

## Effect of Technology and Information Systems on Revenue Collection by the County Government of Embu, Kenya

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**Abstract:** Improvement of revenue collection in counties is the key to meeting their financial obligations leading to realization of their mandate to offer quality and timely services to the residents, the demand for which may exceed the available resources. Many counties have adequate revenue bases to finance the current level of services, but revenue collection levels are often low. According to reports by the Controller of Budget, revenue collection by 14 counties in Kenya fell below amounts generated by the former local authorities under their respective jurisdictions during the 2013/2014 financial year. In addition, the analysis showed that most counties failed to meet their local revenue collection targets. Several counties have been slammed with labour strikes and go-slows among their workforce due to delayed salaries and/or poor remuneration of employees working under the county governments. The purpose of this study was to establish the effect of technology and information systems on revenue collection by County governments in Kenya. The study was guided by technology acceptance theory. The study employed a descriptive survey research design. The target population of the study comprises all county government employees in Kenya. Purposive sampling and simple random sampling was used to select 102 respondents for the study. Content Validity was used as a validity test while Cronbach alpha coefficient was used for reliability test where a reliability coefficient of 0.7 was obtained and accepted. Data was collected using self-administered semi-structured questionnaires. Overall; it was found that technology and information systems had the effect on revenue collection. The study recommends a revision of the County's Act and the integration of information systems in the management activities of Embu County. The findings of this study shall be beneficial to county governments as they were in a position to establish corrective measures and formulate policies to harness revenue collection.

**Keywords:** Technology, Information Systems and revenue collection

### INTRODUCTION

A strong local revenue base is essential for the sustainability of decentralization programmes. Local revenue forms a core means of building an independent and accountable local governance system [1]. County Governments with strong local revenue collection have greater scope for autonomy, and are more responsive to the needs and priorities of their citizens. According to the Constitution of Kenya 2010, the clause on revenue funds for county governments states that, there shall be established a Revenue Fund for each county government, into which shall be paid all money raised or received by or on behalf of the county government, except money reasonably excluded by an Act of Parliament [2].

The county governments are enjoined to identify and raise revenue from local sources in form of rates, tolls, property tax, fees and fines among others to boost their financial base for development of the locality. In addition to the Internally Generated Funds (IGFs), the county governments are expected to fashion out projects and programmes that allure to poverty

reduction in their local areas [15]. Taxation and single business permits constitute the core sources across all the Counties. Kenya pioneered a single business permit (SBP) licensing system which has become a model that has been emulated and adopted by other countries in the region. In spite of the outlined revenue sources amongst others, the Counties have been facing inadequacies of finances to fund their expenses.

### Technology, Information Systems and Revenue Collection by County Governments in Kenya

Revenue in form of taxation, excise duties, customs, licenses or other sources is very crucial in ensuring smooth execution of government operations. Taxation is one of the leading avenues of revenue collection by governments all over the world. It is asserted that, developed countries have advanced and successful tax policies which enhance revenue collection. Nevertheless, developing countries often have inefficient tax systems which hamper their tax collection efforts [3]. The increased overall budget deficits in countries to the south of Sahara reflect

insignificant improvement on growth in domestic revenue mobilization after various reforms.

The technological innovation has been an important matter in tax and revenue collection. The advent of new instruments to help businesses work more efficiently affects the way taxes and revenues are collected. Information Technology (IT) changes at a rapid pace that the existing fiscal systems become obsolete in a short period of time. The necessity to integrate former existing structures is becoming more demanding since new applications need to be created to assist the dynamics of financial processes [4]. In addition, the quantity of processing data augments each year, which requires a scalable infrastructure to keep the fiscal processes working [5].

Reforms to Government's financial management systems and processes are becoming critical in response to increasing demands for greater transparency and accountability in the management of the public's finances [6]. Information Communication Technology provides counties with the opportunity to acquaint themselves with new strategies for effective lobbying, advocacy, design, implementation, and delivery of services to citizens by using those management information systems that meet local, national, regional, and international trends. The computerization of all the processes steps plays an important role in minimizing the errors, standardization of the operational procedures and reducing costs. It may assure that the practice is in accordance with the current legislation. Furthermore, a computerized tax system may reduce the operational costs of revenue collections. With a reduction in expenditures, a probable residual budget may be invested in means to enhance the citizens' welfare prioritizing the society needs [7].

### Revenue Collection in Kenya

Revenue collection generally relates to a government agency's actions to collect outstanding financial obligations from the public [1]. Revenue might come from a variety of sources: taxes, license fees, fines or use of state facilities. Typically, each government agency is responsible for collecting revenues it might be entitled to receive. The County Governments in Kenya get their revenue from taxation, permit fees, cess, license fees and other sources. County Government operations might stall, projects might derail, and even the workforces might resort to go-slow and strikes as it has hitherto been witnessed in a number of Counties [8]. When the County Governments fail to optimally collect requisite revenues, the public will negatively be affected by being denied vital services. As aforesaid, the County Government employees are bound to fail to be adequately remunerated. Moreover, the National Government will be overburdened by the

financial demand from the County Governments which will ultimately negate the national economy [8].

Kenya is considered to have the largest, most diversified and innovative economy in East Africa region. The country has made significant strides in enhancing the overall economic environment with a performance index always above that of the sub-Saharan Africa (SSA) average. It is observed that, the Government of Kenya [2] plans to continue the growth trajectory and has as such prioritized among others, governance and public finance management reforms to enhance transparency, accountability, service delivery and cost efficiency. It is further indicated that, Kenya is in the critical process of implementing the devolved governance as espoused in the Constitution of Kenya of 2010 [2].

According to the National Council for Law Report [9], County governments in Kenya were established as stipulated in the County Governments Act No. 17 of 2012. The Act stipulates that, a county government shall be responsible for any function assigned to it under the Constitution or by an Act of Parliament. The Act further states that, a county government shall be responsible for among others, exercising executive functions, functions provided for in Article 186 of the Constitution, any other function that may be transferred to county governments from the national government, any functions agreed upon with any other county governments; and establishment and staffing of county public service [10].

The Constitution of Kenya 2010 stipulates that several public services should be devolved to the County Governments. Ideally, these governments should finance their operations and functions. In Kenya, there are 47 county governments whose structure, authority and mandate are the same as enshrined in the Constitution. However, virtually all counties in Kenya are hampered by inadequacy of vital financial resources mainly due to poor revenue collection. This is in spite of the county government largely depending on national treasury for financial support. Indeed, there are authenticated allegations that the larger percentage of the monies disbursed to the county governments is employed in the recurrent expenditure to the detriment of development projects such as infrastructure. According to the Constitution of Kenya 2010, the clause on revenue funds for county governments states that, there shall be established a Revenue Fund for each county government, into which shall be paid all money raised or received by or on behalf of the county government, except money reasonably excluded by an Act of Parliament [2].

According to Mansour [11] revenue mobilization means to receive or collect money from internal and external source of government. Local revenues mobilized in most urban authorities in Africa are necessary but not sufficient to develop and supply adequate services for the fast-growing urban population. The growth of Africa's towns and cities has outpaced local authority capacity in terms of management, infrastructure, and financing. Many African towns and cities are now faced with a governance crisis. Accordingly, the capability and capacity of urban local government to provide basic services to a growing population have entered the core of the development debate. In particular, fiscal decentralization, the devolution of revenue mobilization and spending powers to lower levels of government has become a main theme of urban governance in recent years [12].

Governments all over the world operate under the purview of public finance. According to Kayaga [3], the purview of public finance entails effects of government on efficient allocation of resources, distribution of income, and macroeconomic stabilization. It is further noted that, the government expenditures comprise of government operations and income distribution. There are four major ways of financing the government expenditures including taxation, debt and also public finance through state enterprises. Revenue in form of taxation, excise duties, customs, licenses or other sources is very crucial in ensuring smooth execution of government operations [13].

Taxation is one of the leading avenues of revenue collection by governments all over the world. It is asserted that, developed countries have advanced and successful tax policies which enhance revenue collection [3]. The author posits that, the sub-Saharan Africa tax structures in terms of tax types and rates have improved in the recent past. Notably, when a government fails to raise funds through any or all of the aforementioned avenues, then, it results in constrains in financing the government operations [3].

#### **Revenue Collection by Embu County Government**

The spirit of decentralization is that county governments should generally be in a better position than the central government to identify local needs, and to deliver public services accordingly [14]. Given this background, Embu county government is enjoined to identify and raise revenue from local sources in form of rates, tolls, property tax, fees and fines among others to boost its financial base for development of the locality. In addition to the Internally Generated Funds (IGFs), the county government is expected to fashion out

projects and programmes that allure to poverty reduction in their local areas [15].

The County revenue receipts are divided into tax revenue and non-tax revenue which include among others taxes on properties. Business revenue is income from activities that are ordinary for a particular corporation, company, partnership, or sole-proprietorship. These revenues are important for the success and long-term sustainability of infrastructure and service delivery in the County. Indeed the importance of these County revenues cannot be over emphasized particularly in the case of Embu where the revenues are used for employee emoluments, co-funding capital development projects, providing bursaries, building administrative headquarters etc.

#### **STATEMENT OF THE PROBLEM**

The Constitution of Kenya 2010 stipulates that several public services should be devolved to the County Governments. Ideally, these governments should finance their operations and functions. However, virtually all counties in Kenya are hampered by inadequacy of vital financial resources mainly due to poor revenue collection. This is in spite of the county government largely depending on national treasury for financial support. Indeed, there are authenticated allegations that the larger percentage of the monies disbursed to the county governments is employed in the recurrent expenditure to the detriment of development projects such as infrastructure. In the face of the foregoing, there are several counties that have been slammed with labour strikes and go-slows among their workforce due to delayed salaries and/or poor remuneration of employees working under the county governments. Inadequacy of finances affects delivery of services to the public and also derails development at county levels. The situation is not only detrimental to the citizenry at county levels who lack the requisite services and also complain of among others, over-taxation, but also the county leadership is likely to be voted out of their positions due to perception in the public eye of mismanagement of public funds.

#### **Objective of the Study**

The objective of the study was to establish the effect of technology and Information Systems on revenue collection in Embu County.

#### **Scope of the Study**

The study was carried out in Embu County to ascertain the effect of technology and Information Systems on revenue collection.

#### **THEORETICAL REVIEW**

The study was guided by the technology acceptance model.

**The Technology Acceptance Model**

This model was developed by Davis in 1989. This is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably perceived use and perceived usefulness. Perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance. Davis defined Perceived ease-of-use as the degree to which a person believes that using a particular system would be free from effort [16].

Bagozzi, Davis and Warshaw [17] argued that because new technologies such as personal computers are complex and an element of uncertainty exists in the minds of decision makers with respect to the successful

adoption of them, people form attitudes and intentions toward trying to learn to use the new technology prior to initiating efforts directed at using. Technology Acceptance Model (TAM) has been widely criticized, despite its frequent use, leading the original proposers to attempt to redefine it several times. Criticisms of TAM as a theory include its questionable heuristic value, limited explanatory and predictive power, triviality, and lack of any practical value [18]. Benbasat and Barki suggest that TAM has diverted researchers' attention away from other important research issues and has created an illusion of progress in knowledge accumulation.

**CONCEPTUAL FRAMEWORK**

The conceptual framework was used to show the relationship between revenue collection technology and information systems.

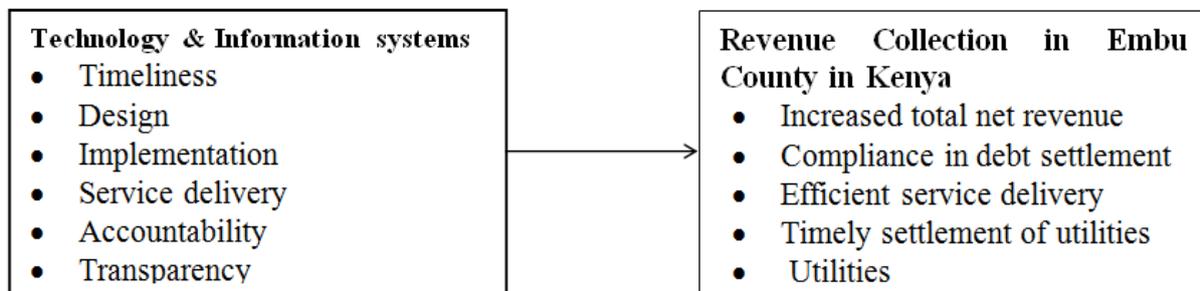


Fig-1: Conceptual Framework

**RESEARCH METHODOLOGY**

**Research Design**

This research adopted descriptive survey research design. This method is the best suited to systemically give an exhaustive analysis of the situation as it determines and reports the way things are in that it attempts to describe such things as possible behavior, attitude, values and characteristics.

**Population of the Study**

The target population of the study comprised all county government employees in Kenya. The accessible population was 132 Embu County employees. Population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated.

**Sampling Technique and Sample Size**

Sampling is appropriate when it is not feasible to involve the entire population under study. There are 126 employees of Embu County government. The study adopted Slovin's formula to determine the sample size as shown below:

$$n = \frac{126}{1 + 126(0.05)^2} = 96$$

Where: n= Sample size N= Total population ε= is the margin error of 0.05 based on 95% confidence level. Therefore, 96 respondents were selected from among the revenue collection staff who were selected using stratified simple random sampling technique as shown in Table 1.

Purposive sampling was used to select the Chief Officer in Charge of Finance, Sub County Revenue Officers and the County Executive in charge of Revenues which totals to 6 officers. Therefore a total of 102 respondents were selected for the study.

**Slovin's formula**

$$n = \frac{N}{1 + N(e)^2}$$

**Data Collection Instruments**

The nature of this study required that a questionnaire be used. A questionnaire is easy to administer. Questionnaires also reduce bias since the researchers' own opinions would not influence the respondents to answer questions in a certain manner unlike if it was a face to face survey.

**DATA ANALYSIS, RESULTS AND INTERPRETATION**

**Data Processing and Analysis**

In this study, both qualitative and quantitative data was collected. The qualitative data was analyzed using descriptive statistics tools including the mean, mode, standard deviation and variance was used. The findings were presented in form of frequency tables, charts and graphs. Multiple linear regression models were used to analyze the relationship between factors influencing effective revenue collection and optimal revenue in the County Governments in Embu County Government, Kenya.

**Response Rate**

A total of 102 questionnaires were administered on the sampled respondents. Out of this

number, 75 were successfully filled and collected from the respondents. This translates to 73.5% response rate which is sufficient and acceptable for analysis. According to Nulty [19] the response rate was acceptable as it had surpassed the 70% response rate threshold.

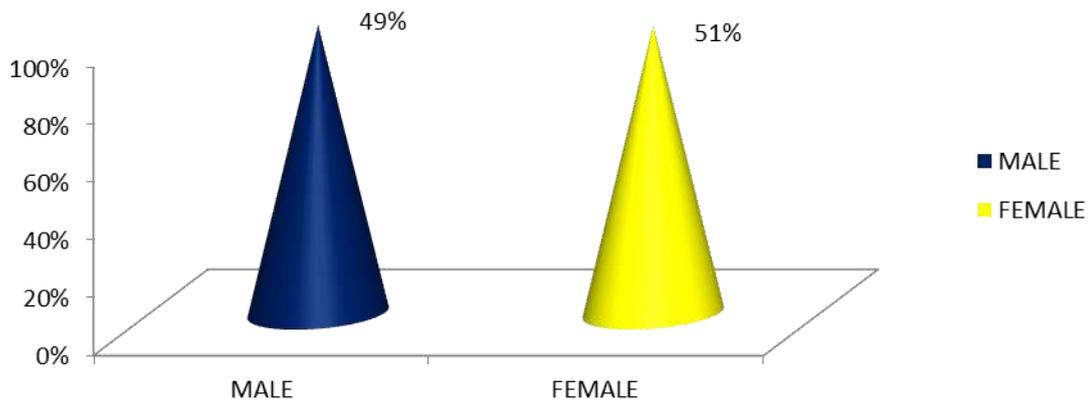
**Background Information**

The study examined the background information of respondents in respect to gender, age, education level, length of service/work experience of revenue collectors in Embu County.

**Gender of the Respondents**

The study sought to determine gender composition of the employees of the county government in Embu. The findings established that the majority (51%) of the employees were female while 49% of the employees were male. This implies that revenue collection staff in Embu County is female dominated which is in line with two third gender rule of the Kenyan Constitution 2010.

The findings are presented in Figure 2.



**Fig-2: Gender of the respondents**

**Age**

The study sought to determine the age of the respondent. It was revealed that 43% of the respondents were aged between 25-35 years. It was also found that 29% of the respondents were between the age of 36-45

years while above 45 years were 19%. Respondents below 25 years were 9%. The findings implied that most of the revenue collectors are middle aged who are energetic and productive. The findings are presented in Figure 3.

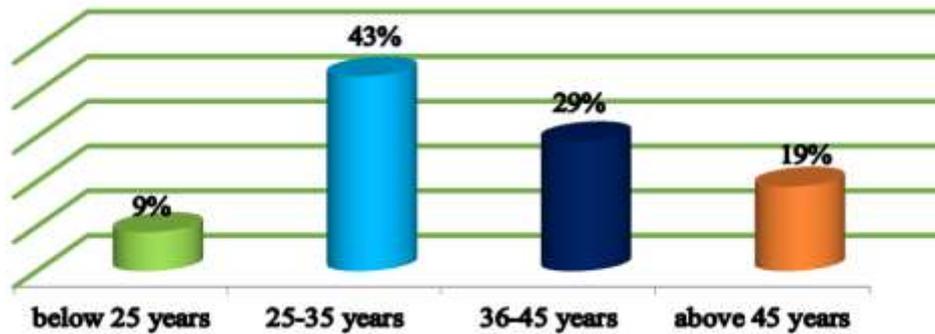


Fig-3: Gender of the respondents

**Length of Service**

The study sought to establish the length of service to the current position. The study revealed that majority (43%) of the employees had served for a period of less than 5 years. Employees with 5-10 years' experience were (23%). Further it was established that employees with above 15 years were (20%) and (13%) had between 10-15 years of experience. The findings shows that over 57% of revenue collectors had

experience of over 5 years which means they were staffs adopted from defunct municipal and county councils of Embu former local authority. Further, the findings implies that 43% of revenue collectors with experience of less than 5 years, are relatively young people that were employed in the recent past and in the wake of inception of County governments in Kenya in early 2013. The findings are presented in Figure 5.

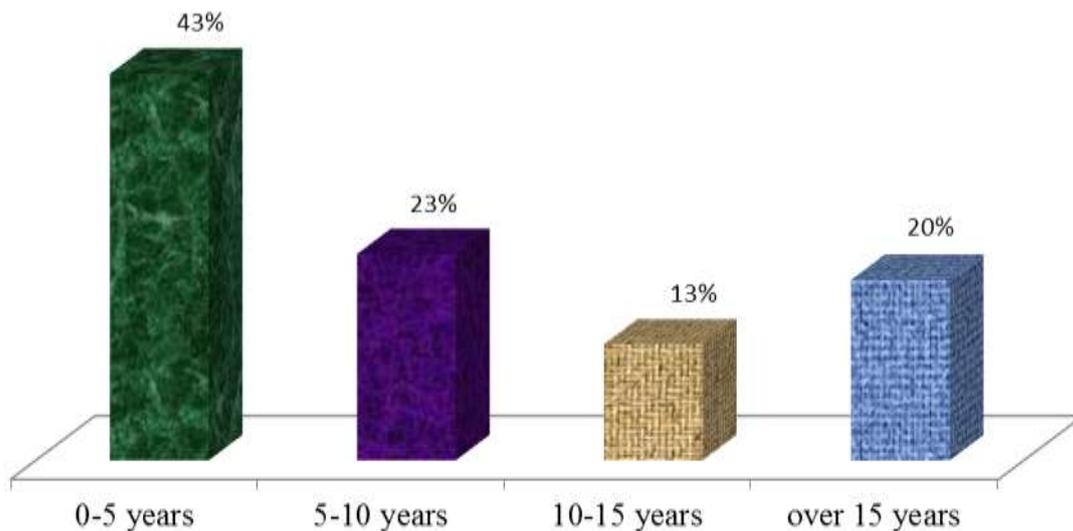
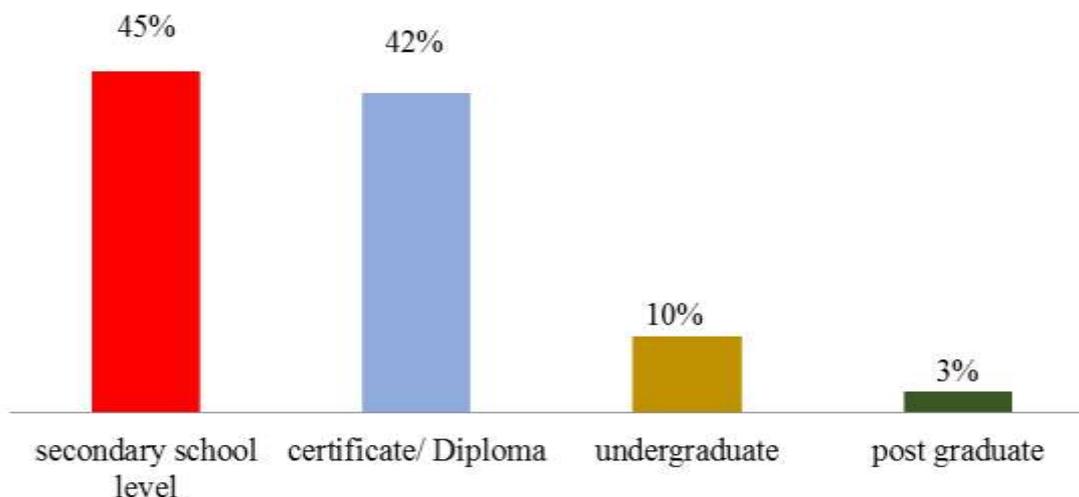


Fig-4: length of service

**Education Level**

The study sought to determine the education level of the employees. Education level was categorised into secondary school level, certificate/diploma level, undergraduate and post graduate level. It was revealed that majority (45%) of the employees had attained a secondary school certificate. Diploma and certificate holder represented 42% of the respondent, while 10% were undergraduate holders. Further it was established

that 3% of the respondents had a post graduate certificate. The findings implied that the Embu County Government adopted revenue collectors from the defunct municipal and county council of Embu which didn't put emphasis on academic qualification of the workforce. The County Government has not invested in training the collectors who rely on their work experience to collect revenue.



**Fig-5: Education Level of the respondents**

**Descriptive statistics**

This part illustrates descriptive findings and discussions relative to the study objective. The findings are presented means, standard deviations and variance.

**Effect of Technology and Information Systems on revenue collection by the County Government of Embu**

This study sought to assess the effect of technology and information systems on revenue collection by the County Government of Embu. The findings on Table 1 shown that respondents agreed (mean = 3.65; std dev = 1.44) that the county government of Embu had necessary tools for revenue collection. It was further agreed (mean = 3.54; std dev =1.33) that the revenue collection tools were efficient. Revenue collection tools are well designed and specific to jobs (mean = 3.62; std dev = 1.14) and that the revenue collection tools and equipment were used to generate timely reports (mean = 4.22; std dev =0.93).

The respondents agreed that (mean= 4.24; std dev = 0.87) the staff were capable of using the ICT systems to collect and generate revenue reports. It was also agreed (mean = 3.87; std dev = 1.14) the reports that were generated by the ICT system were verifiable and therefore ensured transparency and accountability. These findings implied that the use of technology was embraced thus ensuring efficiency and effectiveness in revenue collection. The revenue reports were generated in real time and could be used to know total revenue collected at a particular period. The finding implies a commendable improvement in revenue collection systems in Embu County. These findings are in line with those of Mahi [20] who asserted that there is a positive move towards adoption of fully fledged ICT services in the counties with potential of promoting and supporting routine business service needs, promotion of trade and investment, and joint planning, tax and revenue collection and development coordination.

**Table-1: Effect of Technology and Information Systems on revenue collection by the County Government of Embu**

	N	Min	Max	Mean	Std. Dev	Var
County government has necessary tools for revenue collection.	75	1	5	3.65	1.44	2.08
Revenue collection tool are efficient.	75	1	5	3.54	1.33	1.78
Revenue collection tools are well designed and specific to jobs.	75	1	5	3.62	1.14	1.30
Revenue collection tools provide timely reports.	75	1	5	4.22	0.93	1.11
Staffs are capable of using ICT system to collect and report on revenue.	75	1	5	4.24	0.87	1.09
Report generated by ICT systems are verifiable.	75	1	5	3.87	1.14	1.29

**INFERENTIAL STATISTICS**

This section puts into perspective the relationship between the independent variable and dependent variable. Pearson product-moment correlation coefficient as well as regression analysis was used to measure correlation between independent and the dependent variable.

**Correlation between Technology and Information Systems and Revenue collection**

The relationship between the technology and information system and revenue collection is shown in

Table 2. The table shows that there is a positively and a significant relationship between technology and information system and revenue collection ( $r = 0.361$ ; P value = 0.002). This implies that adoption of technology and information systems by county government has helped in improving revenue collection. This finding concurs with Mitullah *et al.*, [21] who argued that ICT has become essential in increasing transparency and accountability of government agencies; reduce transaction costs in service delivery and the workings of governments.

**Table-2: Correlation between Technology and Information Systems and Revenue collection**

Technology Information System	Revenue Collection	
	Pearson Correlation	.361**
	Sig. (2-Tailed)	.002
N	75	

**Regression Analysis**

Coefficient of determination  $R^2$  was used explains the extent to which changes in revenue collection can be explained by the changes in technology & information systems. Table 3 shows the

results of regression analysis. The table shows  $R^2$  value of 0.247. This implies that 24.7% of revenue collection in Embu County can be accounted for by technology & information systems scores.

**Table-3: Regression Analysis for Technology & Information Systems**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.497 <sup>a</sup>	.247	.200	2.94041

a. Predictors: (Constant), Technology Information System

**Analysis of Variance**

In order to establish the relationship between Technology, Information System and revenue collection in the county government of Embu, ANOVA was used. Analysis of Variance results are presented in Table 4. The table shows F statistic value of 5.255 and a p value of 0.001 which was lower than the conventional p value of 0.05. This implies that the relationship between

technology, information system and revenue collection was statistically significant.

**Coefficients for the Overall Model**

The regression coefficients associated with the determinants of revenue collection are presented in Table 5.

**Table-4: Analysis of Variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	181.729	4	45.432	5.255	.001 <sup>b</sup>
	Residual	553.343	64	8.646		
	Total	735.072	68			

**Table-5: Regression Analysis Model**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	12.792	2.900		4.411	.000
	Technology information system	.234	.157	.195	1.493	.140

a. Dependent Variable: revenue collection

From the regression findings, the substitution of the equation  $RC = \beta_0 + \beta_1 + \epsilon$  becomes

$$RC = 12.792 + 0.234X$$

According to the equation, a unit increase in technology & information systems will lead to a 0.23 increase in Revenue collection in Embu County. This implies that use of technology has increased revenue collection by 23.4%.

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This section presents the summary of the findings, conclusions and recommendations of the study.

### Summary

In this study the determinants of the effective revenue collection was hypothesised to be technology and information systems.

### Technology and information systems

The study noted that the use of technology was highly embraced thus ensuring efficiency and effectiveness in revenue collection. The revenue reports were generated in real time and could be used to know total revenue collected at a particular period. The study confirmed that Information Systems relate to revenue collection. Information System was found to have positive relationship with revenue collection. It was further found that Information System enhanced financial control.

### CONCLUSIONS

From the findings of the study, investment in ICT is very important to Local Authorities. This is because computerized Information Systems had a positive effect on revenue collection. Computerization of council activities such as revenue collection enhanced efficiency as a result of timely revenue collection, enhancing management integrity, provision of clear records among other factors. Information systems also improved the operations that are facilitated by the Internal Control Systems which in turn enhances efficiency and effectiveness of the council.

### Recommendation

The study recommends a revision of the County's Act and statutes to cater fully for the integration of information systems in the management activities of Embu county at all departmental levels to enhance information sharing and a coordinated approach of all programs. Addressing revenue shortfalls needs to go hand in hand with legislative reforms strengthening the rule of law. Therefore there is a need of controlling tax collection requirements in order to

enhance revenue collection process by considering optimum rate structure, appropriate rules and regulations and human capacity increasing control to reduce leakage by performing surprise audits to compliment self-assessment procedure, improving the control processes, put efforts to enforce a strict and heavy penalty for non-compliance, instill financial discipline to staffs that have contributed to leakage in local revenues and make efforts to link tax. Payment with services provided by county government; improvement of administration and better revenue planning is critically dependent upon the ability of Counties to minimize the cost of collecting revenues by improving the existing tax administration procedures through administrative simplification.

### Suggestion for further studies

Whereas the study confined itself to technology and information systems, findings have revealed the importance of top management commitment, resource planning and communication emerging as also significantly influencing the success of revenue collection in the county. Further study on the determinants of effective revenue collection in other counties may thus be carried out with reference to the same. Also, the study narrowed down its scope only to the study of revenue collection which gives rooms for other functions of the count governments. This also presents a room to replicate the study in other government agents/parastatals in the country and beyond.

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