UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING AND INFORMATICS

ASSESSMENT OF PUBLIC VALUE OF ICT INVESTMENT IN COUNTY GOVERNANCE:

A CASE OF HOMA BAY COUNTY

BY

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P54/86011/2016

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AUGUST 2020

A project report submitted to the School of Computing and Informatics in partial fulfillment of the requirement for the award of a degree in Master of Science in Information Technology Management of the University of Nairobi

DECLARATION

I declare that this project report is my original work except where due references are cited. To the best of my knowledge, it has not been submitted for any other award in any University.

_____ _____

Victor Muganda Ateng Date

Reg No.: P54/86011/2016

This project report has been submitted in partial fulfillment of the requirement of the Masters of Science Degree in Information Technology Management of the University of Nairobi with my approval as the University Supervisor.

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University Supervisor

ACKNOWLEDGEMENT

I take this opportunity to thank God for the gift of life and the strength to carry out this study and also to give thanks to all the support and encouragement I got from the School of Computing and Informatics, project evaluation panel, classmates and all the parties I came across while undertaking this course.

I sincerely thank my Supervisor, Mr. Eric Masiga Ayienga, for all the constructive critiques and support and above all for making and enabling me to do my research well and in accordance with the required guidelines.

To the people of Homa Bay and county staff for the support accorded to me during data collection period I say a big thank you.

ABSTRACT

Public value is used when evaluating the performance of e-government. Furthermore, the performance of e-government is assessed from the citizen's perspective. Transparency, participation, and collaboration in county governments processes should be viewed as means toward desirable ends, rather than administrative ends in themselves, as they appear to be currently treated. The creation of public value is the goal of public organizations; through public value, public organizations meet public goals with respect to substantive benefits as well as the intrinsic value of better government. Kettani (2014) states that Information and communication technologies (ICT) have tremendous potential to enhance the lives of people in general and, particularly, those in developing countries. Kettani (2014) continue to state that the use ICT can boost business, support education and healthcare systems and also enhance all levels of government in their development processes worldwide.

The main objective of this research project was to assess the public value of ICT investment in public service delivery in Homa Bay county.

Data was collected through questionnaires from residents, leaders and staff of Homa Bay county. Considering the nature of e-government in Kenya, four dimensions of public value creation through e-government were considered. These dimensions outline the four different ways of creating public value including the delivery of public services, the achievement of desirable outcomes, the development of trust, and the effectiveness of public organizations.

The study recommends that a sensitization be done among the county residents of Homa bay on the existing electronic government channels they can use to access County services to allow more uptake of the ICT technologies for their own good.

There is need to increase the services being provided through ICT e-government platforms to quicken up take of the ICT systems. This coupled with support on the usage and supporting systems such as infrastructure and power will help more services to be done through ICT platforms and more residents to use them.

Going forward, the county needs to conduct an assessment of the public needs and how such needs can be handled through investments in ICT to increase the level of public value derived from the county's ICT investments.

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ABBREVIATIONS AND ACRONYMS

EAC	-	East African Community
e-Consultation	-	Electronic Consultation
e-Government	-	Electronic Government
e-Petitioning	-	Electronic Petitioning
e-Transtrport	-	Electronic Transport
ICT	-	Information and Communication Technology
IS	-	Information systems
IT	-	Information Technology
KBE	-	knowledge-based economy
NPM	-	New Public Management
UN	-	United Nations

DEFINITION OF TERMS

Good governance - the qualitative dimension of governance that indicates effective, efficient, participative, or democratic form of government which is responsible for transparent and accountable management of human, natural, economic and financial resources for equitable and sustainable development.

Public Value - describes the value that an organization contributes to society. Public value is value for the public. Value for the public is a result of evaluations about how basic needs of individuals, groups and the society as a whole are influenced in relationships involving the public. Public value then is also value from the public, i.e., "drawn" from the experience of the public. The public is an indispensable operational fiction of society. Any impact on shared experience about the quality of the relationship between the individual and society can be described as public value creation. Public value creation is situated in relationships between the individual and society, founded in individuals, constituted by subjective evaluations against basic needs, activated by and realized in emotional-motivational states, and produced and reproduced in experience-intense practices.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Information and Communication Technology (ICT) is emerging as the mainspring in today's economy and governance. Adoption of ICT in the economy has become essential in public service delivery. Application of ICT has in effect changed how information flows and transformed some of our social and organizational edifices. The changing information flows brought about by ease of access to digital technologies has influenced how government systems are run and in effect deliver public value of ICT investments in county governments. According to Luna and Luis (2017, government and non-governmental organizations generally are encouraging the usage of digital technologies to improve on the social interactions with the citizens. Some of the platforms these governments use include electronic consultation which is used to engage the citizens on political conversations, electronic ticketing platforms, electronic voting systems among others. Luna and Luis continue to argue that the digital trends will continue to transform the democratic structures of governments which will eventually open up opportunities for citizens. This will in effect enable the citizens to influence government policy issues and improve on public participation.

When counties think about ways to develop their regions, manufacturing, agriculture and tourism sectors are often given high priority. However, even as counties align to the Big 4 agenda with their counties specific goals, the priority given to ICT is wanting, particularly considering the potential of the sector to anchor sustainable development. In key ICT strategy plans, expansion of fiber optic terrestrial network ranks highly. Similarly, for counties to attract local and international investments, availability of high-speed internet is a major selling point.

Homa Bay county is one of the 47 county governments of Kenya. The County's economy is anchored on Agriculture and Fisheries. ICT and Education is one of the ministries constitutionally constituted in Homa Bay county government. The objective of the ministry of ICT is to ensure there is good access to the internet in the county and citizens are able to access county information services. The ministry also aims to enhance transparency, accountability and personal responsibility. Provision of the platform for entrepreneurship and innovation is another objective

of this ministry. Implementation and use of ICT in the county and National governments need to facilitate better decision making, service delivery, citizen feedback on government offerings among other benefits. Implementation of ICT needs to be precise, accurate and done quickly so as to help in ensuring the policies set are positioned into full use within the set time plans. Apart from attracting big investors, availability of fiber infrastructure acts as a catalyst for local businesses, both new and established entrepreneurs can run profitable business centers, anchored by subsidized e-government services.

According to National Information & Communications Technology (ICT) Policy, Ministry of Information Communications and Technology, "The Kenya government Vision 2030 was promulgated to offer long-standing development design plan in order to promote Kenya to become globally competitive and a wealthy nation. This was to ensure Kenya is transformed into an industrious, middle-income nation which would improve the quality of life of her citizens". The Kenya Government Vision 2030 constitutes three pillars. These are;

i. Economic
ii. Social and
iii. Political

These three pillars remain attached on the whole nation's economic stability generally referred to as macroeconomic stability; they are to ensure continuity in governance reforms; the pillars are expected to deliver equality and encourage prosperity for economic opportunities for Kenyan citizens with low income. The expectation was that use of ICT would improve economic status of all Kenyan regions and help the nation achieve at least 10% GDP growth rate by the year 2017, this is according to Ministry of Information Communications and Technology. It is in every modern government agenda to ensure it achieves an information society and knowledge economy. Having a well-informed information and knowledge economy should be on of the major priorities of any government that wants to attain any kind of development goals and well as wealth creation for its citizens. Kenya's Vision 2030 espouses to implement this. All counties investments are expected to be aligned to Kenya Vison 2030 and the Big 4 Agenda pillars.

When you want to evaluate the performance of e-government, you must consider the public value in it. Besides, the effectiveness of e-government is usually assessed from the citizens perspective.

Democracy calls for government transparency at all times with the citizens. Also, citizen participation, and collaboration with county governments should not be treated as administrative ends but be regarded as means toward necessary end. It should be the goal of any public organization to create public value in their service offerings. Kettani (2014) states that "Information and communication technologies (ICT) have tremendous potential to enhance the lives of people in general and, particularly, those in developing countries". Kettani (2014) continue to state that the use ICT can be used to boost business. ICT can also be used to support education and healthcare systems. Kettani(2014) continue to state that ICT can be used to "enhance all levels of government in their development processes worldwide".

Good governance is central and e-governance is influential. e-governance is a tool (Mohanty, 2017). Having achieved good governance will dictate what tools to use in e-governance delivery. Usually government entities have complicated processes which sometimes cannot be solved by deploying e-governance tools alone. Simplification of rules and procedures has been an important area for the use of ICT (Mohanty, 2017). Automating some of these processes may sometimes lead to more complications instead of providing intended solutions.
This study aimed to assess the public value produced when communication between government and citizens is more lustrous, participative, and collective, i.e., more democratic.

1.2 Statement of the Problem

National and county governments are deploying new and improved ICT solutions as enabler of good service delivery to the citizens. As this is done, citizens who are the main stakeholders in county governments are concerned if there is any public value brought about with these investments. There was a need to assess the public value produced by ICT investment in Homa Bay county and conduct a study on what kind of systems were being implemented and the level of public participation before any solutions were adopted for use in the county.

1.3 Research Objective

The main objective of this research project was to assess the public value of ICT investment in public service delivery in Homa Bay county.

Specific Research Objectives

1. To explore the types of ICT investments in Homa Bay county

2.To establish the level of public consumption of the existing ICT investments in Homa Bay county

3. To investigate the derived public value of ICT investments in Homa Bay county government.

1.4 Research Questions

The following were the research questions for the study;

i. What are the ICT investments in Homa Bay county?
ii. What is the level of public participation in ICT solutions implementation in Homa Bay county?
iii. What criteria is used in determining the kind of ICT investments in Homa Bay county?
iv. What value have Homa Bay County citizens realized from ICT investments?

1.5 Scope of the Study

This study focused towards determining ICT investments in Homa Bay County, if there is public participation before investments are made and the public value realized out of ICT investments for public service delivery.

1.6 Significance of the Study

ICT has been proven to offer solutions to governance problems. Use of ICT tools has the potential to enable good governance and service delivery to citizens. The rise of ICT in digital economy has affected the way government operates. Citizens are getting information quickly than ever before. Those in authority are able to plan, execute and manage the projects using ICT tools deployed in the county's ICT data center(s). ICT can be used to change the way a county government operates. Big data continue to grow but what is key is getting the right tools to harness this data and get useful information out of it which in the long run will facilitate better decision making at the

county's top level. This way, there will be tremendous improvement in good governance which in turn leads to better service delivery to the county's residents.

1.7 Limitations of the Study

In this study, data was collected to determine investments in ICT and the level of public value realized from Homa Bay County. The findings of this study are thus solely depended on the data from only that particular region of the country. Since different regions are at different economic status, culture and productivity status, the findings may vary from other counties in Kenya. It is suggested that a similar study be conducted in other counties to compare the findings and provide more knowledge on the same phenomenon.

CHAPTER TWO

LITERATURE REVIEW

2.1 The Role ICT plays in Socio-economic development

Olszak & Ziemba (2011) argues that ICT is a key pillar of a knowledge-based economy (KBE) and the notion of KBE is compared with terms such as digital economy, network economy and e-economy. Olszak & Ziemba (2011) affirm that the key receivers KBE and ICT are everyone which includes government entities, private companies as well as citizens. Celina and Ewa evaluated the role ICT plays in the relationship of administration between citizens and businesses. The study focused on 176 companies and 500 citizens. Use of ICT improves decision making process by businesses, administrations and citizens (Celina and Ewa, 2014). ICT helps improve the relations of businesses, administrations and citizens.

Use of ICT is a key pillar in KBE and its importance for social and economic development of a nation is paramount. This is echoed by (Olszak & Ziemba ,2011)

1. ICT can help improve work productivity and reduce costs involved in service operations;
2. ICT is likely to generate new jobs as information processing is done;
3. ICT will appeal to strategic investors both locally and internationally which will in tum improve allure and credibility of all regions within the country's borders
4. ICT will greatly arise the establishment the companies able to produce both hardware and software;
5. ICT infrastructure has a link with other sectors in the economy which when used correctly will stir the nation's economic growth.

In all the above, building an effective ICT infrastructure will be key in realizing an effective solution that provides for the required services.

Homburg, V. (2018) explain the adoption of ICT in the following three angles;

1. (technological) *opportunity*, which accounts for the powerful influence of new technologies that affect and change the institutions we live by;

2. ways in which existing ideas and normative structures are *inscribed* in specific technologies, which accounts for how institutions affect technologies, and how in various contexts, various technologies can be observed; and
3. *enthusiasms*, which accounts for the 'agency' of human activities, argumentation, persuasive pressures and sometimes politicking in the adoption and diffusion of technologies.

Homburg, V. (2018) identified "the various components of diffusion and adoption of specific type of ICT enabled government, personalized electronic service delivery among municipalities in Netherlands, and concluded that opportunity in the sense of (isomorphic) pressure, ideas (organizational search), and enthusiasms (activation and framing)
are indeed important explanatory variables for the diffusion and adoption of e-gov". Homburg goes further to discuss electronic service delivery as an empirical e-government phenomenon. Currently, there is a lot of talk on open data and big data. The manifestations may have their own opportunities, ideas and enthusiasms (Homburg, V, 2018)
Asogwa, B. E. (2013) continues by highlighting the need for ICT implementation in Nigeria for the following reasons:

1. The size of Nigeria –the country's territory is so huge making physical delivery of government difficult. This information is sometimes lost in transit.
2. The large population of Nigeria and the complexities of government activities which results into large volumes of data being generated and at the same time a need to provide easy access to this data.
3. The presence of multiple languages and ethnicities which necessitates government information to be translated into the various dialects in the country so that the intention of the message is achieved.
4. The risks involved in transporting large amounts of money. This could be reduced by use ICT tools.

An analysis and critical evaluation of the existing knowledge relevant to the research area is crucial for any academic research (Hart, C. (2018). The purpose of the literature review was to collect

views and opinions of other scholars and writers on areas ICT, governance and role of ICT in governance.

2.2 Implementation of ICT Projects in Government

Information, Communication Technology is understandingly plays a big role in economic development of nations. (Babu, 2016). Conferring to Dawadi & Shakya (2016), some of the challenges affecting ICT enhancements in any government more so in rural areas are

- demographic condition, terrain, transportation, electricity, literacy
- maintainability and operability of the ICT centers
- Lower literacy and underdevelopment in the society
- Government political instability, lack of proper policy guidelines and infrastructure development and deployment plan.

Focus has shifted to the design and deployment of ICT solutions that have the potential to bridge the gap between information and knowledge gap in developing and developed nations (Victor, 2009). The use of ICT in developing nations continue to grow and more and more investments are being made in ICT infrastructure design and deployment.

The urgent need to use ICT in the public service is necessitated by the need to improve governance, efficiency and effectiveness in the delivery of public service (Abdulrazaq, 2015). The idea is to have a rethinking of how services need to be delivered to the public and the whole process of governance. Abdulkareem (2015) states that ICT provides a platform which in fact has changed the way government and citizens relate.

Nigeria Federal government acknowledged need to transform the way the public service is run by use of modern systems of ICT (Asogwa, 2012). This would ensure there is transparency, government departments would be more accessible and also information broadcasting to the public made real time.

The lag in performance of ICT solutions deployed in the public sector are due to technical, social and sometimes cultural reasons that have denied citizens access to public services and therefore causing low transparency levels (Abdulkareem, 2015).

According to Atsu et al. (2010), petite studies has been conducted on the implementing ICT more so in the areas touching on the public sector of the developing countries because the area of ICT is a new marvel hence hasn't been well researched on. This however can be debated as more and more developing countries are now embracing the use of technology in public service delivery. There are also other factors that would guarantee to ensure successful implementation of ICT projects and this will vary from country to country. For example, there are aspects of ICT implementations that would best work in developed country but not in the developing country.

2.3 E-Governance in Kenya

According to African Development Bank (AfDB) governance is a process which determines how authority manages its affairs with the people it governs. According to AfDB in order to create and sustain sound development, you need to have good governance in place. Good governance is linked to the value of investment (Wani, 2014). Wani (2014) goes further to explain that AfDB development policy is intended promote good governance in its operations.

Asogwa (2013) argues that most governments around the world are concerned with the benefits brought about by the use of ICT in public service delivery. Conferring to Asogwa (2013), need to use ICT tools is public service delivery has been driven by two elements:

1. The rate at which globalization has brought about the financial investment opportunities among nations;
2. The revolution brought about by information technology which has made information easily available anywhere in the world. The means there is a more effective global market than before.

One of the main pillars of Kenya's government vision 2030 is assimilating Information, Communication and Technology into Teaching and Learning. This will involve reviewing institutional framework policy, ICT procurement process of infrastructure and also ensure capacity development and integration in special needs education. According to Vison 2030, implementation of ICT in education must take care of special needs of both learners and teachers. The intention was to rollout ICT pregame in all public primary schools at a cost of Ksh. 53 billion shillings. These monies will be used to provide energy, security and internet connectivity and also be used

to build teachers knowledge capacity within the schools. There is a need to determine how this will be achieved and the progress thus far.

Kenya government has developed an ICT policy for the country's ICT roadmap. According to the Kenya Ministry of Information Communications and Technology, the following are considered to improve the citizen participation and productivity in information society.

i. Automating the delivery of government functions- this will involve opportunities on how ICT can be used to re-engineer how government delivers its functions such as health, transport, agriculture, lands among others;
ii. Use of ICT in both the private and public sectors to increase economic productivity and attractiveness of the whole economy;
iii. Use and integration of ICT in basic and tertiary education to ensure learners are prepared to embrace the knowledge bases economy;
iv. Government to build digital villages which will ensure creation of information centers across the country. This include information centers such as Huduma centers;
v. Provide and ensure there is reliable public internet in all public schools.

Kenya being a member and signatory of East African Community (EAC) is steadfast in ensuring and implementing policies that would promote the regional integration. It is from the point that the Kenyan government has been at the forefront in ensuring there is a harmonized policy and legal framework to manage ICT integration within the region. The Kenyan government will continue to explorer areas that will ensure objectives of the common market protocol benefits all citizens of the region.

Consumers and users who are literally the citizens of Kenya will be encouraged to participate in guaranteeing the following:

i. ICT services are easily accessible and affordable across the region;
ii. Quality of ICT services to be improved and maintained; and
iii. Continuous review of government policies which should be in tandem with the changing technological advancements and trends.

Makau, (2015) asserts that, many e-government projects in Kenya have either failed or stalled due to key organizational factors just like in other developing nations. Makau, (2015) argues that Kenyan government organizational structure, prioritization of deliverables, and organizational culture are critical in Kenyan context. Makau, G.K. (2015) continue to state that the future needs of the organization, power distribution, organizational structure, organizational information system strategy alignment, prioritization of deliverables, and training are also important but not critical in ensuring successful implementation of ICT projects. According to Makau et al (2015) there are several organizational government success and failure projects. Overall, according to the authors (Makau, G.K. (2015);

i. There is proper allocation of work roles to conduct government administrative activities
ii. There is fear among some government employees of losing their power and authority with the introduction of ICT tools
iii. There is flexibility in performing tasks for the e-government system procedures
iv. There is proper alignment of strategies between different players for the eGovernment systems success.
v. There is a system to prioritize which deliverables are most important so that projects are easily managed and delivered on time.
vi. There exists a government implementation plan which will ensure system implementation is done as per the laid processes and that also caters for future organizational needs.

Makau, (2015) recommends that e-government projects implementers should ensure that efficient and effective organizational structure and culture are followed during systems implementations. This will ensure chances of projects implementation success are high

2.4 Public Value of ICT

The term "public value" according to Meynhardt, T. (2009) attracts analyses concerning a need to understand value role the public citizens play in bringing value in the society. Meynhardt asserts that the public often feel disappointed since they are rarely involved in decision making of a country. The growth of public value according to Meynhardt may be accredited to the need for advancing new public management which is intended to implore stricter economic models for

managing the economy. This model borrows heavily on how economic management is handled in the private sector. Meynhardt establishes that public value answers queries as to what needs to be done for the public considering the challenges in NPM approaches. Meynhardt describes public value discourse as a way of removing the barriers between the government and the people approaches to solving issues. Meynhardt continue to state that management public value demand approaching governance in broader perspective rather than basing the management on how it used to be handled by previous regimes. Public officers need to ask themselves more challenging and demanding questions if they want to achieve public value. They are asking more than whether procedures have been followed. Public offices need to ask themselves whether the goals set for them in achieving government-citizens objectives have been met or not. They are asking more than whether their targets have been met (Meynhardt,2009).

Public engagement is a key element in service delivery and in essence boosts the Government's efficacy and of course advances quality of decisions made as stated Pereira, G. V et al (2017). In todays, world there is more knowledge in the society than it used to be a few years back. According to Pereira, G. V et al. Pereira, G. V, government policy makers and departments should ensure citizens are provided with avenues to participate in policymaking. This will ensure citizens provide government with their expertise in various areas and fields and at the end improve chances of systems adoption. Policy makers and government entities need to ensure there is sufficient public input and participation in government.

Pereira, G. V et al establishes that government departments can also take advantage of the now famous social media platforms to encourage citizen participation and engagement with the government. The use of social media platforms such as Twitter, Facebook, Instagram and LinkedIn to advance government-citizen engagement is essential. Harrison, et al continue to state that government can also use feeds, for current affairs about small and medium enterprises in order to improve on the public value.

Pereira, G. V (2017) suggest seven types of values that could in essence be as a result of government actions. These values are also distinguished between fundamental value of government and societal assets. The value derived from government services offer explicit benefits to citizens, selective groups or companies. Pereira, G. V et al describes public value in terms of

and encapsulates them into six general types that encapsulates the range of possible results in government. In sum, seven types of public value from government include: economic, political, social, strategic, quality of life, ideological, stewardship. Furthermore, Pereira, G. V advises that it is essential to appreciate how public value is created and the kind of value generators essential in ensuring service delivery.

The following are a set of value generators as defined by Pereira, G. V et al;

i. Productivity –this will ensure you obtain increased outputs using the same resources or when there is low resource consumption, there is still increased output.
ii. Efficacy – the quality of the desired outcome should be increased;
iii. Fundamental enhancements – the stakeholder environment should be changed to meet their expectation;
iv. Transparency –citizens should find it easy accessing information they require about a government official or government programs;
v. Involvement – how are the citizens involved in decision making about their government?
vi. Relationship – this involves the frequency or duration for decisions or policy operations.

Murray, R et al. 2010 establishes that gauging the success e-government, citizen public value must be looked into and that perception plays a big role. Their (Murray, R et al. 2010) understanding of success has been hampered however by (i) the rapid development and complexity of Internet technologies and (ii) the lack of conceptual bases necessary to represent the ever-expanding range of success dimensions. Murray, R et al. hinges the success of ICT implementation based on DeLone and McLean IS Success Model which encompass three essential success or value clusters: efficiency, effectiveness and social value. According to Murray, R et al, the proposed success measure is reliable and valid and that the nine-factor structure (Cost, Time, Convenience, Personalization, Communication, Ease of Information Retrieval, Trust, Well-Informedness and Participate in Decision-Making) can explain a major portion of citizens' perceptions of eGovernment success.

Goal of public officers is to ensure there is public value in their service offerings as explained by Pereira et al. 2017. Pereira, et al. identify that governments can user ICT to improve on service delivery and also on public engagement. Public managers become more open and this in essence improve interaction with citizens. The use of ICT has brought major economic, social and political

benefits as stated by Pereira (2017). The major focus by governments is how it can leverage on the use of technology to improve service delivery and interaction with the people. So as to improve the quality of amenities offered by the administration to its citizens, it must ensure public participation. Pereira, 2017 also identify an important link between citizens and the coordination and connectivity between them. According to Pereira, 2017, the user of technological tools is enabling governments to automatically gather information which they can use to provide answers to some administration issues as well as use the information gathered during policymaking. Governments can use the information gathered to come up with policies which will improve the lives of citizens in the society. Pereira et al. 2017 argues that in view of the fact that the public sector is characterized by a complex value structure, understanding that public organizations need a cost-effective and legally, to balance transparency and accountability, equal treatment to all citizens and users of services is paramount. In sum, promote democratic participation in the public administration (Pereira et al. 2017).

According to Bannister and Connolly (2014), governments need to use ICT to enable state administration and good service delivery to citizens. When there is a good understanding between ICT and the public value generated from it, then governments will be in a better position to decide which technology to adopt. Bannister and Connolly (2014) clarifies that the understanding there is a need to consider the good and bad aspects of adopting the use of technology. Socially oriented public values can constitute a behavior considered as adequate to reach social objectives. These social objectives are under the positive (or negative) influence of ICTs. Socially oriented public values are considered more helpful than the rest as they will ensure socially oriented objectives are achieved (Bannister and Connolly, 2014).

2.5 Theoretical Foundation of the Study

Abend, Gabriel et al states that generally theories are articulated to explain a phenomenon and, in most cases, used to challenge and extend knowledge to existing knowledge by criticizing the existing assumptions. The theoretical framework is used to support a theory of a research study. The theoretical framework introduces and describes the theory that explains why the research problem under study exists". Scholars have developed theories to expound the role ICT plays in

good governance. Yonazi (2010) explains that there are multitudes of factors that influence the role ICT plays in ensuring good governance in a country.

2.5.1 The Technology–Organization–Environment Framework (TOE)

This theory by Tornatzky and Fleischer (1990) describes the entire process of innovation. The process of innovation starts from development of innovations by architects/engineers and entrepreneurs to the adoption and implementation of those innovations. According to Tornatzky and Fleischer (1990), the TOE framework is used to explain how the different elements in an organization can influence which decisions to adopt. The elements used in this framework are technological, organizational and environment in situation.

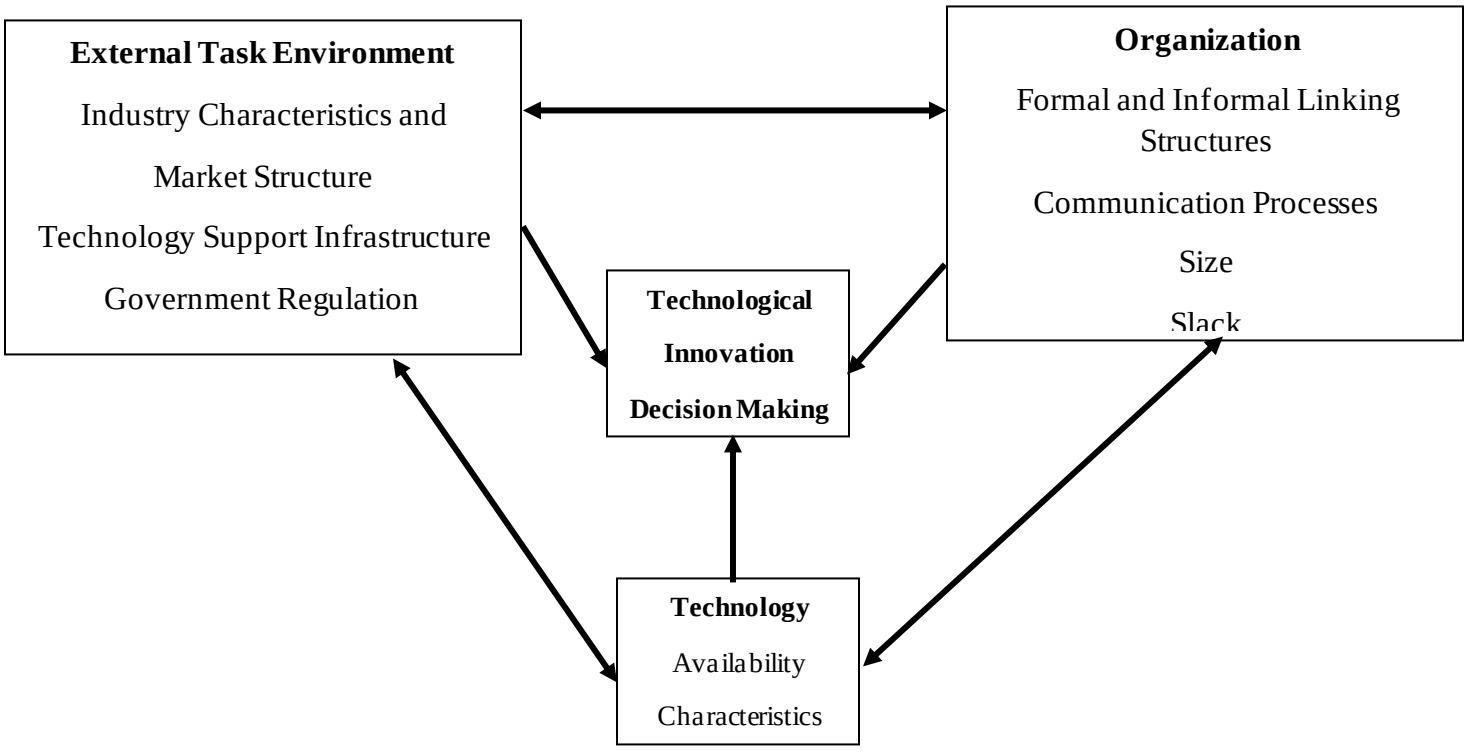

Figure 1: The TOE framework, Source Tornatzky and Fleischer (1990)

TOE model has been broadly used to explain the adoption of innovations in a host of industries including manufacturing, retail, health care among others. The same framework can be used to guide on how innovations can be used to provide better governance in governments.

This theory informs this study since the county governments are implementing ICT solutions and as they do that, they ought to ensure those solutions are innovative, uses the right technologies, the government structures in place support innovations and all the stakeholders are well involved in the whole process. Even if there are innovative solutions being deployed in the counties yet those responsible are not ready for the uptake, little or nothing will be achieved and the investment will probably go to waste.

2.5.2 Diffusion of Innovations

Rogers (2003) defines diffusion as a socially inclined process that occurs when people learn about new innovations which could be a new ICT tool to improve on government service delivery to citizens or solving social problems by use of ICT. Rogers goes further to state that there are certain channels that diffusion is communicated through overtime among the recipients in a society. Government has to communicate with the citizens and this information needs to reach the intended audience in its purest form. This forms part of governance. Therefore, coming up with tools that make the dissemination of this information quickly and efficiently is paramount to any government.

Muhammad et al. (2017) states that Information systems (IS) evolved out to be the spine of the organizations. Muhammad Farooq, et al. continue to emphasize that by utilizing these systems at the operational level processes such as Human Resource Systems, Accounting/ Finance systems, Production/ Manufacturing Systems and Marketing/Sales systems etc., in the organizations could be performed effectively and efficiently. The accelerated growth of information technology, government use of IS has also evolved tremendously (Muhammad et al. (2017).

Due to accelerated growth of information technology, organizational IS has also evolved tremendously. Laudon and Laudon (2011) highlighted that organizations are investing heavily on their IS for various purposes such as safeguarding organizational survival, attaining competitive advantage, refining decision making, attaining customer service and trust, developing innovative products and services and achieving operational effectiveness (agility, efficiency, productivity). In short, good information system is highly important for organizational performance.

Technological solutions are diffused in organizations at different levels according to the characteristics of innovation and organization. Based on DOI, the process of innovation adoption includes the following five stages;

1) information,

2) influence,

3) result,

4) application, and

5) validation (Rogers, 1983).

Information or knowledge is the first stage and the importance of knowledge in today's complex global environment cannot be ignored (Avazzadeh, 2015). Bases on knowledge persuasion take place and then decisions are made. These processes apply even to Homa Bay county in the sense that there should be tangible outcomes from any technological innovation being invested on. Those responsible for the innovation need to take into account citizens knowledge in adopting these technologies. Implementation need to be done using best practices in ICT project implementation.

2.5.3 Theoretical Framework for Governance

Lutfor (2016), describes good governance as a tool being used to improve social-economic welfare of the people and is often used an effective tool for overcoming challenges associated with economic issues both in developed and developing nations across the world. Lutfor continues to state that it has generated increasing attention and debate both at the national and international level over the past two decades. Lutfor (2016) argues that "the concept of 'good governance' conveys the qualitative dimension of governance that indicates effective, efficient, participative,

or democratic form of government which is responsible for transparent and accountable management of human, natural, economic and financial resources for equitable and sustainable development. Addition of the adjective 'good' to governance has given a sense of enhancement and almost become an obsession in the recent debates on international development and public administration in developing countries".

The use of good governance in most cases ensures quality services is provided to the public as cited by Lutfor (2016). It is understood that good governance provides a mechanism for achieving quality services and is therefore very necessary.

Lutfor continue to discuss the concept of governance by stating that there has been a paradigm shift from government to governance. Trends have now changed where the flow of information from traditional institutions to counties and the rise of global markets demand and supply, the increase in global and social economic partnerships and easy access to information is the new normal. Of significance is to note that governments can no longer assume there is no expertise from its citizens and therefore a need to public-citizen cooperation (Lutfor,2016).

Reddel states "the concept of new governance centers on management by negotiation and dispersed networks rather than traditional methods of hierarchical command and control" (Reddel, 2002). Contrasting the dimensionality of government and governance models is summarized Table below.

Table 1: Government and Governance: Parallels and Dissimilarities

Attribute	Government	Governance	Shared Attributes
Motivation	Collective Goods	Collective Action	Broad scope
Control Mechanisms	Coercive	Collaborative, facilitative	
Primary Function	Direct Service/Indirect Service	Indirect Service	Indirect services
Infrastructure	Centralized/ Hierarchical/ Bureaucratic/ Rigid	Decentralized/public-private-multi-level-transnational/ Flexible	Some level of administrative structure
Vision	Client based problem solving	Constituent empowerment; engagement of stakeholders	Problem solving
Mission	Serving customers	Building relationships	Societal improvements
Sphere of Public Administrator's Influence	Local/Regional	Regional/Global	Regional
Accountability	Regulation, procedures, traditional public administration	Reward/punishment balance	
Unit of Analysis	Program and Organizational Outcomes	Community-wide, long term outcomes	Analytical Measurement
Teaching Emphasis	Internal mechanisms for improving administrative functioning, may include managing outsourcing of service deliverables	Creative thinking, enablement skills, mediation skills, cross-boundary relationship building	

Source: Adapted from Tim Reddel (2002)

2.5.4 The "Good Governance" Concept of the World Bank

According to the World Bank defines governance as a process of making decisions and the process by which these decisions are implemented and sometimes not implemented (Kaufman et al, 1999, **cited from Lutfor,2016**). From the definition of governance from the world bank, there are three dimensions that can be arrived at. These are

i. The processes used to select and replace governments.
ii. The capability of a government to frame and implement effective policies
iii. The respect the government institutions have towards its citizens

The following table describes the Indicators of Governance prescribed by World Bank.

Table 2: The Pointers of Good Governance specified by World Bank

1.	Voice and Culpability
2.	Political Solidity
3.	Government Efficacy
4.	Regulatory Excellence
5.	Rule of Law
6.	Control of Fraud

The first pointer, "voice and culpability", measures the different aspects of political process as well as citizens civil and political rights. It explains how well citizens of a given country have control in whom to select and manage the affairs of their country. The second pointer, "political solidity", establishes how likely a government in power can be overthrown without following the due process of the laws of the land. The pointers three and measures the ability of a government to make and implement sound policies. The fifth pointer "rule of law" is used to measure how strong the country's laws are and whether they are respected. This will form a basis of economic social foundation. The World Bank recognizes that achieving an ideal governance is difficult but countries need to take firm actions in order to realize its objectives Kaufman et al., 1999, **cited from Lutfor,2016**).

2.5.5 The UNDP Concept of "Good Governance"

From the assessment of UNDP, governance means exercising economic, social, political power to manage a country's affairs. Governance should be used to promote social cohesion and political stability of the whole population according to UNDP (UNDP, 2002, **cited from Lutfor,2016**). Good governance should also incorporate mechanisms to allow citizens to air their grievances, exercise their rights and also articulate issues of their interests (UNDP, 1997, **cited from Lutfor,2016**).

According to UNDP governance has three lags: economic, political, and administrative. Economic governance includes decision-making process that affects a country's economic activities and relationship with other economies. It has major implications for equity, poverty, and quality of life. Political governance is the process of decision-making to formulate policy. Administrative governance is the system of policy implementation. Encompassing all three, good governance

defines the processes and structures that guide political and socio-economic relationships (UNDP, 1997:2-3, **cited from Lutfor,2016**).

2.6 Summary of assessment of public value investment frameworks

Table 3: Summary of assessment frameworks

Framework	**Features**
Technological, Organizational and Environmental (TOE) model	i. Explains the adoption of innovations in a host of industries including manufacturing, retail, health care among others ii. Framework can be used to guide on how innovations can be used to provide better governance in governments
Diffusion of Innovation model	i. socially inclined process that occurs when people learn about new innovations which could be a new ICT tool to improve on government service delivery to citizens or solving social problems by use of ICT ii. The process of innovation adoption includes: i) information, ii) influence, iii) result, iv) application, and v) validation
Theoretical Framework for Governance	i. Providing quality services ii. Paradigm shift from government to governance

2.7 Conceptual Framework

Figure 2 shows the framework used in the study

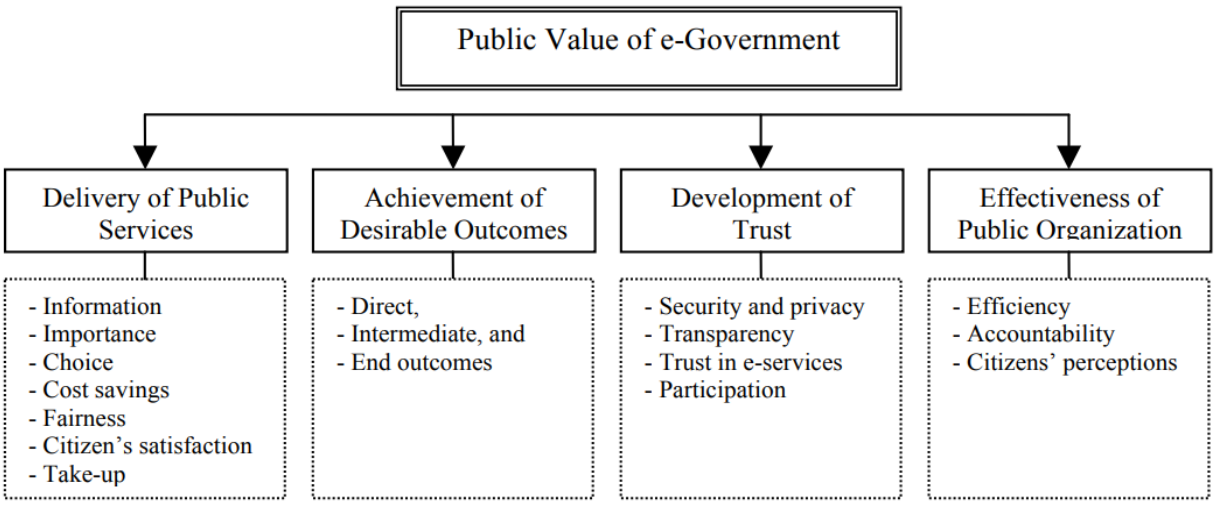

Figure 2: Conceptual Framework, Source Karunasena & Deng (2009)

Considering the nature of e-government in Kenya, four dimensions of public value creation through e-government are considered. The four ways of creating public value are

i. delivery of public services;
ii. achievement of desirable outcomes;
iii. development of trust; and
iv. effectiveness of public organizations.

Attributes associated with each of the dimensions mentioned above are explained. Figure 2 shows an summary of the conceptual framework used in the study. This framework is adopted from Karunasena & Deng (2009).

The delivery of public services dictates the quality of the service delivered through e-government and the timeliness of such deliveries (Karunasena & Deng (2009) cited from Kearns 2004; Heeks 2008). Efficiently delivering public services through e-government very much depends on the availability of information, the importance of information to citizens, choice, cost savings, fairness of services, satisfaction of citizens, and take-up of e-government services (Karunasena & Deng, 2009). The availability of information concerns about the amount and type of information available

to citizens through e-government services. The importance of information is a reflection of the perception and requirements of citizens with respect to their specific needs. The choice refers to the availability of e-government service delivery channels to citizens for accessing public services. The cost saving of e-government relates to the amount of money that citizens can actually save through e-government service compared to traditional government services. The fairness of e-government services delivery refers to the extent to which e-government services are available to the whole population including socially disadvantaged groups. This is reflected through the availability of resources for disadvantaged groups to access e-government services. The satisfaction of citizens with e-government services is reflected through the experience of citizens in using e-government services. The take-up of e-government is measured by the number of users who have used at least one e-government service (Karunasena & Deng, 2009).

Realizing socially desirable outcomes is a key source of public value creation through e-government (Karunasena & Deng, 2009). Delivery of desirable outcomes is usually achieved by determining what impact and consequences service delivery is expected to accomplish (Karunasena & Deng, 2009). There are usually the initial outcomes followed by intermediate outcome the long-term outcomes (Karunasena & Deng, 2009). When you achieve intended results for a specific region or group of people that is referred to as direct outcome. When you produce results for the whole sector be it private or public that is known as intermediate outcome. However, when you produce intended results for the whole nation, that is usually known as end outcomes.

When the trust between citizens and the government is increased, that dimension can be used to measure the level of public value (Karunasena & Deng, 2009). You can assess this from the security and citizens information privacy (Karunasena & Deng, 2009), (b) openness of e-government services (Karunasena & Deng, 2009), (c) confidence of citizens in electronic government services (Karunasena & Deng, 2009), and (d) contribution of citizens in public discussions. The security and confidentiality of refers to how government manages citizens personal information. This includes government readiness to secure and develop laws that protect personal information. The openness of electronic government dictates how the government reveals to its citizens on the procedures it follows in executing its mandate in service delivery (Karunasena & Deng, 2009). An open government does not hide information to the public. The public confidence electronic government is measured by the way the citizens perceives the e-services

delivery by public institutions. The contribution of citizens in government is usually demonstrated by how citizens are involved in the decisions that affect the public.

The efficacy of public organizations is a major indication of public value created through electronic government (Karunasena & Deng, 2009). Efficacy is measured by productivity, responsibility, and citizens' perceptions about public organizations (Karunasena & Deng, 2009). E- government is used to improve the public services by cutting processing cost, managing performance, and making strategic connections between and among government agencies (Karunasena & Deng, 2009 cited from Heeks 2008). All these activities save public money. In this context, the efficiency of public organization is determined by the financial return of investment Karunasena & Deng, 2009).

The table below summarizes the above discussion.

Table 4: A description of the conceptual framework, Source Karunasena & Deng (2009)

Dimension	**Attributes**	**Description**
Delivery of Public Services	Information	Availability of information for citizens through e-government
	Importance	Importance of the information to the citizens
	Choice	Availability of e-government channels to access public services
	Fairness	Fairness of e-government service delivery
	Cost Savings	Cost savings for citizens using e-government services
	Take-up	Use of e-government services
	Citizens' Satisfaction	Citizens' satisfaction with e-government services
Achievement of Outcomes	Direct Outcomes	Achievement of socially desirable outcomes for specific constituencies through e-government
	Intermediate Outcomes	Achievement of socially desirable outcomes for a entire sector through e-government
	End Outcomes	When the socially desirable outcomes from e-government are for the whole society.
Development of Trust	Security and Privacy	The extent to which the government is protecting citizens confidential data.

	Transparency	Addresses the extent to which the government is disclosing information about the decisions it makes through e-government.
	Trust	Does the public trust e-government services?
	Participation	How many citizens are using e-government services?
Effectiveness of public organizations	Efficiency	This addresses the return on investment of e-government services in public institutions.
	Accountability	This attribute is used to address the number of public entities publishing their service offerings online to the public
	Citizens' Perceptions	This attribute addresses the citizens opinion about the public institutions where e-government are deployed.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter includes the research design, target population, data collection methods, and data analysis procedures.

3.1 Research Design

The purpose of research design was to ensure the evidence obtained during the research process enables answer the research objectives. It is a strategy that ensures all the research objectives are met in the course of the study. Research design provides the framework for the data collection, analysis and presentation. (De Vaus, 2006).

The study research design adopted was a survey research design. Here the researcher was interested in describing the situation under study. This research design was used to gather, analyze and present the collected data from the respondents. The feedback of the research work enabled the researcher to provide understandings into the why and how the research work.

The study aimed at furnishing the researcher with profound knowledge and understanding on the ICT strategies formulated and implemented by Homa Bay County and how they are impacting delivery of public service in Kenyan and good governance. The study also aimed at furnishing the researcher with the technological investments in Homa Bay County as well as gathering the level of public participation in determination what kind of ICT investments should be made in Homa Bay County.

3.2 Target Population

A population refers to a complete set of individuals, cases or objects with some common observable characteristics (Mugenda and Mugenda, 1999). This study's target population included Homa Bay County ICT staff responsible for implementation of ICT projects, residents of Homa Bay county, county government staff responsible for strategy, policy and political formulations (county government political leaders). A population was identified for the study, this was made up

of people who used or were expected to use the ICT tools to access government information and services and who were also expected to be part of the decision making in county ICT projects implementation.

3.3 Data Collection

The research data for the study was collected through interviews, direct observations and questionnaires with the target population. Questionnaires were created based on the study objectives. Another set of data were also collected from sample population of residents of Homa Bay County. The aim of data collection was to assess the public participation of residents of Homa Bay County for ICT investments and also to establish the technological investments already in place or planned for future rollout. Secondary data sources included journals, books and articles addressing the objectives of this study.

3.4 Data Analysis

Analyzing data from a survey generally consist of an iterative and cyclical process that proceeds from more general to more specific observations with an aim of coming up with useful information that can be used to inform decision making (Creswell, 1998; Palys, 1997; Silverman, 2000). Data collected from this study were analyzed qualitatively and findings used to compile a report.

In the data analysis step, the data gathered were statistically analyzed in order to answer to the research objectives and ensure those objectives were met. Qualitative data gathered through interviews and observations were analyzed.

3.5 Mapping Objectives with Methodology

Table 5: Research Objectives and Methodology

<table>
<tr><th>Objective</th><th>How Objective were achieved</th></tr>
<tr><td>Identify the technological investments in Homa Bay county</td><td>• Payroll
• Health management system
• POS machines
• Revenue automated collection systems
• Wi-Fi among others</td></tr>
<tr><td>Establish the level of public participation in ICT solutions implementation in Homa Bay county</td><td>County Budget and Economic Forums (CBEFs) (40%), followed by Chamas and Youth groups (23.5%) and thirdly through Chief Barazas (14.12%).</td></tr>
<tr><td>Identify the criteria used in determining the kind of ICT of investments to be made by Homa Bay county government</td><td>• The ease of use of the ICT device
• Speed
• Accessibility
• Cost Effectiveness
• Public Needs
• Target group
• Accountability</td></tr>
<tr><td>Public value and satisfaction derived from ICT investment in Homa Bay County by the citizens</td><td>40% had participated to a less extent, 35% had not participated at all while 20% had participated to a moderate extent. The results show that public participation on ICT investment in the County was generally low.</td></tr>
<tr><td>Assess the public value of ICT in enabling good</td><td><table>
<tr><th></th><th>Strongly disagree</th><th>Disagree</th><th>Don't know</th><th>Agree</th><th>Strongly agree</th></tr>
<tr><td>Information</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>You are aware of county government electronic services available</td><td>11.8%</td><td>10.8%</td><td>12.9%</td><td>55.9%</td><td>8.6%</td></tr>
<tr><td>You use these electronic services</td><td>19.8%</td><td>13.2%</td><td>5.5%</td><td>52.7%</td><td>8.8%</td></tr>
</table></td></tr>
</table>

governance in the county of Homa Bay	County government has put in measures to ensure public are aware of the services available online	28.3%	44.6%	8.7%	12.0%	6.5%
	You are satisfied with the electronic government offering services by county government	32.6%	42.4%	8.7%	6.5%	9.8%
	Importance					
	You understand the objectives of the county government electronic devices	15.4%	22.0%	16.5%	34.1%	12.1%
	The objectives of the electronic services are relevant to your needs and those of the public	7.5%	17.2%	21.5%	39.8%	14.0%
	You support the introduction of more electronic services in the county services offering	3.3%	6.5%	10.9%	33.7%	45.7%
	Choice					
	You are aware of county electronic government channels	12.0%	18.5%	18.5%	40.2%	10.9%
	You use the county electronic government channels	10.8%	26.9%	12.9%	39.8%	9.7%
	You are satisfied with the electronic government channels	29.0%	37.6%	16.1%	7.5%	9.7%
	County government electronic services are readily available	32.3%	36.6%	14.0%	8.6%	8.6%
	Cost Savings					
	Electronic services are convenient to use	8.5%	6.4%	10.6%	34.0%	40.4%
	You spend less time in getting services as compared to visiting the actual government offices	6.7%	6.7%	11.1%	53.3%	22.2%
	You save money by using electronic government channels	7.7%	24.2%	12.1%	37.4%	18.7%
	Fairness					
	Electronic government services are available to all people in the county	40.7%	28.6%	11.0%	12.1%	7.7%
	Electronic government services are available to socially disadvantaged people in the county	40.7%	34.1%	8.8%	11.0%	5.5%
	Socially disadvantaged people can easily access the electronic services	45.1%	31.9%	11.0%	7.7%	4.4%
	Citizen's Satisfaction					
	Electronic services are easily accessible	21.7%	42.4%	10.9%	17.4%	7.6%
	County government electronic services are available in all sub counties	38.5%	31.9%	13.2%	9.9%	6.6%
	You frequently use county government electronic services	34.4%	34.4%	9.7%	12.9%	8.6%
	You are satisfied with county government electronic services	37.8%	34.4%	11.1%	11.1%	5.6%
	Take-up					
	You intent to use at least one electronic government service	5.5%	4.4%	7.7%	48.4%	34.1%
	You have used at least one electronic government service	6.5%	9.8%	9.8%	42.4%	31.5%
	You would advise county residents to embrace the use of electronic government service	2.2%	1.1%	7.7%	41.8%	47.3%

3.6 Operationalization of the variables

The variables were operationalized through the use of questionnaires.

Table 6 : Operationalization of the variables

Variable	Definition	Metrics
Information	Addresses the how easily the information required is available to the public	Citizens are able to easily access e-government services
Importance	This defines the importance of information to citizens	Value of information available to citizens through e- government services

Choice	e-government channels available to the public	The number of access channels available to citizens
Cost Savings	Money saved by citizens when they use e-government services	Direct savings realized by citizens when they use e-government services.
Fairness	This is defined as the fairness of e-government service delivery.	Accessibility of e-government services to citizens
Citizen's satisfaction	Experience citizens realize when they use e-government services	Citizens' satisfaction with electronic government services
Take-up	Determined by the number of citizens who have used at least one e-government service	Frequency of use of e-government service.
Security and Privacy	Safety in the interaction with the county government	The degree of perceived safety while using the ICT devices and platforms
Transparency	Availability of information about county operations among the public	Extent to which information on county operations is available
Trust	Ability of the citizens to use the systems without suspicion	Percentage of citizens who have confidence with the system
Participation	Freedom to take part in the operations of the county	Percentage of citizens participating in county activities
Efficiency	Ease of accessing services through the use of the ICT platforms	Percentage of citizens using the ICT systems with ease
Accountability	Is the availability of information to the citizens through the ICT platforms	Percentage of citizens able to get the county government information
Citizens' Perceptions	Citizen's attitude and opinion on ICT investments and value they enjoy by presence of the ICT	Number of citizens with positive or negative opinions towards the systems

CHAPTER FOUR:

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter is an execution of the data analysis plan explained in chapter three. The chapter provides information on the tests done, the results and interpretation of the results. The results are presented in graphs and tables and labelled sequentially.

4.1.1 Response Rate

A total of 130 questionnaires were distributed to various respondents for data collection out of which 94 were filled, collected and used in this study giving a response rate of 72.3%. According to Bryman and Bell (2011), a response rate of 50% is acceptable to analyze and publish, 60% is good and 70% is very good. Thus, a response rate of 72.3% was considered ideal for the current study.

Table 4. 1 Response Rate

Number of questionnaires	Number	Percentage of the total
Collected	94	72.3
Uncollected./unused	36	27.7
Total	130	

4.2 Background information

4.2.1 Category of the Respondents

The data was collected from both the county and general public. The percentage of the public was 74.5% while that of the county staff was 25.5%. This shows that majority of the respondents were the public who form the majority and are the consumers various ICT solutions in the county.

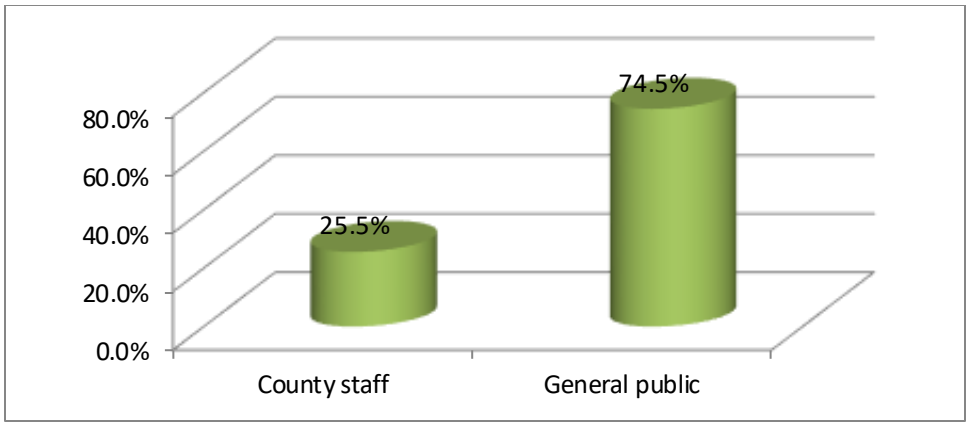

Figure 4. 1 Category of the respondents

A further breakdown of the type of the respondents shows that 74% were residents of the Homa Bay county while 19% were count employees and 2% were non-residents as shown in table 4.2.

Table 4. 2 Respondents type

Category	Freq.	Percent
County employee	18	19
Resident	70	74
Non-resident	2	2
Others	4	4

4.2.2 Gender of the Respondents

The results show that majority of the respondents in this study were male (59%). The female respondents accounted for 41%. Although the participation of male respondents was high compared to that of female respondents, the participation of the female respondents was substantial in the study.

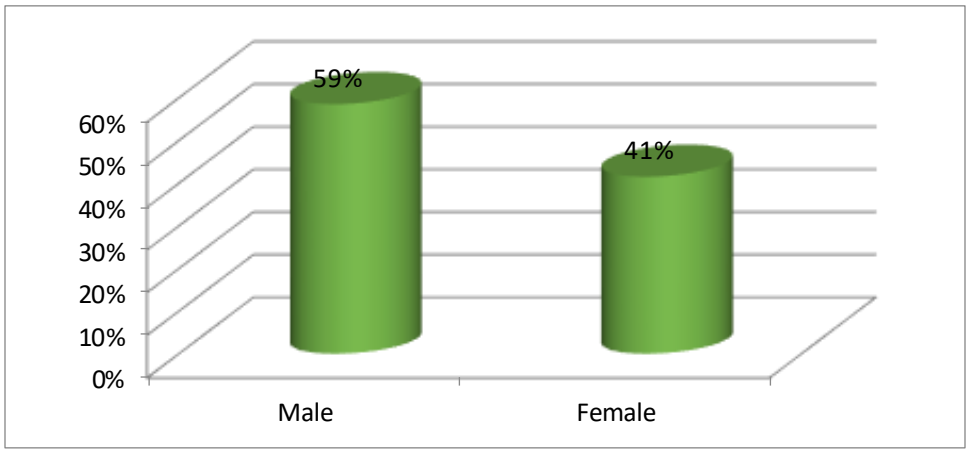

Figure 4. 2 Gender of the Respondents

4.2.3 Age of Respondents (Years)

Table 4.1 shows that 44.7% of the respondents were aged between 21-30 years. Another proportion of 21.3% were aged between 41-50 years followed closely by a category of respondents aged between 31-40 years (19.2%). The cumulative percentage shows that 51.1% of the respondents

Table 4. 3 Age of Respondents (Years)

Age of respondent	Freq.	Percent	Cum.
20 years and below	6	6.4	6.4
21-30	42	44.7	51.1
31-40	18	19.2	70.2
41-50	20	21.3	91.5
Above 50	8	8.5	100.00
Total	**94**	**100.00**	

4.2.4 Education Status of the Respondents

Figure 4.3 shows the education profile of the respondents who took part in the study. According to the findings, 31% had diplomas, 30% had undergraduate studies while 23% had secondary education among others. The results indicate that the sample is a representative of a natural population.

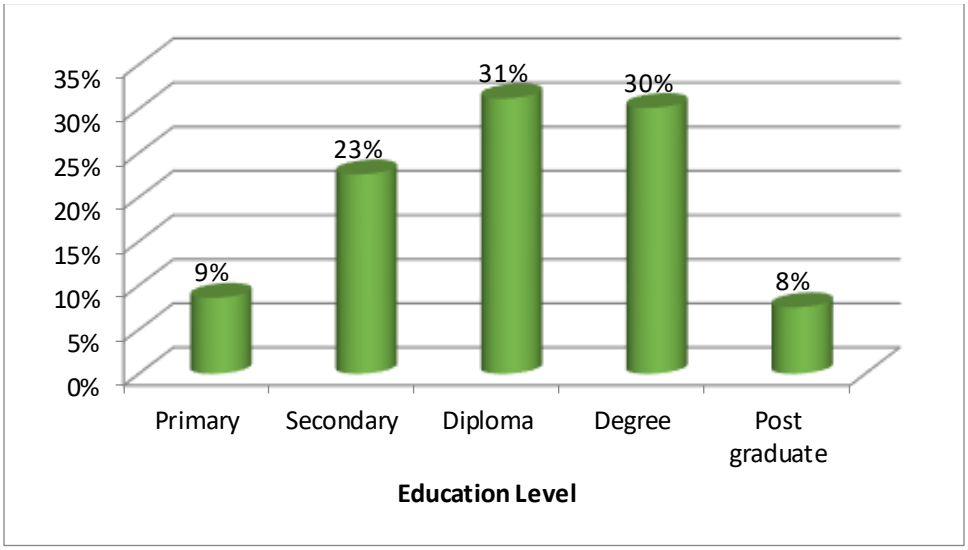

Figure 4. 3 Education Status of the Respondents

4.2.5 Department and Duration Worked in the County

The respondents who took part in this study were citizens of Homa Bay County while others were staff members working in the County. The staff members who participated in this study were drawn from different departments such as Agriculture, Education, ICT, Finance and economic

planning, revenue, procurement, trade and industrialization. Others were from national government from the interior ministry, huduma centres, national registration bureau, national treasury among others. Table 4.4 shows that most of the respondents drawn from the county were from agriculture, livestock, fisheries and food security, education and ICT, revenue, trade and industrialization departments. Further, the study collected data from 5 directors from various departments namely; education and ICT, trade and industrialization, finance and economic planning, Agriculture and an officer from ministry of interior (huduma centers).

Table 4. 4 Department of the respondents

Department/Ministry	Count	Percentage %
Agriculture, livestock, fisheries and food security	4	16.7%
Education and ICT	3	12.5%
Revenue department	3	12.5%
Trade and industrialization	3	12.5%
Finance and economic planning	2	8.3%
Procurement	2	8.3%
Interior-Huduma centre	2	8.3%
Human resource	1	4.2%
Information desk	1	4.2%
National construction authority	1	4.2%
National registration bureau	1	4.2%
National treasury	1	4.2%

For those who worked in the county, majority (61%) had worked with the counties for a period between 2-5 years, 26% for more than 5 years and 13% for less than 1 year. The results shows that majority had worked with the county for more than 2 years and thus had adequate understanding of the county operations.

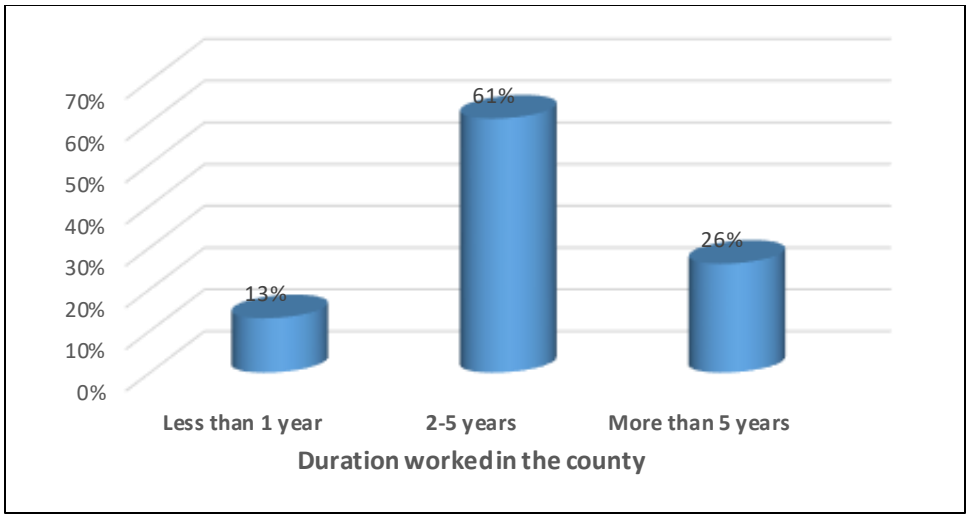

Figure 4. 4 Duration worked in the County

4.3 ICT Investments in Homa Bay County

4.3.1 Services offered to the public by the county government

Table 4.5 shows the common payable services offered by the County government to the members of the public. Most of the payable services to the public were the parking fees accounting for 50% of the services. Others included market permits, business permits, construction fees, land rates, registration of duplicate identity cards and certification of building. The services were offered by mainly two departments: department for revenue collection and trade and industrialization.

Table 4. 5 Services offered to the public by the county government

Services	Department	Percent	Cum.
Market permit	Revenue collection	16.67	16.67
Business permit	Trade and industrialization	16.67	33.33
Parking permits	Revenue collection	50.00	83.33
Construction fees	Trade and industrialization	16.67	100.00
Total		100.00	

4.3.2 Means through which electronic services are accessed

Table 4.6 shows the various ways through which the members of the public paid for the services offered by the county. According to the results, 49.46% paid county services through mobile phones, 37.63% through e-government centers such as huduma centers, 8.6% through laptops and 4.3% in cyber cafes. The results show that the common means used included mobile phones and e-government centres. This shows that the residents preferred phones or cash at the centers.

Table 4. 6 Means through which electronic services are accessed

How do you access electronic services	Freq.	Percent	Cum.
Mobile phone	46	49.46	49.46
Laptop	8	8.60	58.06
Cyber cafe	4	4.30	62.37
E-government centre	35	37.63	100.00
Total	93	100.00	

4.3.3 ICT Investments in the County

The study found that several electronic services have been implemented in the County. Approximately 34.4% of the respondents agreed having human resource management system (payroll system module). Most of the respondents argued that there were no health management systems (56.7%) in the County. Similarly, a proportion of 52.8% stated that there was no revenue collection system in the county against 33.4% who agreed that such systems were operations in the county. This indicates that, the systems could be in some parts of the county or uneven distributed within the County. Further, another 58.5% asserted that there were no Wi-Fi access points in the county against 29.8% who indicated they were there which demonstrates lack of uniformity in the access of the ICT investments in the County. Further, the result shows that an average of about 2 projects on electronic payment services had been done to ease payment of payable services at the county such as automation of revenue collection and payroll health management system.

The study shows that only 9 respondents knew of e-payment projects which were ongoing at the time of the study. The rest of the respondents were not aware of any such projects which were being implemented at that time.

Some of the ICT investments in the County were reported to have failed such as the intercom and the County portal although majority of the respondents could not tell whether there were any failed electronic government payment projects. The main reasons for the failure included rejection due to suspicion, improper planning, lack of funds, lack of goodwill from those responsible for implementing the projects, lack of awareness by the county residents, less interest, poor coordination and maintenance, illiteracy, lack of power and security and corruption among other things. The study shows that there was no good will from the county top executive for the success of electronic government services.

The challenges facing implementation of e-payment of services projects can be addressed by civic education to residents, establishment of power back-ups and training on ICT to the residents.

The study collected information on the objectives of the electronic government services in the county. The respondents indicated that such projects were implemented to improve service delivery in the county by enhancing revenue collection, improving effectiveness and efficiency, accountability and for reporting purposes, making government services accessible and easier, to seal revenue leakages, reduce loss of revenue among others County needs.

Table 4. 7 ICT Investments in the County

Type of ICT System	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
Human Resource Management System (Payroll System module)	15.1%	18.3%	32.3%	26.9%	7.5%
Health Management System	17.8%	38.9%	10.0%	25.6%	7.8%
Revenue Automated Collection System	18.0%	34.8%	11.2%	30.3%	5.6%
Wi-Fi Access Points	23.4%	35.1%	11.7%	24.5%	5.3%

4.3.4 Level of public Consumption of ICT products and services in Homa Bay County

Table 4.7 shows the extent to which public uses different ICT investments in Homabay County. The results show that 54.0% had never paid parking fees electronically, 48.2% had not paid market fees electronically same as electronic payment of renewal of business permits (51.7%). Further electronic payment of the land search (65.5%) and construction fees (73.2%) registered big proportion of respondents who had never used them. The results show low usage and adoption of almost all the payable services captured in the study.

The respondents stated challenges which they faced while accessing electronic government services in the County such as lack of power, delays at times, power failures, lack of knowledge on how to use the electronic systems, poor network and connectivity, lack of support and goodwill by officials to use the systems, limited options, machine hangs, not all needs are covered among other challenges.

Table 4. 8 Extent to which the public uses ICT investments in Homabay County

ICT systems Invested	Not at all	Less extent	Moderate extent	Great extent	Very Great Extent
Human Resource Management System (Payroll System module)	8.6%	14.0%	30.1%	34.4%	12.9%
Health Management System	12.2%	32.2%	20.0%	21.1%	14.4%

Revenue Automated Collection System	11.2%	27.0%	21.3%	27.0%	13.5%
Wi-Fi Access Points	13.8%	31.9%	20.2%	23.4%	10.6%

4.4 Descriptive Statistics on Public Value

This section discusses some aspects of public value in relation to the government electronic ICT investments available in the county.

4.4.1 Delivery of Public Services

The respondents provided information on the delivery of services (public value) they derived from the ICT investments in Homa bay County. The first aspect on public value was on information. The results show that 55% of the respondents were aware of the county government electronic services available in the county and 52.7% used the services. The results further show that most 44.6% of the respondents felt that the County had not put in place measures to ensure the public were aware of the services available online and 42.4% were not satisfied with the way the county offered electronic services.

A proportion of 34.1% agreed that they understood the objectives of the county government electronic services. This category was followed closely by 22.0% who indicated that they did not understand the objectives of such services. Further, 39.8% of the respondents indicated that the objectives of the electronic services were relevant to their needs and those of the public although 21.5% were not sure whether such services were relevant to them and the public. The results show that a percentage of 45.7% strongly supported and 33.7% supported the introduction of more electronic services in the County services.

The other aspect of public value examined was on choice. Table 4.11 shows that 40.2% of the respondents were aware of the county electronic government channels while 39.8% agreed that they used county electronic governments' channels. A percentage of 37.6% of the respondents were dissatisfied with the electronic government channels and 36.6% stated that county government electronic services were not readily available. The results show that although a substantial proportion of the residents knew and used the services, they were not satisfied and were not readily available.

The other public benefit from the investments on ICT was on saving costs. Most of the respondents (40.4%) strongly agreed that use of electronic services was convenient and consumed less time

(53.3%) to get services compared to visiting the actual government offices. Also a considerable number of the respondents (37.4%) indicated that they saved money by using electronic government channels compared to other manual channels.

Findings on fairness show that a sizeable number (40.7%) of the respondents indicated that the electronic government services were not available to all people. Same proportion (40.7%) also indicated that such services were not available to socially disadvantaged group in the county. A proportion of 45.1% also reported that socially disadvantaged people could not easily access the electronic services. The results imply that the electronic government investments poorly cultivated the public good of fairness among the people.

On satisfaction of the public with regard to the electronic government channels, the results shows that residents were not satisfied (42.4%) with the accessibility of the ICT investments in the county. Also, a considerable number (38.5%) of the respondents were not satisfied with the presence of the services among the sub-counties. Most of the respondents (34.4%) also did not use such services and a proportion of 37.8% expressed their dissatisfaction with the services. The results indicate that most of the respondents were dissatisfied with the government ICT investments in the county due to variety of factors such as accessibility and unavailability of the services in their regions among other factors.

Findings on the take up of the ICT services among the residents' shows that most of the them (48.4%) intended to use at least one electronic government service and 42.4% had used at least one of the electronic government channels. Also, a sizeable number (41.8%) were willing and intending to advise others to embrace the services in the county. The results show that uptake was low but majority of the respondents were willing to take the services and even champion for their adoption.

Table 4. 9 value and satisfaction derived

Delivery of Public Services	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
Information					
You are aware of county government electronic services available	11.8%	10.8%	12.9%	55.9%	8.6%
You use these electronic services	19.8%	13.2%	5.5%	52.7%	8.8%
County government has put in measures to ensure public are aware of the services available online	28.3%	44.6%	8.7%	12.0%	6.5%
You are satisfied with the electronic government offering services by county government	32.6%	42.4%	8.7%	6.5%	9.8%
Importance					

Delivery of Public Services	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
You understand the objectives of the county government electronic devices	15.4%	22.0%	16.5%	34.1%	12.1%
The objectives of the electronic services are relevant to your needs and those of the public	7.5%	17.2%	21.5%	39.8%	14.0%
You support the introduction of more electronic services in the county services offering	3.3%	6.5%	10.9%	33.7%	45.7%
Choice					
You are aware of county electronic government channels	12.0%	18.5%	18.5%	40.2%	10.9%
You use the county electronic government channels	10.8%	26.9%	12.9%	39.8%	9.7%
You are satisfied with the electronic government channels	29.0%	37.6%	16.1%	7.5%	9.7%
County government electronic services are readily available	32.3%	36.6%	14.0%	8.6%	8.6%
Cost Savings					
Electronic services are convenient to use	8.5%	6.4%	10.6%	34.0%	40.4%
You spend less time in getting services as compared to visiting the actual government offices	6.7%	6.7%	11.1%	53.3%	22.2%
You save money by using electronic government channels	7.7%	24.2%	12.1%	37.4%	18.7%
Fairness					
Electronic government services are available to all people in the county	40.7%	28.6%	11.0%	12.1%	7.7%
Electronic government services are available to socially disadvantaged people in the county	40.7%	34.1%	8.8%	11.0%	5.5%
Socially disadvantaged people can easily access the electronic services	45.1%	31.9%	11.0%	7.7%	4.4%
Citizen's Satisfaction					
Electronic services are easily accessible	21.7%	42.4%	10.9%	17.4%	7.6%
County government electronic services are available in all sub counties	38.5%	31.9%	13.2%	9.9%	6.6%
You frequently use county government electronic services	34.4%	34.4%	9.7%	12.9%	8.6%
You are satisfied with county government electronic services	37.8%	34.4%	11.1%	11.1%	5.6%
Take-up					
You intent to use at least one electronic government service	5.5%	4.4%	7.7%	48.4%	34.1%
You have used at least one electronic government service	6.5%	9.8%	9.8%	42.4%	31.5%
You would advise county residents to embrace the use of electronic government service	2.2%	1.1%	7.7%	41.8%	47.3%

4.4.2 Achievement of Desirable Outcomes

Achievement of outcomes was the other aspect used to predict the value of the public from the ICT investments in Homa Bay County. The results show that 51.1% agreed that they had been trained on use of electronic services in the county of Homa bay. A proportion of 38.5% agreed and another 38.5% strongly affirmed their willingness to be trained on how to use e-government services. Indicating that most of the respondents were willing to be trained on the use of electronic services in the County.

On the intermediate outcomes, most of the respondents (40.4%) agreed that there had been some impact as a result of e-government services in the county. When asked whether the impact was positive or negative, most (41.8%) confessed that there were positive impacts from the ICT investments. The results show that ICT investments in the county had some impacts to a sizeable proportion of the residents.

Lastly, the respondents were asked forward looking questions on whether ICT investments were likely to have a major impact in the County. The results show that majority (65.6%) expressed confidence of a likely impact from the ICT investments. The impact would be social and would be felt by the entire society including those within and without the county borders. Thus, the ICT investments are likely to have an impact on the citizens in future as cited by the respondents.

Table 4. 10 Achievement of Desirable Outcomes

	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
Achievements of Desirable Outcomes					
Direct Outcomes					
Attended any form of training to enable you understand and use the electronic services in the county	12.8%	23.4%	2.1%	51.1%	10.6%
Willing to be trained on how to use e-government services	8.8%	13.2%	1.1%	38.5%	38.5%
Intermediate outcomes					
Any impact as a result of the e-government services in the county	16.0%	28.7%	5.3%	40.4%	9.6%
The impact has been positive	15.4%	29.7%	6.6%	41.8%	6.6%
End Outcomes					
There will be a major impact brought about by e-government implementation in the county	16.1%	15.1%	3.2%	47.3%	18.3%
The socially desirable impact is felt by the whole society living within and outside the county	11.1%	10.0%	3.3%	42.2%	33.3%

4.4.3 Development of Trust

The other aspect used to check public good was development of trust between among the respondents. Findings on security and privacy shows that majority (26.1%) did not know whether the data they shared with the county through the digital platform was safe. On the contrary, a substantial proportion (23.9%) could not tell whether the data shared through the digital platform was safe. Further, 27.5% affirmed that county government had put enough measures to protect confidential data.

On transparency, a big proportion of the respondents (37.6%) disagreed that transparency had been reflected in their interaction with the digital platforms followed by 24.7% who strongly held that digital platforms did not guarantee their transparency. Further, 37.6% were concerned about their privacy when sharing their data with the government. Similarly, majority (44.1%) had no faith on county e-government services although majority (41.8%) supported the objectives of e-government service offering.

In terms of participation, majority (34.8%) indicated that use of e-government services had not improved governance indicating that respondents did not feel that use of e-government services had any meaningful impact on good governance. However, majority of the respondents (45.1%)

were willing to use e-government services and 42.4% confessed they would advise their friends to embrace e-government services in their dealings with the county government.

Table 4. 11 Development of Trust

Development of Trust	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
Security and Privacy					
The data shared with the county government through the digital platforms is safe	18.5%	21.7%	23.9%	26.1%	9.8%
The county government has put in measures to protect your confidential data	20.9%	19.8%	23.1%	27.5%	8.8%
Transparency					
The government transparency is reflected in your interaction with its digital platforms	24.7%	37.6%	10.8%	19.4%	7.5%
Concerned about your privacy when sharing your data with the government	11.8%	11.8%	2.2%	36.6%	37.6%
Trust					
Have faith in county e-government service offerings	20.4%	44.1%	2.2%	21.5%	11.8%
You support the objectives of e-government service offering	11.0%	15.4%	2.2%	41.8%	29.7%
Participation					
Using the e-government services there has been improvement in good governance	23.9%	34.8%	5.4%	27.2%	8.7%
Willingly using the e-government services	15.4%	18.7%	2.2%	45.1%	18.7%
Would you advice someone you know to embrace e-government service offerings	9.8%	18.5%	2.2%	42.4%	27.2%

4.4.4 Effectiveness of Public Organization

The last dimension of public value of the ICT investments was on the effectiveness of public organization. Firstly, the study collected data on efficiency. Majority (49.5%) of the respondents were not satisfied with the number of county e-services that had been implemented. A number of respondents (41.3%) strongly supported introduction of more e-county government services to improve the County administration.

In terms of accountability, 42.4% indicated that the county government did not published information online. On the contrary, 29.3% agreed that the county published information online. The results, suggest that majority could be unaware about information provided by County on online platforms. Majority of the respondents (41.3%) further stated that they did not access government portal frequently implying that use of e-county government services could be facing user –related challenges.

Findings on the perception of the citizens showed that a proportion of 46.1% indicated that e-government projects had not brought any value to the government projects implemented by Homa bay County. Despite that negative perception, 38.5% of the respondents agreed and 14.3% strongly agreed indicated that e-government services were efficient. Further, 37.0% agreed and another proportion of 30.4% strongly supported introduction of more e-government services in the county.

This indicates that although the citizens attached minimal value to the existing ICT investments in the county, there was a general consensus that e-government services were efficient and effective.

Table 4. 12 Effectiveness of Public Organization

Effectiveness of Public Organization	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
Efficiency					
Satisfied with the number of e-services that have been implemented	28.0%	49.5%	2.2%	14.0%	6.5%
Do you support introduction of more e-services projects to better county administration	13.0%	16.3%	1.1%	28.3%	41.3%
Accountability					
Does the county government publish information online	17.4%	42.4%	10.9%	21.7%	7.6%
How frequently do you access county portal	28.3%	41.3%	1.1%	13.0 %	16.3%
Citizens' Perceptions					
Do you think there has been value in the e-government projects already implemented by Homa Bay County government	19.1%	46.1%	6.7%	21.3%	6.7%
Are e-government services efficient	15.4%	26.4%	5.5%	38.5%	14.3%
Do you support introduction of more e-government services by county government	10.9%	18.5%	3.3%	37.0%	30.4%

4.5 Inferential Tests on Public Value

4.5.1 Diagnostic Tests

To perform inferential tests for testing relationship between ICT investments and the public value realized from such investments. The following diagnostic tests were done to ensure the data met the basic axioms of the regression tests. They include normality, multicollinearity and heteroskedasticity.

4.5.1.1 Normality

The test for normality was done by running a skewness –Kurtosis tests. The test was done to check whether the distribution of the variables followed the skewness and kurtosis patterns of normal distribution. The tests check whether the distributions of the variables differ significantly from those of the normal distribution. A joint distribution with a p-value of less than 0.05 indicates that the distribution is significantly different from a normal distribution. The test shows that all the variables had p values greater than 0.05 ($p>0.05$) indicating that they were not statistically different from normal distributions. Therefore, the variables satisfied the axiom of normality.

Table 4. 13 Skewness/Kurtosis tests for Normality

Variable	Obs	Pr (Skewness)	Pr (Kurtosis)	adj_ chi2(2)	Prob>chi2
Delivery of Public Services	93	0.0448	0.1774	5.63	0.0600
Achievement of desirable outcomes	90	0.2644	0.0354	5.49	0.0642
Development of Trust	89	0.1106	0.2723	3.86	0.1448
Effectiveness of Public Organization	94	0.6789	0.1475	2.33	0.3115

Human Resource Management System	93	0.0309	0.4604	5.12	0.0772
Health Management System	90	0.0486	0.1916	5.72	0.0611
Revenue Collection Management System	89	0.0410	0.2073	5.01	0.0833
Wi-Fi Access Points	94	0.0101	0.5864	5.82	0.0553

4.5.1.2 Multicollinearity

The second diagnostic test was multicollinearity test. The test results show the VIF and Tolerance values. According to Hair, Black, Babin and Anderson, (2010), Tolerance values of less than 0.2 and VIF values of more than 4.0 indicate presence of multicollinearity challenges in the data. In this study, all the independent variables had VIF values of less than 4.0 with the highest being 3.81 while the least tolerance value recorded was 0.2843. The R squared value is also used to check collinearity problem is the value is more than 0.75 since it means that the variable shares more than 75% of its variation with other variables. Therefore, none of the variables had collinearity values to suggest presence of collinearity related challenges.

Table 4. 14 Collinearity Test

Variable	VIF	SQRT VIF	Tolerance	R Squared
Human Resource Management System	3.52	1.88	0.2843	0.7157
Health Management System	2.81	1.68	0.3556	0.6444
Revenue Collection Management System	3.42	1.85	0.2922	0.7078
Wi-Fi Access Points	3.25	1.8	0.3081	0.6919

4.5.1.3 Heteroskedasticity

The third diagnostic test was to test Heteroskedasticity of the residuals after the four models. This was done through the Breusch-Pagan / Cook-Weisberg test for heteroscedasticity. The corresponding chi-square statistics results show that all the four regression models on public value had a p value of more than 0.05 (P>0.05) implying that the residual errors after regression was the same for all values of the independent variables and were not changing with changes in the independent variables. Therefore, the errors were homoscedastic and thus variables ideal for running a regression test.

Table 4. 15 Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Model 1	Model 2	Model 3	Model 4
Ho: Constant variance Variables: fitted values of Delivery of Public Services	Ho: Constant variance Variables: fitted values of Achievement of Outcomes	Ho: Constant variance Variables: fitted values of Development of Trust	Ho: Constant variance Variables: fitted values of Effectiveness of Public Organization
chi2(1) = 0.94 Prob > chi2 = 0.3332	chi2(1) = 1.06 Prob > chi2 = 0.3025	chi2(1) = 0.01 Prob > chi2 = 0.9397	chi2(1) = 2.78 Prob > chi2 = 0.0957

4.5.2 Delivery of Public Services

A multivariate regression was used to test how investments in the county specifically on Human Resource system, Health Management systems, Revenue collection system and Wi-Fi Access points contributed to public value. The results show that the four ICT investments in the county had no significance contribution towards delivery of services except provision of Wi-Fi Access points which was an important component of the process and also accelerated to the take up of ICT services in the county.

Table 4. 16 Multivariate Regression of ICT Systems on Delivery of Public Services (Public Value)

Indicator of Public Value	ICT system	(1)	(2)	(3)	(4)
Information					
	HR system	0.134			
	Health System		-0.083		
	Revenue System			-0.116	
	Wi-Fi points				0.086
Importance					
	HR system	0.114			
	Health System		0.028		
	Revenue System			0.099	
	Wi-Fi points				0.213*
Choice					
	HR system	0.015			
	Health System		0.038		
	Revenue System			-0.018	
	Wi-Fi points				0.034
Cost savings					
	HR system	0.137			
	Health System		-0.034		
	Revenue System			-0.023	
	Wi-Fi points				0.176
Fairness					
	HR system	-0.206			
	Health System		0.143		
	Revenue System			0.117	
	Wi-Fi points				-0.130
Satisfaction					
	HR system	-0.172			
	Health System		0.145		
	Revenue System			0.131	
	Wi-Fi points				-0.115
Take-up					
	HR system	0.252*			
	Health System		-0.083		
	Revenue System			-0.086	
	Wi-Fi points				0.213*
Overall delivery of services					
	HR system	0.044			
	Health System		0.033		
	Revenue System			0.020	
	Wi-Fi points				0.082

Indicator of Public Value	ICT system	(1)	(2)	(3)	(4)
N		90	87	86	91

Standardized beta coefficients
*[1] p<0.05, ** p<0.01, *** p<0.001
Key: 1=HR system, 2= Health Systems, 3= Revenue Collection Systems, 4= Wi-Fi Access Points

4.5.3 Achievements of Desirable Outcomes

To establish how various government ICT incentives influenced the public value (Achievements of Desirable Outcomes), a multivariate regression was done on each indicator of public value. A significance influence of the electronic government services on public value was ascertained if the value of the t was statistically significant at 0.05 ($p<0.05$).

The other aspect of public value considered in the study was the achievements of outcomes. Thus the study, investigated how the four main ICT investments contributed to the achievements of outcomes in the county. The results show that investments in human resource systems had significant negative ($p<0.05$) implications on direct, intermediate and end outcomes in the county. Investments in health systems, revenue collection system and Wi-Fi access had positive contribution on achievement of outcomes ($p<0.05$). In terms of degree of influence, provision of Wi-Fi access points (0.629) and revenue collection system (0.604) were the ICT investments which contributed the most in achieving the desired outcomes. ICT investments in health was third at (0.523) while contribution of HR systems the desired outcomes was negative indicating that they were counterproductive.

Table 4. 17 Multivariate Regression of ICT Systems on Achievement of Outcomes

		(1)	(2)	(3)	(4)
Direct outcome					
	HR system	-0.596***			
	Health System		0.425***		
	Revenue System			0.553***	
	Wi-Fi points				0.502***
Intermediate outcome					
	HR system	-0.706***			
	Health System		0.519***		
	Revenue System			0.584***	
	Wi-Fi points				0.591***
End outcome					
	HR system	-0.629***			
	Health System		0.508***		
	Revenue System			0.598***	

[1] A figure which is starred means it is significant. The number of stars indicate the level to which the figure became significant. * means p is less than 0.05 but more than 0.01. ** means the p is less than 0.01 but more than 0.001. And *** the p is less 0.001 or simply 0.000

Wi-Fi points				0.491***
Achievements of Outcomes				
HR system	-0.728***			
Health System		0.523***		
Revenue System			0.604***	
Wi-Fi points				0.629***
N	93	90	89	94

Standardized beta coefficients

* [2]p<0.05, ** p<0.01, *** p<0.001

Key: 1=HR system, 2= Health Systems, 3= Revenue Collection Systems, 4= Wi-Fi Access Points

4.5.4 Development of Trust

The third aspect of public value was development of trust among the citizens. The study examined how ICT investments contributed to the development of trust in the county. Investments in ICT on HR (0.707, p<0.001) and installation of Wi-Fi access points (0.660, p<0.001) significantly contributed to security and privacy of the users. This shows that users felt more secure with the HR systems than when the system had not been installed. Revenue collection systems (-0.654, p<0.001) had a significant negative contribution on the perceived security and privacy of the users. This is probably due to the fact that use of system had no physical evidence of payment such as issuance of receipts which most people feel its real proof of evidence.

On transparency, the ICT investments on HR (0.711, p<0.001) and provision of Wi-Fi access points (0.656, p<0.001) significantly contributed to transparency in some of the County matters. However, investments systems on health (-0.549, p<0.001) and revenue collection (-0.631, p<0.001) impacted negatively on transparency among the county residents. This shows that the users of the systems had inadequate trust on the systems to provide transparency.

On trust, the results shows that HR systems (0.722, p<0.001) and Wi-Fi points (0.666, p<0.001) won more trust to the end users compared to other ICT systems introduced in the county. Investments in ICT on health and revenue collection had negative effects on trust of the citizens. Provision of HR systems (p<0.001) provided employees with an opportunity to participate in recruitment processes and even other HR related issues. Wi-Fi access points significantly (0.646, p<0.001) provided an opportunity for the residents to participate in the county matters or access services.

[2] A figure which is starred means it is significant. The number of stars indicate the level to which the figure became significant. * means p is less than 0.05 but more than 0.01. ** means the p is less than 0.01 but more than 0.001. And *** the p is less 0.001 or simply 0.000

The overall value to the public of developed trust among the citizens from the ICT investments was realized by the HR systems and provision of wife access points in the county. The rest of ICT systems such as the health systems and revenue collection systems brought about among the residents in the county.

Table 4. 18 Multivariate Regression of ICT Systems on Development of Trust

		(1)	(2)	(3)	(4)
Security and Privacy					
	HR system	0.707***			
	Health System		0.573		
	Revenue System			-0.654***	
	Wi-Fi points				0.660***
Transparency					
	HR system	0.711***			
	Health System		-0.549***		
	Revenue System			-0.631***	
	Wi-Fi points				0.656***
Trust					
	HR system	0.772***			
	Health System		-0.613***		
	Revenue System			-0.659***	
	Wi-Fi points				0.666***
Participation					
	HR system	0.789***			
	Health System		-0.611***		
	Revenue System			-0.670***	
	Wi-Fi points				0.646***
Overall Development of Trust					
	HR system	0.820***			
	Health System		-0.608***		
	Revenue System			-0.663***	
	Wi-Fi points				0.736***
N		92	89	89	93

Standardized beta coefficients
* [3]p<0.05, ** p<0.01, *** p<0.001
Key: 1=HR system, 2= Health Systems, 3= Revenue Collection Systems, 4= Wi-Fi Access Points

4.5.5 Effectiveness of Public Organization

The study also examined the contribution of the ICT investments on the effectiveness of the public entities in the county. The results show that investments in HR systems, health systems, revenue systems and Wi-Fi access points had positive influences on efficiency of operations in the public offices and entities (p<0.001). On Accountability, HR system and Wi-Fi appoints had influenced residents to bring leaders to account and contributed to improvement in accountability. However,

[3] A figure which is starred means it is significant. The number of stars indicate the level to which the figure became significant. * means p is less than 0.05 but more than 0.01. ** means the p is less than 0.01 but more than 0.001. And *** the p is less 0.001 or simply 0.000

investments in health and revenue collection were found to have a negative impact on accountability. This could be explained by some incidences of malpractices related to health system and revenue collection and thus the users would not appreciate or link investment in the ICT to improved accountability. In terms of ability of the systems to promote sense of belonging among the residents by promoting citizen participation, Wi-Fi access points was found to have had contributed access to the online websites and medium of communication with the county executive which to a certain improved citizen participation in the county matters ($p<0.001$). The introduction of health and revenue systems were found to have no significant effect on citizen participation.

Overall, the investments in ICT systems in the county had a variety of influences in the county. The results show that revenue collection system and connectivity through the internet through the Wi-Fi access points contributed largely on effectiveness of the public entities in the counties. Other ICT investments such as the health systems and HR systems also had significant influences on the effectiveness of the public organizations in the county. The results indicate that the investment in ICT in the county had some positive contribution on effectiveness of county operations.

Table 4. 19 Multivariate Regression of ICT Systems on Effectiveness of Public Organization

	(1)	(2)	(3)	(4)
Efficiency				
HR system	0.820***			
Health System		0.692***		
Revenue System			0.745***	
Wi-Fi points				0.756***
Accountability				
HR system	0.772***			
Health System		-0.606***		
Revenue System			-0.626***	
Wi-Fi points				0.742***
Citizen Participation				
HR system	0.792			
Health System		-0.667		
Revenue System			-0.687	
Wi-Fi points				0.681***
Effectiveness				
HR system	0.561***			
Health System		0.693***		
Revenue System			0.834***	
Wi-Fi Points				0.748***
N	91	88	87	92

Standardized beta coefficients
*[4] $p<0.05$, ** $p<0.01$, *** $p<0.001$

[4] A figure which is starred means it is significant. The number of stars indicate the level to which the figure became significant. * means p is less than 0.05 but more than 0.01. ** means the p is less than 0.01 but more than 0.001. And *** the p is less 0.001 or simply 0.000

Key: 1=HR system , 2= Health Systems, 3= Revenue Collection Systems, 4= Wi-Fi Access Points

4.5.6 Other Determinants of the Public Value

A multivariate regression for other factors and how they related to the public value was done. The study found that the public value of ICT investments was influenced by the degree of ICT consumption ($p<0.05$). The level of public value realized by consuming ICT services in the county was not dependent on type of the respondents (county staff or general) ($p>0.05$), gender ($p>0.05$), age bracket ($p>0.05$) not the education level ($p>0.05$) of the residents. However, the public value was statistically significantly felt more in Mbita sub-County compared to suba ($p<0.05$). This shows that consumption and public value of ICT investments in Homa bay county neither dependent on the gender, age nor education level.

Table 4. 20 Other Determinants of the Public Value

Public value	(1) Coef	(2) Coef	(3) Coef	(4) Coef	(5) Coef	(6) Coef
Level of ICT Consumption	2.024***					
Type of respondents						
County staff		-				
General public		0.125				
Gender						
Male			-			
Female			0.029			
Age Bracket						
20 years and below				-		
21-30				-0.006		
31-40				0.176		
41-50				0.077		
above 50				0.166		
Education Level						
Primary					-	
Secondary					-0.193	
Diploma					-0.054	
Degree					-0.095	
Post graduate					0.138	
Sub-County						
Homabay						0.776
Mbita						0.925*
Oyugis						0.650
Rachuonyo						0.134
Rangwe						0.329
Suba						-
Observations	94	94	94	94	93	66

Standardized beta coefficients
*[5] p<0.05, ** p<0.01, *** p<0.001

4.5.7 Summary of the Public Value

Table 4.18 shows that none of the ICT systems had a significant effect on the delivery of services in the County. However, Wi-Fi access points had more influence compared to the rest of the systems. On achievement of desirable outcomes, Wi-Fi access points ($p<0.05$), revenue collection system ($p<0.05$) and health system ($p<0.05$) had significant contribution towards the desired outcomes. The use of health systems helped to easily manage hospitals and serve many patients as a results majority receive health care services. For revenue collection system, the use of a system was better, efficient and resulted into increased revenues associated with the efficiency in collection while Wi-Fi access points enabled all other ICT systems to be accessed by the public.

On development of trust among the members of the Homabay County, the results found that the HR system had a significant effect on the levels of trust of the county staff on their HR issues. The

[5] A figure which is starred means it is significant. The number of stars indicate the level to which the figure became significant. * means p is less than 0.05 but more than 0.01. ** means the p is less than 0.01 but more than 0.001. And *** the p is less 0.001 or simply 0.000

Wi-Fi access points also increased the trusts levels by ensuring the systems worked as planned. However, investment in health and revenue collection system had a negative influence on the trust of the residents.

On effectiveness, the HR system significantly ($p<0.05$) influenced the effectiveness of public organization. The installation of health system in the county improved the effectiveness of health care services and provision of Wi-Fi points also improved effectiveness in the public organization. However, installation of revenue system could not be associated with increased effectiveness but a decline indicating that either its implementation was done incorrectly.

The overall orientation of the findings indicates that the four main types of ICT system had statistically significant influence on value derived by the members of public. HR was beneficial to the employed, Health system helped county health care centers to provide health care services efficiently to the patients, revenue collection system was easy to use though not transparent and Wi-Fi access points provided network to access other online services in the county.

Table 4. 21 Summary of Multivariate Regression Tests of ICT Systems on Public Value

	(Model 1) Coef	(Model 2) Coef	(Model 3) Coef	(Model 4) Coef
Delivery of Public Services				
HR system	0.033			
Health System		0.038		
Revenue System			0.023	
Wi-Fi Points				0.076
Achievement of Outcomes				
HR system	-0.728***			
Health System		0.523***		
Revenue System			0.604***	
Wi-Fi Points				0.629***
Development of Trust				
HR system	0.817***			
Health System		-0.608***		
Revenue System			-0.663***	
Wi-Fi Points				0.735***
Effectiveness of Public Organization				
HR system	0.835***			
Health System		0.695***		
Revenue System			-0.728***	
Wi-Fi Points				0.750***
Overall public value				
HR system	0.802***			
Health System		0.620***		
Revenue System			0.708***	
Wi-Fi Points				0.703***
N	93	90	89	94

Standardized beta coefficients

*[6] p<0.05, ** p<0.01, *** p<0.001

Those who used the electronic government channels cited a list of benefits they associated with the use of the services such as being affordable, accessible, confidential, effective, convenient, less time consuming, reliable, easy of communication, faster, enhancing effectiveness in curbing corruption, promoting accountability among other benefits.

To enhance the adoption and use of electronic government channels and services in the county, the residents proposed a variety of measures: the staff and the public about the services, training county staff members, seeking public opinion, computerizing all the services, improve the existing systems to make them more efficient, introducing more e-services, allocating adequate resources to fully implement them services among others.

4.6 Discussion of the Findings

The study aimed to establish relationship between ICT investments in the county government of Homa Bay and value enjoyed by the public from consumption of such ICT services. The study found that use of government electronic channels in the counties was low especially in the payment of parking fees, market fees, renewal of business permits, searching lands electronically and paying construction fees. Further findings on the investments and awareness of the available ICT system indicated that human resource systems were common in the county compared to health, revenue collection and Wi-Fi points which implies low investment in the ICT systems and low consumption of the ICT systems in the County. The low usage of electronic channels was due to unavailability of power, delays of the systems at times, lack of knowledge on how to use the electronic systems, poor network and connectivity, lack of support and goodwill by officials to use the systems. The results concur with those of Makau et al (2015) who asserted that, many eGovernment projects in Kenya had either stalled or failed to meet their objectives due to some key organizational factors just like in other developing nations.

Brendan (2012) argued that governments around the world were increasingly becoming concerned with the many benefits that come as a result of information technology in the delivery of public services. The study found that the county government had a number of electronic channels used to

[6] A figure which is starred means it is significant. The number of stars indicate the level to which the figure became significant. * means p is less than 0.05 but more than 0.01. ** means the p is less than 0.01 but more than 0.001. And *** the p is less 0.001 or simply 0.000

deliver services to the residents. The common electronic payment channel was used to pay parking fees (50%). The main means of accessing the electronic channels by the county government were through mobile phones (49.5%) although a substantial number of residents (37.6%) preferred walking into e-government centers.

Murray et al. (2016) established that measuring the success of eGovernment systems depended on how citizens perceived their value. In this study, the demand to have electronic government channels was driven by the need to improve service delivery in the county by enhancing revenue collection, desire to have accountable system for reporting purposes, seal revenue leakages, making government services accessible and easier to reach, improving effectiveness and efficiency and reducing loss of revenue. However, the electronic government channel projects were not as successful as planned such as intercom and the County portal. This was mainly due to lack of awareness of such services and also due to rejection due to suspicion, improper planning, lack of goodwill from executives, illiteracy of the consumers of the services, power inconsistencies and corruption among others. Having efficient and effective organizational structure, organizational culture and right priorities of the deliverables were identified as some of the measures which could be used to minimize the cases of failure in implementing eGovernment projects (Makau et al,2015).

The study found that a variety of factors were taken into account when making electronic government channels such as ease of use of the technologies, the speed of work, accessibility, cost effectiveness, needs of the public, accountability of the systems and the target group. The results agree with the views of Abdulrazak (2015) that urgent use of ICT in the public service is necessitated by the need to improve governance, efficiency and effectiveness in the delivery of public service.

The second objective of the study was on the public value realized through the consumption of the ICT products and services accruing from the ICT investments in the County. The four main aspect of public value included delivery of services, achievement of outcomes, development of trust and effectiveness of public organizations. On delivery of services, investments in ICT had provided access and exchange of information moderately in the county. Such investments provided a variety of choices for the residents in pursuit of different services in the county. Also, the ICT products and services were less costly and thus providing some cost saving benefits to the residents.

However, the ICT services and products were not fairly distributed across the county and thus could not be accessed by everyone leading to negative citizen perception and publicity and low taken up since the investments were considered as less important among the residents. Therefore, in terms of the delivery of services, the investments in ICT was conceived as having less contribution on delivery of services to the residents.

On achievement of outcomes, the investments in ICT had some impacts on training and capacity building in the county. The residents held that such investments had some positive impacts on the County. There was also some consensus among the residents that such investments will continue to have positive gains and impact positively by the whole society living within and outside the County.

On whether the ICT investments had developed trust among the residents of Homa Bay County; the results show that approximately 40.2% of the residents felt that the digital platform were not safe citing lack of measures to protect confidential data. This indicates that residents felt ICT investments in the county as not being secure and private enough. The residents also stated that such systems did not improve transparency of the county operations and even the systems were not transparent enough. Further, majority of the residents (64.5%) did not trust the current system but supported the idea of e-government service offering. The results show some positive attitude towards e-government and willingness of the residents to be ambassadors of the systems in the county. The results show mixed levels of trust on the ICT products and services among the residents.

The other aspect of public value was effectiveness of the public entities. The results show that the ICT were not efficient enough and most of the residents were not satisfied with the e-services implemented but were in support of better e-services. The results show that investment in ICT had insignificant contribution towards accountability. Majority of the residents did not find information online through such systems and the usage of such systems which shares information with the public were rarely used. The perception of the citizens was that the ICT use and investments in the county had less value in the County.

The third objective of the study was to establish the relationship between investments in ICT and public value. The results show that the major ICT investments in the county included human resource systems, health management systems, revenue collection system and Wi-Fi access points.

The results show that investment in ICT had insignificant influence on delivery of public service. A multivariate regression test shows that provision of Wi-Fi access points influenced the perceived importance of ICT systems in the County. This further hastened take up of the systems in the county. In terms of achievement of outcomes, all the four ICT systems in the county (HR system, health system, revenue collection system and Wi-Fi points) had significant influence on the achievements of outcomes. The effect of three systems namely: health, revenue collection and Wi-Fi access points had positive effect on the outcomes. This implies that while health systems made contribution to health care services and revenue collection systems on the efficiency of revenue collection and lastly Wi-Fi provided internet connectivity in the county thus allowing more people to access the online services provided by the county. However, HR systems had a negative contribution to the staff productivity implying staff performance was not only explained by use of good HR systems but by many factors such as existing HR policies and staff motivation.

Further, a multivariate regression on the effect of the ICT system on the development of trust shows that all the four major ICT systems installed in the county had a significant influence on public value. According to the results, HR system built the public value by improving participation, transparency and security and privacy of the employed residents in the County. Investment in Wi-Fi access points had a positive contribution to public value. The other two systems (health and revenue collection systems) had a negative contribution on trust. Indicating that residents had negative trust on the health systems and the revenue collection systems. In terms of effectiveness, all the four major ICT investments had a positive contribution on effectiveness implying that if well implemented, the systems had the ability of increasing the effectiveness in the county operations.

Further, a multivariate test on how other factors affected public value shows that public value was independent of type of the respondents (county staff or general public), gender, age bracket and education level. Indicating that these factors did not affect the amount of public value accrued from the ICT investments. Public value was however found to be influenced by the degree of consumption of the ICT systems. Also, the residents residing at Mbita sub-county seemed to have benefited more compared to the rests of the sub-counties with reference to Suba.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter concludes the entire research process from the previous chapters with a conclusion and commendations of the study. The chapter also has a section on suggested areas for further areas of research.

5.2 Summary of the Findings

The study found that there exists a need to have electronic government channels and some electronic government ICT projects had been implemented but have not been successful such as intercom and the County portal mainly due to rejection due to suspicion, improper planning and lack of goodwill from executives among others.

The study found that the common electronic government channels used was use of mobile payment channel to pay for some services such as parking fees. However, the use of electronic government channels to pay for county services was generally low. This was mostly associated with to some managerial and functional challenges coupled with resource limitation.

The study found that ICT investments had a substantial degree of public value to the residents. The investments enabled easy access and exchange of information which in turn provided a variety of choices of services and products in the County at affordable costs. However, these benefits were not felt by the larger public because they were only invested in some selected areas and thus the overall effect was low. The ICT investments had some positive impacts on the lives of the residents and such were expected to last for a number of years in the long term. The ICT systems had mixed effects on trust with a general perception that ICT investments and systems were not secure and confidential enough with some citing that such systems lacked transparency. On the contrary, most of the residents were contented with the systems in the county despite the levels of distrust in the system. Lastly, the systems implemented were not efficient and thus dissatisfied most of the residents. Further, such systems were rarely used in the county explaining the perceived insignificance among the residents.

5.3 Linking study findings to the objectives

Objective 1: To explore the types of ICT investments in Homa Bay county

The study found that there exists a need to have electronic government channels and some electronic government ICT projects had been implemented but have not been successful such as intercom and the County portal mainly due to rejection due to suspicion, improper planning and lack of goodwill from executives among others.

The study found that the common electronic government channels used was use of mobile payment channel to pay for some services such as parking fees. However, the use of electronic government channels to pay for county services was generally low. This was mostly associated with to some managerial and functional challenges coupled with resource limitation.

Objective 2: To establish the level of public participation in ICT solutions implementation in Homa Bay county

The degree of public participation on implementation of ICT channels was low. The main channel through which residents participate in decision making was through CBEFs, chamas and youth groups. The low public participation levels in the county was due to lack of clear communication on public participation forums and dates, lack of adequate resources on public participation, lack of goodwill from leaders and ineffective coordination of the participation forums. The only people who participated were directors, county staff and experts implying low public input and low level of derived public benefit.

Objective 3: To investigate the value and satisfaction derived from ICT investment in Homa Bay County by the citizens.

A multivariate regression test shows that through integration of the ICT services in the county processes, the public enjoyed access to information, choice, fairness in delivery of services and general satisfaction.

5.4 Conclusions

Major ICT investments in the County: The four major investments in the County included HR, health, revenue collection and Wi-Fi access points. These were mostly done in public places by the county government. Most of the e-services were accesses by the residents through mobile phones and cyber cafes. Some of the services accesses through the systems included payment of parking, construction fees, market fees, hospital bills, hospital services, and HR services for those employed in different county government entities.

Low consumption of electronic government channels: The use of government electronic channels is low in the county mainly due to lack of power, poor network, connectivity, goodwill and delay of the systems. The use of electronic government channels in Homa bay County done mainly through mobile platforms on payment of parking fees, market fees, construction fees and renewal fees. The desire to have electronic government channels was driven by the need to seal revenue leakages, enhance revenue collection, making government services accessible and easy to reach.

Uneven distribution of ICT investments: The study found that one of the major factors contributing to low public value of the ICT systems is the uneven or skewed investments. Some of the regions had no or less investments compared to others and thus they could use of enjoy the ICT services like the rest of the regions.

Incidences of failed ICT investments the County: The study noted that there were some incidences of failures of the ICT investments in the county mostly occasioned by improper planning, lack of funds, poor coordination and maintenance, lack of power and security and corruption. This requires to be attended to urgently

Public value: The derived value and satisfaction from the existing electronic government channels was low. The study notes that this was mainly due to the low intake of the electronic government channels to access the county services due to lack of knowledge on how to use the channels and also due to lack of awareness of existence of such channels.

Consumption influences public value: The study noted that public value was affected by the degree to which the ICT investments, services and products were being consumed by the residents.

The study noted low consumption of the systems which explains the low public value derived from the existing ICT investments in the County.

High potential of public value from ICT: The results shows that proper investment in the county can have huge public benefits among the residents such as widened access, time savings, reduced costs achievements of outcomes and goals and effectiveness of the public entities.

5.4 Suggested Model on the ICT Investment and the Public Value

The study found that several factors influenced the planning and implmentation of the ICT invesetments leading to low public value. The study proposes the shown model for establsihing the public value in the County after the study.

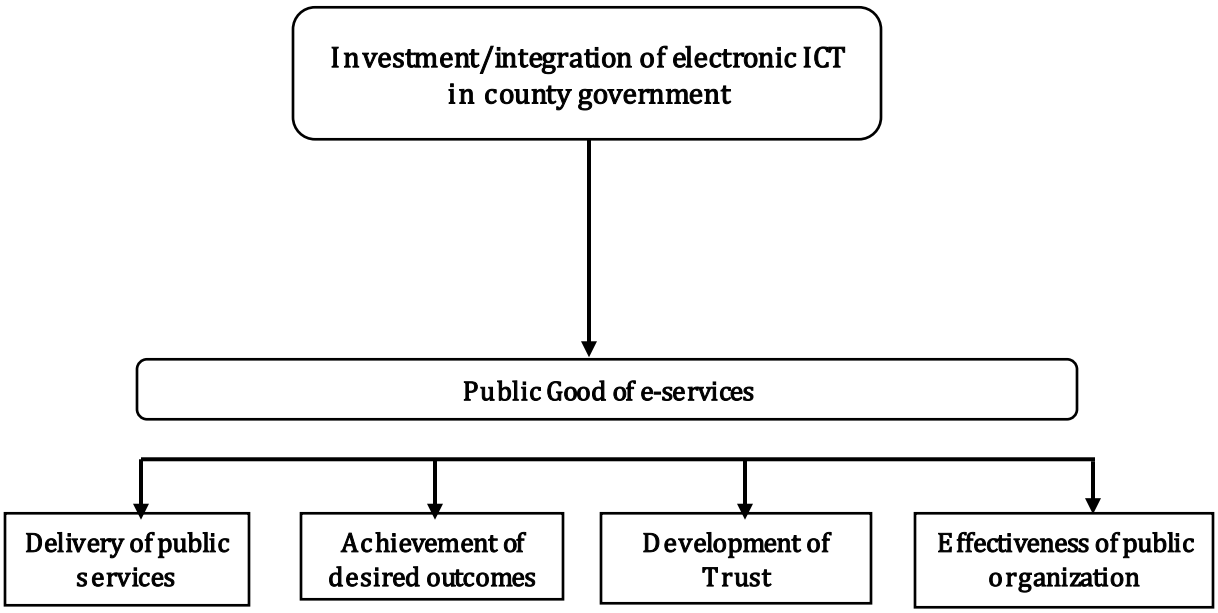

Figure 5. 1 Suggested model on the ICT investment and the public need

5.5 Recommendations

The study recommends that a sensitization be done among the county residents of Homa bay on the existing electronic government channels they can use to access County services to allow more uptake of the ICT technologies for their own good.

There is need to increase the services being provided through ICT e-government platforms to quicken up take of the ICT systems. This coupled with support on the usage and supporting

systems such as infrastructure and power will help more services to be done through ICT platforms and more residents to use them.

Going forward, the county needs to conduct an assessment of the public needs and how such needs can be handled through investments in ICT to increase the level of public value derived from the county's ICT investments.

As a way of encouraging more uptake of the electronic government channels in the county, the county needs to develop a power distribution plan in the county to address the problem of frequent power failures which distracts the use such channels.

There is need for even distribution of ICT investments in the county to ensure that residents get ICT services regardless of their geographical locations.

5.6 Suggestions for further areas of research

The study collected data on the government investments in ICT and the level of public value from Homa Bay County. The findings of this study are thus solely depended on the data from only that particular region of the country. Since different regions are at different economic status, culture and productivity status, the findings may vary from other counties in Kenya. It is suggested that a similar study be conducted in other counties to compare the findings and provide more knowledge on the same phenomenon.

REFERENCES

1. Abdulkareem, A. K. (2015). Challenges of e-government implementation in the Nigerian public service. *JOURNAL OF CREATIVE WRITING| ISSN 2410-6259*, *1*(04), 45-56.
2. Abend, Gabriel. "The Meaning of Theory." *Sociological Theory* 26 (June 2008): 173–199; Swanson, Richard A. *Theory Building in Applied Disciplines*. San Francisco, CA: Berrett-Koehler Publishers 2013.
3. AJAYI, O. O. (2009). E-learning: A Shorter, Safer, and Surer Route to Reaching the Education For All Destination. Journal of Science and Technical Education (JSTE), Akungba. ISSN: 978-978-49161-9-6, Vol.1, No.1, pgs. 138-145
4. Annual County Budget Implementation Review Reports FY2017-2018 by Office of Controller of Budget
5. Asogwa, B.E., 2013. Electronic government as a paradigm shift for efficient public services: Opportunities and challenges for Nigerian government. *Library Hi Tech*, *31*(1), pp.141-159.
6. Atsu, F., Agyei, C., Phanuel Darbi, W., & Adjei-Mensah, S. (2014). The impact of telecommunication revenue on economic growth: evidence from Ghana. *African Journal of Economic and Management Studies*, *5*(2), 195-208.
7. Avazzadeh E (2015). Investigation the effect of customer relationship management on customer's loyalty and satisfaction (case study: Shiraz city Refah chain stores). International journal of Advanced and Applied Sciences.
8. Bannister, F., & Connolly, R. (2014). ICT, public values and transformative government: a framework and programme for research. Government Information Quarterly, 31, 119–128.
9. Constitution of Kenya, 2010
10. Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five Traditions*.

11. Dawadi, B. R., & Shakya, S. (2016). ICT implementation and infrastructure deployment approach for rural Nepal. In *Recent Advances in Information and Communication Technology 2016* (pp. 319-331). Springer, Cham.
12. De Vaus, D. A. (2001). *Research Design in Social Research*. London: SAGE.
13. Dr. P.K. Mohanty, (2017). *Using e-Tools for Good Governance & Administrative Reforms.*
14. *EDUCARE: International Journal for Educational Studies*, Vol.7(2) February, pp.189-202. Bandung, Indonesia: Minda Masagi Press and UMP Purwokerto, ISSN 1979-7877. Available online also at: http://educare-ijes.com/changing-dynamics/
15. Harrison, T. M., Guerrero, S., Burke, G. B., Cook, M., Cresswell, A., Helbig, N., & Pardo, T.A. (2012). Open government and e-government: Democratic challenges from a public value perspective. Information Polity, 17, 83–97.
16. Hart, C. (2018). *Doing a literature review: Releasing the research imagination*. Sage.
17. Homburg, V. (2018). E-Government and E-Governance: Bits & Bytes for Public Administration.
18. http://icta.go.ke/national-ict-policy/
19. http://icta.go.ke/pdf/National-ICT-Policy,20June2016.pdf#page=46&zoom=100,0,97)
20. http://www.homabay.go.ke/education-ict/
21. https://dictionary.cambridge.org/dictionary/english/governance
22. https://iog.ca/what-is-governance/. Accessed on 31st October 2018
23. https://vision2030.go.ke/social-pillar/
24. https://www.gdrc.org/u-gov/governance-understand.html
25. Karunasena, K., & Deng, H. (2009, December). A conceptual framework for evaluating the public value of e-government: a case study from Sri Lanka. In *20th Australasian Conference on Information Systems, Melbourne* (pp. 1002-1012).
26. Kettani, D. (2014). *E-Government for Good Governance in Developing Countries: Empirical Evidence from the eFez Project*. Anthem Press.
27. Khan, Mohammad Mohabbat (2006). Dominant Executive And Dormant Legislature : Executive-Legislature Relations In Bangladesh, Dhaka: University Press Limited (UPL) & New Delhi : South Asian Publishers.

28. Kroeker, K.L, (2010). Engineering the web`s third decade. Association for Computing Machinery, 53(3), 16-18.
29. Laudon KC and Laudon JP (2011). Management information systems. Prentice Hall, New Jersey. USA.
30. Luna, R., Luis F. (2017). Opportunities and challenges for digital governance in a world of digital participation. Information Polity, 22(2-3), 197-205.
31. Lutfor Rahman (2016). Governance and Good Governance: A Theoretical Framework
32. Makau, G.K. (2015). The Critical Technological Factors OF E-Government in Kenya.
33. Makau, Godfrey & Daudi N., Nzomo & Omwenga, Elijah. (2015). THE CRITICAL ORGANIZATIONAL FACTORS OF E-GOVERNMENT IN KENYA. International Journal of Computer Applications Technology and Research. 4. 246-252. 10.7753/IJCATR0404.1007.
34. Meynhardt, T. (2009). Public value inside: What is public value creation?. *Intl Journal of Public Administration*, *32*(3-4), 192-219.
35. Mugenda, M., Mugenda, G. (1999). Research Methods. Quantitative and Qualitative Approaches. Nairobi, Kenya.
36. Muhammad Farooq Tariq Butt, Faizuniah Pangil and Arfan Shahzad(2017). Diffusion of innovation theory: Beyond decision stage
37. Murray, R., Caulier-Grice, J., & Mulgan, G. (2010). *The open book of social innovation* (p. 2). London: National endowment for science, technology and the art.
38. Olszak, C. M., & Ziemba, E. (2011). The use of ICT for economic development in the Silesian Region in Poland. *Interdisciplinary Journal of Information, Knowledge and Management, 6*, 197-217.
39. Olszak, C.M. and Ziemba, E., 2011. The use of ICT for economic development in Silesian region in Poland. *Interdisciplinary Journal of Information, Knowledge, and Management, 6*, pp.197-216.
40. Palys, T. (1997). *Research decisions: Quantitative and qualitative perspectives (2nd Ed.).* Toronto, Ontario, Canada: Harcourt Brace Jovanovich.
41. Pereira, G. V., Macadar, M. A., Luciano, E. M., & Testa, M. G. (2017). Delivering public value through open government data initiatives in a Smart City context. *Information Systems Frontiers*, *19*(2), 213-229.

42. Public Finance Management Act, 2012
43. Reddel, T. (2002). "Beyond Participation, Hierarchies, Management & Markets: New Governance & Place Policies", Australian Journal of Public Administration 61:50-63.
44. Rogers EM (1983). Diffusion of innovations. 3rd Edition, The Free Press, New York, USA.
45. Rogers EM(2003.) Diffusion of innovations. 5th ed. New York (NY): Free Press
46. Sambuu, Y. (2008). *Proceedings of the 2nd International Conference on Theory and Practice of Electronic Governance*" Pages 474-477 ACM New York, NY, USA. Silverman, D. (2000). *Doing qualitative research: A practical handbook.* Thousand Oaks, CA: Sage.
47. Scott, M., DeLone, W. and Golden, W., 2016. Measuring eGovernment success: a public value approach. European Journal of Information Systems, 25(3), pp.187-208.
48. Statistics Canada (2008). Information and communications technologies (ICTs). Accessed 15 April 2010 from http://www.statcan.gc.ca/pub/81-004-x/def/4068723-eng.htm.
49. Tornatzky and Fleischer (1990), Iacovou et al., developed a model formulating three aspects of EDI adoption – technological factor, organizational factor, and environmental factor…"
50. UNESCO (2002). Information and communication technology in education. Accessed 21 November 2018 from http://unesdoc.unesco.org/images/0012/001295/129538e.pdf.
51. Victor van Reijswoud, (2009), *Appropriate ICT as a Tool to Increase Effectiveness in ICT4D: Theoretical considerations and illustrating cases*
52. Wani, H. A. (2014). Constraints and impediments of good governance in Africa: Future prospects. *Afro Asian Journal of Social Sciences*, *5*(1), 1-21.
53. Yonazi, J. (2010). Enhancing Adoption of e-Government Initiatives in Tanzania, University of Groningen, Groningen, the Netherlands

APPENDICES

Survey Covering Letter and Questionnaire

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Date: ……

Dear respondent,

My name is Victor Muganda Ateng, I am a student undertaking a Master of Science in Information Technology Management at the University of Nairobi, Nairobi Campus. To accomplish this course, am carrying out a research titled, "Assessment of the public value of ICT investment in county governance: a case of Homa Bay County". I am kindly inviting you to participate in this research study by completing the attached questionnaire and sincerely giving information as per each question.

If you choose to participate in this research, please answer all questions as honestly as possible. Participation is strictly voluntary and you may decline to participate at any time. Please note that you do not have to indicate your name, for confidentiality of information. The data collected will be for academic purposes only.

Thank you very much for your time and response.

Yours Sincerely,

Victor Muganda Ateng

MSc. Student. Registration No. P54/86011/2016

Survey Questionnaire

Assessment of the public value of ICT investment in public service delivery in Homa Bay County Research Survey

This questionnaire seeks to find out the public service delivery value brought about by ICT investments. This survey targets the opinions and perceptions of various categories of stakeholders in Homa Bay county.

INSTRUCTIONS

Please respond to all items, indicate by way of ticking in the right column, the extent, to which you agree/disagree with the statement provided in relation to public value of ICT in Homa Bay County, where:

1= Strongly disagree 2=Disagree 3=Don't know 4=Agree 5 = Strongly agree

Please tick √ only one of the options that most closely fits your opinion for each statement.

Section A: Demographic Information

1. Which of these categories are you?

   County employee [ ]

   Resident [ ]

   Non-resident [ ]

   Others (please specify) _____

2. Gender

   a) Male [ ]

   b) Female [ ]

3. Age of respondents (Years)

   a) 20 years and below [ ]
   b) 21-30 [ ]
   c) 31-40 [ ]
   d) 41-50 [ ]
   e) Above 50 [ ]

4. What is your level of education?

   a) Primary [ ]
   b) Secondary [ ]
   c) Diploma [ ]
   d) Degree [ ]
   e) Post graduate [ ]
   f) Others (please specify) _____

5. In which sub county do you live? _____

6. What services do you usually seek from county government?

a) Market fees [ ]

b) Business Permit [ ]

c) Parking fees [ ]

d) Construction fees [ ]

e) Land rates [ ]

f) Others (please specify) _____

7. How do you access electronic services?

a) Mobile phone [ ]

b) Tablet [ ]

c) Laptop [ ]

d) Cybercafé [ ]

e) E-government center (e.g. Huduma Center)

f) Others (Please specify) _____

	1= Strongly disagree 2= Disagree 3= Don't know 4= Agree 5= Strongly agree					
Section B: Information		1	2	3	4	5
	You are aware of county government electronic services available					
	You use these electronic services					
	County government has put in measures to ensure you are aware of the services available online					
	You are satisfied with the electronic government offering services by county government					
Section C: Importance		1	2	3	4	5
	You understand the objectives of the county government electronic services					
	The objectives of the electronic services are relevant to your needs					

	You support the introduction of more electronic services in the county services offering					
Section D: Choice		1	2	3	4	5
	You are aware of county electronic government channels					
	You use the county electronic government channels					
	You are satisfied with the electronic government channels					
	County government electronic services are readily available					
Section E: Cost Savings		1	2	3	4	5
	Electronic services are convenient to use					
	You spend less time in getting services as compared to visiting the actual government offices?					
	You save money by using electronic government channels					
Section F: Fairness		1	2	3	4	5
	Electronic government services are available to all people in the county					
	Electronic government services are available to socially disadvantaged people in the county					
	Socially disadvantaged people can easily access the electronic services.					
Subsection G: Citizen's Satisfaction		1	2	3	4	5
	Electronic services are easily accessible					
	County government electronic services are available in all sub counties					
	You frequently use county government electronic services					
	You are satisfied with county government electronic services					
Section H: Take-up						
	You intend to use at least one electronic government service					
	You have used at least one electronic government service					

	You would advise county residents to embrace the use of electronic government service					
Section I: Direct Outcomes						
	Have you attended any form of training to enable you understand and use the electronic services in the county?					
	Are you willing to be trained on how to use e-government services?					
Intermediate outcomes						
	Have you seen any impact as a result of the e-government services in the county?					
	Has the impact been positive?					
End Outcomes						
	Do you think there will be a major impact brought about by e-government implementation in the county?					
	Should the socially desirable impact be felt by the whole society living within and outside the county?					
Security and Privacy						
	Do you feel the data shared with the county government through the digital platforms is safe?					
	Do you think county government has put in measures to protect your confidential data?					
Transparency						
	Do you feel government transparency is reflected in your interaction with its digital platforms?					
	Are you concerned about your privacy when sharing your data with the government?					
Trust						
	Do you have faith in county e-government service offerings?					

	You support the objectives of e-government service offering					
Participation						
	Do you feel by using the e-government services there has been improvement in good governance**?**					
	Are you willingly using the e-government services?					
	Would you advice someone you know to embrace e-government service offerings?					
Efficiency						
	Are you satisfied with the number of e-services that have been implemented?					
	Do you support introduction of more e-services projects to better county administration?					
Accountability						
	Does the county government publish information online?					
	How frequently do you access county portal?					
Citizens' Perceptions						
	Do you think there has been value in the e-government projects already implemented by Homa Bay County government?					
	Are e-government services efficient?					
	Do you support introduction of more e-government services by county government?					

1= Strongly disagree 2= Disagree 3= Don't know 4= Agree 5= Strongly agree					
To what extent has the county government of Homa invested in the following ICT solutions?	1	2	3	4	5
Human Resource Management System (Payroll System module)					
Health Management System					
Revenue Automated Collection System					

Wi-Fi Access Points					
Others: Please mention					

Why are you using electronic government service?

_____

_____

Do you face any challenges while accessing electronic government service?

_____

_____

Are you satisfied with the electronic government service channels available in the county?

_____

_____

Please indicate any other comment(s) that will be useful in improving electronic government service in the county.

_____

_____

_____

_____

_____

_____

Thank you for your time and response