



**UNIVERSITY OF NAIROBI
SCHOOL OF COMPUTING AND INFORMATICS**

**User-Centric Evaluation of Government of
Kenya Online Services: The Case of iTax**

BY

Judith A. A. Owigar
P51/65052/2013

Supervisor

Prof. Elijah Owenga

May 2016

*Submitted in partial fulfillment of the requirements for the Degree of Master of
Science in Applied Computing of the University of Nairobi*

Declaration

This proposal is my original work and has not been presented for a masters in any other University

..... 11 May 2016

Signature Date

Judith Anne Adem Owigar

This proposal has been submitted for examination with my approval as the University Supervisor

..... 11 May 2016

Signature Date

Prof. Elijah Omwenga

Abstract

In recent years, the Kenyan government has worked to use Information and communication technologies (ICTs) to increase openness and transparency in their operations. These ICTs are seen as a cost-effective and convenient means to promote public participation in government in Kenya. While many of these efforts have had a government centered approach, the users perspective has been largely ignored. This research takes a user centered approach and looks at how user's perspectives and attitudes affect adoption of e-government services. The iTax online service was selected as a case study for this research. The research framework is based on technology acceptance models focusing on the aspects of perceived usefulness and perceived ease of use by the users. This view is especially important in developing countries that are still grappling with issues of connectivity and basic infrastructure while developing e-governance initiatives. The data was collected using questionnaires (both paper and online), in depth interviews and a usability study focusing on the primary task of registering on the iTax government service. Findings indicate that the main pain point for both the government and the users is the speed of connectivity. While user/citizens generally think that provision of e-government services is a good idea, there is dissatisfaction with the complexity of the said e-government service. Findings also show that issues of access in developing countries need to be viewed beyond infrastructure but also on service level. Service level access looks at the extent to which the service is usable to the targeted user. Service level access goes hand in hand with training since some users do have access to the infrastructure but lack the know how to effectively utilize the service. This research concludes that to increase the adoption of e-government services governments need to focus their strategies on the needs of users, their attitudes towards to the services and respond to these needs effectively.

Key words: User Centric, iTax, users, and citizens

Dedication

This research project is dedicated to my mother who encouraged me to start this masters and my sister who encouraged me to finish.

Acknowledgement

A journey of a thousand miles begins with one step. Coming to the end of this Masters journey has taken consistency, patience and hard work. I thank God Almighty for giving me the strength, resilience and grace to pursue and complete this master's course.

Secondly I would like to thank my family, whose support throughout my masters has been greatly valued and appreciated. Special thank to my mother, Esther Owigar, who encouraged me to start this masters course and my sister, Christine Nyaboro, who encouraged me to finish by completing her Masters thesis.

Furthermore, I would like to thank my supervisor, Prof. Elijah Omwenga, who provided guidance, insightful criticisms while I carried out this research.

Finally I would like to thank my classmates, who shared ideas and provided assistance during this project, and my friends, who provided links to key information sources.

Table of Contents

Declaration.....	ii
Abstract.....	iii
Dedication	iv
Acknowledgement	v
Table of Contents	i
1. Introduction.....	1
1.1 Background	1
1.2 Problem Statement and Purpose	2
1.3 Research Objectives.....	3
1.4 Research Questions	3
1.5 Research Outcome and Significance	3
1.6 Definitions	4
2. Literature Review and Theory	5
2.1 Introduction.....	5
2.2 E-administration	7
2.3 E-services	7
2.4 Public participation	8
2.5 User-Centric E-Government Strategies.....	12
2.5.1 User Centric Vs Government Centric.....	13
2.6 Theoretical Framework.....	14
2.7 Discussion	21
2.8 Conceptual Framework.....	22
2.8.1 Key Constructs	22
3. Methodology	26
3.1 Research Design	26
3.1.1 Actual Use	26
3.1.2 Quality Assessment	26
3.1.3 Ideas for Improvement.....	27
3.2 Case Study	27

3.3 In-depth Interview	28
3.4 Usability Study	28
3.4.1 Target Population	28
3.4.2 Iterative Design	29
3.4.3 Moderated Observer.....	29
3.4.4 Process.....	30
3.4.5 Usability metrics.....	30
3.4.6 Define the Test.....	30
3.4.7 Task Selection.....	30
3.5 Survey.....	30
3.5.1 Survey structure.....	30
3.5.2 Target Population	31
3.6 Triangulation.....	32
3.7 Data Collection	33
3.8 Data Analysis.....	33
4. Results	35
4.1 Actual Usage	35
4.2 Quality Assessment	36
Activity: New Pin registration	36
4.2.1 Success Rate.....	37
4.2.2 Task Completion	37
4.2.3 Subjective Satisfaction.....	38
4.3 User Survey.....	38
4.3.1 Participant’s profile	38
Education Level.....	39
Occupation Type	40
4.3.2 Access and Usage of the iTax system.....	40
4.3.3 Filing Individual Tax returns	41
4.3.4 Attitudes Towards the iTax online service	43
4.3.5 Education Level and Filing Taxes	45
4.3.6 Occupation Type and History of Filing Taxes	46
4.3.7 User recommendations	47
4.3.7.3 Customer Service	48

4.3.7.4 Training of users	48
4.3.8 Recommended New services	50
5. Conclusion and Recommendations	51
5.1 Contribution To The Study.....	51
5.2 Conclusion	52
5.3 Discussion	55
5.4 Limitations Of The Study.....	55
5.5 Recommendations for future works.....	56
Appendix 1: E-Government Service User Survey.....	64

1. Introduction

1.1 Background

Over the last 10 years of public sector development the Government of Kenya has been looking at how best to use information and communication technology (ICT) to improve the performance of public sector administration. This began with the establishment of the e-Government programme in June 2004. The goal of this program is to facilitate better and efficient delivery of information and services to the citizens, promote productivity among public servants, encourage participation of citizens in Government and empower all Kenyans.

There is little point of the government investing in e-government initiatives if citizens and users are not using the services or seeing the benefits of using the system. E-participation is a component of successful implementation of e-governance. E-participation is characterized when citizens use ICTs to access public information, participate in public decision-making and monitor how the government is being run.

Bringing the concept of “user-centered e-government” into practice, a multi-method study is proposed with a double goal: first of all, to inquire about the needs and expectations of users towards the electronic public service provision. Second, a thorough yet simple usability analysis of a selected government website which provides the Kenyan government institutions a clear picture of what needs to be improved. The results of these studies will be used to determine whether good usability of government websites affects the uptake of these online services.

With increasing pressure from society on governments to become more efficient and effective, and at the same time pay more attention to user needs, demands, and satisfaction, governments have been forced to rethink their approach to service development and delivery.

Integrating a user-centric approach to public service development and delivery raises the question of how the Kenyan government can enable and support a more participatory and inclusive approach to public service development and delivery in order to ensure that user needs and demands are met by government services.

1.2 Problem Statement and Purpose

There has been slow adoption and use of e-Government services among citizens in Kenya. For businesses, there is a significantly higher uptake trend due to the fact that the government has prioritized efficient and effective interaction between businesses and public authorities. As reported by the Nation Media Group (2014), iTax service that was publicly launched by the Kenya Revenue Authority (KRA) in March 2014. According to the Business Daily (2014), the Commissioner General stated that 93 per cent of Large Taxpayers and 63 per cent of Medium Taxpayers are already using iTax services.

The goal of this research study is to meet the call for a more thorough understanding of citizens' and users' needs and expectations towards e-government. Though there are channels that enable governments and institutions to consult citizens on specific issues, the low level of citizen participation has been noted, particularly participation in decision-making. The citizen's capacity for intervention to influence the public sphere using the tools put in place is very low or even nonexistent.

The user is at the center of the research that was conducted in order to develop a comprehensive model for measuring usage of online public services. Online public services are increasingly seen as part of a broader service (improvement) strategy, with important customer and efficiency benefits. Since users of public services are usually obliged to interact with their governments to access services, user dissatisfaction with the quality of the services can easily become a major political issue.

1.3 Research Objectives

This research project aimed at understanding the perspectives users have towards Kenya Revenue Authorities' iTax system. The Kenya government is seeking to increase the adoption of this system by citizens and users. The framework used in this research can be used to evaluate other e-government services.

The research objectives of this project included:

1. To understand user's perspectives towards the iTax online government services
2. To evaluate the usability of the iTax online government service: its uses and its main functionality.
3. To identify gaps that exists in the iTax online service and possible areas of improvement.
4. To measure the relationship between usability and public participation on the iTax online government service

1.4 Research Questions

The research questions related to this project included:

1. How do users perceive the iTax online government service?
2. What are the challenges and limitations faced by users when using the iTax online government service?
3. What are the needs and expectations of users towards iTax online government service provision?
4. To what extent does usability affect public participation on the iTax online government service?

1.5 Research Outcome and Significance

E-Government strategies have been increasingly examined and questioned (Jaeger & Thompson, 2003; Heeks & Bailur, 2007; Titah & Barki, 2006; OECD, 2005). Many critics claim that the development of electronic public services has until now been primarily guided by supply side factors (Bertot and Jaeger 2006; Kunstelj, Jukic, and Vintar 2007) and technological possibilities (Bertot and Jaeger 2008; Ebbers, Pieteron, and Noordman 2008) rather than user needs.

In reaction to this, the plea for (more) user-centered e-government strategies becomes more prominent. The proposed approach aims to respond to the need for more demand side oriented impact studies. As van Dijk et al. (2008) state, there is a lack of data and investigations into the demand side of public or government electronic services (especially in comparison with multiple classifications and benchmarks lists describing the E-Government supply side).

Due to the slow and low adoption of e-government services it is prudent to question the strategies employed by governments to increase technology service adoption. Many e-government benchmarking studies have focused more on basic service availability and sophistication. However, after more than 10 years of online service analysis, a transformation would be welcome to set a new generation of e-government services, since it is important to measure the change in users needs (Marchio, Benedetti and Russo, 2015).

The study of the needs and expectations of users of selected e-government services represents a demand-oriented approach. The research represented in this report contributes to the existing body of research on e-governance that can guide government agencies on how a user centric approach can be employed when designing and improving e-government services.

1.6 Definitions

KRA- Kenya Revenue Authority

2. Literature Review and Theory

2.1 Introduction

E-government includes government activities that take place over electronic communications among all levels of government, citizens, and businesses to deliver products and services; placing and receiving orders; providing and obtaining information; and completing financial transactions (Riad et al., 2010). E- government is not merely an automation of government services and a dissemination of public information online but is a radical transformation of government, technology, and administrative processes that has the potential to change the way that services and information are presented to citizens (Information Society Commission, 2003). Broadly, the vision of electronic e-government is based around enhancing public participation and by providing a progressive and reformist approach to bureaucracies (Cumbie & Kar, 2014).

E-government and innovation can provide significant opportunities to transform public administration into an instrument of sustainable development. According to the United Nations Global E-government Readiness Report (2004), E-government is “the use of ICT and its application by the government for the provision of information and public services to the people”.

The World Bank (www.worldbank.org) defines “E-Government” refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government.

More broadly, e-government can be referred to as the use and application of information technologies in public administration to streamline and integrate workflows and processes, to effectively manage data and information, enhance public service delivery, as well as expand communication channels for engagement and empowerment of people. The opportunities offered by the digital development of recent years, whether through online services, big data, social media, mobile apps, or cloud computing, are expanding the way we look at e-government. While e-

government still includes electronic interactions of three types—i.e. government-to-government (G2G); government-to-business (G2B); and government-to-consumer (G2C)—a more holistic and multi-stakeholder approach that promotes economic growth and social inclusion is needed especially for disadvantaged and vulnerable groups (Yahaya & Idris, 2015). E-Government is widely regarded as a disruptor of traditional e-government service provision through greater citizen access, enhanced democracy, improved information quality, and a range of governmental efficiencies (Dillon et al, 2015).

E-government has received continued recognition as key policy and investment area by many governments. It is about changing how governments work, share information, and deliver services to external and internal clients. It harnesses ICTs to transform relationships with citizens and businesses, and between arms of government centered on customer friendliness. E-government goes beyond efficiency, effectiveness, economy to include long-term trust in government, social inclusion, community regeneration, community well being and sustainability.

Components of e-governance include:

- **E-administration:** Public investment in ICT in order to strengthen the transparency and accountability of public bodies, both at a national and local level, in the way they function. This component is often linked to the reform of public administration and to modernization of the state.
- **E-service:** Public investment in ICT in order to strengthen the effectiveness and transparency of public institutions in the way in which they provide public services in all sectors.
- **E-participation:** Public investment in ICT in order to strengthen interaction between public bodies and citizens, with the aim of promoting better public policies, services and functioning. This occurs at three levels: provision of information to citizens, citizen consultation and dialogue between governments and citizens.

2.2 E-administration

In E-administration the citizen is considered as a consumer of rights claiming personalized and efficient public services (Michel, 2005), the goal in this case is to improve the citizen satisfaction. The implementation of electronic administrations aims at simplifying and improving the relationships and transactions between public organizations and their users and citizens (García-Sánchez et al., 2011). Heeks (2001) simply defines e-participation as improving government processes. According to Heeks the e-participation processes deals with improving the internal workings of the public sector in the following ways:

Cutting process costs: improving the input:output ratio by cutting financial costs and/or time costs. Automation can replace higher human costs with lower ICT costs to support efficiency/productivity improvements.

Managing process performance: planning, monitoring and controlling the performance of process resources (human, financial and other). Informatisation supports this by providing information about process performance and performance standards.

Making strategic connections in government: connecting arms, agencies, levels and data stores of government to strengthen capacity to investigate, develop and implement the strategy and policy that guides government processes.

Creating empowerment: transferring power, authority and resources for processes from their existing locus to new locations. Typically that transfer is to lower, more localised levels of the public sector and may be seen as decentralisation.

2.3 E-services

According to Heeks (2001) e-services initiatives deal particularly with the relationship between government and citizens: either as voters/stakeholders from whom the public sector derives its legitimacy, or as customers who consume public

services. E-service initiatives may incorporate the process improvements in e-participation. E-services include:

Talking to citizens: providing citizens with details of public sector activities. This mainly relates to certain types of accountability: making public servants more accountable for their decisions and actions.

Listening to citizens: increasing the input of citizens into public sector decisions and actions. This could be flagged as either democratisation or participation. The main potential is for informatisation and transformation to support this by providing new information flows from citizens to government. The rationale is to make public decisions more responsive to citizens' view or needs.

Improving public services: improving the services delivered to members of the public along dimensions such as quality, convenience and cost. This uses all the potentials of ICTs to deliver the informational components of public services to citizens in digital form.

2.4 Public participation

Public Participation is the process by which public concerns, needs and values are incorporated into governmental and corporate decision-making (Creighton, 2005). In public participation, the agency retains the ultimate decision-making authority, although it may choose to share that decision-making in return for a higher level of public acceptance. Agencies retain the ultimate decision making power because they are constrained by mandates and authorities that limit what they can do. As frustrating as these mandates and authorities can be, there must be an orderly process for addressing them, or soon agencies would do whatever they wanted, and without any accountability to the public.

In the paper titled the ladder of participation (Arnstein, 1969), citizen participation is a categorical term for citizen power. It is the redistribution of power that enables the have-not citizens, presently excluded from the political and economic processes, to be deliberately included in the future. It is the strategy by which the have-nots join in

determining how information is shared, goals and policies are set, tax resources are allocated, programs are operated, and benefits like contracts and patronage are parceled out. In short, it is the means by which they can induce significant social reform, which enables them to share in the benefits of the affluent society.

Arnstein defines types of participation and non-participation as seen in the diagram below:

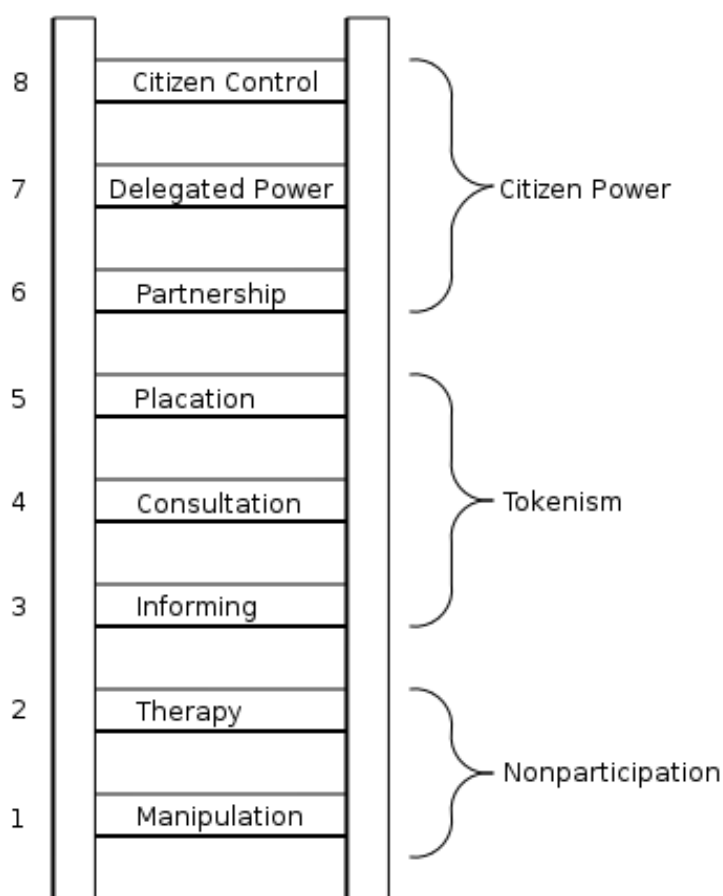


Figure 1: The ladder of participation

The bottom rungs of the ladder are (1) Manipulation and (2) Therapy. These two rungs describe levels of "non-participation" that have been contrived by some to substitute for genuine participation. Their real objective is not to enable people to participate in planning or conducting programs, but to enable powerholders to "educate" or "cure" the participants. Rungs 3 and 4 progress to levels of "tokenism" that allow the have-nots to hear and to have a voice: (3) Informing and (4)

Consultation. When they are proffered by powerholders as the total extent of participation, citizens may indeed hear and be heard. But under these conditions they lack the power to insure that their views will be heeded by the powerful. When participation is restricted to these levels, there is no follow-through, no "muscle," hence no assurance of changing the status quo. Rung (5) Placation is simply a higher level tokenism because the ground rules allow have-nots to advise, but retain for the power holders the continued right to decide.

Further up the ladder are levels of citizen power with increasing degrees of decision-making clout. Citizens can enter into a (6) Partnership that enables them to negotiate and engage in trade-offs with traditional power holders. At the topmost rungs, (7) Delegated Power and (8) Citizen Control, have-not citizens obtain the majority of decision-making seats, or full managerial power (Arnstein, 1969).

This ladder helps to show that there are different levels of participation.

E-participation is a necessary component, or even, more precisely, a prerequisite of e-democracy. It refers to the means of ICT-supported participation in processes concerning administration, policymaking, decision-making, service delivery, information provision, consultation, deliberation, etc. E-Participation can be divided roughly into three mayor levels: Information (informative public participation); Consultation (consultative public participation); Cooperation (cooperative public participation).

Governments are aided by modern ICTs that are transforming their interface and relations with citizens. ICTs are enabling governments to increase their outreach to citizens and communities for determining their needs and preferences in public policies and services. Conversely, ICTs are empowering citizens to access public institutions and have their voices heard. E-participation, then, is the process of engaging citizens through ICTs in policy and decision-making in order to make public administration participatory, inclusive, collaborative and deliberative for intrinsic and instrumental ends.

The United Nations e-Government Survey uses a three-level model of e-participation that moves from more "passive" to "active" engagement with people. The model includes: 1) e-information that enables participation by providing citizens with public

information and access to information upon demand, 2) e-consultation by engaging people in deeper contributions to and deliberation on public policies and services and 3) e-decision-making by empowering people through co-design of policy options and co-production of service components and delivery modalities. This model of e-participation is based on the assumption that a shift from more “passive” to “active” engagement brings about true people empowerment, a necessary condition for sustainable development. This model of e-participation also gives tacit acknowledgement to two trends. First, there is a shift in view of people from passive receivers of services to co-creators of public value and contributors to community resilience. Second, the daunting challenges of sustainable development inclusive economic growth that promotes full and productive employment for all while safeguarding the fragile biosphere and mitigating the effects of climate change require the concerted action of all governance partners to produce desired outcomes.

According to the UN E-participation Index, while initially the digital divide was considered primarily an issue of access to relevant information technology infrastructure, it is increasingly about capability and ability to access and use ICT. It is becoming increasingly obvious that citizens may have access to the technology infrastructure but they may not have the skills required to use the services available, or the services may not be usable. One aspect of the digital divide is also the e-government usage divide, which is generally correlated with demographic and socio-economic characteristics, such as income, education and age. Furthermore, as more government tasks are moved online, there is an increasing concern that a significant portion of the population will be shut off from jobs, health care, education and other government services.

Increasing uptake is also dependent on aligning, mixing and integrating channels appropriate to specific service types and user groups. In this context, both mobile and social media are becoming more important both to deliver services and to interact with users in a variety of ways. This also helps government listen to and work with users and help design more appropriate, user friendly and useful services, which is in turn likely to increase take-up and impact. There are increasing examples where this is being done in sectors like education, health, poverty eradication, employment and environment, which directly support sustainable development through increased user

uptake.

Policy to promote both supply side and demand side must go hand in hand. Policy efforts to increase take-up should, however, not aim just to increase usage, but should also focus on obtaining the maximum benefit from that usage for all stakeholders (United Nations E-Government Survey, 2014).

2.5 User-Centric E-Government Strategies

In the late 80s, the ‘reinventing government’ movement (Osborne & Gaebler, 1992) already stressed the rethinking of government services and proposed an ‘outward-looking approach’ (starting from the citizens' needs) instead of an ‘inward-looking’ approach (starting from the public services themselves) (Tat-Kei Ho, 2002). It can be stated that a user-centric approach should be an integral part of governmental e-strategies. Continuous inquiry of public service customers is a must, as both services and users (and their expectations) are changing permanently. This is especially necessary when dealing with technology that is rapidly changing all the while users needs and expectations of systems are increasing. To adequately satisfy their users it is imperative for governments and public agencies to be constantly checking on the needs, perceptions and experiences of their users when dealing with e-services.

Otieno and Omwenga (2014) argue that public projects are driven by public value rather than technological or economic value. Public value is defined as “the value created by government through services, laws, regulation and other actions” (Heeks, 2006). They argue that it is imperative to adopt (evaluation) frameworks that emphasize citizen-centric or demand-side approach to ensure that citizens and businesses get value for money. Therefore, when assessing e-government impact it is important to consider the context of implementation and impact from the users’ perspective since they are key stakeholders.

According to Verdegem and Verleye (2009), it is important to bear in mind that there is no such a thing as ‘the’ citizens. Since Users of electronic public services are very diverse and heterogeneous (Bertot & Jaeger, 2006; Bicking, Janssen, & Wimmer, 2006) and they may not be the citizens of the country they are accessing the service from. Therefore when it comes to developing services, the government should take an

inclusive user-centric approach instead of a one size fits all approach since this is not feasible in the long run.

2.5.1 User Centric Vs Government Centric

There are two ways of looking at the e-government service delivery perspective either primarily focusing on a user-centric perspective (demand-side) or a government-centric perspective (supply-side).

Government-centric perspectives are adopted when the need for government's internal transformation and the need for vertical and horizontal integration of government agencies and their information systems are chosen as the central aims of the stages. While these organizational and technological changes are indeed required to design a seamless, integrated national government website or portal to the public, they do not explicitly communicate what service delivery capabilities are made available to the public.

From a user-centric perspective, common e-government service delivery capabilities can be identified across 4 stages:

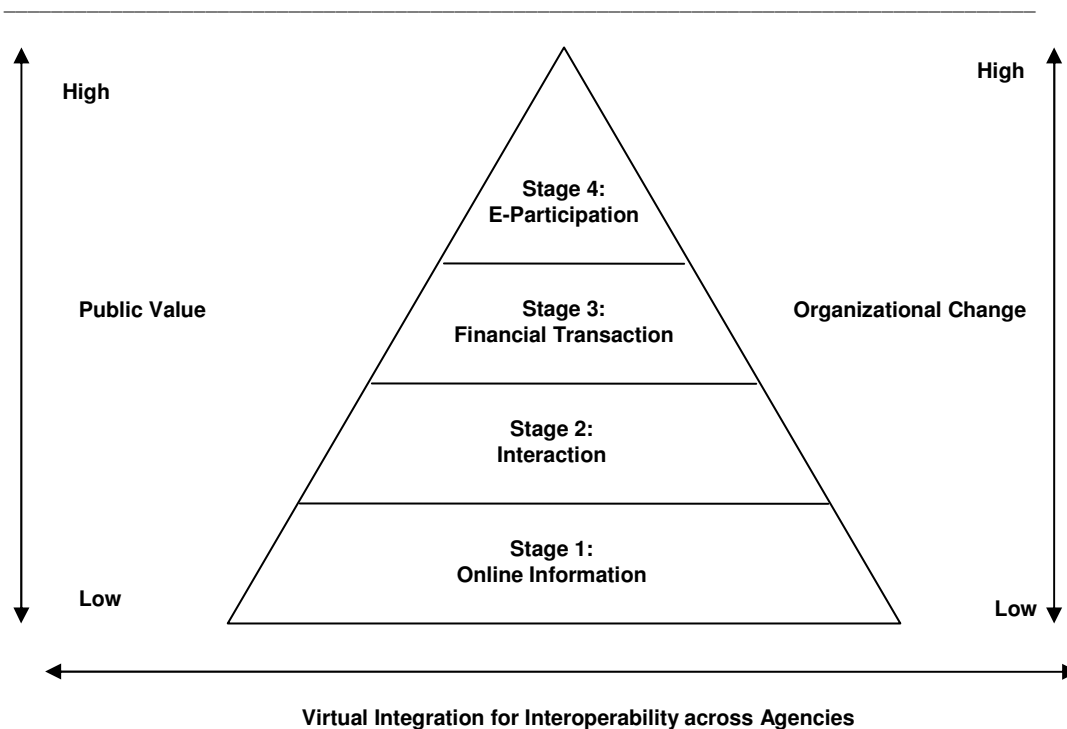
Stage 1: the public's ability to gather basic information from an official website or portal (Online Information);

Stage 2: the public's advanced ability to engage in two-way information exchange, searching databases, downloading forms and reports and uploading completed forms and reports,

Stage 3: the public's ability to conduct financial and/or legal transactions as well as the ability to bid for public contracts by businesses (Financial Transaction);

Stage 4: the public's ability to participate, deliberate, and vote electronically, being able to express opinions and viewpoints on issues of importance and to influence policy and strategy formulation processes and outcomes (E-Participation)

User-Centric E-Government Stage Model (Chatfield and AlHujran 2007)



The e-participation stage takes various forms, for example, email feedback to inform the government through online polling mechanism, discussion forums, and online consultation facilities. The final stage also underscores the importance of sharing information and knowledge within virtual communities. The final stage provides opportunities for e-governments to make their decision making processes more transparent to the public and hence to increase transparency and trustworthiness of government to the public and to build trust in e-government among the stakeholders.

2.6 Theoretical Framework

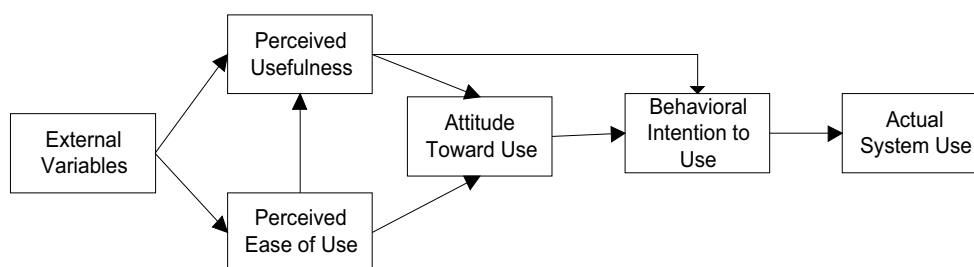
Research into technology acceptance has been concerned with how and why people adopt new information technologies. Different theoretical frameworks have been arising during the last decades. On the one hand, 'Diffusion of Innovations' by Rogers (2003) provided insights into the adoption and diffusion of innovations within the population. It is a frequently used theory to assess adoption potential (Wejnert, 2002). Rogers' view is that technology appropriation passes through different successive stages: knowledge, persuasion, decision, implementation and confirmation. The success of an innovation can be estimated using five innovation characteristics: relative advantage, compatibility, complexity, trialability and observability.

- Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. The cost and social status motivation aspects of innovations are elements of relative advantage (Rogers, 2003). Moreover, Rogers categorized innovations into two types: preventive and incremental (non-preventive) innovations. “A preventive innovation is a new idea that an individual adopts now in order to lower the probability of some unwanted future event” Preventive innovations usually have a slow rate of adoption so their relative advantage is highly uncertain. However, incremental innovations provide beneficial outcomes in a short period (Sahin, 2006).
- Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters (Rogers, 2003). If an innovation is compatible with an individual’s needs, then uncertainty will decrease and the rate of adoption of the innovation will increase (Sahin, 2006).
- Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use (Rogers, 2003). As Rogers stated, opposite to the other attributes, complexity is negatively correlated with the rate of adoption. Thus, excessive complexity of an innovation is an important obstacle in its adoption.
- Trailability is the degree to which an innovation may be experimented with, on a limited basis (Rogers, 2003). Trialability is positively correlated with the rate of adoption. The more an innovation is tried, the faster its adoption is (Sahin, 2006).
- Observability is the degree to which the results of an innovation are visible to others (Rogers, 2003). Similar to relative advantage, compatibility, and trialability, observability also is positively correlated with the rate of adoption of an innovation (Sahin, 2006).

Diffusion theory, with a focus on innovation related characteristics, has been extended with insights from social psychology studies aiming to broaden the scope to attitudinal (adoption) determinants (Plouffe, Hulland, & Vandebosch, 2001). This has resulted in a greatly elaborated framework for studying ICT and service acceptance, comprising theories and models such as Theory of Reasoned Action-TRA (Ajzen & Fishbein, 1980), Theory of Planned Behavior-TPB (Ajzen, 1985), Technology Acceptance Model-TAM (Davis, Bagozzi, & Warshaw, 1989) and Social Cognitive Theory (Bandura, 2002).

TAM, (Davis & Warshaw, 1989), is based on the theory of reasoned action (TRA), which states beliefs influence intentions, and intentions influence one's actions. According to TAM, perceived usefulness (PU) and perceived ease of use (PEOU) influence one's attitude toward system usage, which influences one's behavioral intention to use a system, which, in turn, determines actual system usage.

Technology Acceptance Model



It is however interesting to note that the research presented by Davis (1989) to validate his model, demonstrates that the link between the intention to use an information system and perceived usefulness is stronger than perceived ease of use. According to this model, we can therefore expect that the factor that influences the most a user is the perceived usefulness of a tool.

Although the initial TAM model was empirically validated, it explained only a fraction of the variance of the outcome variable, IT usage (from 4% to 45%, according to McFarland and Hamilton, 2006). Therefore, many authors have refined the initial model, trying to find the latent factors underlying perceived ease of use and perceived usefulness. In TAM2, Venkatesh & Davis (2000) showed that social

influence processes (subjective norm, voluntariness, image) and cognitive instrumental processes (job relevance, output quality, result demonstrability) affected perceived usefulness and intention to use.

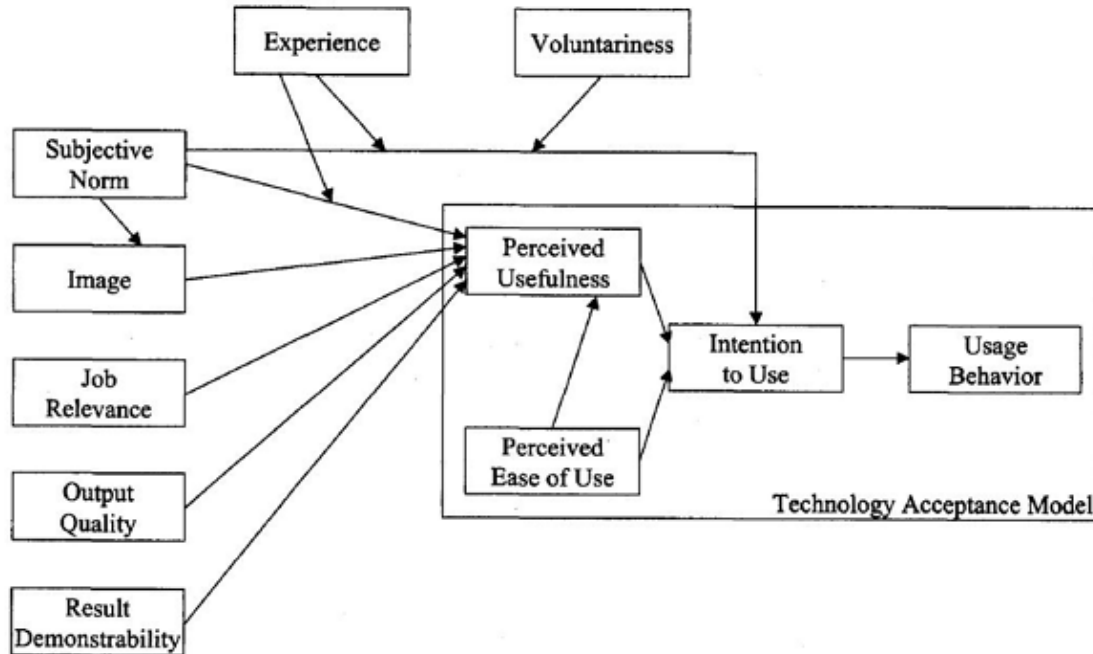


Figure 2: Technology Acceptance Model 2

A notable refinement of the TAM model is proposed by (Mc Farland and Hamilton, 2006). Their model assumes that 6 contextual variables (prior experience, other's use, computer anxiety, system quality, task structure, and organizational support) affect the dependant variable system usage through 3 mediating variables (computer efficacy, perceived ease of use and perceived usefulness). The model also postulates direct relations between the external variables and system usage and not only mediation through perceived ease of use and perceived usefulness.

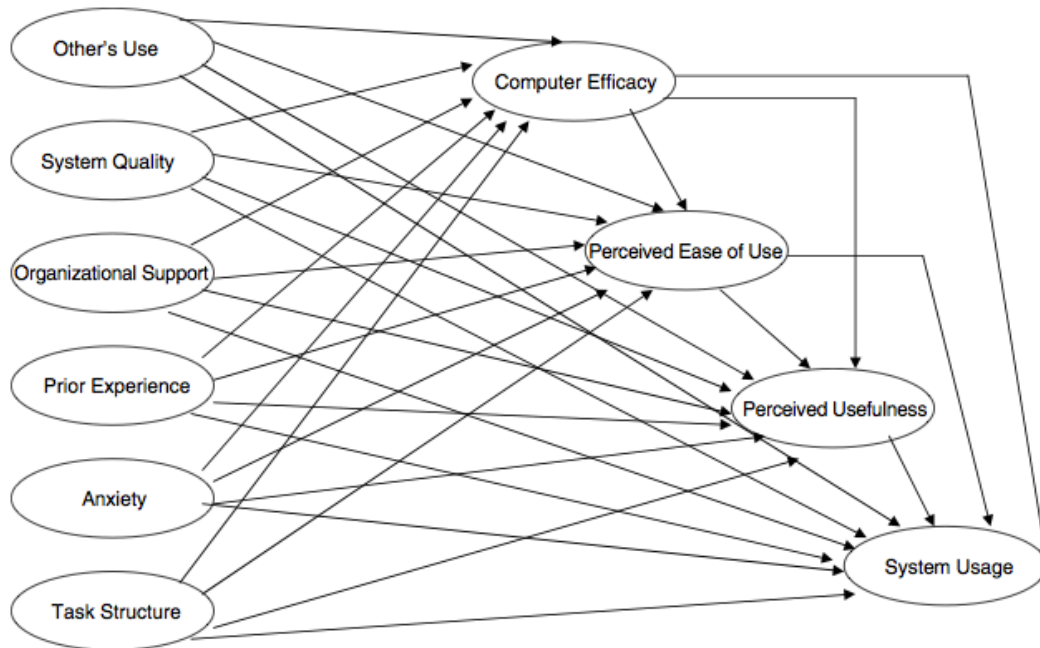


Figure 3: Adding contextual specificity to the Technology Acceptance Model from McFarland & Hamilton (2006)

The results comforted the research model, showing that "system usage was directly and significantly affected by task structure, prior experience, other's use, organizational support, anxiety, and system quality." Mediation effect were also shown as predicted. Thus However, for some relations, the effect went in the opposite direction from expected, like other's use lowering computer efficacy or high quality systems linked to low frequency of use (McFarland and Hamilton, 2006). The results show that system usage is strongly influenced by computer anxiety, prior experience, other's use, organizational support, task structure, system quality, and perceived usefulness. In addition, perceived usefulness is the strongest mediator in determining system usage.

TAM3 (Venkatesh and Bala, 2008) presents a complete nomological network of the determinants of individuals' IT adoption and use. They suggest that the determinants of perceived usefulness will not influence perceived ease of use and the determinants of perceived ease of use will not influence perceived usefulness. Thus, TAM3 does not posit any crossover effects. TAM3 posits three relationships that were not empirically tested in Venkatesh (2000) and Venkatesh and Davis (2000). They suggest that experience will moderate the relationships between (i) perceived ease of

use and perceived usefulness; (ii) computer anxiety and perceived ease of use; and (iii) perceived ease of use and behavioral intention.

They expect that experience will moderate the effect of perceived ease of use on behavioral intention such that the effect will be weaker with increasing experience. Perceived ease of use—that is, how easy or difficult a system is to use—is an initial hurdle for individuals while using a system (Venkatesh, 2000). However, once individuals get accustomed to the system and gain hands-on experience with the system, the effect of perceived ease of use on behavioral intention will recede into the background as individuals now have more procedural knowledge about how to use the system. Consequently, individuals will place less importance on perceived ease of use while forming their behavioral intentions to use the system (Venkatesh & Bala, 2008).

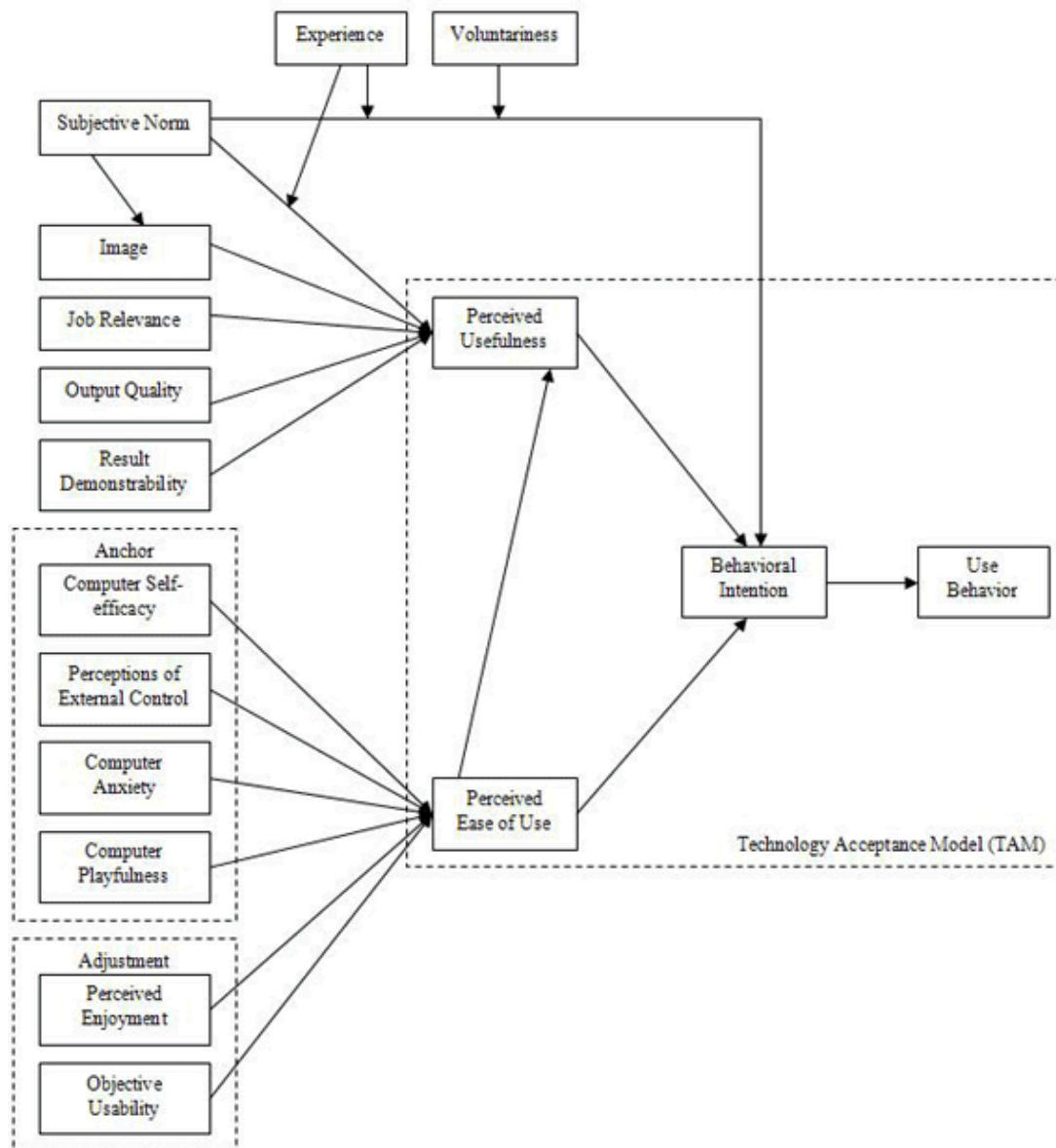


Figure 4: Technology Acceptance Model 3

The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior. The theory holds that four key constructs: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions; the first three being direct determinants of usage intention and behavior, and the fourth a direct determinant of use behavior. Gender, age, experience, and voluntariness of use are posited to moderate the impact of the four key constructs on usage intention and behavior toward using technology, self-efficacy, and anxiety are theorized not to be direct determinants of intention (Venkatesh et al. 2003).

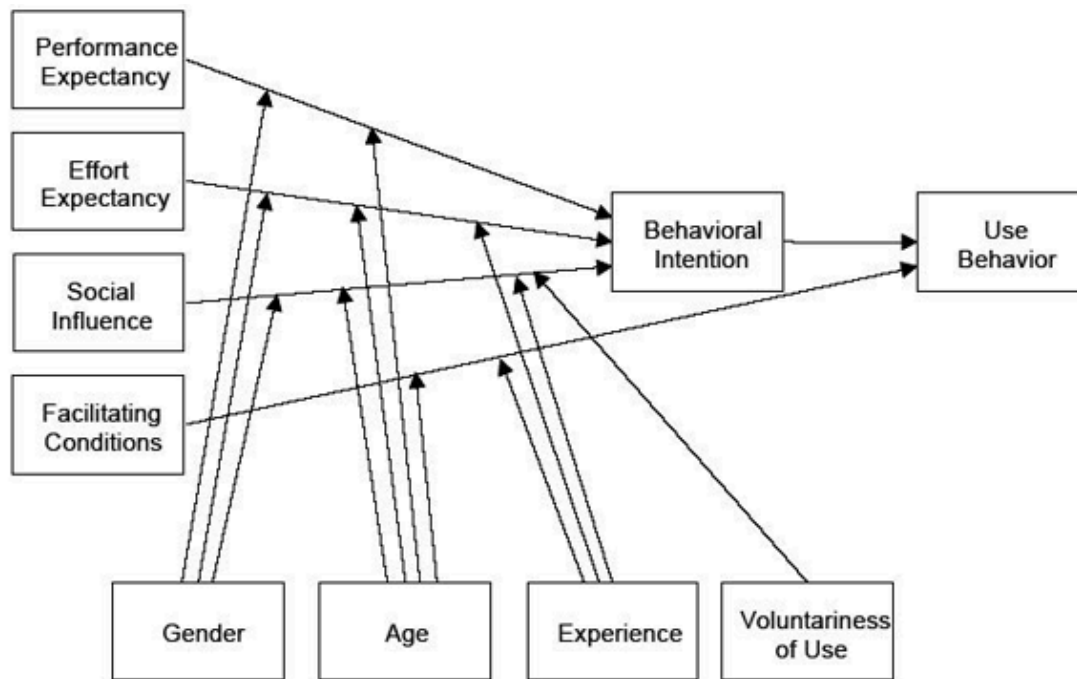


Figure 5: Unified theory of acceptance and use of technology (UTAUT)

2.7 Discussion

Based on the reviewed literature it is clear to see that the user is the greatest determinant for the adoption any e-governance project. The different models highlighted showcase the work that different researchers have done to identify the factors that should be considered when trying to increase the adoption of an Information System. Therefore when trying to evaluate the adoption of an e-government service like iTax using a user centric approach it is imperative to look at the motivations for a user to use the service and their behavior while using the service in order to determine whether they will continue to use the service.

As Tat-Kei Ho (2002) stated in his paper, “Reinventing local governments and the E-government initiative”, an ‘outward-looking approach’ that emphasizes the concerns and needs of the end users needs to be the focus in government service delivery. Ultimately the success or the failure of an Information System lies solely at the discretion of a user of the system and how they perceive its value to their lives.

2.8 Conceptual Framework

Based on the literature review, a basic conceptual framework is proposed borrowing from the underlying technology acceptance models. This is the basis of the framework for measuring usage behavior of online public services.

The conceptual framework considers key constructs of Technology Acceptance Model (Davis 1989), Technology Acceptance Model 2 (Venkatesh & Davis 2000 & Venkatesh 2000), Technology Acceptance Model 3 (Venkatesh et al. 2003) and Unified Theory of Acceptance and Use of Technology (Venkatesh & Bala 2008).

In order to look at a government system from the user's perspective this conceptual framework borrows key constructs that emphasize on the motivations for a user to use a mandatory government service. This conceptual framework focuses on how usability and the views and attitudes of the Kenyan users affect the usage of government websites. It determines if there is a positive or negative relation between user perceptions and experience of online government services and their usage. This framework was also used to determine the key contributors to users' perceptions of the iTax online service.

2.8.1 Key Constructs

Perceived Usefulness: The degree to which an individual believes that using the system will help him or her to attain gains in job performance. The perceived usefulness was measured by looking at the following constructs in the conceptual framework: voluntariness, subjective norm and job relevance. These three constructs were chosen to highlight what users thought were contributing factors to the finding usefulness in the iTax online service

Voluntariness: The extent to which potential adopters perceive the adoption decision to be non-mandatory. From the Unified Theory of Acceptance and Use of Technology (UTUAT) (Venkatesh et al., 2003) model the researcher decided to focus on voluntariness. This is because the iTax online service is currently being used as a mandatory service for companies though for individuals they can still choose whether they can use the paper or the online route. When looking at individual use it is important to highlight the voluntariness of the service and how it affects the adoption.

Voluntariness is an intervening variable in social influence in the UTUAT model and to subjective norm in the TAM2 model.

Subjective Norm: Person's perception that most people who are important to him think he should or should not perform the behavior in question (Fishbein and Ajzen, 1975), it is adapted in TAM2. Because the iTax online service is perceived to be less voluntary even though it is not completely mandatory there is a clear and definite push to make it mandatory for users in the coming years. Subjective norm is considered to be more important when system use was considered to be less voluntary (Hartwick and Barki, 1994).

Job Relevance (from TAM3): Individual's perception regarding the degree to which the target system is relevant to his or her job. The research was carried out to determine whether users feel the iTax online service is relevant to them. The fact that the government is pushing for the adoption of this service means that they see it is relevant. But the question is whether the intended users consider this service relevant.

Output quality: The degree to which an individual believes that the system performs his or her job tasks well. This construct was included to determine how the users felt towards the iTax online service regarding achieving the task they set out to do. A key factor that was looked into was whether to what extent the users completed their tasks.

Perceived Ease of Use: The degree of ease associated with the use of the system.

To determine the Ease of use the researcher focused on objective usability, computer self-efficacy and facilitating conditions. To determine the perceived ease of use of the service the researcher would observe the users and record their feedback.

Objective Usability: A comparison of systems based on the actual level (rather than perceptions) of effort required to complete specific tasks. To effectively record this, users of the iTax system were observed using the service and given tasks to perform in a controlled environment.

Computer Self-efficacy: The degree to which an individual believes that he or she has the ability to perform a specific task/job using a computer. To measure the adoption of a key service like iTax in a developing nation like Kenya, it is imperative for one to consider the literacy and computer level of the target population. Both of these factors contribute to how the individual perceives technology and whether they think they will effectively complete a task.

Facilitating Conditions: The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. For example the fact that it is free to file tax returns but one needs an Internet connection and a computer (desktop or laptop), which are not easily accessible for most people in to do this activity online.

Behavioral Intention: The degree to which a person has formulated conscious plans to perform or not perform some specified future behavior. From TAM3 (Venkatesh and Bala, 2008), TAM2 (Mc Farland and Hamilton, 2006) and TAM (Davis, 1989) it can be seen that perceived ease of use and perceived usefulness contribute to behavioral intention, which ultimately determine the usage behavior of the user. The desired behavioral intention of the Kenya government towards the iTax online service is adoption and continuous use. The greatest determinant of this adoption is the users who determine whether the service is a success or not. Therefore to increase adoption, the users intention is actually of more importance in determining the success of adoption.

Usage Behavior: the degree of use by the targeted end user. In this phase in which the user arrives when he or she has developed the intention to use the service and has gained access to that particular service.

Conceptual Framework

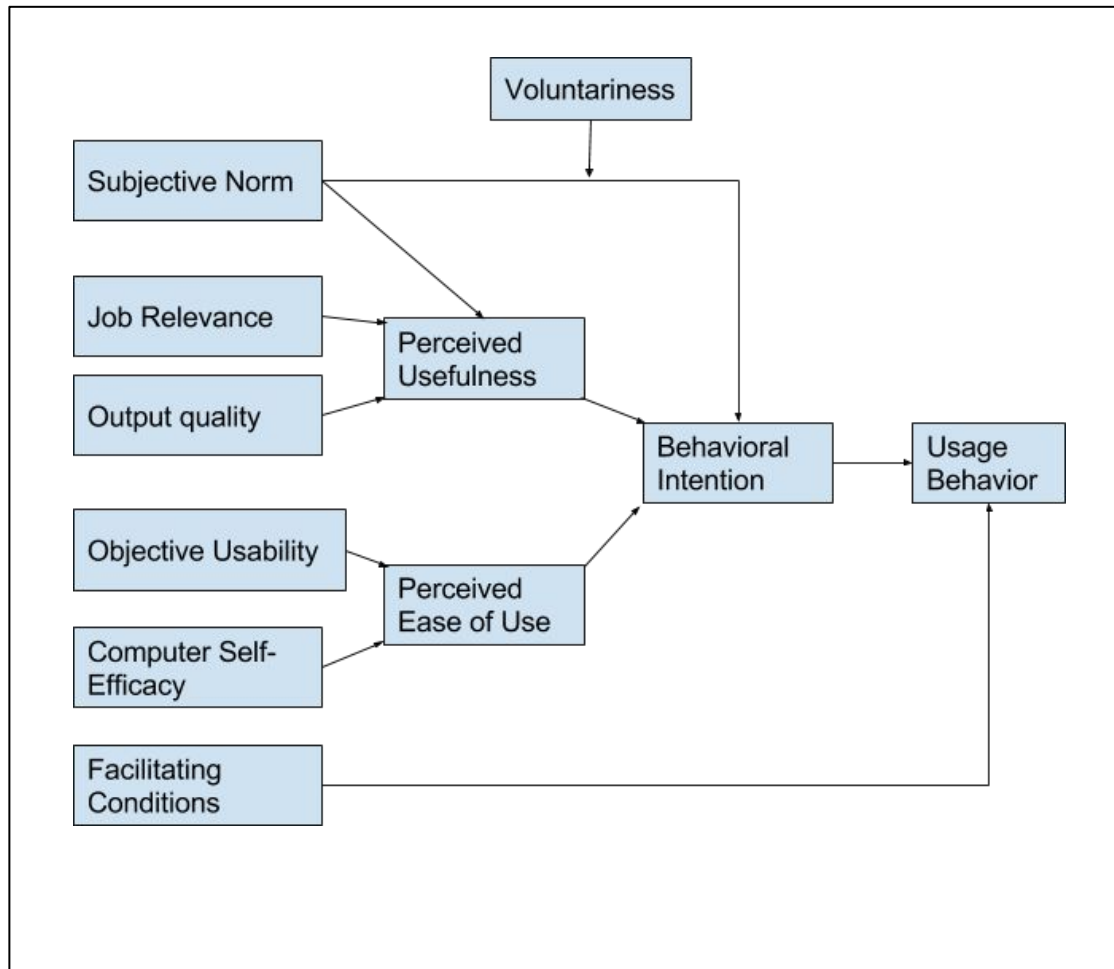


Figure 6: Conceptual Framework

3. Methodology

3.1 Research Design

This research provides an in depth view on the needs and expectations of E-government services by the users. The evaluation was done in three parts. The first part consisted of a survey targeting users of the selected electronic public service. The second part involved a usability study that evaluated how users perceived the selected system. Both the first and the second part served to identify the demand side that consists of the users needs, perceptions and expectations of the e- services. The third part involved an in depth interview with an official of the e-government service provider. This part looked at the supply side and how efficient and effective it is in meeting the user needs. A comparison will be made between both the supply and demand side and any gaps identified will be highlighted.

According to Zhang (2011) a citizen centric e-government performance measurement system needs to embody three components: actual use, quality assessment and ideas for improvement. These three components complement each other to form a coherent dimension for the development e-government performance.

3.1.1 Actual Use

Existing e-government performance measures tend to focus on availability. This part of the research focused on the actual usage behavior. The first consideration was whether use of the system was voluntary or mandatory, it worth noting that if the service was mandatory then use is not a vote of confidence in the service. In contrast if it was voluntary actual use indicates the benefit outweighs the cost in accessing the government information and/ or service. The second consideration is to get the adoption rate for the service. The calculation of such a rate needs to first delineate the target population and put the number of uses in that context.

3.1.2 Quality Assessment

Quality was assessed mainly through assessing the service quality while contextualizing the use to the user's perspective. This assessment was limited to the usability of certain aspects of the online service through the user's perspective. Through this inquiry the researcher sort to identify the perceived ease of use of the

iTax online service by the intended users. Usability is defined as the extent to which specified users could use a product to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use (ISO9241-11, 1998). Performance scores based on perception needed to be put in their proper context. For perceived performance, it is a function of expectation.

3.1.3 Ideas for Improvement

A productive e-government performance measurement seeks users' input for improvement. This speaks to the ultimate goal of performance measurement – improving performance. But in order to improve performance, the usefulness of the system to the users needs to be measured against their expectations. At the most basic level, how users perceive the usefulness of the iTax online service is central to improving their online experience. One productive use is to ask what information and/or service is lacking. Citizens will be engaged through a survey in order to generate improvement ideas.

3.2 Case Study

This research project aims to build a framework that will be used to evaluate the usability of government websites. Due to fact that there are very many government website and the researcher was limited in terms of time and money, it was decided the KRA iTax system would be the one focused on. This is because it has a wide reach and every Kenyan who is earning money is expected to file their returns online through this system. For this reason it is the government system that has possibly the widest reach on the citizens of Kenya. It is noted that it is extremely difficult to choose a sample of websites large enough to be statistically generalizable but the nature of iTax system and its size provides a worthy case study through which the researcher can propose a framework. This case provides an in-depth sample, with relevant descriptive data in an otherwise complex environment (UKES, 2011). The case study used both quantitative and qualitative approaches.

- Quantitative approaches give numerical results. For example: the percentage of participants who have filed their individual tax returns using the iTax system in the past year. Quantitative methods are most often used to assess a project's outcome.

- Qualitative approaches use narrative or descriptive data rather than numbers. For example: a description of the views and attitudes of those who have used the iTax system, and their thoughts on how it could be improved. Qualitative methods are most often used in a formative evaluation to aid a project's planning stage and when assessing participants' needs (Apcrc.nhs.uk, 2016).

3.3 In-depth Interview

Actual usage of the system was determined by carrying out an in-depth interview with an officer at the Kenya Revenue Authority. This provided information on the actual number of users who use the online iTax system versus the actual number of users who file their taxes using the offline method.

3.4 Usability Study

The usability study of the iTax system was used to determine the views and attitudes of users who have used the iTax system, and their thoughts on how it could be improved. The key construct to be examined at this stage was objective usability. The usability test involved the following activities:

1. Qualitative User Testing
2. Identify representative users
3. Ask the users to perform representative tasks with the design

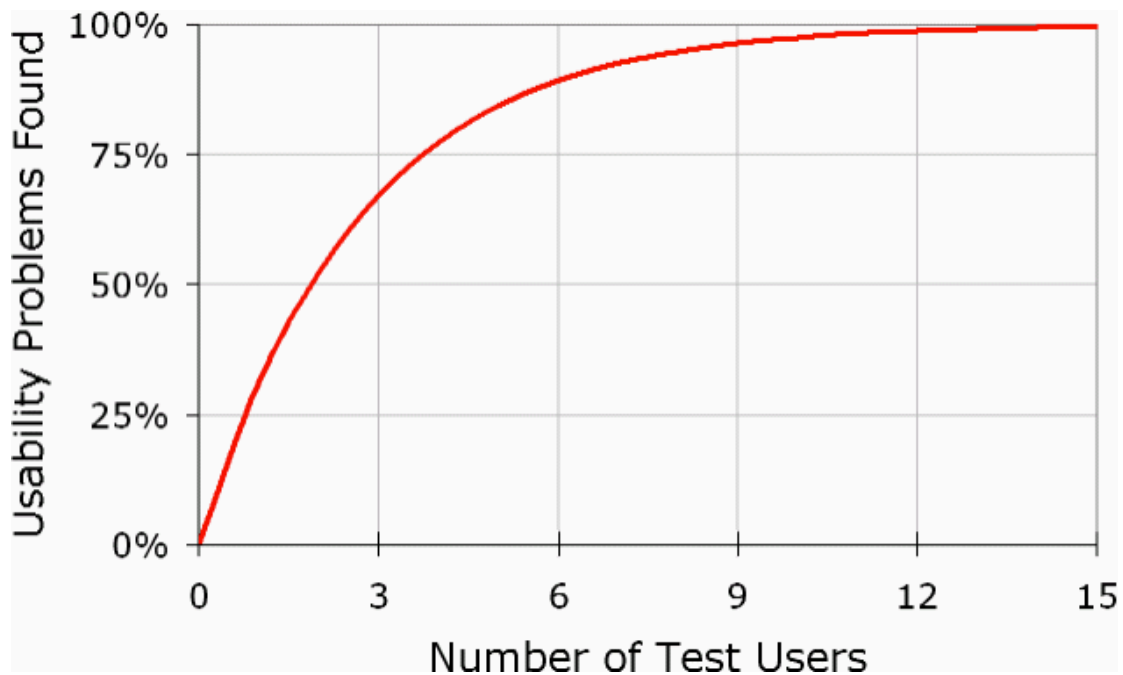
3.4.1 Target Population

According to Jacob Nielsen of the Nielsen Norman group, the best usability test results come from testing no more than 5 users and running as many small tests as one can. In earlier research, Tom Landauer and Jacob Nielsen showed that the number of usability problems found in a usability test with n users is:

$$N(1-(1-L)^n)$$

where N is the total number of usability problems in the design and L is the proportion of usability problems discovered while testing a single user. The typical

value of L is 31%, averaged across a large number of projects we studied. Plotting the curve for L =31% gives the following result:



3.4.2 Iterative Design

From the curve it can be seen that with 15 users one can discover all the usability problems in a design. Nielsen recommends that it is better to spread users on multiple small tests when a research has got budget limitations. This is because the real goal of Usability testing is to improve design and not just to find weaknesses. After the first study with 5 users 85% of the usability problems will have been identified. After this an improved version of the design can be designed which can go through the process of iterative testing. The second study will identify the remaining 15% of the usability problems. Due to constraints of time and budget this research will only carry out the first iteration of the usability testing. Recommendations will be presented to the concerned authority. It will be up to them to decide on the changes to be made on the design and hopefully carry out the second part of the usability test (www.nngroup.com, 2016).

3.4.3 Moderated Observer

In moderated observer testing, the observer is onsite with the tester. The observer watches closely as the test unfolds, and can ask questions and take notes. Essentially,

the moderator can drive the test forward to make sure all moderator questions are answered and all user tasks are completed. While it allows for instantaneous results, it can make the users feel as if they are a part of an experiment. Testers may not feel comfortable enough to perform their tasks normally due to this environment. This will not give your test natural results (Sebastian, 2013).

3.4.4 Process

- Two usability tests were carried using the moderated observer method
- Each test was carried out by 5 users
- This user study was carried over the course of two weeks

3.4.5 Usability metrics

- Success rate across task- percentage of tasks that users complete correctly.
- Time to complete task (min:secs)
- Subjective satisfaction (1-5 scale, 5 best)

3.4.6 Define the Test

- Finding good participants
- Making sure participants show up
- Selecting test tasks and scenarios
- Running the session
- Debriefing

3.4.7 Task Selection

- Registering for an individual Pin on the KRA iTax website

3.5 Survey

3.5.1 Survey structure

There key constructs in the conceptual framework examined by the survey include: Voluntariness, Subjective Norm, Job Relevance, computer self efficacy, facilitating conditions.

The survey was distributed on both online and offline platforms. Both paper surveys and an online survey were carried out. The survey was in three parts: (a) demographics, (b) online behavior, use and attitude toward e-government services and (c) ideas for improvement.

3.5.2 Target Population

The target population of the survey was Kenyan citizens and residents who remit Pay As You Earn (PAYE) taxes. Due to the fact that this population is very large and is distributed over a wide geographical area, it was not possible to obtain a sampling frame. That exercise would be expensive and time consuming. I therefore decided to work with an accessible population of people who work in the small and medium enterprises in Nairobi. This people should be Internet savvy in order to be the target that access government e-services. In this research I used random sampling, targeting individuals working in small and medium organizations.

As of May 2015, there were 1.6 million tax payers registered on the iTax system (Nation.co.ke, 2015). The sample size was determined using published tables. This table was created using the formula proposed by Krejcie & Morgan in their 1970 article “Determining Sample Size for Research Activities” (Educational and Psychological Measurement, #30, pp. 607-610). To achieve a confidence level of 95%, $P=.5$ and a precision level of $\pm 10\%$, I conducted a survey with 107 obtained responses.

Below is an image of the published table:

Table 1. Sample size for $\pm 3\%$, $\pm 5\%$, $\pm 7\%$ and $\pm 10\%$ Precision Levels Where Confidence Level is 95% and $P=.5$.

Size of Population	Sample Size (n) for Precision (e) of:			
	$\pm 3\%$	$\pm 5\%$	$\pm 7\%$	$\pm 10\%$
500	a	222	145	83
600	a	240	152	86
700	a	255	158	88
800	a	267	163	89
900	a	277	166	90
1,000	a	286	169	91
2,000	714	333	185	95
3,000	811	353	191	97
4,000	870	364	194	98
5,000	909	370	196	98
6,000	938	375	197	98
7,000	959	378	198	99
8,000	976	381	199	99
9,000	989	383	200	99
10,000	1,000	385	200	99
15,000	1,034	390	201	99
20,000	1,053	392	204	100
25,000	1,064	394	204	100
50,000	1,087	397	204	100
100,000	1,099	398	204	100
>100,000	1,111	400	204	100

a = Assumption of normal population is poor (Yamane, 1967). The entire population should be sampled.

3.6 Triangulation

Due to the fact that this study was limited in terms of the number of respondents and their demographics, which could introduce limited biases, the concept of triangulation was used. By combining multiple methods: in depth interviews, usability study and a survey (both paper based and online) the results can be further checked for consistency thus will increase credibility and validity.

3.7 Data Collection

Desk research-The researcher carried out a study and review of studies and projects done on e-governance with a keen focus on the citizen centric and user centric view in Kenya and in other countries. This method was used to determine the work that had been done and see how this study could add to that body of knowledge by putting a spotlight on the Kenyan context.

In depth Interview- This involved an unstructured interview that was carried out over a one-week period with a subject matter expert who works at KRA.

Usability Study- This was carried over a period of two weeks with young women who were first time users of the iTax online service. They had just finished tertiary training; they were about to get their first formal jobs and were between the ages of 18-24 years. They can be classified as digital natives (Prensky, 2001) since they have grown their whole lives interacting with the digital world via television, mobile phones and computers.

Survey- The survey was carried out over a period of one month in November 2015. It was carried out using online and offline means. It targeted people who were aware of the iTax online service and who had some form of access to the service; either via their computers or they were in close vicinity to someone who was in the possession of a computer. They also had access to the Internet.

3.8 Data Analysis

The qualitative data from the in depth interview and the usability exercise was categorized and coded in order to identify themes or patterns. These were represented in the form of ideas, interactions, recommendations and incidents that the respondents mention or have experienced. Once these were categorized patterns and connections within and between the categories were identified. The in depth interview handled the supply side of the of the selected online government service, iTax.

The data from the Usability Study was analyzed using defined usability metrics, which were analyzed using descriptive statistics and summarized and presented in the form of averages. This data handled the demand side of the iTax online service.

The explore feature in Google sheets was used for the data analysis of quantitative data from the user survey. Descriptive statistics was done using table of frequencies, percentages and means. Pie charts were also used to present the findings. In terms of inferential statistics, SPSS statistics software was used to determine the correlation between selected variables. Correlation is a bivariate analysis that measures the strengths of association between two variables. Pearson r correlation is widely used in statistics to measure the degree of the relationship between linear related variables.

4. Results

The research methodology consisted of three components: actual use, quality assessment and ideas for improvement, which were represented as follows:

- Actual usage- In-depth Interview
- Quality assessment- Usability Study
- Ideas for improvement- User survey

4.1 Actual Usage

The in depth interview was carried out to determine actual usage of the iTax online service. The interview was carried out with an officer of the Kenya Revenue Authority (KRA). The number of individuals who filed Individual Tax Returns (IT1) on the iTax online service for January- December 2014 was 20, 185. The respondent indicated that the official data was not accurate since all the manual copies are yet to be put on the system.

From the interview the respondent confirmed that the steps the KRA is working on to ensure there is an increase in the number of Kenyan citizens and residents who file their taxes include:

- Closing of manual filing as from July 2015 for Value Added Tax (VAT), Pay As You Earn (PAYE), Income Tax Company Returns (IT2C), Income Tax Partnership Returns (IT2P)
- Conducting iTax returns sensitization trainings across the country for various the tax obligations.

The respondent said that the two channels currently available for users to file returns are the iTax online service and manual filing (paper based). The official indicated that their greatest challenge as the KRA was system downtime. This shows that KRA is aware of this challenge that their users are facing. Otieno and Owenga (2015) argued that the greatest challenge that faces implementation of e-government services in developing countries is poor infrastructure and Internet connectivity. Inadequate infrastructure and slow Internet connection affects a system's availability. To improve their system availability it is imperative for KRA to invest in better infrastructure for

their systems. It is the government's responsibility to ensure that citizens' have access to infrastructure and Internet connectivity in order to use the service.

4.2 Quality Assessment

The quality assessment was determined through the usability study carried out on the five participants.

Activity: New Pin registration

Success rate across task- percentage of tasks that users complete correctly

User	Success Rate
User 1	100%
User 2	100%
User 3	100%
User 4	0%
User 5	100%
Average success rate	80%

Time to complete task (min:secs)

User	Time
User 1	12minutes 49 Seconds (769s)
User 2	6 minutes 23 seconds (383s)
User 3	7 minutes 32 seconds (452s)
User 4	10 minutes (600s)
User 5	6 minutes 35 seconds (395s)
Average time to complete task	8 minutes 7 seconds (519s)

Subjective satisfaction (1-5 scale, 1 worst, 5 best)

User	Subjective satisfaction
User 1	4
User 2	4

User 3	5
User 4	1
User 5	4
Average subjective satisfaction	3.6

4.2.1 Success Rate

Only one respondent was not able to complete the task. This was because the iTax online service was not available. We tried accessing the service for 10 minutes then abandoned the exercise. This is reflective of the down time that many users experience when accessing the online service. This means that the infrastructure could be available, the user can have access to the Internet but the service itself could be unavailable. Considering most services carried on iTax are mandatory this means that users could be incurring costs for the lack of service this includes paying of fines for late filing of taxes despite having the required infrastructure in place.

In order to improve the user experience on the site, the most common request by users was for the service to be available whenever it is needed.

4.2.2 Task Completion

77.6% of the respondents in the offline and online user survey (that will be comprehensively discussed in the next section) indicated that they have had challenges using the KRA iTax online system. These statistics were backed by the usability study that was done with 5 novice users of the KRA iTax system. The five respondents were first time users of the iTax system.

4 of the 5 test users were familiar with computers. 4 were graduates of an ICT programming training program. Despite having working knowledge of computers all the users needed assistance to complete the task of pin registration. The average time taken to complete the task was 481 seconds (8 minutes and 7 seconds). Simplifying the system and giving clear instruction when requesting for information can reduce this time.

To increase adoption of government services, it would be prudent to simplify the system for the users and include tool tips on every step of the way.

4.2.3 Subjective Satisfaction

The user who had the highest subjective satisfaction score is the one who needed the most help and had the least working knowledge of computers. This can be implied to mean that she was more satisfied with the help than with the efficiency of the service. This shows that the addition of tool tips, help features and responsive customer service will go a long way in increasing user satisfaction and thus increasing adoption. All users told the researcher, *“If you were not here, I would not have finished”*. This also shows a common user behavior whereby they do not finish an online task if they do not receive assistance. It is imperative for e-government service providers to provide avenues to receive assistance whether offline or online in order to increase adoption.

4.3 User Survey

4.3.1 Participant’s profile

The charts and graphs below show the demographics of the participants in the study. A sample was randomly selected, 120 questionnaires were distributed and 108 respondents took part in the survey. 60.8% of the respondents to the survey were female while 39.2% were male. In terms of age 72% of the respondents were between the ages of 20-29 years, followed by the 30-39 years age group representing 19.6%, the 40-49 years representing 5.6%, 50-59 years representing 1.9%. Prensky (2001) referred to digital natives as children born into a digital, media saturated world, which require media rich learning to hold their attention. In America this were typically applied to children born after 1980 because computer bulleting board systems were already in use at the time (Wikipedia, 2016). In this report carried out in Kenya, I propose that this are children born after 1990. The mobile revolution sparked the Internet uptake in Kenya. The first mobile phone company in Kenya was founded in 1997. In this regard the age group most likely to easily adopt e-government systems would be 20-29 years hence the focus on them. The results show that majority of the

respondents are digital natives meaning they are the group that is more likely to be aware and have access to a computer and Internet connection. It should be noted that 53.7% of the respondents filled in the survey via the online Google form while the other 46.3% filled it via paper based means. What this suggests is that to increase adoption of online e-government services, the government agencies should focus their awareness and marketing efforts to the population aged 20-39 years in order to increase adoption.

Demographic Profile by age and gender

Variable	Attribute	Total Respondents	%
Age	10-19	1	0.9
	20-29	78	72
	30-39	21	19.6
	40-49	6	5.6
	50-59	2	1.9

Gender	Male	42	39.2
	Female	66	60.8

Education Level

In terms of the highest education level achieved, 53.3% of respondents had a degree, 20.6% had a diploma, 23.4% had postgraduate education, 1.9% had secondary education and 0.9% had primary education.

Highest Education level	Primary	1	0.9
	Secondary	2	1.9
	Diploma	22	20.6
	Degree	58	53.3
	Post Graduate	25	23.4

Occupation Type

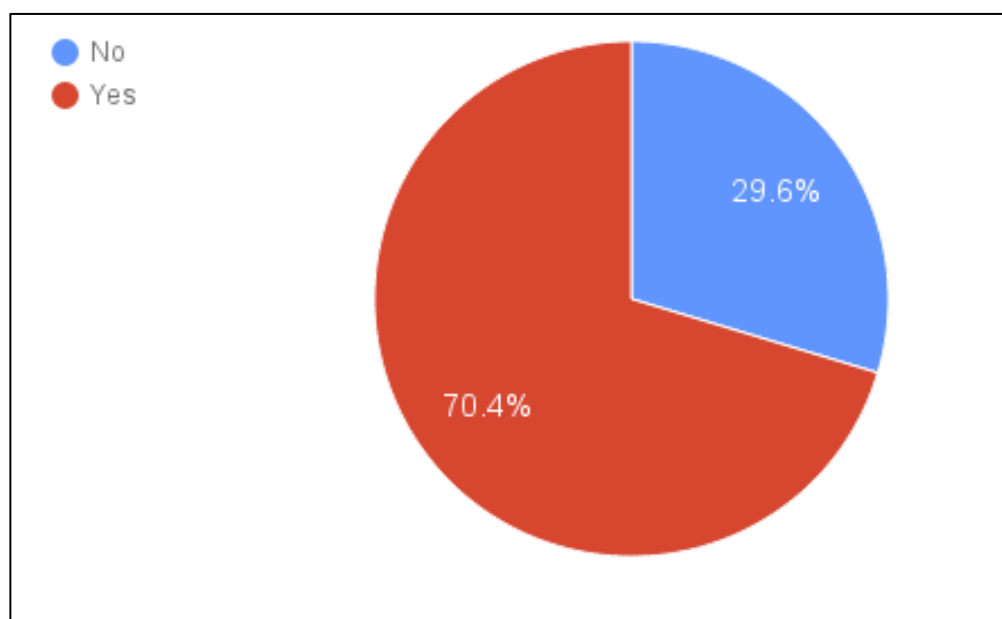
In terms of occupation 40.7% were employed in the formal sector, 13.9% were employed in the informal sector, 27.8% were self-employed, 14.8% were students, and 2.8% were unemployed.

Occupation	Employed (formal sector)	44	40.7
	Employed (informal sector)	15	13.9
	Self Employed	30	27.8
	Student	16	14.8
	Unemployed	3	2.8

4.3.2 Access and Usage of the iTax system

The total number of respondents who have used the iTax system is 76, which represents 70.4% of all the respondents surveyed. These respondents who use the iTax system have a preference for devices that are mobile. 26.5% of respondents who used the iTax system accessed via a desktop while 73.5 % accessed the service via device that allows for mobility: laptop (60.2%), tab (7.2%) or mobile phone (6%). The key message is that the iTax system should be built to handle more traffic from mobile devices than just focusing on the traditional tablet computers.

Representation of respondents who have ever used The iTax Service



Device Access

Device	Total=76	%
Laptop	46	60.2%
Desktop	20	26.5%
Tablet	5	7.2%
Mobile Phone	5	6%

Frequency of using the iTax Online Service

Frequency	Total	%
At least once a week	2	2.4
At least once a month	21	27.7
At least once a year	53	69.9

These results show that majority of the users interact with the system once a year. This is usually when they are required to file their individual tax returns. For most of the users, since they access the system once a year, they are unlikely to remember their passwords or how to fill in the Excel template that needs to be Macro enabled. For this reason it is recommended that the iTax service for filling returns should be the simplest service offered with the least number of barriers e.g. Macros to enable users to use the system with ease.

4.3.3 Filing Individual Tax returns

Filing tax returns is an individual obligation required by the government of Kenya. When asked if the respondents filed their returns in 2015, 59.3 % did and 40.7% did not. Of those who filed their returns, 73.8% used the online means while 26.2 % used the manual method. This is despite efforts by the government to make filing of individual tax returns to be mandatorily online (this efforts did not succeed in 2015 because the online system could not handle the last minute rush). After a discussion with a KRA official they informed me that only 20,000 individuals filed their individual tax returns online. As of writing this report they had not compiled the

number of manual returns to come with a conclusive number. It was difficult to get the approximate of total number of taxpayers who filed tax return both manually and via the online channels.

Representation Of Respondents Who Filed Their Individual Tax Returns

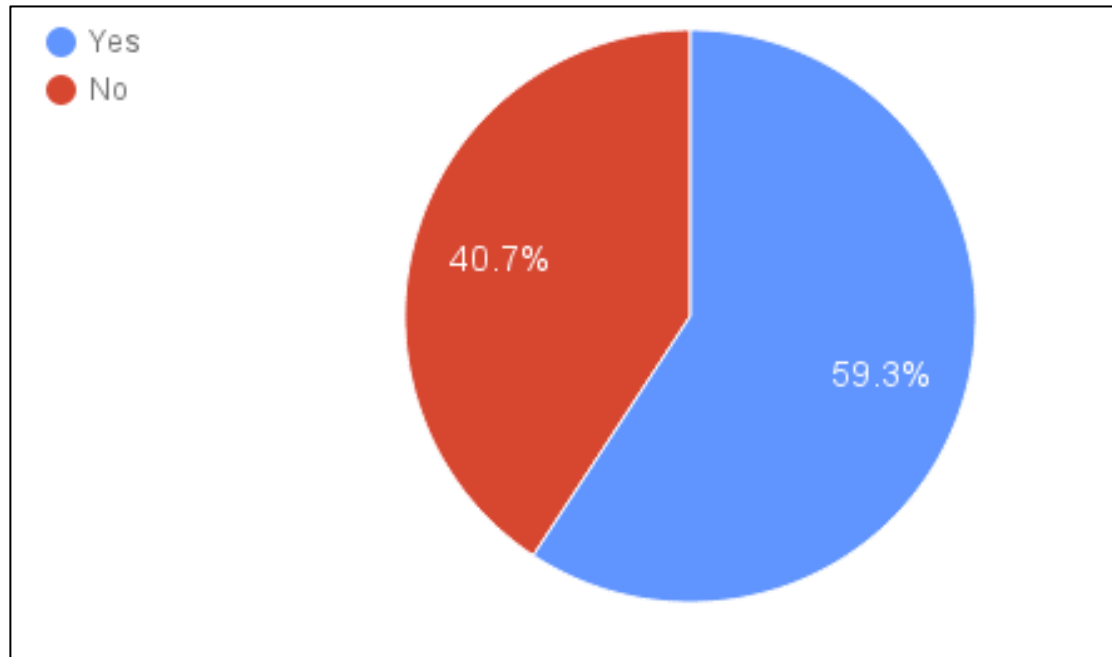


Figure 7: Yes- 59.3%, No- 40.7%

Of the factors that influenced the respondents' decision to file their returns 54.7% said it was the Kenya Revenue Authority, followed by 28.1% who said it was their employer, followed by 10.9% who said it was their family and friends, and 6.3% said they were personally motivated. This shows that the aggressive marketing campaign run by KRA is effective and needs to be strengthened in order to encourage adoption of the iTax online service.

Of those who have used the iTax online service, only 33% have read the Frequently Asked Questions (FAQs) of the iTax service. This means that either people do not know they exist or they do not know how to use them. Ultimately there is a definite gap in information about the assistance available on the iTax online service. To address this gap KRA and focus on sensitizing users on the FAQs available and also put the FAQs link in a place that is easily visible and accessible to the users of their service.

Representation of How Respondents Filed their Individual Tax Returns

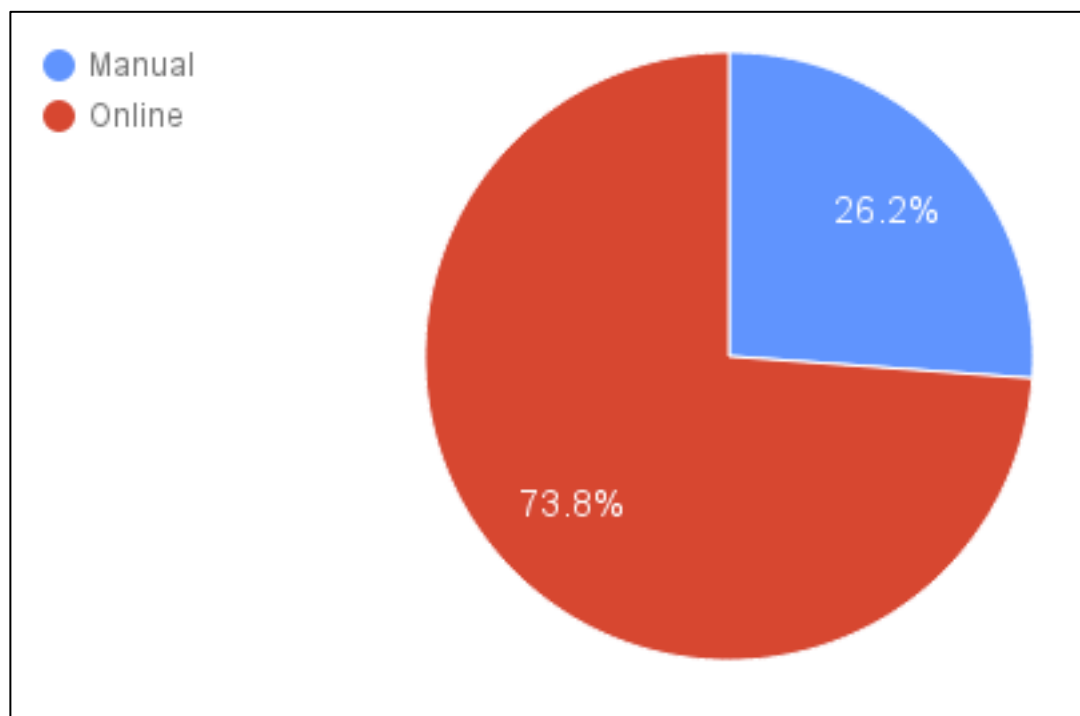


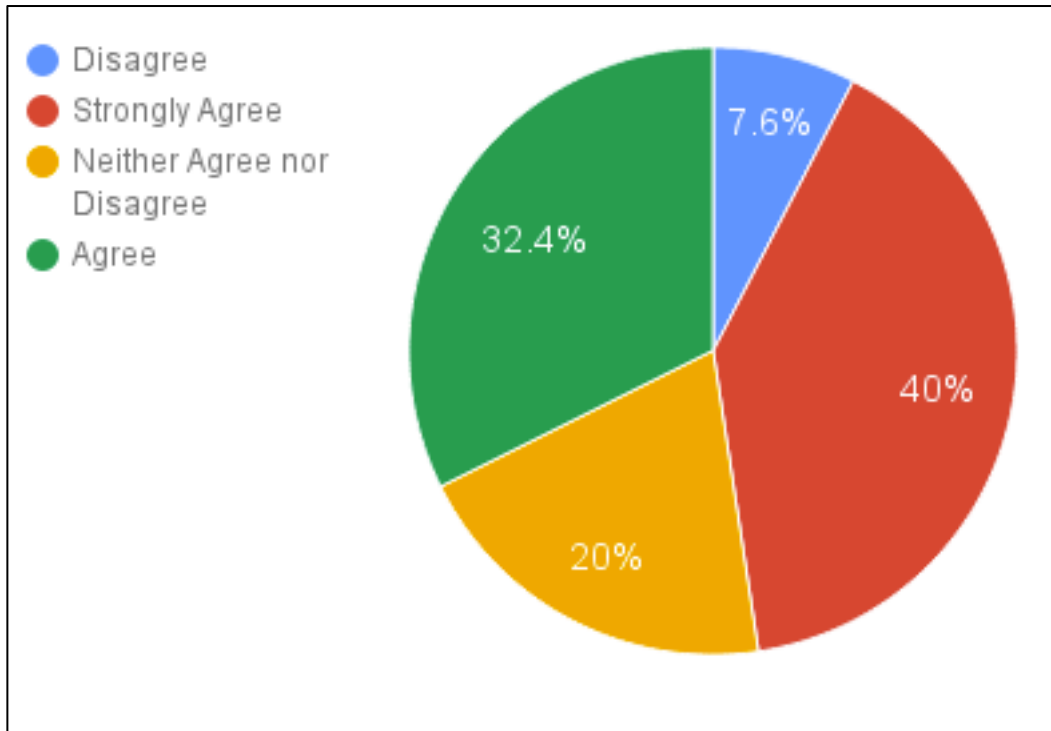
Figure 8: 73.8 % online 26.2% manual

4.3.4 Attitudes Towards the iTax online service

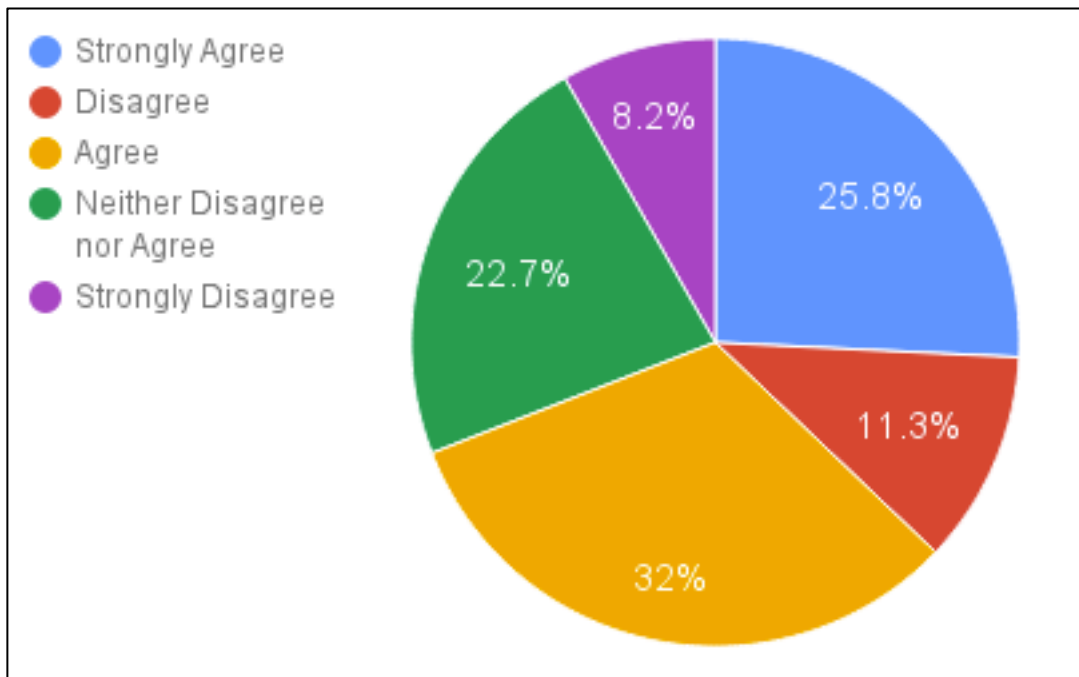
57.8% of the respondents agreed and strongly agreed with the statement '*the iTax online service is the best way to file my individual tax returns*'. When we look at individual responsibility, 70.5% of the respondents agreed and strongly agreed with the statement '*I think it is important to file my individual tax returns*'. This shows that users are willing to file their tax returns and understand the importance of filing their tax returns. The issue raised all through this study is the complexity that characterizes service especially with the use of macros in the Excel document when uploading reports. One respondent said,

"There is an assumption that everyone is computer literate. This is in great error as there are so many people who are not computer literate and yet they earn. Why not have two options for people to file in their returns? You can have both iTax and hard copy (as was originally). That way people are not limited to only having to use a computer yet we as Kenyans know how to access a computer and Internet can be a challenge."

“I think it is important to file my Tax Returns”



“I think the iTax Online Service is the best way to file my individual returns”



4.3.5 Education Level and Filing Taxes

The spearman correlation was not used in determining the degree of association between the two variables (level of education and history in filing taxes) because the level of education is not considered an ordinal variable. These values are ordered as primary school, secondary school, degree, and post graduate. Even though they can be ordered from lowest to highest, the spacing between the values may not be the same across the levels of the variables. If we assign scores 1, 2, 3 and 4 to these four levels of educational experience and compare the difference in education between categories one and two with the difference in educational experience between categories two and three, or the difference between categories three and four. The difference between categories one and two (primary and secondary school) is probably much bigger than the difference between categories two and three (secondary school and degree).

The Pearson r correlation was used to measure the degree of the relationship between education level and evidence of filing tax returns.

Correlations

		Q1Educationlevel	Q3filedtaxreturns
Q1Educationlevel	Pearson Correlation	1	-.156
	Sig. (2-tailed)	.	.107
	N	108	108
Q3filedtaxreturns	Pearson Correlation	-.156	1
	Sig. (2-tailed)	.107	.
	N	108	108

There is a weak relationship between respondent's level of education and the respondents filing their tax returns because the Sig. 2-tailed level is .107 and showing there is a small negative relationship ($r=0.156$) of 15.6% which means as the level of education increases the likelihood to file taxes decreases. Since this is a small correlation the argument does not hold. The low Pearson correlation efficient shows that the two variables may have a non-linear relationship. This shows that the likelihood of filing taxes is not influenced by level of education of the respondents.

4.3.6 Occupation Type and History of Filing Taxes

The spearman correlation was not used in determining the degree of association between the two variables because the type of occupation is not considered to be an ordinal variable.

The Pearson r correlation was used to measure the degree of the relationship between the type of occupation and filing tax returns.

Correlations

		Q2Occupation	Q3filedtaxre turns
Q2Occupation	Pearson Correlation	1	.378(**)
	Sig. (2-tailed)	.	.000
	N	108	108
Q3filedtaxreturns	Pearson Correlation	.378(**)	1
	Sig. (2-tailed)	.000	.
	N	108	108

** Correlation is significant at the 0.01 level (2-tailed).

There is a significant relationship between respondent's level of occupation and the respondents filing their taxes because the Sig. 2-tailed level is .000 and showing there is a moderate positive relationship ($r=0.378$) of 37.8% which means that as one variable goes up or down so will the other one. This means both variables will increase or decrease together. In relation to this study it shows that the likelihood of filling taxes increases when one is in formal employment. This could be influenced by the fact from the results of this research it is seen that employers are the second largest influencers (28.1%) after KRA (54.7%) to individuals filing their tax returns.

4.3.7 User recommendations

4.3.7.1 *Improved Efficiency of the iTax System*

Respondents recommended that KRA should invest in making sure the system is always accessible. Many users complained that when they wanted to use the system especially close to the deadlines for Income Tax return submission the system was frequently inaccessible, unstable and slow. They recommended that the system be built and maintained to handle mass traffic especially since it is expected that there will be a last minute rush when filing returns.

Respondents also expressed that the authentication process was hectic. Confirmation emails during the authentication process were either delayed or not sent. This was observed to be a great deterrent to using the system. The issues to be focused on by KRA include: availability, speed, reliability, and stability.

4.3.7.2 *Simplification of the iTax online service*

In relation to the complexity of using the iTax online service, respondents recommended the numbers steps to accomplish a task like filing tax returns should be reduced to simplify the process. Also recommended was that the service should be made easier to navigate and more user friendly.

Respondents requested that the service should have intuitive help features like pop ups to indicate wrongfully entered information. One respondent suggested that KRA distribute a sample filled in excel sheet for the income tax returns so that users can know what is expected. Another user expressed that the system should be simplified that “it is as easy as Mpesa¹” so that any body from any part of the country can access and file tax”.

It should be noted that as it stands the system is built for people who understand how to use excel and are familiar with the use of Macros, this is a limited number of the

¹ M-Pesa (M for mobile, pesa is Swahili for money) is a mobile phone-based money transfer, financing and microfinancing service, operated by the mobile phone network Safaricom in Kenya.

population who first have access to computers, Internet and have the skill to carry out a task such as filing returns online.

4.3.7.3 Customer Service

Users expressed frustration with the fact the iTax customer service is unsatisfactory. Respondents expressed that their phone calls and emails were rarely answered. There was a general consensus that there is a slow response to inquiries through the existing online channels, thus forcing the users to go to the iTax offices. On a positive note, one respondent found the iTax YouTube videos to be very helpful.

Respondents recommended that the iTax service could include online chat agents on the site so that there is an instant response to queries. They could also include tool tips on the site to assist users.

In response to the recommendations of the user, the researcher recommends that KRA invest in a customer care centre to take care of inquiries over calls, emails, chats and social media. This will reduce the queues of people with simple inquiries at the iTax offices.

It is also recommended that when dealing with user's issues they could allow for people to scan the documents they request and send them to iTax for follow up rather than people going to their offices physically.

4.3.7.4 Training of users

Respondents also recommended that KRA should carry out more training on how to use the iTax system. They expressed frustration in how a service that is mandatory is so difficult to perform. They recommended that the process of filing tax should be as easy as possible.

4.3.7.5 Public Awareness

Respondents recommended that there be more awareness created around the iTax online service. Otieno and Omwenga (2015) showed that a low level of public

participation in e-government inherently follows from low levels of awareness. One of the successes that can be noted is that most of the people surveyed indicated that KRA influenced their decision to file taxes. Only 6.3% of the respondents felt personally motivated to file their individual tax returns.

Influencers to using the iTax Online Service

<u>Influencer</u>	<u>Percentage</u>
Kenya Revenue Authority	54.7%
Employer	28.1%
Friends and Family	10.9%
Self	6.3%

One user indicated that he had learned about many of the iTax online services through this survey carried out. It is noted that KRA carries out classes on the use of iTax service. Unfortunately few members of the public are aware that these classes exist. It is recommended that KRA should develop a strategy to share the information of the online service with members of the public who are based in the rural areas, especially those who do not understand the platform.

4.3.7.6 Additional recommendations

In order to reduce the long queues at the iTax offices, one user recommended that the KRA could introduce an agency model of service delivery.

It was recommended that the iTax service should be available in local languages. Since Kiswahili is the Kenyan national language, KRA should consider making the service available in Swahili.

One of the respondents mentioned that the Macros in the Excel sheet were a challenge. She said the requirement to enable macros sometimes made it difficult to use the Excel document. One other respondent mentioned that Macros were dependent on the settings on a user's computer.

4.3.8 Recommended New services

The user survey allowed the respondents to recommend services they would like offered in the iTax online service.

4.3.8.1 Payment Services

The respondents recommended that KRA should introduce mobile payment of taxes through channels like M-Pesa and Credit cards.

It was also recommended that other statutory deductions should be included in the iTax online service such as National Social Security Fund (NSSF) and National Hospital Insurance Fund (NHIF).

4.3.8.2 Notifications in the iTax service

It was recommend that the iTax service should be improved to notify employees when employer submits tax. Employers and individuals also requested to be able to view tax histories for both companies and individuals on the iTax online service.

Also requested for on the iTax service is a section on the site where a user can check the amount of tax payable for imported goods and be able to pay in advance.

5. Conclusion and Recommendations

5.1 Contribution To The Study

No study has previously been undertaken to get a user centric view towards the iTax online system. Due to the low adoption of e-government services it is easy to assume that users are not interested or are not aware. From this study it can be seen that awareness and knowledge on how to use the e-government system is indeed a barrier that needs to be addressed but also that in many cases users are aware of the system, they are aware of its benefits, but they feel the system is too complicated to use. Many users appreciated giving feedback on the system and many expressed the desire to see a better version of the iTax online system. This shows that users view the move towards e-government services as a positive step in development.

The study identified that many gaps between the functionality that the iTax service provides and what users need. The iTax online system provides services, which provide a direct benefit to the government and its need for information. On the other hand users recognize that the government holds a lot of information, which can be shared to them through the iTax online service. They also feel that since the iTax service is one of the successful e-government services in the country it can be used as a template for other e-government services that deal with statutory deductions. To increase adoption of e-government services the government agencies should consider adding services that increase user satisfaction and user delight.

The usability study carried out looked at the efficiency, effectiveness and satisfaction with which test users accomplished one of the simplest tasks on the iTax online system, registration. This is the one task that determines whether adoption will take place or the user will opt for the manual option. When looking at effectiveness, all the users needed external assistance to complete the task. The system by itself did not provide adequate information or prompts to assist the users by themselves. When looking at efficiency, the task was completed after an average of 8 minutes 7 seconds. Time was lengthened because the users had to return to pages to complete data entry. It was not clear to them that some data was mandatory, users only found that out when they tried to submit their application. Ultimately the users were satisfied that they did not have to go to a Cyber Café or queue in a line to receive this service, but

they all expressed the need to have some form of external assistance to complete the task. It can thus be seen that e-government services need to take into consideration usability as a priority especially for those whose services are mandatory. This will ensure that users complete the tasks and fill in the correct.

It can thus be seen that the better the usability of an e-government service the more users are likely to use it thus increasing e-participation.

<u>Influencer</u>	<u>Percentage</u>
Kenya Revenue Authority	54.7%
Employer	28.1%
Friends and Family	10.9%
Self	6.3%

5.2 Conclusion

Subjective Norm	The greatest influencer for using iTax was the Kenya Revenue Authority, influencing the decision of 54.7% of the users, followed by employers at 28.1%. Considering that it is not mandatory for users to file their taxes using iTax, this means that KRA should use its influence to encourage more users to use the iTax online service.
Job relevance	72.4% of the respondents felt that it was important to file their taxes but only 57.8% of these respondents felt that the iTax service was the best way to do this. A majority of the respondents felt that iTax is relevant but more needs to be done by KRA to sensitize the public on the relevance.
Output Quality	57.8% of the respondents believe that the iTax online service is the best to file their tax returns. This means they believe the service helps them achieve their tasks well.

Perceived Usefulness	From the constructs above, it is clear to see that users believe that iTax system will help them attain gains in job performance.
----------------------	---

Objective Usability	For a first time user to register on the iTax service, it will take an average of 8 minutes and 7 seconds. This is a user with basic computer literacy, who has basic education. There was a recorded task completion rate of 80% and a user satisfaction of 72%. (This was with guidance from the researcher). This is a positive figure, but considering that the iTax service is one of the primary services in a business for filing taxes, the ideal task completion should be above 95%. As concerns user satisfaction, the iTax system needs to invest in help features and responsive customer service to help users complete their tasks. Moreover, there are fines associated with non-completion of some tasks. Therefore a user or business should not pay a fine when it is the system at fault.
Computer Self-Efficacy	Of the respondents surveyed 82.4% of the respondents are actively engaged in revenue generating activities whether employed or self-employed. There is a significant relationship between respondent's level of occupation and the respondents filing their taxes. In relation to this study it shows that the likelihood of filling taxes increases when one is in more formal employment. This could be influenced by the fact from the results of this research it is seen that employers are the second largest influencers (28.1%) after KRA (54.7%) to individuals filing their tax returns.

Perceived Ease of Use	All the respondents in the usability study had never used the service but were willing to learn how to use it and still gave it a satisfaction rating of 72%. From the results it can be seen that users with basic education perceived the iTax system to be something that can be learned and easy to use.
-----------------------	--

Behavioral Intention	Looking at the user discussions in the survey, users perceive that the iTax online system can be easy to use once they learn it. They also perceive that it is useful in making gains in the job/ task performance. Therefore they do have the intention to use the service.
Facilitating Conditions	The respondents of the survey believe that the KRA has a lot to do to support the use of the system. The following is a summary of the issues the users felt needed addressing: simplification of the iTax service, customer service, training of users and increased public awareness campaigns by KRA. The respondents also gave recommendations for things that could be added onto the service: localization of languages, disabling of macros on the downloadable excel documents, notifications to users when their employers have made payments and addition of other payment methods.
Usage Behavior	The results of the research study shows that nationally 20,185 individuals filed their tax returns online out of 1.6 million users who have registered on the iTax system. This shows an adoption of 1.2%. In contrast to the results of the survey carried out by the researcher in which 59.3% respondents said they filed their tax returns while 40.7% said they did not file their tax returns. Of those who filed their tax returns 73.8% file their tax

	return online while 26.2% filed them manually. The explanation for this could be the fact that most of the respondents to the survey were in close proximity to the technology sector and half of them filled the form using the online channel. This means they are more likely to have access to a computer, Internet and have the computer self-efficacy to learn to use a system like iTax.
--	---

5.3 Discussion

From the study it can be seen that the users have the intention to use the iTax service. The challenge to adoption comes about when they do not believe that KRA provides adequate technical and organizational infrastructure to support their use of the system. In conclusion for KRA to increase adoption of the iTax system they need to show users that they are willing and able to provide organizational and technical support to its implementation. This will call for KRA to invest in gathering user and citizen feedback and improve the iTax system based on that feedback. The researcher noticed that the respondents were more than willing to give feedback to their experiences when using the iTax service. Many respondents especially those in the accounts field who need to file monthly tax returns for organizations (the organization view was not covered in this study) clearly expressed frustration in using the service and the indifference of KRA to their frustrations. To increase adoption of the iTax service, KRA needs to focus on the needs of all users but especially those of its novice users and those of its power users, the accountants. When they have a good experience with the service, they will turn into champions of adoption for the iTax service.

5.4 Limitations Of The Study

The following are the limitations of this research project:

This research aims to increase the knowledge about public participation in e-government online services in Kenya. Heeks (2006) showed that there are several stakeholder entities to be considered in e-government. In this research only one group of the main external stakeholder entities in e-government was considered these are the users.

Secondly due to the methodology of the research that targeted users who could read and write and who had access to Internet, low-income, older and technology-challenged users were not adequately represented as respondents in the results.

Thirdly due to the exclusivity of the sample chosen it is difficult to generalize these results to the whole population in Kenya. The fact that most of the respondents are gainfully employed (82.4%) and have basic education (99.1%) shows that this is not a true representation of the employment and education level in Kenya. According to Tradingeconomics (2016), the current unemployment rate stands at 40%. Therefore the usage patterns shown in these results cannot be generalized. But the same evaluation framework can be used to conduct a more inclusive national survey showing the different employment and education levels.

5.5 Recommendations for future works

This research can be scaled up to the national level to take into consideration the different user groups not represented in this study. This can be done by embedding the survey on the iTax website. This will be a positive step in incorporating user feedback in decision-making.

Due to the changing nature of user needs and perceptions it is recommended that other e-government services carry out similar studies using this recommended user centric framework on a regular basis in order to increase user satisfaction and adoption of their services.

This research mainly looked at the perception of the users. This same methodology can be used to collect the perceptions of other stakeholders like small businesses and large corporations.

6. References

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behaviour* (pp. 11–39). Heidelberg: Springer.

Arnstein, S.R., 1969. A ladder of citizen participation. *Journal of the American Institute of planners*, 35(4), pp.216-224.

Anouze, A. L., Irani, Z., Lee, H., Balci, A., Medeni, T., Weerakkody, V. (2011), A New Cobras Framework To Evaluate E- Government Services: A Citizen Centric Perspective, tGov Workshop'11 (1GOV11).

Asiimwe, E. N. and Lim, N. (2010). Usability of Government Websites in Uganda, *Electronic Journal of e-Government*, vol. 8, no. 1, pp. 1-12.

Bertot, J. C., & Jaeger, P. T. (2006). User-centered E-Government: Challenges and benefits for government web sites. *Government Information Quarterly*, 23(2), 163–168.

Business Daily (2014). KRA maintains new iTax system works despite logjam reports. [Online] Available from: <http://www.businessdailyafrica.com/Corporate-News/KRA-iTax-John-Njiraini-TATA-Consulting-Services/-/539550/2264090/-/i7dyfqz/-/index.html> [Accessed: 26th January 2016].

Chatfield, A. T. & AlHujran, O. (2007). E-government evaluation: a user-centric perspective for public value proposition. In H. Arabnia & A. Bahrami (Eds.), *International Conference on e-Learning, e-Business, Enterprise Information Systems, and e-Government* (pp. 53-59). USA: CSREA Press.

Cumbie, B.A. and Kar, B., 2014. A Study of Local Government Website Inclusiveness: The Gap Between E-government Concept and Practice. *Information Technology for Development*, (ahead-of-print), pp.1-20.

Davis, F. D., Bagozzi, R. P., Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003.

Dillon, Stuart; Deakins, Eric; Hofmann, Sara; Räckers, Michael; and Kohlborn, Thomas, "A Longitudinal Study of Local E- Government Development: The Policy Maker Perspective" (2015). *ECIS 2015 Completed Research Papers*. Paper 37. ISBN 978-3-00-050284-2

Ebbers, W. E., Pieterse, W. J., & Noordman, H. N. (2008). Electronic government: Rethinking channel management strategies. *Government Information Quarterly*, 25 (2), 181–201.

FRÍAS-ACEITUNO, J.V., GARCÍA-SÁNCHEZ, I.M. and Rodríguez-Dominguez, L., 2014. Electronic Administration Styles and Their Determinants. Evidence from Spanish Local Governments. *Transylvanian Review of Administrative Sciences*, 10(41), pp.90-108.

Gareis, K., Cullen, K., & Korte, W. (2004). Putting the user at the center. Implications for the provision of online public services. In P. Cunningham (Ed.), *eAdoption and the knowledge economy. Issues, applications, case studies* (pp. 611–618). Amsterdam: IOS Press.

Heeks, R., 2001. Understanding e-governance for development. Institute for Development Policy and Management, paper no. 11

Heeks, R., 2006, July. Understanding and measuring eGovernment: international benchmarking studies. In UNDESA workshop, “E-Participation and E-Government: Understanding the Present and Creating the Future”, Budapest, Hungary (pp. 27-28).

Heeks, R., & Bailur, S. (2007). Analyzing E-Government research: Perspectives, philosophies, theories, methods, and practice. *Government Information Quarterly*, 24(2), 243–265.

Information Society Commission. (2003). 'E-government: More than an Automation of Government Services,' [Online], [Accessed: July 14, 2014], <http://www.isc.ie/downloads/egovernme nt.pdf>.

ISO 9241-11:1998 Ergonomic requirements for office work with visual display terminals (VDTs) -- Part 11: Guidance on usability.

Jaeger, P. T., & Thompson, K. M. (2003). E-Government around the world: Lessons, challenges, and future directions. *Government Information Quarterly*, 20(4), 389–394.

Jaeger, Paul T., & Bertot, J. Carlo. (2010). Designing, implementing, and evaluating usercentered and citizen-centered e-government. In C. G. Reddick (Ed.), *Citizens and e-government: Evaluating policy and management* (pp. 1-19). Hersey, PA: Information Science Reference.

Kaaya, J. (2004) “Implementing e-government services in East Africa: Assessing status through content analysis of government websites”, *Electronic Journal of e-Government*, vol. 2, no. 1, pp. 39-54.

Kenya Revenue Authority. (2014) Kenya Revenue Authority [Online] Available from <http://www.kra.go.ke/> [Accessed: 9th May 2014]

Krejcie, R.V., & Morgan, D.W., (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*.

Kunstelj, M., Jukic, T., & Vintar, M. (2007). Analysing the demand side of E-Government: What can we learn from Slovenian users? *Lecture Notes in Computer Science*, 4656, 305–317.

McFarland, D.J. and Hamilton, D., 2006. Adding contextual specificity to the technology acceptance model. *Computers in human behavior*, 22(3), pp.427-447.

Michel H (2005) "e-Administration, e-Government, e-Governance and the Learning City: A typology of Citizenship management using ICTs" *The Electronic Journal of e-Government* Volume 3 Issue 4, pp 213-218, available online at www.ejeg.com

Ministry of State for Planning and National Development, (2007). *Kenya Vision 2030- The Popular Version*. Nairobi: Government of the Republic of Kenya, pp.1-6.

Nielsen, J. (2001). Success rate: The simplest usability metric. *Jakob Nielsen's Alertbox*, 18.

Nielsen J. *Quantitative Studies: How Many Users to Test?* 2006. <http://www.nngroup.com/articles/usability-metrics/>. Accessed 12/05 2012.

Nielsen, J., 2012. Why you only need to test with 5 users, 2000. *Jakob Nielsen's Alertbox*. Available on line from www.useit.com/alertbox/20000319.html.

Nielsen, J. and Molich, R (1990). Heuristic Evaluation of User Interfaces. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems: Empowering People* (Seattle, Washington, United States, April 01 - 05, 1990). J. C. Chew and J. Whiteside, Eds. CHI '90. ACM Press, New York, NY, 249-256. Retrieved on 10/10/05, from ACM Portal.

Nation Media Group (2014) 1.6 million taxpayers now on KRA online tax payment system. [Online] Available from: <http://www.nation.co.ke/business/1-3-million-taxpayers-now-on-KRA-online-tax-payment-system/-/996/2763392/-/108u8ke/-/index.html> [Accessed: 26th January 2016].

Novick, David G. and Hollingsed, Tasha, "Usability inspection methods after 15 years of research and practice" (2007). *Departmental Papers (CS)*. Paper 16. http://digitalcommons.utep.edu/cs_papers/16

OECD. (2005). E-Government for better government Paris: OECD E-Government Studies.

OECD (2009), “Rethinking e-Government Services, User-centred approaches”

Otieno, I. and Omwenga, E., 2014, May. Towards the development of a citizen-centric framework for evaluating the impact of eGovernment: A case study of developing countries. In IST-Africa Conference Proceedings, 2014(pp. 1-9). IEEE.

Otieno, I. and Omwenga, E., 2015. Citizen-Centric Critical Success Factors for the Implementation of E-government: A Case Study of Kenya Huduma Centres. In IST-Africa Conference Proceedings, 2015(pp. 1-9).

Osborne, D., & Gaebler, T. (1992). Reinventing government: How the entrepreneurial spirit is transforming the public sector. Reading: Addison-Wesley.

Plouffe, C., Hulland, J., & Vandenbosch, M. (2001). Richness versus parsimony in modelling technology adoption decisions — Understanding merchant adoption of a smart card-based payment system. *Information Systems Research*, 12(2), 208–222.

Prensky, M., (2001). Digital natives, digital immigrants part 1. *On the horizon*, 9(5), pp.1-6.

Reddick, C. G. (2005b). Citizen interaction with E-Government: From the streets to servers? *Government Information Quarterly*, 22(1), 38–57.

Riad, A., El-Bakry, M. & El-Adl, G. (2010). A Novel DSS Framework for E-Government, *International Journal of Computer Science Issues*, 7 (6). 33–37.

Sahin, I., 2006. Detailed Review of Rogers' Diffusion of Innovations Theory and Educational Technology-Related Studies Based on Rogers' Theory. *Online Submission*, 5(2).

Schedler, K., & Summermatter, L. (2007). Customer orientation in electronic government: Motives and effects. *Government Information Quarterly*, 24(2), 291–311.

Tat-Kei Ho, A. (2002). Reinventing local governments and the E-Government initiative. *Public Administration Review*, 62(4), 434–444.

Tradingeconomics (2016). Kenya Unemployment Rate. [Online] Available from: <http://www.tradingeconomics.com/kenya/unemployment-rate> [Accessed: 18th February 2016].

Titah, R., & Barki, H. (2006). E-Government adoption and acceptance: A literature review. *International Journal of Electronic Government Research*, 2(3), 23–57.

United Nations. Department of Economic and Social Affairs, 2014. United Nations E-government Survey 2014: E-government for the future we want . United Nations Publications.

vanDijk, J., Peters, O., & Ebbers, W. (2008). Explaining the acceptance and use of government internet services: A multivariate analysis of 2006 survey data in the Netherlands. *Government Information Quarterly*, 25(3), 379–399.

Verdegem, P. and Verleye, G. (2009). “User-centered E-Government in practice: A comprehensive model for measuring user satisfaction”, *Government Information Quarterly*, vol 26, pp. 487–497

Venkatesh, V., 2000. Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research*, 11(4), pp.342-365.

Venkatesh, V. and Davis, F.D., 2000. A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), pp.186-204.

Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D., 2003. User acceptance of information technology: Toward a unified view. *MIS quarterly*, pp.425-478.

Wigand, F. D. (2011). "A Framework for Citizen-Centric Government Websites", IGI Global

Yahaya, Y. M. and Idris, H. A., 2015. The Practice and Challenges of e-Government in Nigeria in the 21st century, *International Journal Administration and Governance*, 1(4), 82-86.

Zhang, J., 2013. Towards a citizen-centered e-government: Exploring citizens' satisfaction with e-government in China (Doctoral dissertation, NORTHERN ILLINOIS UNIVERSITY).

Appendix 1: E-Government Service User Survey

All questions in this survey are part of a survey to get a clear picture on how citizens/ users view the iTax online service and how they think it can be improved. The survey has three parts: (a) demographics, (b) online behavior, use of and attitude toward the iTax online service and (c) ideas for improvement.

SECTION A: DEMOGRAPHIC INFORMATION

Respondent Details		
A1. Gender	1. Male	2. Female
A4. How old are you?	1. 10-19 years 2. 20- 29 years 3. 30-39 years 4. 40- 49 years 5. 50-59 years 6. Above 60 years	
A5. What is your highest level of education	1. Primary 2. Secondary 3. Diploma 4. Degree 5. Post graduate 6. None 7. Other (specify).....	
A6. Do you have any other training (s)?	1. Yes 2. No	
A7. If yes, specify		
A8. What is your current employment status?	1. Student 2. Employed (formal) 3. Employed (casual) 4. Self employed 5. Other (Specify)	

SECTION B: ONLINE BEHAVIOR, USE AND ATTITUDE TOWARD E-GOVERNMENT SERVICES

B1. Did you file your individual tax returns in July 2015?	1. Yes 2. No (Got to B4)
B2. How did you file your individual tax returns	1. Manual 2. Online

B3. What influenced your decision to file your individual tax returns?	<ol style="list-style-type: none"> 1. Friends 2. Employer 3. Kenya Revenue Authority 4. Other (Please specify)
<p>B4. Please rate how you feel towards this statement “I think it is important to file my individual tax returns”</p> <p>Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree</p>	
B5. Have you ever used the iTax online service?	<ol style="list-style-type: none"> 1. Yes 2. No (Go to B6)
<p>B5-1. (If B5 is yes) What tasks have you done on the iTax online service?</p>	<ol style="list-style-type: none"> 1. Registering for iTax training 2. Submitting online returns 3. M-Service 4. Customs online payment 5. Pin Checker 6. Tax Compliance Certificate checker 7. Checking the KRA for Frequently Asked Questions 8. Printing a pin certificate 9. Filing individual tax returns 10. Registering a company to get a pin 11. Other (please specify)
B5-2. How often do you use the KRA iTax online service?	<ol style="list-style-type: none"> 1. Once a Week 2. Once a month 3. Once a year
B5-3. What device do you usually use to access the iTax online service?	<ol style="list-style-type: none"> 1. Laptop 2. Desktop 3. Tablet 4. Mobile phone 5. Other (please specify)
B5-4. Have you faced any challenges using the iTax online service?	<ol style="list-style-type: none"> 1. Yes 2. No
B5-5. Please specify one challenge you have faced while using the iTax online service	

B6. Have you ever used any of the iTax online service help lines	<ol style="list-style-type: none"> 1. Yes. 2. No (Go to B7)
B6-1. How did you access the iTax online service help line	<ol style="list-style-type: none"> 1. Phone call 2. Email 3. Twitter 4. Facebook 5. Other (Please specify)
B7. Have you ever read the FAQs on the iTax online service?	<ol style="list-style-type: none"> 1. Yes 2. No

SECTION C: IDEAS FOR IMPROVEMENT.

<p>C1. Please rate how you feel towards this statement The iTax online service is the best way to file my tax return</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neither agree nor disagree 4. Disagree 5. Strongly disagree 	
C2. Would you like the iTax online service to be improved?	<ol style="list-style-type: none"> 1. Yes 2. No
C2-1. If yes, how?	
C2-2. If no, why not?	
C3. What services would you wish were offered on iTax online services that are not currently being offered?	