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

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ABSTRACT
National and local governments have been working to use Information and Communication Technologies (ICTs) to increase citizen participation in their operations. While many of these efforts have been driven from a government perspective, the users' needs, motivations and behavior have been largely ignored. This paper explores a user-centric approach to e-governance and looks at how user perspectives and attitudes affect adoption of online government services. A user-centric evaluation model of online government services was developed in this research. The iTax online system, which facilitates electronic filing of tax returns in Kenya, was selected as a case study. The research framework was based on the technology acceptance models focusing on the aspects of perceived usefulness and perceived ease of use. Interviews, questionnaires and a usability study were used to collect data. Descriptive and inferential statistics were used to analyze the qualitative data, while coding and usability metrics were used to analyze the quantitative data. The findings show that to increase the adoption of online government services, governments need to focus their strategies on addressing the needs of their users, their attitudes towards to the electronic services, and respond to the identified needs appropriately.

General Terms
E-governance, Software testing, Human Computer Interaction

Keywords
User-centric, government-centric, e-government, public participation, iTax, users, citizens, usability

1. INTRODUCTION
Governments in developing countries are facing challenges in increasing the adoption of online government services among citizens despite the increased government investment in the said services. The Kenya Revenue Authority (K.R.A.) launched an online service called the iTax system in 2013[1]. Citizens and residents in Kenya are required to file their taxes once every year. It has been optional to use the iTax service but there are ongoing government efforts to make it mandatory for filing individual tax returns. Under sec. 52B of the Kenyan Income Tax Act [2], every individual chargeable to tax under this Act is required to submit their tax return for any year of income no later than 30 June failure of which attracts penalties. The Government of Kenya drives the push for public participation and adoption of this service, while taking little effort to understand the needs and behavior of the target users.

Public participation is an important component of successful implementation of e-governance. Public participation is characterized when citizens use ICTs to access public information, participate in public decision-making and monitor how the government is being run. The goal of this research study is to meet the call for a thorough understanding of user behavior, user needs and expectations towards e-government services. It has been noted that there has been a low level of public participation in the iTax system despite the fact that there are multiple channels that enable the Kenya government and it's agencies to consult users on specific issues. The user's capacity for intervention in the public sphere using the channels put in place is very low or even nonexistent. Since users of public services are usually obliged to interact with their governments to access services, as is becoming the case with iTax, user dissatisfaction with the quality of the services can easily become a major hindrance to increased adoption of the service.

This research will refer to the target recipients of online government services as users instead of limiting it to citizens. According to Verdegem and Verleye [3], 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 [4] [5] 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 approach instead of a one size fits all approach that is not feasible in the long run.

2. LITERATURE REVIEW
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 [6]. It is widely regarded as a disruptor of traditional government service provision through greater citizen access, enhanced democracy, improved information quality, and a range of governmental efficiencies [7]. In order to justify continued public investment in online government services it is imperative that the intended users of these services participate in their implementation through adoption.

Components of e-governance include [8]:

E-administration: Improving government processes. 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.

E-citizens and E-services: Connecting citizens to services. This involves public investment in ICT in order to strengthen the effectiveness and transparency of public institutions in service delivery. This research specifically looked at 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.

E-Society: Building interactions with and within civil society. Such initiatives deal particularly with the relationship between public agencies and other institutions – other public agencies, private sector service providers, non-profit and community organizations – and with the relationship between civil society institutions.

2.1 Public Participation

Public Participation is the process by which public concerns, needs and values are incorporated into governmental and corporate decision-making [9]. In the paper titled 'the ladder of participation' [10], 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, how 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.

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, policy making, decision-making, service delivery, information provision, consultation, deliberation, etc [11]. E-Participation can be divided roughly into three major 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.

2.2 User-Centric versus Government-Centric Approaches

In the late 80s, the 'reinventing government' movement [12] already stressed the rethinking of government services and proposed an 'outward-looking approach' (starting from the user's needs) instead of an 'inward-looking' approach (starting from the public services themselves) [13].

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) [14]. 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 aim of the transformation. 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 communicate the quality of service delivery that is made available to the public. When the government-centric perspective is the primary focus there is a high risk that they utility of the service to the user can be ignored.

Public value is defined as "the value created by government through services, laws, regulation and other actions" [15]. Otieno and Omwenga [16] argue that public projects are driven by public value rather than technological or economic value. They emphasize that when dealing with online government services, it is imperative to adopt (evaluation) frameworks that emphasize citizen-centric or demand-side approaches in order to ensure that citizens and businesses get value for their money and time. Therefore, when assessing e-government impact it is important to consider the context of implementation and impact from the users' perspective since they are primary stakeholders.

2.3 Conceptual Framework

The conceptual framework considers key constructs of Technology Acceptance Model [17], Technology Acceptance Model 2 [18][19], Technology Acceptance Model 3 [20] and Unified Theory of Acceptance and Use of Technology [21]. In order to look at an online government service 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 framework was also used to determine the key contributors to users' perceptions.

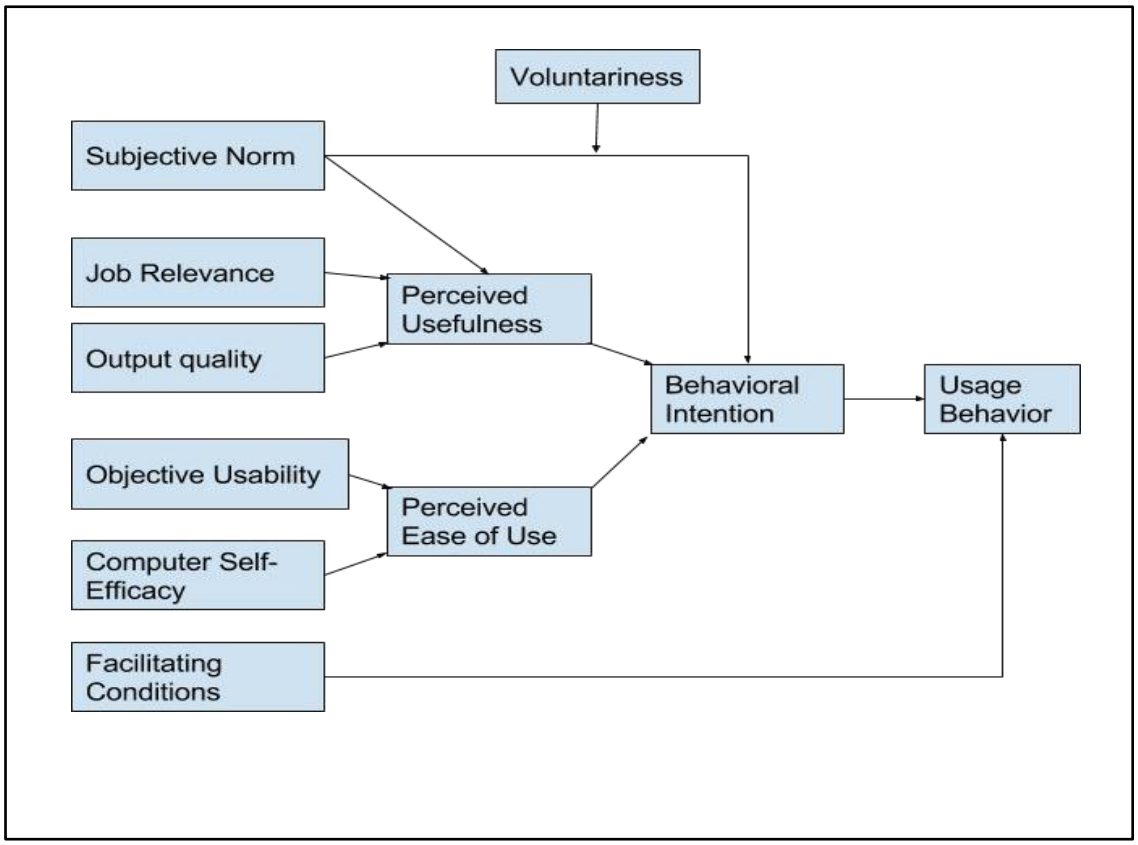

Fig 1: Conceptual Framework

2.4 Key Constructs

The key constructs used in the conceptual framework are described below:

Perceived Usefulness: is defined as the prospective user's subjective probability that using a specific application system will increase his or her job performance [17]. The perceived usefulness was measured by looking at the following constructs in the conceptual framework: voluntariness, subjective norm, job relevance and output quality [20].

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) [21] model the researcher decided to focus on voluntariness. At the time this research was carried out, the iTax online service was being used as a mandatory service for companies though for individuals they could still choose whether they to use the paper or the online route.

Subjective Norm: A person's perception that most people who are important to him think he should or should not perform the behavior in question [22] is adapted in TAM2. 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 is considered to be less voluntary [23].

Job Relevance: Individual's perception regarding the degree to which the target system is relevant to his or her job [20]. The research was carried out to determine whether users feel the iTax online service is relevant to them.

Output quality: The degree to which an individual believes that the system performs his or her job tasks well [20]. 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 to which the prospective user expects the target system to be free of effort [17]. To determine the perceived ease of use the researcher focused on objective usability, computer self-efficacy and facilitating conditions.

Objective Usability: A comparison of systems based on the actual level (rather than perceptions) of effort required to complete specific tasks [20]. 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 [24]. 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.

Facilitating Conditions: The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system [21]. 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, TAM2 and TAM 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.

Usage Behavior: the degree of use by the targeted end user [18]. 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.

3. RESEARCH METHODOLOGY

3.1 Data Collection

This research was carried out to build a model that would be used to evaluate how citizens/users perceive and use online government services. Due to fact that there are many diverse e-government services and the researcher was limited in terms of time and money, the K.R.A. iTax system was selected as the case study for this research.

According to Zhang [25], 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. The evaluation for this study was done in three parts described below.

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 citizens who used the online iTax system to file their tax returns.

Quality assessment of the iTax online service was done through a usability study. The usability study was used to determine the behavior, views and attitudes of citizens who are the target users of this service. The key construct to be examined at this stage was objective usability. The usability test involved the following activities:

1. Qualitative User Testing

2. Identifying representative users

3. Asking the users to perform representative tasks with the iTax service

According to Jacob Nielsen of Neilsen Norman group [26], the best usability test results come from testing no more than 5 users and running as many small tests as one can.

The third part of data collection consisted of a survey that was used to collect citizens and users ideas for improvement of the iTax system. The key constructs in the conceptual framework examined by the survey included: Voluntariness, Subjective Norm, Job Relevance, Computer self-efficacy, and facilitating conditions. The survey was distributed on both online and offline platforms using paper questionnaires and an online form. The survey was in three parts: (a) demographics, (b) online behavior, use and attitude toward e-government services and (c) ideas for improvement.

The first part of the data collection which involved an in depth interview with an official of the Kenya Revenue Authority looked at the supply side of the iTax system; and how efficient and effective it is in meeting the user needs. Both the second and the third part of the data collection served to identify the demand side that consists of the user behavior, needs, perceptions and expectations towards the online government service. A comparison was made between both the supply and demand side and any gaps identified are highlighted in the results section of this paper.

The target population of the survey was Kenyan citizens and residents who could remit Pay As You Earn (PAYE) taxes. As of May 2015, there were 1.6 million tax payers registered on the iTax system [27]. Due to the fact that this population is very large and is distributed over a wide geographical area, the survey of the population would be expensive and time consuming. The researcher therefore decided to work with an accessible population of people who work in the small and medium enterprises in Nairobi, Kenya. In this research random sampling was used among individuals working in the targeted small and medium enterprises. 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" [28]. To achieve a confidence level of 95%, P=.5 and a precision level of +-10%, the researched conducted a survey and obtained 108 responses out of 160 questionnaires, both offline and online, that were distributed.

3.2 Data Analysis

The qualitative data from the in depth interview was categorized and coded in order to identify themes. This data represented the supply side demands for the iTax service. The data from the usability exercise 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 citizen/ user survey. Descriptive statistics was used to summarize the findings through 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.

4. RESULTS

The findings of this research have been summarized and categorized below using the key constructs adopted in the conceptual framework proposed in this paper.

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 at the time of this research the iTax online service was not mandatory for users to file their taxes, K.R.A. should use its nationwide reach to influence 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 was relevant but more needed to be done by K.R.A. to sensitize the public on its relevance.

Output Quality: 57.8% of the respondents believed that the iTax online service was the best way to file their tax returns. This means that a majority of the respondents believed that the service helped them achieve their tasks well.

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

Objective Usability: For a first time user to register on the iTax service, it took an average of 8 minutes and 7 seconds. This was a user who had basic computer literacy skills. There was a task completion rate of 80% and a user satisfaction rate of 72%. This is a positive figure, but considering that the iTax service is one of the primary services for citizens and users to file taxes, the ideal task completion rate should be above 95%.

Moreover, there are fines associated with non-completion of some tasks on iTax. Unfortunately, a user or business may have to pay a fine when it is the system at fault.

Computer Self-Efficacy: Of the respondents surveyed 82.4% of the respondents were actively engaged in revenue generating activities whether employed or self-employed. The Pearson r correlation was used to measure the degree of the relationship between the type of occupation and history of filing tax returns. There was a significant relationship (r=0.378) between respondent's level of occupation and the respondents' history of filing their taxes. In relation to this study, it showed that the likelihood to file tax returns increased when one was in formal employment. This result is further supported by the fact from the findings of this research it is seen that employers were the second largest influencers (28.1%), after K.R.A. (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% (it should be noted that this was with some assistance from the researcher). 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 believed that the K.R.A. had 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 K.R.A.. 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 rate of 1.2%. In contrast to the results of the survey carried out by the researcher showed that 59.3% of the 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% filed their tax returns online, while 26.2% filed them manually. The explanation for this could be the fact that most of the respondents to the survey were based in Nairobi, Kenya's capital city and main economic hub, which hosts many enterprises in the growing ICT sector. This means these respondents are more likely to have access to a computer, Internet and have the computer self-efficacy to learn to use a system like iTax.

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5. CONCLUSION

No study has previously been undertaken in Kenya to get a user-centric view towards the iTax online system. Due to the low adoption of online government services in Kenya it has been easy to assume that users are not interested in these services. From this study it can be seen that a dearth in awareness and lack of knowledge on how to use the selected e-government system are indeed adoption barriers that need to be addressed. It is also noted that in many cases users felt the system was too complicated to use. Many users appreciated giving feedback on the service and 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 but are limited by the government's infrastructure and service delivery.

The study identified many gaps between the functionality that the iTax system provides and what users need. The iTax online system provides services that contribute to the government's need for information. On the other hand users would like the government to share some of the information it has through the iTax platform. They also feel that since the iTax service is one of the successful e-government services in the country it could be used as a model of online system implementation that other government agencies can adopt. To increase adoption of e-government services the government agencies should consider adding services that increase user satisfaction and user delight.

The usability study looked at the efficiency, effectiveness and satisfaction with which 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. 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 repeat some tasks in order to complete data entry. It was not clear to them that some data was mandatory. Ultimately the users were satisfied that they did not have to go to a public Cyber Café or queue in a line to receive this service, but they all expressed the need to have 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 services that are mandatory. It can thus be seen that the better the usability of an e-government service the more likely users are to adopt it thus increasing public participation.

5.1 Discussion

From the study it can be seen that the users have the behavioral intention to use the iTax service. The challenge to adoption comes about when they believe that the government agency charged with its implementation, K.R.A., does not provide adequate technical and organizational infrastructure to support their usage of the system. In conclusion, for K.R.A. to increase adoption of the iTax system they need to show users that they are willing and able to provide organizational and technical support for its effective implementation. This will call for K.R.A. to invest in constantly gathering user and citizen feedback in order to improve iTax. The researcher noticed that the respondents were more eager to give feedback on their experiences when using the iTax system. Many respondents especially those in the accounting field who 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 K.R.A. to their frustrations. To increase adoption of iTax, K.R.A. needs to focus on the needs of all the key stakeholders. When they have a good experience with the service, they can be the champions of adoption for the iTax system.

5.2 Limitations of the Research

The following are the limitations of this research project:

This research aimed to increase the knowledge about public participation in online government services in Kenya. Heeks [15] showed that there are several stakeholder entities to be considered in e-government. In this research only one group of the external stakeholder entities in e-government was considered these are the citizens/ users. There is room for this research to be expanded to include other stakeholders.

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

5.3 Recommendations for Future Works

This research can be scaled up to the national level to take into consideration the different user groups and external stakeholders not represented in this study. One of the ways this can be done is by embedding a 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 government agencies carry out similar studies on a continuous basis on their respective online services in order to increase user satisfaction and adoption.

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