as; Strongly agree =5 (very high) with mean range of 4.20 – 5.00; Agree = 4 (High) with mean range of 3.40 – 4.19; Undecided = 3 (Medium) with mean range of 2.60 – 3.39; Disagree = 2(low) with mean range of 1.80-2.59, Strongly Disagree = 1(very low) with mean range of 1.00 – 1.79.

3.9 Interview guide

Interviews, specifically semi-structured interviews, were chosen because of their flexibility to explore themes that dig deeper to answer the research question. This method allowed new ideas to be brought up and explored during the interviews. The choice to conduct interviews was based on practical reasons such as respondents' availability. The respondents were interviewed on relationship between electronic billing machines and revenue collection performance. The interviews were structured, meaning that there was a list of pre-determined questions to be asked to the respondents. In both face to face and oral interviews, the questions were the same and were asked in a manner that ensured the least bias in the response.

3.10 Review of Secondary Data

Secondary data was collected from articles, newspapers, text books and Journals. These were accessed through desk research, visiting various libraries and the internet. The secondary data was useful in enabling the Researchers learn more about the Electronic billing machines in Uganda and was further used for cross referencing in the discussion of the study findings.

3.11 Validity and Reliability

To ensure that the questionnaire seeks data in line with the study objective and gives consistent results, the researcher first tested for the validity and reliability of the research instrument.

3.12 Validity

Validity measures the degree to which the research or study achieves what it sets out to do. The research instrument was validated in terms of content and face validity. The revenue collection experts determined whether the sets of items could accurately measure the electronic billing machines and performance of revenue collection. The Experts were requested to comment on the representative and suitability of questions and give suggestions on the structure of the tools. The instruments were also scrutinized by the research experts to judge the items on their appropriateness of content, and to determine all the possible areas that needed modification so

as to achieve the objective of the study. This helped improve the content validity of the data that was collected.

3.13 Reliability

According to Kothari (2004), reliability establishes the consistency of a research instrument in that the results it achieves should be similar in similar circumstances and so the same research respondents using the same instrument should generate the same results under identical conditions.

The researchers measured the reliability of the questionnaire to determine its consistency in testing what they were intended to measure. The test re-test technique was used to estimate the reliability of the instruments. This involved administering the same test twice to the same group of respondents who were identified for this purpose. To test reliability of the questionnaire, 15 questionnaires were piloted and the result of the reliability test produced. The researchers determined Cronbach's Alpha or reliability coefficient, which estimate the internal consistencies of data in measuring a given construct.

3.14 Data Analysis

The data were analyzed both quantitatively and qualitatively as illustrated below;

3.15 Quantitative data analysis

In analyzing the data, the researchers' main aim was to establish whether the answers to the research questions were provided. In this case, the researchers used SPSS version 20 to analyze the data since it saves time and gives correct results of the findings and tabulation was applied using frequencies and percentages in the Validation of the statistical findings. The study used Pearson correlation coefficient to determine the degree of the relationship between electronic billing machines and revenue collection performance of Uganda Revenue Authority. Pearson r correlation is the most widely used correlation statistic to measure the degree of the relationship between linearly related variables. In this study the researchers used Pearson correlation to measure how electronic billing machines are related to revenue collection performance,

3.16 Qualitative data analysis

In this section, content and narrative analysis were done. Under content analysis, verbal or behavioral data was categorized to classify, summarize and tabulate the data. Narrative analysis was done through reformulation of stories presented by respondents taking into account context of each case and different experiences of each respondent. Narrative analysis was also used to revise the primary data got by the researcher from the field through interviews.

3.17 Ethical issues

The researcher ensured that no respondent suffered the effects of the research activities.

The researcher ensured confidentiality. The respondents' participation was voluntary, and the purpose of the research was declared to them.

4.0 FINDINGS AND DISCUSSION

The objective of the study centred on investigating the relationship between electronic billing machine and revenue collection performance at URA. Findings in form of descriptive statistics and correlations are presented. In the study electronic billing machine was the independent variable operationalized as: electronic billing machines accelerating the processing of accounting and financial documentation; monetary transactions being made easier with the use of the electronic billing machines; clients billing and currency counting machines saving a lot of time and manual efforts; productivity increasing with billing machines; clients billing machines producing the sum totals for various money transactions and generating the bills faster and accurately; electronic billing machines able to catch tax evaders with less effort and electronic billing machines improving tax collections and compliance. The dependent variable was revenue collection performance measured in terms of revenue collected, reduced avoidance and evation of tax and reduced costs of tax collection.

4.1 Descriptive statistics results

Descriptive analysis was carried out to describe the sample form which data was collected. Results are given in Table 4.1.

Table 4.1: Summary descriptive statistics on electronic billing machine and revenue collection performance.

	Variable	Mean value	Std	t value
1	Electronic billing machine	4.06	0.828	4.903
2.	Revenue collection performance	3.96	0.560	7.071

Summary descriptive findings in table 4.1, illustrate that respondents rated themselves high on average on all aspects of electronic billing machine (mean = 4.06; std = 0.828; t = 4.903) at 0.01 or 1% significance level. Generally, respondents agreed that the electronic billing machine was: accelerating the processing of accounting and financial documentation; making monetary transaction easier; saving a lot of time and manual efforts; increasing clients productivity; generating the bills faster and accurately; catching tax evaders with less effort and improving tax collection and compliance. On the dependent variable, respondents also rated themselves high on average on all aspects of revenue collection performance, suggesting that URA was collecting adequate revenue, had reduced customers avoiding and evading tax and reduced costs in tax collection.

4.2 Correlation Results

A bivariate analysis was conducted using the pearson correlation method to establish whether there was an associative relationship between electronic billing machine and revenue collection performance at URA. The strength of the correlation was interpreted on the following basis; (0.00 – 0.29), very low; (0.30 – 0.49), low: (0.50 – 0.69), moderate; (0.70 – 0.89), high and

(0.90 – 1.00), very high, 1.00 means perfect correlation. Positive correlation means that the two variables move in the same direction. That is, when one increases the other also increases. Negative correlation means that variables are moving in the opposite directions. An increase in one variable brings a correspondent decrease in the other.

Table 4.2: Correlation between electronic billing machine and revenue collection performance

		Electronic billing machine	Revenue collection performance
Electronic billing machine	Pearson correlation	1	0.781**
	Sig (2 – tailed)		0.000
	N		90
Revenue collection performance	Pearson correlation	0.781**	
	Sig (2 – tailed)	0.000	
	N	90	

** Correlation significant at 0.01 level (2 – tailed)

Correlation results in Table 4.2, in conformity with the basis for interpretation of correlation indicated above, illustrate that there is a significant positive high associative relationship between electronic billing machine and revenue collection performance (r = 0.781; sig = 0.000) at 0.01 or 1% significance level. The positive associative relationship if predictive, means or suggests that when the electronic billing machine, is applied, revenue collection performance at URA would increase also.

Findings support authors like Geetha & Sekar (2012) and Jahirul (2011). Geetha and Sekar (2012), indicated that one of the most important advantages of an electronic billing machine and currency counting machine was that it saves a lot of time and manual efforts. Productivity can easily be increased with these machines. An electronic billing machine also proves to be advantageous in producing the sum totals for various money transactions and to generate the bills faster and accurately. According to Jahirul (2011), electronic billing machines improve tax collection and compliance and consequently improve the government tax base. The use of electronic billing machines discourages some tax payers who were fond of keeping two receipt books or non-issuing of tax receipts to clients, irrespective of the quantities bought, which used to encourage tax evasion.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The objective of this study was to examine the relationship between electronic billing machines and revenue collection performance at URA. From the study findings, it can be concluded that electronic billing machines are significantly related to revenue collection performance at URA. Uganda Revenue Authority should educate and encourage the use of the billing machines. When billing machines are appropriately used they among other things, assist to generate tax bills faster and accurately. They also improve tax collection and compliance and consequently widen the tax base of the government and revenue collection performance.

Much as the study has contributed to our understanding of some of the factors that explain revenue collection performance, its results should be used with caution due to the following limitations: First, there were few variables used in the model. For example, it is not only electronic billing Machines that are related to revenue collection performance, and also revenue collection performance has other indicators. Secondly, the study did not scrutinize whether the relationship was predictive or not. That is, whether the relationship is not by accident. Thirdly, the study was essentially a cross-sectional study that looks at electronic billing machines and revenue collection performance, at a particular point in time. This may not give a complete picture of the phenomenon that was studied and may limit some of the conclusions obtained.

In view of the above limitations, the study therefore opens up areas for further research. One; more variables as may be related to electronic billing machines and other indicators/measures of revenue collection performance should be included in the model. Two; other researchers may go ahead to find out or scrutinize whether the relationship established in this study is predictive or not. Third; future researchers' may consider exploring appropriate economic methods that may improve the understanding of revenue collection performance.

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