

**THE RELATIONSHIP BETWEEN ICT STRATEGY AND
PUBLIC SERVICE DELIVERY: A CASE STUDY OF THE ICT
AUTHORITY**

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D61/72587/2014

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER
OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY
OF NAIROBI**

2016

DECLARATION

This research project is my original work and has not been presented for the award of degree in any other university or institution for any other purpose.

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This research project has been submitted for examination with my approval as University supervisor.

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DEDICATION

I dedicate this project to my dear parents Mr. and Mrs. Machinga and siblings Fanis and Viviane for their never ending support and continuous source of inspiration during the entire duration of this course.

ACKNOWLEDGEMENT

The project writing process has been a sensational undertaking and a marvellous learning experience in my academic life. It brings forth a new beginning in my endeavours. The challenges and rewards have tremendously inspired me become a better individual. I am exceedingly grateful to the support accorded by my supervisor Professor Bitange Ndemo and moderator Professor Martin Ogutu who have, through their insightful knowledge and guidance through the whole project research process. I am grateful for the improvements they made on my drafts and their continuous words of reassurance.

I am also appreciative to my boss, family, friends and colleagues for their moral support and constant backup that have enabled me to complete my MBA course successfully.

Special thanks to the ICT Authority management for granting me the opportunity to interview them and their special contribution to my research paper.

ABSTRACT

The study objective was to establish the link between ICT strategy and public service delivery within the setting of ICT Authority. The researcher adopted the case study research design since case study provides very comprehensive information about a particular theme that would be difficult to obtain through an alternative form of research as it is subjective and is concerned with options and experiences, descriptive in nature and generated theories that may possibly lead to further research on similar work. Research data was collected using an interview guide which had a flexible order, followed certain rules and procedures, and its wording was adapted to maximize participant understanding and response. The researcher interviewed four directors responsible for shared services, programs and standards, partnership research and innovation, and ICT service management. Data collected was qualitative in nature and as such was analyzed using content analysis. Data was classified and summarized and a report written highlighting the research findings and recommendations. From the research findings it can be concluded that ICT strategies as championed by the ICT Authority are continuously being incorporated into the public delivery platforms. Although ICTA still faces a number of challenges in its strategy formulation and implementation to fulfil its mandate, it has come up with a number of strategies touching on shared services, ICT governance, information security, innovation and enterprise , and human capital development which have created a big positive impact on a number of crucial sectors in public service delivery including access to service, elimination of fraud, improved education experience, ease and reduced cost of doing business. Centred on the study's conclusions, the researcher made several conclusions for policy and practice as well as for further research.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT.....	v
LIST OF FIGURES	viii
ABBREVIATIONS & ACRONYMS	ix
CHAPTER ONE: INTRODUCTION	1
1.1 Background	1
1.1.1 ICT Strategy.....	3
1.1.2 Public Service	3
1.1.3 ICT Authority (ICTA).....	4
1.2 Research Problem	5
1.3 Research Objective	7
1.4 Value of the Study	7
CHAPTER TWO: LITERATURE REVIEW.....	9
2.1 Introduction	9
2.2 Theoretical Foundation of the study	9
2.2.1 Resource-Based Theory	10
2.2.2 Strategic Management Process Framework	10
2.3 Concept of ICT Strategy	11
2.4 Public Service Delivery	14
2.5 Empirical Studies and Knowledge Gaps.....	16
CHAPTER THREE: RESEARCH METHODOLOGY	18
3.1 Research design	18
3.2 Data collection.....	18
3.3 Data Analysis and Interpretation	19
CHAPTER FOUR: DATA ANALYSIS, RESEARCH FINDINGS AND	
DISCUSSIONS.....	20
4.1 Introduction	20
4.2 Information About the Respondents	20
4.3 Strategy Formulation and Implementation at ICTA	20

4.3.1 ICT Authority Organizational Structure.....	21
4.3.2 ICT Strategies adopted by ICTA in Delivery of Public Service.....	22
4.3.3 Drivers of Strategies Adopted by ICTA	24
4.3.4 ICT Technologies that are Incorporated in Service Delivery Platforms	25
4.3.5 Process of ICT Strategy Formulation and Implementation at ICT Authority	26
4.3.6 Gaps between Strategic Goals and Current Operations	27
4.4 Areas of Public Service Impacted by Adoption of ICT Strategies	28
4.5 Benefits of Adopting ICT Strategies in Public Service Delivery	29
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS	30
5.1 Introduction	30
5.2 Summary of the Findings	30
5.3 Conclusion of the Study	32
5.4 Recommendation	32
5.5 Limitation of the Study	34
5.6 Suggestion for Further Research	34
REFERENCES	35
APPENDICES	40
Appendix I: Interview Guide	40
Appendix II: Informed Consent Form	42

LIST OF FIGURES

Figure 2.4.1 Documentation on the evolution of how in information and communication technology has been used in the advancement of public administration.	15
Figure 2.4.2. Theme distribution in information and communication technology use and advancement of the public administration system.	15

ABBREVIATIONS & ACRONYMS

CCP	:	County Connectivity project
CEO	:	Chief Executive Officer
GCCN	:	Government Common Core Network
ICT	:	Information and Communication Technology
ICTA	:	Information and Communication Technology Authority
IFMIS	:	Integrated Financial Management Information System
MBA	:	Master of Business Administration
MDA	:	Ministries Departments Agencies
MDGs	:	Millennium Development Goals
NHIF	:	National Hospital Insurance Fund
NOFBI	:	National Optic Fibre Backbone Infrastructure
NSSF	:	National Social Security Fund
SDH	:	Synchronous Digital Hierarchy
UoN	:	University of Nairobi
VSAT	:	Very Small Aperture Terminals
WDM	:	Wavelength Division Multiplexing

CHAPTER ONE: INTRODUCTION

1.1 Background

Evolution of ICT over the past two decades has completely revolutionize our lives in the way we learn, transact business, communicate and access information. It is, therefore, necessary for strategies to be formulated and implemented that offer vision and provide direction to the country so as to make it competitive in the global economy. Such strategies will drive the overall direction of a country, specifying the objectives, and tactics designed to realize these objectives, and will also facilitate allocation of resources to implement such plans.

Rapid technological advancement within the ICT industry such as transmission technologies, cloud and virtual environment, security platforms, web technologies, storage infrastructure and virtual payment platforms have enabled effective, efficient and secure delivery of public services to vast majority of users through platforms that are scalable, have multiple points of presence and ensure confidentiality in public service delivery. This makes access and use of public service delivery platforms more convenient to majority of the Kenyan population.

Kenya through its vision 2030 aims at making the nation prosperous by according its citizens a high standard of living and making the country globally competitive. One of the pillars of this vision is Information Technology enabled services (Kenya Vision 2030, 2008). Information and Communication Technology (ICT) has turn out progressively to be an important factor in the development process of nations. According to ICT Authority (ICTA), Strategic Plan Paper 2013, some of the benefits of embracing ICT in public service delivery are to eliminate fraud and /or corruption in

delivering of public service, improve efficiency and effectiveness in resources utilization, improve access and security to information and provide access to shared transport data both through the internet and mobile technologies.

ICT strategies within the Kenya Government are executed by ICTA, a body authorised to restructure the adoption and use of ICT systems and processes within the Kenyan Government. The Ministry of ICT through the ICT Authority is mandated to formulate policies that touch on ICT human capital development, Information Security, Innovation and Enterprise, Shared Services and ICT Governance.

Two theories formed the foundation of this study; Resource Based Theory (RBT) and Strategic Management Process Framework (SMPF). The contributions of these theories defined how organizations create strategic plans necessary to effectively formulate and implement strategies that maximize usage of resources to provide public services to the masses. RBT is important as it enables a firm translate its limited resources and abilities into a strategic advantage by facilitating an organization maximize usage of these resource through embracing efficiency and effectiveness in execution of its strategic processes and procedures (Porter 1959). SMPF promotes an organized method of strategy design that is embedded in the organization's mission and assess the implementation choices and activities of the firm compared to the set mission. (Barney, et.al, 2010).

This research therefore aims at finding out the ICT strategies formulated by the ICT Authority and the impact such strategies have on delivery of public service.

1.1.1 ICT Strategy

According to (Floyd, 2010) information technology strategy is an organization's general policy that entails purposes, values, and procedures that relate to usage of technologies in a given organization or institution. LaBelle (2005) elaborates that "strategy direct the body of policies and provide a framework for their implementation with clear goals". LaBelle (2005) elaborates that some of the areas where ICT Strategy focuses on include; New and creative ways of using ICT for better value provisioning for system users and sharing of public infrastructure to ensure efficiencies are obtained via consolidation of resources and structures, increased output and efficiency via adoption and use of digital infrastructure to progress and advance the relationship between the general population, companies and government, increasing efficiencies through integrated services and increased data sharing to facilitate improved decision making; increased openness and transparency between Government and its citizens, provision of advanced user experience and superior services to the general public.

1.1.2 Public service

McGregor et al., (1982) defines public service as "a service which is provided by government to people living within its jurisdiction, either directly through the public sector or through funding provision of services". In Kenya, Huduma Centre, which is mandated to provide some public services on a digital platform, has incorporated a multi-channel service delivery strategy that is centred on optimizing the public service delivery experience for the public in Kenya.

In Kenya the vision to transform public service delivery is currently being deployed in this two broad phases. The first phase involves establishing Huduma Centres (public

centres for service delivery) in the 47 counties while the second phase involves re-engineering, automation, integration and roll-out of digital services. Since their establishment, Huduma Centres have been providing the following services to the Kenyan public: Getting a police abstract, business name search and registration of businesses, getting a copy of identity card, student loan application, student loan repayment, reporting of corrupt incidences, and many more.

Huduma Centres are currently located in 40 of the 47 counties in Kenya. On a day-to-day basis, the centres serve about thirty thousand customers and offer up to 115 government services. On an annual basis the centres are able to collect in over 12 billion shillings for the various government agencies.

1.1.3 ICT Authority (ICTA)

The Information and Communication Technology Authority is a parastatal under the Ministry of Information Communication and Technology and was formulated under “the Executive Order No.2 of 2013 on the Reorganization of Government under Legal Notice No.183 of 2013”. The Authority is authorised to ensure that ICT systems and processes are adopted and used within the Kenyan Government. The Ministry of ICT through the ICT Authority is mandated to formulate policies that touch on ICT human capital development, Information Security, Innovation and Enterprise, Shared Services and ICT Governance.

ICT Authority (icta.go.ke) is mandated to ensure development of human capital and build capacity. ICTA also makes sure that end systems are used effectively to deliver timely, affordable and effective services to the citizens of Kenya. The authority also

ensures that ICT industry leaders adopt ICT skills when making strategies and policies for their organization.

ICTA is also mandated to promote and enhance ICT governance in government ICT projects and make sure such projects are aligned to the national objectives. On information security, ICTA ensures that there are pro-active measures setup to identify and mitigate threats and risks poised on ICT infrastructure and processes. It also encourages enterprise and innovation by providing mentoring and opportunities of partnerships. It also builds, maintains and operate infrastructure that enables efficiency and effectiveness in accessing government services and reduce the cost of communication.

1.2 Research Problem

As governments across the world try to increase their competitiveness in the global economy, they strive to bring closer services that facilitate ease of doing business. Many governments have, therefore, invested heavily on ICT infrastructure and services that enhance efficiency in public service delivery.

In Kenya, according the budget speech (2016) read by Cabinet Secretary of Finance, Henry Rotich, “a total of Sh.6.1 billion has been allocated for the Single Window Support Project, Research Development Fund, Roll out of IFMIS, Development at Konza Techno-polis, Digital Migration (Kenya Broadcasting Corporation), and for the Presidential Digital Talent Programme. The Kenyan Government has put in place, in the National ICT Master plan 2017, initiatives such as the presidential digital talent initiative (aimed at providing young graduates with hands-on training on various ICT platforms), digital literacy Programme (building ICT Human Resource Skills across the

public service), County Connectivity Project (providing ICT last mile connectivity) , Digital migration (for the broadcasting media outlets) and NOFBI (National Optic Fibre Backbone Infrastructure) Phase 2 that will improve the delivery of Government services”.

Some of studies that have been done locally and internationally on impact of ICT strategies on public service that compare equally well with this study include: Gichoya (2005); Mokaya & Njuguna (2013); and Wangari (2011) claim that ICT adoption and e-government improves the way Kenya government communicates and relates to citizens. Despite the efforts by the National Government to improve adoption of ICT projects through ICT Authority, adoption of ICT projects has not been wholly effected. Bhatnagar (2014) argues that the Indian Government supports usage of ICT in delivery of public service as ICT can be incorporated in diverse public service delivery platforms to accelerate information dissemination, improve efficiency of public services, increase the transparency and answerability of government administration, reduce corruption, and facilitate citizen participation in local governance.

Appel (2007) in South Africa identified ICT as a key factor in service delivery as it stimulates economic development and ensures government units are organized around service provision to citizens. This is being done to enable and promote more usage of ICT in service delivery platforms, increase population access and usage of government provided services and increase innovation and enterprise within the South African economy. A case study done by (Karunasena, et.al, 2011) elaborates that ICT is continually being incorporated into government service delivery platforms and is effective in provision of e-government services. The study, however, noted that

adoption of ICT in delivery of public service platforms has generated insufficient public value is service provisioning.

From all the above statements it necessitated further investigation as to how ICT Strategies are formulated at ICT Authority, how they are implemented and how they impact on public service delivery that will make Kenya a globally competitive economy as envisioned in Vision 2030. Although the studies attained their objectives they did not delve into how specific strategies developed by ICTA are linked to Kenya's development agenda as envisioned in Vision 2030 and how they contributed towards making Kenya a major player in the world economy through efficient and effective delivery of public service.

This study aims at offering more insights to the limitations on existing knowledge as it will elaborate further on how strategy is formulated, adopted, and implemented, and how such strategies impact on public service delivery. The study aimed at answering the following question; how ICT Authority strategies drive adoption of information and communication technologies in public service delivery platforms in Kenya.

1.3 Research Objective

The objective of the study was to establish the relationship between ICT strategies and public service delivery in reference to the ICT Authority.

1.4 Value of the Study

Given the strong desire by the Kenyan Government to make Kenya a middle income country and have its citizens enjoy a high quality life the outcomes of the case study are anticipated to be beneficial to ICT Policy and Strategy makers as it would offer guidance on how draft and implement strategies that would bring about competitiveness

in their business processes and efficiency in service delivery. Also how to direct investment towards ICT projects that spur growth. For the Public Service Delivery Secretariat, the study will provide information on how to incorporate information and communication technologies in the platforms so as to ensure transparency in processes and procedures, efficiency in use of shared infrastructure, security of the platforms, aid in revenue collection and convenience of public service delivery to intended users. County Governments, as part of the devolved system of government, are mandated to deliver some devolved services to the residents of a county. The study will thus provide guidance on how to formulate policies and strategies towards public service delivery, guide in investment in ICT platforms that will provide efficiency in service delivery.

The study will also have theoretical value as it will enrich the dissertation on the process of strategy formulation and implementation, challenges involved, and how such strategies contribute towards successful implementation of processes and systems that bring services to the public masses.

Finally, the study will provide additional information into the already existing body of literature regarding the ICT adoption in public service delivery in Kenya. The findings of this study will supplement existing knowledge and hence will be of importance to both researchers and academicians who might strive to explore and carry out additional investigations. It will, therefore, provide basis for further research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter makes deductions from previous research work and case studies carried out by researchers in the same field of study. A lot of studies both empirical and theoretical have been conducted on ICT strategy formulation and implementation and how they impact of public service delivery. In reference to existing literature relevant to this study two broad theories offer guidance, namely Resource Based Theory and Strategic Management Process Framework. This is followed by the concepts ICT, Strategy and ICT Strategy. Afterwards, summaries of past work on that touch on: Process of ICT Strategy formulation and Implementation; General Trend in ICT evolution and advancements in public service and finally on ICT Authority.

2.2 Theoretical Foundation of the Study

Theories are used as the basis of most research work. (Dusick, 2011) elaborates that “the theoretical framework is presented by a research scholar so as to place a particular study work within the viewpoint of other similar work in the same area of research. It, therefore, offers support for the planned research work by establishing known connections among variables and sets parameters or confines for the proposed study”. Two theories form the basis of this study namely; Resource Based Theory and Strategic Management Process Framework.

2.2.1 Resource-Based Theory

The theory sees a firm as having physical, monetary and intellectual assets that are limited and unique. The organization will therefore need to organize usage of these resources in an efficient and effective manner so as to bring about competitiveness and achieve a strategic advantage (Penrose, 1959; Porter, 1980; Williamson, 1975).

This theory informs this study since the Kenyan Government with the aim of making the country globally competitive has to invest heavily on ICT platforms and build human resource capacity to manage and deliver public service as efficiently and effectively as possible to the masses. All this has to be achieved within the limited budgetary allocations assigned to the ICT Authority. This will force ICTA to carefully prioritize ICT projects depending on the level of usefulness or impact it has towards digitization of public service platforms.

2.2.2 Strategic Management Process Framework

The theory promotes a methodical way of forming an organization's strategy by firstly analyzing the actions plan that are directed by gaps in current and desired situations, analyzing the organization resources and the business environment, formulation of strategic goals and tactics, implementing these strategies and finally monitoring and evaluating these strategies against strategic objectives (Barney, et.al, 2010).

This theory therefore informs this study as to how ICTA sets specific targets within its mandate to promote and/or facilitate ICT human capital development, Information Security, Innovation and Enterprise, Shared Services and ICT Governance.

2.3 Concept of ICT Strategy

Over the past two decades there has been a global trend of progressively incorporating ICTs into public delivery platforms. This was brought about by the need to effectively store and process huge amounts of information by governments globally so as to perform their day-to-day tasks and at the same time regulate access and usage of the same data by government agencies and the public. Although there is a general growth in the trend of adoption of ICTs in government operations, there are also varying levels of adoption of e-government services and their effectiveness in delivering public services by government across the globe (Ifinedo, 2011).

Introduction of ICTs in public service delivery provides new means by which organization collect, process and store information, how infrastructure is shared that enables cost savings and improves decision making processes, and in general the productivity of the people using digitized platforms ultimately increases (Giddens, 1983). Kraemer et al., (1981) further adds that by incorporating information technology into service delivery there would be proper organizational governance, improved work performance and better decision making.

Making strategic decisions comprises of having a vision about the long-term course of actions one will take through an expansive competitive environment. Mintzberg (1979) indicated that strategy offers the direction for operations. It outlines the current operating environment, the goals to be achieved and the different options that can be taken to achieve the strategic objectives. The objective of strategy is to bring about a useful and convenient environment that enable specific actions to be carried out. Strategy is an intermediating force between the organisation and its environment. Porter (1985) states that strategy is an essential vehicle for attaining competitive

advantage. While Chandler (1998) defines strategy as “the definition of and organization’s mission and vision , devising and selecting a course of action and allocating resources that would be necessary to realize the strategic objectives”.

Rouse (2012) describes ICT strategy as a broad blueprint used by an organization’s ICT management to guide the vision and mission of an organization. It provides an overall structure that ensures effective administration of ICT infrastructure and processes in line with corporate objectives and the changing business environment.

ICT policies have become a key area in an organization’s policy structure as it sustains and organization growth by improving service provisioning and thus aids in attaining strategic objectives. ICT industry is changing globally as result of the need to meet the demands of the changing business environment, technological advancements and unpredictable economic conditions.

For example, the Government of Mongolia takes great consideration in introducing Information and Communication Technology (ICT) in all of its economic segments. Some of the undertakings that have been carried out to enhance the use ICT as a crucial tool for development include, formulation of appropriate laws and guidelines, writing policy documents that offer guidance in strategy processes, in particular, “Concept on ICT Development for Mongolia by Year 2010”, “E-Mongolia National Program”, and “E-Government Master Plan of Mongolia” were developed. The Mongolian administration in guidance of these guidelines undertook major steps in the use of ICT in achieving better governance, developing competitiveness and improving excellence in public service provisioning by creating an effective, organized and productive e-Government (Sambuu, 2008).

According to Rwanda's National ICT Strategy and Plan of 2015, the country's government believes that ICT can enable the country to rapidly advance in the vital stages of industrial and economic growth and development. As such, ICTs have been incorporated into most of the economic segments to act as a crucial driver for economic transformation, and align the country's development agenda to global developments so that the country becomes competitive.

In Kenya, as detailed in the National ICT Master plan 2017, some of the ICT strategies that ICT Authority has adopted aims at delivering ICT systems that will facilitate e-government service delivery. ICTA is, therefore, pursuing the following set of strategies: On information security, ICTA ensures that there is pro-active measures setup to identify and mitigate threats and risks poised on ICT infrastructure and processes. It also encourages enterprise and innovation by providing mentoring and opportunities of partnerships. It also builds, maintains and operate infrastructure that enables efficiency and effectiveness in access to government services and reduce the cost of communication.

Process of ICT Strategy Formulation and Implementation

LaBelle (2005) elaborates that a successful ICT strategy should have the following components: Assessment that defines the existing status of the organization and its environment, with a critical view and comparative study identifying the needs and challenges, and provides the basis for formulating the strategy and building plans of actions; Consultation plan that should be an on-going process and should include all stakeholders at the different phases of developing an ICT strategy increasing the probabilities of success of ICT strategy which will be due to meeting the needs of stakeholders and priorities of people; Strategic plan that explains the organization

objectives, the goals that need to be achieved and the actions plans to be undertaken by all parties involved to reach these targets; Action strategy for implementation that contains the how projects would be prioritized, resources available for project implementation, the work plans needed to achieve the strategies, and the risks that may challenge successful implementation of the strategy . Monitoring and evaluation mechanisms that requires attention be given from the start to methodological aspects, that is, appropriate tools to monitor and gauge progress, and institutional and strategic aspects that aid to adjust to local constraints and maximize ownership by stakeholders.

2.4 Public Service Delivery

The coming into effect of the Kenya e-Government Strategy in 2004, aimed at the transformation of government operations by adopting use of ICT to enable the country achieve the desired level of competitiveness via provision government services in an effective and timely manner. Muthaura (2010) views that “for Kenya’s public service to be effective and efficient, it must embrace the advances in technology in the provision of services. Technology is an invaluable vehicle that can help re-engineer public service delivery”.

According to the technology diffusion model by Rogers (2010), the major concern of institutions in charge of public service were security and privacy concerns. This necessitated adoption of technology to be able to mitigate on these factors. The figures below show how over the years’ technology has gained precedence in e-service delivery platforms.

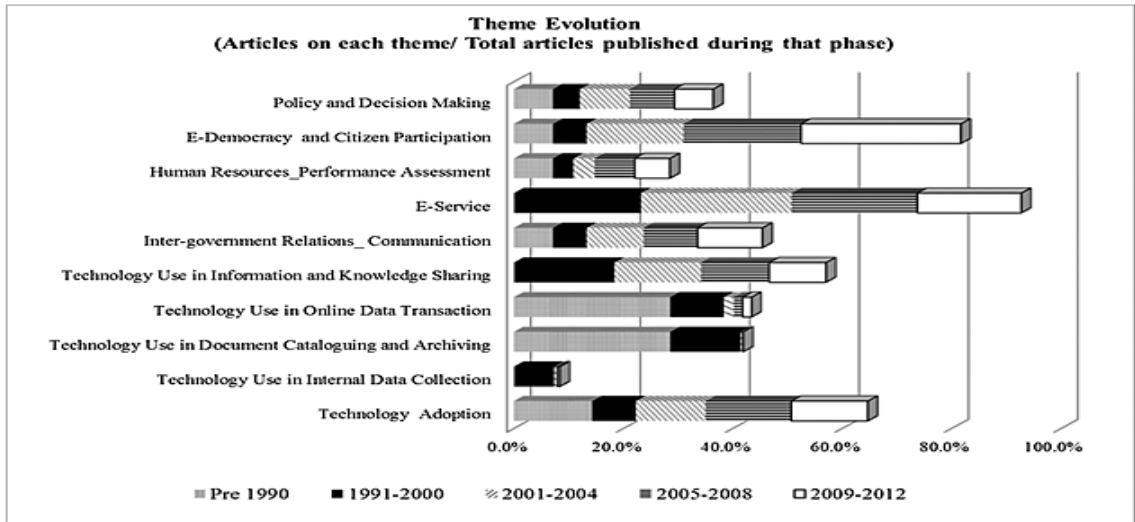


Figure 2.4.1 Documentation on the evolution of how in information and communication technology has been used in the advancement of public administration.

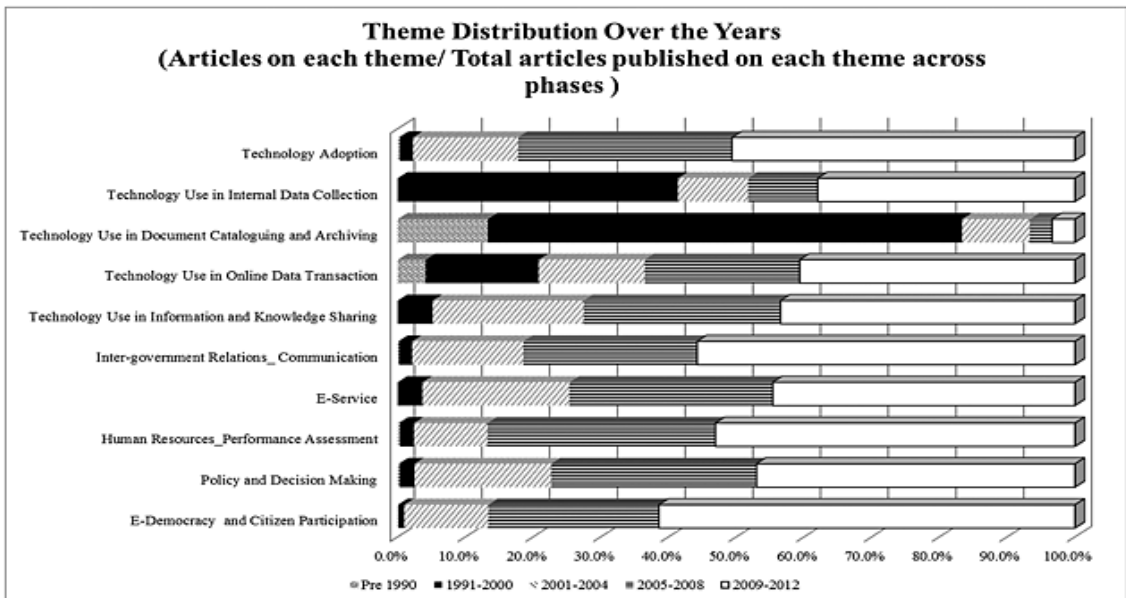


Figure 2.4.2. Theme distribution in information and communication technology use and advancement of the public administration system.

Smart Governance demands that ICTs be integrated into platforms that delivers services. From the two figures above, the findings offer some evidence that show how smart governance systems need to be incorporated with ICTs to facilitate government operations.

Many scholars define Smart Governance as “a governance design that involves use of ICT-based infrastructure and information structure in optimization and modelling, and in the operational processes to make improved resolutions and policies” (Nam and Pardo, 2011). Dawes, (2008) elaborates that there has been increased interaction between technology advancement and human activities and thus ICTs will continue to provide areas of cooperation and knowledge sharing to respond to the needs of the socio-economic changes, adaptation to policy requirements and public governance. There has also been a rise in research interest on how governments adopts ICTs in their operations.

2.5 Empirical Studies and Knowledge Gaps

ICTA is mandated to establish and implement ICT procedures and guidelines for the technology usage, human capital development, ICT infrastructure, systems and processes, and for the public service and has therefore embarked on a number of strategies aimed at usage of ICTs in the delivery of public services. Mugambi (2013) sees ICTs offering an opportunity to revolutionize public service management by improving the capability of government to proficiently share and analyse information between ministry departments and other government agencies. She therefore proposed that ICT strategies could be used to facilitate government ministries embrace use of e-Government systems to effectively deliver services to the Citizens of Kenya. Her study identified the following ICT strategies: Installation of ICT Infrastructure, Broadband Connectivity, Development of Content and IT Applications, Improvement of ICT capacity and Skills, Policy and Legal Structures, Reinforcement of the ICT Unit, etc. The mentioned strategies were aimed at enhancing public service delivery through provision of integrated services across government ministries and departments through

use of ICT platforms. The study focused on having a majority of the government ministries' services being transacted online. The study however does not focus on what strategies were adopted by ICTA and how they impact on public service delivery to the Kenyan citizens and not just government MDAs.

Yator, et al. (2014) elaborated on role of ICT in public service delivery. His studies found out that ICTs aided effective and efficient government operations consolidated government structures and systems and thus presented a one-stop shops to citizens and businesses. He also identified use of ICTs in public service delivery helps in cost savings and enhanced efficiency.

The study focused on customer interaction with public delivery platforms powered by ICTs and as such does not put emphasis on ICT strategies that are formulated and implemented that impact on public service delivery in Kenya.

The shortfalls of the above studies therefore necessitate more research be carried out on ICT strategies that have been adopted by ICTA and how such strategies impact of public service delivery.

This chapter has underlined the key steps in strategy formulation process, the concept ICT strategies and public service evolution and trends. Furthermore, Resource based theory and strategic management process framework that inform this study have also been discussed in detail. To answer the research question and objectives for this study, a detailed description of the appropriate research design, data collection and analysis process was discussed in chapter three. The findings will be used to draw conclusions and provide recommendations to the ICT strategies formulated and implemented that guide delivery of public service to the Kenyan population.

CHAPTER THREE: RESEARCH METHODOLOGY

This chapter summaries the research methodology used in the study. This includes the research design, population of interest, data collection methods, and data analysis procedures and presentation.

3.1 Research Design

Research design is an all-inclusive strategy that provides a clear and logical way to integrate the different components of the study so as to make sure that the research objectives are met. It provides the framework for the data collection, analysis and presentation. (De Vaus, 2006).

The research design adopted in the study was case study. Case study involves first-hand and practical inquiry into a modern-day phenomenon in its context using multiple sources of evidence (Yin, 2012). Case studies can enable a researcher obtain very comprehensive information about a particular area of study that would be difficult to obtain via another type of experimentation as it is subjective and is concerned with options and experiences, descriptive in nature and will generate theories that may lead to further research on similar work.

The study aimed at furnishing the researcher with profound knowledge and understanding on the strategies formulated and implemented by ICTA and how they impacted delivery of public service in Kenya. Case Study research design was therefore considered suitable as it undertook a comprehensive study of ICTA, identifying all aspects of ICT strategy management and the actors involved, and therefore aided in detailed study of the same.

3.2 Data Collection

The research data for the study was collected through interviews with 4 ICTA directors in charge of strategy formulation, and implementation. The CEO of ICTA could not

make time for an interview during the entire course data collection. The preferred data collection method was a semi-standardized interview as it is more or less structured, has a flexible order, follows certain rules and procedures, and its wording was adapted to maximize participant understanding. The interviews were self-administered on a face-to-face basis.

The interview guide had four parts. Part one of the interview covered general information about the interviewee, the second part captured the strategies formulated and the people in ICTA responsible for their successful implementation. Part three aimed at establishing the impact of these strategies on delivery of public service in Kenya. The last part highlighted any suggestions or recommendations from the participants.

3.3 Data Analysis and Interpretation

Analysing data from a case study 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 was analysed qualitatively and findings used to compile a report.

Data analysis was performed using content analysis. It involved discovery of themes or categories from the interview transcripts and attempted to verify them, and collecting all words and phrases from the interview transcripts and fitting them to the categories to obtain an organized data set for purposes of classification, summarization and tabulation. Data summarization and representation was done inform of a report showing the findings and recommendations.

CHAPTER FOUR: DATA ANALYSIS, RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

The objective of the research project was to establish the strategies formulated by the ICT Authority and how they impact public service delivery in Kenya. This chapter presents the analysis and findings in consideration to the research objective and is divided into three sections namely; Information about the respondents, strategy formulation and implementation at ICT Authority, areas in public service that are impacted by the adoption of ICT strategies and the benefits of adopting the ICT strategies.

4.2 Information About the Respondents

This part of the interview guide was intended to evaluate the position the respondents held at the ICT Authority and how they fit in the process of ICT strategy formulation and implementation. The respondents comprised head of departments in charge of shared services, programs and standards, partnership research and innovation and ICT service management. These respondents were deliberately chosen by the researcher because they were deemed to be in-charge of the process of strategy formulation and implementation. In total, the researcher interviewed four out of the five the targeted respondents. This represented 80% response rate.

4.3 Strategy Formulation and Implementation at ICTA

This section of the interview guide sought to establish from the respondents the organization structure of ICTA, the ICT strategies adopted by ICTA, what processes or factors drives ICTA strategy framework, the ICT Technologies that are incorporated in

public delivery platforms, the process of ICT strategy formulation and implementation and finally on the gaps between strategic goals and ICTA current operations.

4.3.1 ICT Authority Organizational Structure

The findings as to whether ICTA organization structure promoted ICT strategy adoption in execution of its mandate was agreed upon by all respondents. ICTA has four departments, namely: shared services department that is responsible for managing all ICT infrastructure commissioned under various projects, coordinating their use and maintaining them during their lifespan; programs and standards department ensures that project implementation is coordinated and managed so as to achieve the targeted results and also sets standards that guide adherence to set standards; partnership research and innovation department builds alliances with various ICT industry stakeholders, and facilitate growth in the research and innovation fields in the ICT industry in Kenya; and ICT service management department that maintains the network operations and call centres. Each of these departments is headed by a departmental head who report to the CEO of ICTA.

The interviewees elaborated that this model was appropriate as it aided in strategy formulation and adoption by providing an end-to-end chain guiding achievement of target architecture through identifying of gaps in the current architecture within delivery of public service and adopting ICT technologies to deliver service more efficiently to the Kenyan citizens.

The findings are also supported by Munyoroku (2012) that indeed organization structure affects strategy adopting and implementation. As with the case of ICTA, he argues that organization structure needs to be clear, decentralized and relatively

formalized giving clear procedures, rules and responsibilities. It gives centrality during implementation and allows for quick decision making.

4.3.2 ICT Strategies adopted by ICTA in Delivery of Public Service

The researcher also wished to establish the ICT strategies adopted by ICTA and which areas of the public service had been impacted by them.

From the research findings ICT strategies adopted are categorized into five major areas: ICT human capital development, Information Security, Innovation and Enterprise, Shared Services and ICT Governance.

The respondent from the partnership research and innovation department elaborated that, through the ICT Human Capital Development strategy, end users manning public service delivery platforms such as Huduma centres are trained to use availed technology and infrastructure effectively and efficiently so as to deliver timely and affordable services to the citizens of Kenya. Change management programs are also taught to end users so as reduce resistance of adopting and use of ICT in public delivery platforms. Strategic leaders are also taught on how to incorporate ICT skills in the business environment and deploy solutions that accelerate implementation of projects that support use of ICT in public service. The citizens of Kenya through the digital literacy program are also trained on how to effectively access and use government services.

The respondent from the programs and standards department noted that through the ICT Governance strategy, ICTA has ensured that government ICT projects are aligned with the national objectives as envisioned in vision 2030 through ICT enabled services, ensures infrastructure deployed is effective and shared in cost effective manner.

The respondent from the ICT service management department highlighted that ICTA maintains a network operating centre that reduces turn-around time to mitigate

incidences, increases ICT systems availability and proactively identify risks that may affect normal operation of public service delivery platforms.

Findings from the respondent from the Shared Services department shows that ICTA has undertaken quite a number of projects that are aimed at providing efficient and effective access to government shared infrastructure for delivery of public service. It has completed the government core network project that improves effectiveness and efficient of provision of government online services and lowers costs of transactions, the county connectivity project that provides last-mile broadband access to facilitate access to government services, the government data centre project that delivers e-government services and provides reliable information processing and storage facility of government services data. Also ensures business continuity ensuring guaranteed uptime for access to government services. The Government Unified messaging system project reduces cost of communication. All these are aimed at efficient service delivery, streamline government processes, and improves decision making.

The interviewees noted that ICTA still faces several impediments in adoption of its strategies in delivery of public services due to budgetary constraints, Human capacity constraints due to limited number of ICTA officers that can effectively man various ICT project roll outs and lack of skill in design and architecture, bureaucracy within government operations that can slow decision making and eventually execution of projects, resistance to change that may lead to boycott of initiatives, ICTA is unable to guide implementation of financed projects as these are majorly controlled by donors, there exists insufficient performance measurement on already implemented projects, the organization is not empowered legally to execute its mandate , and finally government ICT strategies are not aligned leading to duplication of projects.

The findings of Bhatnagar (2014) supports usage of ICT in delivery of public service as ICT can be incorporated in diverse public service delivery platforms to accelerate information dissemination, improve efficiency of public services, increase the transparency and answerability of government administration, reduce corruption, and facilitate citizen participation in local governance.

4.3.3 Drivers of Strategies Adopted by ICTA

Strategy drivers are forces that shape an organization strategy. As to the question as to what drives ICTA adoption of its strategies the respondents highlighted some key drivers. Change as driver is seen through the vision 2030 and more specifically in its economic pillar that promotes use of IT enabled services to make Kenya competitive and the national ICT master plan that directs efforts to digitize the Kenyan economy. The citizens of Kenya as they strive to achieve a middle income status, want to have a better quality of life by having efficient and effective public services delivered to them. As such ICTA has formulated strategies such as setting up Huduma centers and e-citizen portal to meet such needs. ICTA Mission is also another driver as the organization is mandated to design, operate and maintain secure ICT systems and infrastructure for efficient and effective public services delivery as well as promote the deployment and use of ICT. This has led it to adopt to strategies such as Human capital development focusing on ICT skills build up, ensuring ICT infrastructure adhere to set security standards, promoting innovation and enterprise through partnership with various ICT industry stakeholders, and also has put up projects that facilitate efficient and effective access to government services. Regulations within the ICT industry is also a key driver for example ministerial policies and strategic plans that necessitates digitization, automation and achieving operational efficiencies, international obligations and standardization such millennium development goals. Competitive

Forces is also a key driver. As Kenya strives to be competitive in the global market place it is necessary for it to incorporate IT enabled services so as to delivery public services efficiently and also ease the process and cost of doing business. New Technology was highlighted as another driver to strategy adoption especially in virtualization technologies that continue to define the architecture of modern data centers and mobile technologies that enable easy and convenient access to public services and also enable integration of payment platforms.

4.3.4 ICT Technologies that are Incorporated in Service Delivery Platforms

The finding on the technologies incorporated into public delivery platforms revealed that with the rapid technological advancement within the ICT industry such as transmission technologies, cloud and virtual environment, security platforms, web technologies, storage infrastructure and virtual payment platforms, have enabled effective, efficient and secure delivery of public services to vast majority of users through platforms that are scalable , have multiple points of presence and ensure confidentiality in public service delivery. This makes access and use of public service delivery platforms more convenient to majority of the Kenyan population.

The respondents identified some of the technologies adopted by ICTA in implementing its strategies. These include storage and servers for information processing and storage of data; virtualization technologies that enables sharing of infrastructure , cost efficiency in setting up or expanding new services, security of service and infrastructure since they are centrally managed, business continuity is enabled as it guarantees uptime, resilience in service offing; transmission technologies like fiber optics, radio network , WDM, SDH, VSAT that enables fast and secure transmission of data over large distances,; internet infrastructure that facilitates delivery of web based services; mobile

based platforms that facilitate easy and convenient access to public services, integration of mobile payment platforms that ease doing business.

These findings are also supported by (Borins, 2001; Dada, 2006; and Holden, 2003) as they reflect on the fact that ICTs now underpin the basic functioning of most public programs and contribute to the most significant innovations in the delivery of public sector services.

The respondents, however, identified that more should be done of the legal framework to incorporate more technologies that particularly touch on cloud computing and security.

4.3.5 Process of ICT Strategy Formulation and Implementation at ICT Authority

On the question on the process of strategy formulation and implementation at ICTA, the respondents affirmed that the process of Strategy formulation in ICTA is generally initiated in two ways; the first is Idea trigger driven by either a ministerial policy formulation, vision 2030 master plan, Millennium development goals, executive directive such as need to fulfil party manifesto. Thereafter analysis is done to identify the gaps between the current architecture and target architecture.

The second is the gaps identified to meet the target architecture are developed into projects. This is carried out by consultation with key stakeholders in private, public and centers of technology. The director of shared services in regards to the deliverables of project classifies or scopes the projects in terms of infrastructure, application or security project. The project is then handed over for implementation.

The implementation process is initiated by the Project management office that identifies the key mile stones, prioritizes the projects based on urgency of service provisioning,

and budgetary availability. After which project is executed, monitored and continuously evaluated so as to align the project to its intended purpose.

These findings are also similar with the finding of (Barney, et.al, 2010) on the strategic management process framework that summaries strategy formulation and implementation in five stages: goal setting, analysis of business and its environment, strategy formulation, strategy implementation and lastly evaluation and control.

4.3.6 Gaps between Strategic Goals and Current Operations

Formulation and afterwards implementation of strategy may differ and this could be because of a number of reasons. The respondents identified some gaps that exists in ICTA that might lead to strategic goals not being adopted. The following gaps were highlighted. Budgetary constraints due a small budgetary allocation from the national government making it difficult for ICTA to run its operations. Insufficient funding from donors and partners for projects. Human resource constraints which is caused by ICTA inability to attract and retain highly skilled ICT professionals due to low remuneration and inadequate training of its staff in design, architecture and operations of its projects. Human bureaucracy that complicates and eventually slows the process of decision making. Fear or resistance to change caused by vested interests in the current operations, systems and processes, may lead to a project being accepted or rejected. ICTA is not empowered enough to prevent parallel ICT projects in government that lead to duplication of services and increased costs of running projects. ICTA is unable to guide implementation of financed projects due to donor interests, lack of adequate legal framework to embrace emerging ICT technologies in matters virtualization and cyber security. Inefficient performance measurement to benchmark the implemented projects to set standards and compare with strategic objectives.

4.4 Areas of Public Service Impacted by Adoption of ICT Strategies

The findings identified some areas that have highly benefited from the incorporation of ICTs into public service. Financial management on IFMIS platform has brought about accountability and transparency in government transactions. E-citizen portal offers convenience in service dispensation, timely services, one stop non-stop, optimize service capability. Public awareness has also increased through websites that provide information that educate them on various aspects. Huduma Centres that provide e-resource centres and facilitates processing of over 115 government services in a convenient, effective and efficient manner to the Kenya citizens. Business continuity and security is also boosted in public delivery platforms ensuring reliable and secure service dispensation to the citizens of Kenya.

Schools through the digital literacy programs have benefited from the laptop projects that has enabled hundreds of thousands of students access and experience learning in a digital format. Also teachers on those schools have received training on use of ICT platforms to foster dispensation of education to the Kenyan students. County Governments use the national fibre back bone network and last mile county connectivity to access government voice, data and data centre infrastructure. Staff of county governments also get the skills, knowledge and expertise in design and implementation of ICT strategies through the guidance of ICTA. They also benefit from ICT skills enhancement and adherence to best practices when it comes to information security, ICT governance, and managing and deploying ICT projects.

4.5 Benefits of Adopting ICT Strategies in Public Service Delivery

The researcher also wished to identify some of the benefits of adopting ICT in delivery of public service. The respondents highlighted the following as some of the benefits: reduced cost and ease of doing business, enhanced revenue collections by MDAs, efficiency in government operations, reduction of duplication, cost saving or avoidance, ease of decision making due to availability of information, cost efficiencies and higher productivity based on comparison of peer benchmarks.

The findings are in line with the main objective of Kenya's Vision 2030 that intends to make the country prosperous and globally competitive (Kenya Vision 2030, 2008). Within the economic pillar of the vision, ICT enabled services as seen as a key driver to bring about economic prosperity and improve global competitiveness of Kenya. The Government, therefore, recognizes that resourceful nature information and as such it must be produced, collected, structured, secured and well-maintained to enhance national prosperity.

The findings of this study are also supported by Bhatnagar (2014), who highlighted that some of the benefits of incorporating ICTs in public service delivery platforms are: use of electronic banking to make payments to the poor using their mobile phones, using a unique 12 digit unique number that can be read via hand held devices to identify people for identity and payments of benefits to the poor in India, computerized management of land records and issue copies of land ownership reducing trips to local land offices to verify information and reduces chances of issuing a bribe to access information, use of laptops in schools to improve learning and use of video technology to overcome deficiency of qualified teachers in far-flung and underprivileged areas.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter sets out to discuss the summary of the findings, draw conclusions, and make recommendations for the adaptation of ICT strategies in the delivery of public service.

5.2 Summary of the Findings

ICTA through its mandate of coordinating and streamlining all Kenya Government ICT functions and promotes the use of ICTs to deliver public services has made great strides in terms of ICT strategy formulation and implementation. ICTA's ICT strategies are based on five core areas which are shared services, ICT governance, Information security, ICT service management and innovation and enterprise.

The findings revealed that with an appropriate organization structure with clear procedures, rules and responsibilities, coupled with formalized procedures, facilitates proper goals setting, analysis of business process and environment, setting up strategic objectives or goals, proper strategy formulation and implementation and efficient procedures for monitoring and control. All these ensures that deployed strategies are in line with strategic objectives as defined within ICTA mandate and increases chances of success in the deployed projects.

The findings also revealed that human capital development, information security, innovation and enterprise, shared services and ICT governance as the key strategic

objectives ICTA has embarked on to ensure ICT strategies are adopted within platforms that deliver public service.

The findings also identifies some of the drivers that trigger ICT strategy adoption to public service delivery platforms as Vision 2030, National ICT master plan, Competition within the global marketplace that necessitate setting up structures that ease the cost of doing business, need for automation of public service so as to provide convenience, efficiency, reliable and secure public service delivery platforms, need to enhance revenue collection and reduce avenues for corruption, need to comply to international standards such as security, digitization, etc., new technological developments within the ICT industry that facilitates incorporation or upgraded of technologies on existing public service delivery platforms, and executive directives as driven by party manifestos.

The study also identifies some ICTs that have been incorporated into public delivery platforms such as transmission technologies, virtualization technologies, security platforms, web technologies, server and storage technologies. All these facilitate multiple points of presence, convenience in service delivery to the Kenyan citizens and provide efficient and low cost platforms for disbursement of public service delivery.

Some of the areas in public service that have been impacted by adoption of ICT strategies championed by ICTA include digitization of land records, digitization of birth and death records, education sector, public financial management, citizen –centric service centres and county government. Some of the benefits envisaged as a result of adopting these ICT strategies in public service include; accountability and transparency in government transactions, convenience in service dispensation, timely services, one

stop non-stop service centres or portals, reliable and secure service dispensation to the citizens of Kenya, optimization of revenue streams and elimination of fraud or corruption, improved students access and experience in learning in a digital format and ease of access to public services in an effective and efficient manner.

5.3 Conclusion of the Study

The researcher drew conclusions based on the research objective of finding out how ICT strategies adopted by the ICT Authority impacted on public service delivery. As Kenya strives to advance into a middle income economy where its citizens enjoy a high standard of living and is globally competitive, there is need to continuously make investments in ICT and incorporate them in more government processes. ICT strategies need to be aligned to fit within the National ICT master plan and Kenya's vision 2030. The ICT strategies, as championed by ICTA, are continuously being incorporated into the public delivery platforms. Although ICTA still faces a number of challenges in its strategy formulation and implementation to fulfil its mandate, it has come up with a number of strategies touching on ICT governance, information security, shared services, human capital development and innovation and enterprise which have created a big positive impact on a number of key sector in the delivery public service including access to service, elimination of fraud, improved education experience, ease and reduced cost of doing business.

5.4 Recommendation

Based on the study's conclusions the researcher made the following recommendations: The global environment within which Kenya operates is dynamic and presents new challenges and opportunities. As such there is need to continuously increase

investments in ICT so as to ease the process and cost of doing business and make the country globally competitive.

There is need to align ICT strategies to the national ICT master plan and vision's 2030 ICT enabled services that will enable coherence in implementation of ICT projects that pertain to delivery of public service. Funding for ICTA activities should be increased to enable ICTA to adequately fulfill its mandate. ICTA should also be given more control over donor funded projects as so to ensure projects implemented are aligned to its strategy of providing ICT enabled services to the citizens of Kenya. More should be done to empower ICTA legally especially in matters cyber security and virtualization technologies so as to adopt to emerging trends within the technology industry and new security threats that may cause destruction of existing ICT infrastructure and processes.

Education is also a key factor in ensuring that ICTA successfully implements in strategies to meet the needs of delivering public services in a digital platform. ICTA staff, Kenyan citizens, staff of the public service delivery centers all need to be trained to use the facilities in an efficient and effective manner. Consultations with key stakeholders within the ICT industry is also necessary to see how best to incorporate ICT strategies into public service delivery platforms.

Finally, ICTA should provide better remunerations to its staff to enable the organization attract and retain highly skilled staff that have the skills and expertise to design, operate and maintain ICT infrastructure and processes.

5.5 Limitation of the Study

The major limitation of the study related to difficulties in accessing the respondents whom all were in senior management positions, had busy schedules and made frequent travels. The study limitation was addressed as follows: sending the interview questions before the actual interview so that they could familiarize with the topical questions, seeking their audience via an email invitation and telephone follow-ups and selecting convenient place and time where we could meet. The data obtained focused mainly on the top managers and hence other staff and stakeholders like customers were not incorporated in the research.

5.6 Suggestion for Further Research

The study scope was narrowed to ICT Authority, however, the process of how ICT strategies are formulated and implemented, and how they impact the delivery of public services is quite broad and can extend to ICT ministries in the counties and other parastatals. This therefore necessitates for a further study to establish other ICT strategies formulated and deployed by other MDA and county governments and how those strategies impact the deliver public services to the people under their jurisdiction.

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APPENDICES

APPENDIX I: INTERVIEW GUIDE

Consent declaration: The responses provided in this interview will be used explicitly to inform findings for this research and not for any other use and your personal details and any other personal information obtained through this interview will be treated as confidential.

Section I: Information about the Interviewee

1. Name
2. Contact Details.....
3. Role in Organization.....

Section II: ICT Strategy Formulation and Implementation

1. What ICT strategies have been adopted for digitization of public service delivery platforms?
2. Areas in technologies in delivery of public service are impacted by adoption of these strategies?
3. How ICTA is structured to support formulation and implementation of ICT Strategies? (Administration, HR, Project Management).
4. What is the process of ICT Strategy formulation and Implementation?
5. What are the drivers of strategies adopted by ICTA?
6. What are the current gaps between strategy goals and current operations?

Section III: Impact of ICT Strategy adopted by ICTA on Delivery of Public Service

1. How are ICT Strategies adopted by ICTA align to business processes of public delivery platforms?
2. What areas of public service have the adopted strategies created an impact?
3. What are the benefits of adopting ICT strategies adopted by ICTA in public service delivery?

Section IV: Suggestions and Recommendations

1. What is ICTA's vision for Technology?
2. What other technologies are currently available and how can they be integrated into public service delivery platforms?
3. What are ICTA plans to overcome the challenges it faces in ICT strategy formulation and implementation?
4. Any other comment in regards to the discussion?

APPENDIX II: INFORMED CONSENT FORM

The Researcher

My name is Eric Mworì and I am a student at the University of Nairobi pursuing a master's degree in Business Administration. I am conducting a qualitative research study on "The relationship between ICT strategy and public service delivery: a case study of the ICT Authority"

The Research

The purpose of this study is to gain insight into what ICT strategies have been adopted by ICTA, the process of strategy formulation and implementation, challenges faced in strategy formulation and execution process, and how such strategies impact on delivery of public service in alignment to Kenya's vision. Insights gathered by you and other participants will be used in writing a qualitative research thesis, which will be read by my professor and presented to the UoN's MBA department. Though direct quotes from you may be used in the paper, your name and other identifying information will be kept anonymous.

The Process

Your participation in the study will involve an interview with an estimated length of one hour. This interview will be tape recorded for later analysis. There may be additional follow-up/clarification through email, unless otherwise requested by participant.

Risk

This study poses little to no risk to its participants. I will do my best to ensure that confidentiality is maintained by not citing your actual name within the actual study.

You may choose to leave the study at any time.

A summary of the results will be available to participants upon request.

By signing below you agree that you have read and understood the above information, and would be interested in participating in this study.

Signature of Interviewee _____ Date _____

Signature of Interviewer _____ Date _____

Please contact

Eric Mworì (+254721864551; emwori@gmail.com) with any questions or concerns.

If you feel you have been treated unfairly, or you have questions regarding your rights as a research subject, you may contact the Dean of the MBA Department, University of Nairobi.