ASSESSMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY INTEGRATED SYSTEM ON ENHANCED REVENUE COLLECTION IN MANDERA COUNTY, KENYA

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Abstract

Information Communication Technology has come to be an essential integral component in revenue collection in the world today. This study sought to determine level of application of information and communication technology on enhancing revenue collection and how the management of ICT influences revenue collection in Kenyan counties and specifically Mandera County. The research utilized ICT in relation to Technological theories. The study employed a descriptive survey research design. The research used a mixed method where both Quantitative and Qualitative research methods were applied as research techniques. The study was limited to revenue collection in Mandera County, which include: Seven sub counties with a target population of over 10,000 people from which a sample of 134 respondents was identified. Stratified random sample technique was used in this study since the strata would sample sub-counties to archive specific target population as a stratum. The first objective of the study was to establish the level of ICT integrated system on enhanced revenue collection in Mandera County. The findings of the study reveal that ICT integration in revenue collection is still low and tax collection is still on cash and receipt basis. The analysis of data revealed that low adoption of ICT for revenue collection in Mandera County has negatively and significantly influence convenience in revenue collection, accessibility to revenue, and affordability of revenue collection activity and application aspects of revenue collection. Generally, low adoption of ICT has contributed 41.3% in low revenue collection in Mandera County. The study recommended that the county government of Mandera need the integrated ICT system for enhanced revenue collection.

Keywords: *Information and Communication Technology, Integrated System, Revenue Collection*

INTRODUCTION

The advent of ICT through the internet and its continued growth has initiated many changes in the way business is being conducted. Like that of the industrial revolution, ICT promises to accelerate the rate of growth and development of the world economy (Bahrini & Qaffas, 2019). Globalization and specifically liberalization of communication networks have all facilitated this break-through that further presents a massive boost for international trade. However, the growth

of the Internet, web-based companies and online business transactions has raised many concerns about various issues relating to e-commerce example cyber related crime is in on the rise (Bahrini & Qaffas, 2019). These concerns range from the type of information that can be retrieved online to the kinds of business transactions conducted and most importantly legislation to regulate this fast-growing industry and make it secure.

The tax structure is supposed to have the following features: equity, efficiency, convenience, certainty, productivity, political feasibility and constitutional acceptance (Winer & Ferris, 2022). Equity refers to fairness with respect to the tax contribution of different individuals both horizontally and vertically, efficiency means small costs of collection as proportionate to revenue collected; convenience is when the tax system is easy to understand and administer; certainty means that the time of payment, structure and mode of payment should be known; productivity refers to tax system that should enhance adequate revenue to meet government expenditure; and constitutional acceptance means the tax should not be against the constitution (Winer & Ferris, 2022).

However, Mandera County among some other counties in Kenya have had specific concerns about the impact of the Internet on their domestic economy as they move to incorporate some aspects of this technological revolution for the benefit of their citizens (Tawane & Mugalavai, 2019). As a result, there is now much debate and discussions among stakeholders on how to regulate the internet while preserving the interests of all. Currently, small and medium size businesses from the region are using the Internet to advertise and sell their products to the rest of the world. Government ministries, among other things, advertise, procure and promote their many services and investment opportunities while the private sectors offer a wide array of offshore and other services to the rest of the world (Tawane & Mugalavai, 2019). These e-commerce-related activities, if adapted and implemented by the forty-seven counties more so our county of Mandera, are expected to move our country to an industrialized nation by the year 2030.

Other concerns have arisen as to the ability of tax administration with limited resources, to keep abreast with the rapid changes in business structures and conduct due to the adoption and expanded use of e-commerce (Tawane & Mugalavai, 2019). In addition, further concerns allude to the reciprocal global e-trade and ICT environment and how it will affect the region as domestic consumers may resort to more online purchases and transactions from companies and businesses abroad. Each of the forty-seven counties in Kenya is charged with the responsibility of revenue collection within their boundaries (Kemei, 2022). Part of the revenue collected end up in unscrupulous county revenue officers' pockets due to fraud as counterfeit receipts can be obtained easily or the same receipt can be used multiple times. Furthermore, the revenue officers may decide to collect half of the official fee and not issue a receipt. In light of all these malpractices it is urgent and important to seal these loopholes by adoption of ICT systems in revenue collection. Firstly, this study suggest ICT as one of the means to improve revenue for example, replacing daily tax receipts with P.O.S (Point Of Sale) devices, that electronically sends all transaction to a central computer instantly for every payment done where all data is processes and stored.

This device can be used by parking attendants and revenue officers for open and closed for markets across the county. Secondly, devolving revenue to the ward level and facilitating tax payers to pay at financial banking agents available at the local centers. Thirdly, the county can adopt mobile money payment system this makes payment easier. These ICT systems if adopted shall curb loss of revenue and enable the county to be self-sufficient and less reliant on the

national government to fund their development and recurrent budget. Such concerns have evolved from the fact that in liberalized markets, governments would not be able to use some fiscal policy tools at their full discretion. On the other hand, Mandera County is highly dependent on tax and tariff revenues to finance their budgets and provide public goods and services hence the need of adoption of ICT in revenue collection (Kemei, 2022). This paper recognizes that there will be many consequences as ICT grows in popularity. However, the primary focus here is to identify the likely tax implications of ICT in Mandera County.

Statement of the Problem

Mandera County currently is short of hundred million of target revenue collection. The ideal situation is to locally raise enough revenue so as to be able to fund most of the projects. It is because of this discrepancy that prompted the researcher to carry out this study to enable the adoption of ICT in revenue collection in Mandera County.

LITERATURE REVIEW

Theoretical Review

Theory of Technical Acceptance Model (TAM)

Camilleri & Falzon, (2021) proposed a relationship between user's acceptance of a new information system (IS) and the user's perceptions of the ease of use and usefulness of the information system. It is an information systems theory that models how users come to accept and use a technology. The theory suggests that when users are presented with a new technology, two factors affect how and when they will use it; perceived usefulness as ''the degree to which a person believes that using a particular system would enhance his or her job performance'' and defined perceived ease of use as ''the degree to which a person believes that using a particular system would be free of effort.'' According to TAM one's actual use of a technology system is influenced directly or indirectly by the user's behavioral intentions, attitudes, perceived ease of the system (Camilleri & Falzon, 2021). TAM also proposes that external factors affect intention and actual use through mediated effects on perceived usefulness and perceived ease of use.

TAM postulated that computer usage is determined by a behavioral intention to use a system, where the intention to use the system is jointly determined by a person's attitude toward using the system and its perceived usefulness. Research efforts have been devoted to extensions to the theory by examining the antecedents of those two beliefs constructs underlying TAM (Camilleri & Falzon, 2021). County Governments are taking ICT as an important tool for delivering services to citizens and businesses. There are few electronic governance systems, most focusing on revenue collection based on Local Authorities Integrated Financial and Operations Management System (LAIFO MS), the system used by the local authorities that preceded the creation of County Governments (Camilleri & Falzon, 2021). Experts on taxation in developing countries strongly agree that there is considerable potential to increase tax revenue in most low-income countries.

Empirical Review Literature

At the international level there is vast literature on ICT and its implication for tax revenues. There is a correlation between the nature of transformations in business process and key tax issues arising (Matt et al., 2015). According to Matt (2015) "With any major change in business conduct, consideration should be given to key direct and indirect tax issues such as: Taxes on Income, at national and local level; International tax, including foreign and controlled foreign company taxation and withholding taxes; Capital gains, e.g., on intellectual property rights or goodwill; VAT and Sales & Use taxes; property taxes; Customs and Excise duties; and Stamp and transfer taxes." Essentially, changes in business, due to technological advancements such as

e-commerce (Matt et al., 2015). Lead to new business models and in turn create a new set of facts and circumstances that can materially affect the incidents of taxation. Therefore, to ensure the tax efficiency of evolving new business model tax planning needs to be consistent with the changes that are taking place, to prevent the escalation of possible tax evasion. Traditional domestic commerce within national markets and cross-border electronic trade involving physical goods that pass-through customs will continue to face customs duties and value-added taxes but products delivered electronically will not (Matt et al., 2015). A similar pattern may emerge internationally if electronic commerce is taxed in some countries but not others.

Aceto et al. (2019) proposed bounded rationality as one of the theoretical links between information technology and competitive advantage. They explained that extending the bounds of organizational rationality has direct implications for both bargaining power and comparative efficiency, as it affects the cost of search (by improving the generation and evaluation of alternatives), as well as transaction costs in organizational interfaces. Transaction costs is affected, for example by reducing contracting and monitoring costs (thus mitigating the effect of opportunism), improving the generation and evaluation of alternatives (thus mitigating the effect of environmental uncertainty and complexity), and either decreasing or increasing information asymmetries (Guha & Galliott, 2021). They proposed industrial economics as the second theoretical link between information technology and competitive advantage that comes from the effects of IT on production processes. They explained that this is through improving the adaptability of products, and allowing the realization of scale economies from smaller production runs. IT can therefore change the economies of production, and facilitate product differentiation based on unique features (Guha & Galliott, 2021). Furthermore, information technology can allow assets to be less specific to the particular economic transactions involved, potentially decreasing the costs of switching to alter-native customers and suppliers.

The Kenyan Government has also developed a Government Common Core Network (GCCN) (Kerubo, 2023). This is meant to serve as a shared and secure interoperable Government-wide ICT architecture. The system will not only integrate work processes and information flows, but also improve inter-ministerial sharing of databases and exchange of information to eliminate duplication and redundancies, improve service delivery such as efficient Revenue collection, public access to Government services and ensures responsiveness in reporting, monitoring and evaluation (Kerubo, 2023). The Government through the national treasury is implementing a disaster recovery facility for data and systems as part of the business continuity plan. This will ensure that the Government better persuading taxpayers of the value of the public spending financed by the taxes they pay, including by improving the management and quality of that spending, can further bolster trust in and compliance with the tax system, hence this facility will also offer an environment for cloud computing to offer services by the County Governments and hence such will automatically promote Revenue collection (Kerubo, 2023).

Although most County Governments have not yet started developing their ICT infrastructure, NOFBI can be used to connect the National Government to the County Governments and interconnect the latter to share data and information, as shown in the envisioned connectivity between NOFBI and GCCN (Kerubo, 2023). County Governments should take ICT as an important tool for delivering services to citizens, tax collection, monitoring county project and other business operations within the counties and sub-counties, all the same including with advanced economies in policy and administration, as well as further support for capacity building. Continued trade liberalization will put pressure on revenue in many lower-income counties. Scope to meet these and other revenue needs by simply raising standard VAT rates is

becoming limited, so the potential lies largely in better improving compliance and scaling back preferential treatments.

METHODOLOGY

A research design is a scheme, outline or plan that is used to generate answers to research problems. This study used survey design. The location of this study was limited to revenue collection points in Mandera county, which included: seven sub counties (7): Mandera East, Mandera West, Banisa, Mandera North, Lafey, Mandera South and Kutullo with a target population of over 10,000 people. This study applied a cross-section survey of over 10,000 (target population) randomly selected from strata, under an established stratum, also known as sub counties. To get the sample, the researcher used the population of 10,000 from the 7 sub-counties and then simple random sampling was used to select 124 respondents. The following formula was used to determine the sample size;

$n = z2pq/ d2$

This study used questionnaires as data collection tools. The pre-tested questionnaire was administered by the researcher with the help of the head of department of the targeted seven sub counties in Mandera County. Data collected from the field was cleaned; edited, coded, analyzed and tabulated using the statistical package for social scientists (SPSS) was used as it offers numerous statistical analysis routes that analyze data small to very large data statistics (Siedlecki, 2020). The analyzed data was presented using tables.

FINDINGS AND DISCUSSIONS

Integration of ICT System on Enhanced Revenue Collection

Table 1: Integration of ICT System on Enhanced Revenue Collection

Year worked	Frequency	Percentage
1 year	13	10
2 years	27	20
3 years	40	30
4 years	54	40
Total	**134**	**100**

The results in table 1 above show that the majority of revenue collectors in the county have worked for about 4 years 54(40%) while a small percentage of 10% (13) have worked for 1 year.

Table 2: Method to Collect Revenue

Method	Frequency	Percentage
Cash and receipt	107	80
M-Pesa	3	2
Cheque	24	18
Total	**134**	**100**

Table 3: ICT Skills in Application

ICT skills	Frequency	Percentage
Excellent	7	5
Good	7	5
Poor	29	22
Very poor	91	68

The results in the table 3 show that 91(68) of the staff in the county are very poor in relation to ICT skills. Only 10% of the staff has some skill in the use of ICT. This is warring for the 21st century economy is anchored on ICT. Kenya is considered the giant of ICT in Africa and if the

county governments will not adopt ICT in revenue collection, the counties are bound to perform decimally. These finding are in agreement with Bakopoulos (1985) argument who explained that bounds and limitations to use of ICT may be either internally imposed (because of human neurophysiologic limitations) or external (because of technological design limitations). Simon (1955 & 1956) defined bounded rationality as referring to neurophysiologic limits on memory, computational, and communication capacities of an individual.

In addition, the majority of respondents 97(72%) in the county believe adoption of ICT will improve revenue collection while 37(28) were against the introduction of ICT. When one staff was interviewed she said; *"Adoption of ICT will make us lose our jobs as computers will replace our source of livelihood".* These could be some of the reason why staff doesn't acknowledge the use of ICT to have the potential of improving revenue collection. The respondents (131(98%)) acknowledged that the county government of Mandera had some ICT facilities though not enough ranging from computers, laptops, modems and cable internet. However, these facilities were underutilized.

Table 4: Type of ICT Application Used in Revenue Collection in Mandera County

Type of ICT	Frequency	Percentage
Mobile banking	0	0
Use point of sale device	0	0
Use of internet	0	0
None	134	100
Total	**134**	**100**

All the respondents agreed that there was no any ICT gadget used in revenue collection within the county. This should raise a lot of concern for the county administration if at all they are to raise enough revenue to fund development and meet other recurrent expenditures to alleviate poverty and improve the quality of life for Mandera residents.

Improvement of Revenue Collection

Table 5: Improvement of Revenue Collection

Response	Mean	Std. deviation
Recruit new revenue officers to implement new system	4.23	.943
Invest in a good security system	4.27	1.078
Cut the bureaucracy process in its implementation	4.33	1.067

Key: 5 strongly agree (SA), 4 agree (A), 3 don't know (DN), 2 strongly disagree (SD), 1 disagree.

The results in table 5 show that all the respondents agree that to improve revenue collection the county government should recruit new revenue officers to implement new system, invest in a good security system and cut the bureaucracy process in its implementation.

The integration of Information and Communication Technology (ICT) systems in various sectors has been a transformative force in modernizing processes and enhancing efficiency. In the context of revenue collection, the adoption of ICT is poised to bring about significant improvements (Deng et al., 2022). This discussion explores the research findings on the potential benefits of integrating ICT systems to boost revenue collection and the influence of ICT on revenue performance. The research findings suggest that the adoption of ICT in revenue collection holds substantial promise for improving revenue outcomes. ICT systems have the capacity to streamline and automate revenue collection processes, reducing the risk of human errors and fraud (Deng et al., 2022). By facilitating secure online payment options, ICT can

provide taxpayers with convenient, real-time access to payment services, which, in turn, can encourage timely payments. Additionally, ICT systems enable data analytics and predictive modeling, allowing revenue authorities to identify tax evasion and non-compliance more effectively. These factors collectively contribute to an enhanced revenue collection process, resulting in increased revenue inflows.

The research also indicates that ICT plays a pivotal role in influencing revenue collection performance. The integration of ICT systems provides revenue authorities with better tools for monitoring, reporting, and analyzing revenue data. Real-time data tracking and analysis empower authorities to make data-driven decisions, allocate resources more efficiently, and implement targeted enforcement measures (Deng et al., 2022). ICT systems enhance transparency and accountability in revenue collection, instilling confidence in taxpayers that their payments are being used effectively. As a result, the research suggests that the integration of ICT can lead to improved revenue performance by optimizing resource allocation, reducing tax evasion, and enhancing taxpayer trust.

The research findings provide compelling evidence that the integration of ICT systems into revenue collection processes has the potential to revolutionize revenue outcomes and performance. By enhancing efficiency, reducing errors, and enabling data-driven decision-making, ICT offers a pathway to increased revenue collection. Moreover, the transparency and accountability afforded by ICT systems contribute to building taxpayer confidence and compliance. As governments and revenue authorities continue to embrace ICT solutions, it is increasingly evident that the adoption of ICT is not only beneficial but also essential for modernizing and optimizing revenue collection processes.

Conclusions

The study sought to establish the level of ICT integration in revenue collection in Mandera County. The study's findings indicate that ICT integration in revenue collection is still at a nascent stage, with tax collection primarily relying on cash transactions and paper-based receipts. This observation highlights a significant gap in the utilization of modern technology for revenue collection processes in the county. The low level of ICT integration could be attributed to various factors, such as limited technological infrastructure, inadequate training and awareness among revenue officers, and potential resistance to change in established practices. To improve revenue collection, Mandera County should prioritize investments in ICT infrastructure, training programs for staff, and the development of user-friendly digital platforms for taxpayers. The results revealed a concerning underutilization of ICT, with tax collection predominantly reliant on traditional cash transactions and paper-based receipts. This underscores the urgent need for Mandera County to undergo a digital transformation in its revenue collection procedures. Investments in ICT infrastructure, staff training, and the development of user-friendly digital platforms are crucial to bridge the existing gap and pave the way for modernized revenue collection practices.

Recommendations

To significantly enhance revenue collection, the county government of Mandera should prioritize the integration of various ICT systems. This includes the implementation of Point of Sale (POS) devices, M-Pesa payment platforms, and mobile banking solutions. These technologies can revolutionize revenue collection by providing taxpayers with convenient and modern payment options. POS devices can be deployed in various revenue collection points, allowing for swift and secure transactions. M-Pesa and mobile banking, which have gained widespread adoption in Kenya, enable taxpayers to make payments using their mobile phones, reducing the reliance on

cash transactions. These ICT solutions can improve revenue tracking and reporting. The government can access real-time data on revenue collection, making it easier to identify trends and discrepancies. This not only enhances transparency but also enables timely decision-making based on accurate financial data. To successfully implement these systems, the county government should collaborate with reputable technology providers, ensuring that they are user-friendly and accessible to all taxpayers, including those in remote areas.

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