UNIVERSITY of RWANDA

COLLEGE OF BUSINESS AND ECONOMICS

"USER SATISFACTION OF E-GOVERNMENT PLATFORM IN GOVERNMENT SERVICE DELIVERY PROCESS": CASE STUDY- IREMBO PLATFORM

A Thesis Submitted in Partial Fulfilment for The Degree of Master of Business Administration (Project Management) of University of Rwanda.

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Submitted 25th September 2019

DECLARATION

I declare that this Thesis is my original work and has not been presented in any other university.

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APPROVAL

This is to certify that this Thesis has been written under my guidance and supervision and it is here by forwarded for examination.

Signed……. Date: ……...

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DEDICATION

I dedicated this Thesis to SEMUHUNGU Vincent (Uncle)

ACKNOWLEDGEMENT

My gratitude goes to the Almighty God on whose mercies and praising we live a borrowed life.

I am grateful that this work has been completed and brought my dreams a reality, It was been possible through a combined support of University of Rwanda, Family, Classmates and friends that supported me to complete this study.

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I wish all MBA staff and classmates, Family and Friends a healthy and prosperous life.

God Bless and Guides You!

ABSTRACT

This study sought to assess the user satisfaction of the electronic government in Rwanda on government service delivery process to a capable and accountable state institutions. Since adoption of decentralization and building a knowledge-based country, Rwanda has put the ICT as the key contributing aspect to achieve a service centred to all government stakeholders. Electronic government as tool of transformation predominantly is being applied by the government of Rwanda, and by focusing on the platform that promotes the government to citizen interaction. The study used Irembo as an experience to electronic government that have helped the researcher to identify how the platform has contributed to build a capable and accountable state institution as the main objective that has based on the Unified Theory of Acceptance and Use of Technology. The study identified the Performance expectancy, Effort expectancy, Rule of law and governance, and the facilitating condition as measures of user satisfaction to government delivery processes. The study used the descriptive analysis, chi-square test and the regression analysis that helped to demonstrate the findings and those findings enabled to build relevant decision. On performance expectancy the result shows that 70% of the people are satisfied with the speed of service delivery through Irembo platform, 96% argued that the electronic government contribute positively to their daily activities, and 70 % of the service are rendered on time through by using Irembo. When the study was measuring the effort, expectancy found that to make application and the average amount to be paid is 503 Rwf. 87% of the people participated trust the service rendered through Irembo and 83% argued that the government service has increased its operability through by using Irembo platform. Even though the people have their own device necessary to access irembo half of them find it more difficult to use it due to lack of knowledge to use the system and this has been shown by the dependability shown in between the user satisfaction on improvement of the process of service delivery using Irembo dependency is on Facilitating condition (knowledge capacity) and effort expectancy (amount paid to be assisted). Finally, Researcher used regression analysis and predicted that if the training could be provided the level of satisfaction could increase at 97% and the seeking of assistance could be reduced which can also reduce the amount that are addition for services for assistance.

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LIST OF ACRONYMS

DOI	Diffusion of Innovation
EGDI	Electronic Government Development Index
FDI	Foreign Direct Investment
G2B	Government to Business
G2C	Government to Citizens
G2G	Government to Government
GDP	Gross Domestic Product
GoR	Government of Rwanda
ICT	Information Communication and Technology
IT	Information Technology
ITU	International Telecommunication Union
MINECOFIN	Ministry of Finance and Economic Planning
NICI	National Information Communication Infrastructure
NST	National Strategy of Transformation
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UN	United Nations
UR	University of Rwanda
USSD	Unstructured Supplementary Service Data
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER ONE:

INTRODUCTION

1.1. Background of The Study

"Investment in ICTs is essential in taking any country to the next level of productivity and efficiency. Investing in ICTs is not at the expense of other sectors, investing in ICTs results in benefits for every sector and the earlier you start the better." H.E President PAUL KAGAME

World Bank and Government of Rwanda [GoR], (2018) noted that Rwanda is being ranked internationally among countries at the average level of upper-middle income country, with particularly strong performance on indicators of government effectiveness, proper capturing of corruption, and rule of law as well as regulatory quality. It is within different strategic plans that the Government of Rwanda strives to give better, faster and more secure services to all citizens.

The adaptation of decentralization in Rwanda was materialized by the implementation of the decentralization policy in start of 2000 with vision 2020. The policy actions were formed on three goals which possess the promotion of good governance; the reduction of poverty and with the promotion of efficient, effective and accountable service delivery. With the aim of building a citizen centered governance, various programs of people's empowerment were introduced.

And again based on the initiative of building a prosperous and knowledgeable society through ICT they noted that it will need a strong move towards online services, better protection of private information, more cooperation between government departments, and a change in public service culture(MINECOFIN, 2015). In 2016, ICT sector has continued to increasingly fuel the Rwandan GDP growth as it has been among the largest contributor to GDP growth of three percent (3%) and it is still persistent that foreign direct investment (FDI) to be a primary target (republic of Rwanda, 2016). On 17 November 2018, president KAGAME co-chaired at a high-level breakfast meeting with prime minister of Ethiopia and noted, "African continent must take advantage in digital revolution to empower the citizens so as to enhance transparency within the government and private sector".

Since 2000, when Rwanda started its first development vision 2020 and now having vision 2050 in respect of African 2063 and East African program of 2030 that is being implemented with a Seven years Government Program for National Strategy of Transformation. It continues to develop different strategies policies in ICT for national development such as broadband policy, NICI strategies, ICT Sector Strategic Plan, Smart Rwanda Master Plan to Lead ICT regarding overall government programs. These policies are working together with high ICT infrastructure development in which internet penetration is increasing at 53.28%, Phone penetration is 81.1% as presented recently in ITU (Murara, 2017). Again, due to high efforts, that Rwanda is making in ICT ranked the first globally for success in Government promotion of ICT global Information technology report in 2015, and Rwanda was rated as the number one in Africa for affordable internet by alliance for affordable internet in 2015.

Furthermore, the government is recognizing the value of the digital revolution and transformation for the delivery of its services and has already taken significant steps focusing on the potential convenience of electronic government.

The United Nations (2002) defined "Electronic Government as the application of all ICTs by government to provide information and the services to citizens". Here it should be considered as concept which is broader than the government to government institutional networking. In the same words also the World Bank defined electronic Government as the use of government institutions of information communication technologies that have the ability to transform interaction and operations with businesses, other government bodies, and the citizens at large, compared to other e-platforms like e-commerce which enables businesses to deal within each other (B2B) and make the customers more closer to the Businesses (B2B), e-government aims to advances the interaction between government and business organizations(G2B), government to citizens (G2C), and inter-government relationships (G2G) more friendly, convenient, transparent, and inexpensive."

Information Communications Technologies through by e-government services delivery could play a vital role to extend the government services role in expanding government services with citizens in far areas where the physical administrative infrastructure is no longer hindrance especially rural areas.

Following the extensive usage of ICT in the public and private sector in order to develop the efficiency of businesses and to generate savings, countries worldwide are also making considerations those interest in order to apply their Information Society programs. E-Government is one of the issues increasingly high in government operability.

E-Government is a global initiative taken almost in advanced and developing nations, to facilitate their nations through providing services, information, and knowledge without any geographical and time restrictions with the help of Information Communication Tools i.e. Internet, Mobile, World Wide Web. So far, electronic government is changing the service delivery schemes and outstanding advancement has been achieved.

Even though the government institutions around the globe are making a progressive effort to build a smart government with paperless and informed citizen through electronic government, however e-government is seen critical on international level compare to another IT domain. Rwandan e-government as other African countries is under world average of 0.55 of E-Government Development Index (EGDI) ranked in middle EGDI-Levels the number of African countries in the High-EGDI-level group remains relatively modest at six, with only one country, Ghana, joining the group since 2016. Many people in these countries are unable to benefit from ICTs because of poor connectivity, high cost of uses and lack of necessary skills. The study was carried out to explore the facilitating conditions to boost Rwandan electronic government.

In accordance with world Bank and Government of Rwanda[GoR] (2018) to a future drivers of growth and complexity of e-governance it is with the sustainability performance evaluation of e-government project need to be complete in Rwanda and it is with this aspect that the research has been carried assessments contributions of electronic government.

According to United nations survey (2018), the convolution of e-government in encouragement of accountable, effective, inclusive, transparent and trustworthy public services that provide people-centric outcomes is growing higher.

In Africa, just four countries (Mauritius, South Africa, Tunisia and Seychelles) are making the top fiftieth percentile along with countries that have EGDIs above the

world average of 0.549. Mauritius (66th) and South Africa (68th) the two highest ranking countries from the region closely followed by Tunisia (80) and Seychelles (83) are the only countries in the top 100.

Table 1: Top Ten e-government in Africa

Country	Sub-region	OSI	HCI	TII	EGDI	EGDI Level	2018 Rank
Mauritius	Eastern Africa	0.7292	0.7308	0.5435	0.6678	High	66
South Africa	Southern Africa	0.8333	0.7291	0.4231	0.6618	High	68
Tunisia	Northern Africa	0.8056	0.6640	0.4066	0.6254	High	80
Seychelles	Eastern Africa	0.6181	0.7299	0.5008	0.6163	High	83
Ghana	Western Africa	0.6944	0.5669	0.3558	0.5390	High	101
Morocco	Northern Africa	0.6667	0.5278	0.3697	0.5214	High	110
Cabo Verde	Western Africa	0.4861	0.6152	0.3926	0.4980	Medium	112
Egypt	Northern Africa	0.5347	0.6072	0.3222	0.4880	Medium	114
Rwanda	Eastern Africa	0.7222	0.4815	0.1733	0.4590	Medium	120
Namibia	Southern Africa	0.4514	0.5850	0.3299	0.4554	Medium	121

Source: UN report, 2018

Rwanda is ninetieth in Africa and took place of 120 worldwide with Medium EGDI level with 0.4590. The average ranking of countries of the African region is 150th. These movements, even if they come from very low levels, highlight regional efforts to keep pace with worldwide technological development trends. Upward movements in EGDI across the region were facilitated by significant improvements in OSI (0.106 increase) and TII (0.031 increase). This is an encouraging trend given that 13 African countries have low EGDI and require major leaps to improve their EGDI levels(United Nations, 2018).

E-government have been adopted in Rwanda since 2005, eighty-eight (88) services are available on Irembo online platform to improve and deliver service to the public as motive leaving no one behind and to help the government deliver its services 24hrs accessible to the citizens. And it continues to be noted that more services are going to be added on the system and Irembo platform has to be national tool used to deliver government services. So far twenty-two (22) can be accessed by using a mobile phone which is a trend compared to the increase of mobile penetration if other factors are maintained constant, as contrast services should be raised in proportion to the people using mobile phones. Again, only seventeen (17) public institutions can be accessed

on the platform which shows a lot of work still to be done in enrollment of Over 150 services need to be uploaded and accessible to the platform.

Rwanda National Portal under which they launched "Irembo" platform to e-government where services are deployed. Irembo is a big e-citizen portal currently providing access to 88 e-services from 17 different state institutions(Rwanda oline, 2018). Government made 25 years Public Private Partnership to improve and deliver services to the public by increasing good government and citizens interactions (G2C) and Government interaction to Businesses (G2B) the following table shows the services available on Irembo online(www.irembo.gov.rw).

Table 2: Irembo services

INSTITUTIONS	AVAILABLE	TOBE LAUNCHED
Office of the Prime minister (PMO)	1	1
Ministry of Foreign Affairs and Cooperation	1	
Ministry of Local Government	22	
Directorate General of Immigration and Emigration	7	
National Identification Agency	6	
Rwanda National Police	15	
National Public Prosecution Authority	1	
Rwanda Land Management and Use Authority	17	
Rwanda Housing Authority	1	
Rwanda Development Board	0	12
Rwanda Governance Board	5	
Rwanda Educational Board	5	
Institute of National Museum of Rwanda	1	
Rwanda Social Security Board	1	
Higher Education Council	1	
Media High Council	1	
Ministry of Justice	1	

Source: researcher, 2019

Rwanda Online Platform ltd is a modern technology solutions provider that is implementing the e-government programs, they have an objective to provide efficient and transparent procedures for effective improvement in service delivery with a paramount understanding of local needs and capabilities of the community to access services. As it was mentioned before they have a 25 years public private partnership with the government of Rwanda for a platform named Irembo and currently Irembo is serving 88 services online enabling the government to provide services to the citizens and businesses and allow them to pay online with ease and efficiency. Mobile USSD,

The Online Portal, and the best of breed Agent Network developed by Rwanda Online enables users without or with little access to internet or mobile phones to request for government services.

Rwanda online stands on a mission to construct and operate a platform that enables the automation and online provision of services to citizens and businesses with a vision to be the catalyst of transformation through technology. Rwanda Online is an exciting and unique company in Rwanda brimming with talented minds and dedicated staff to support Rwanda in growing through the digital age as a knowledge-based economy and its involvement in the ICT field.

Rwanda Online strives to keep the momentum in automating services, availing more solutions needed by the population and opening the platform for more contributions by innovators.

Five things to know about Irembo is that it provides 88 services online, there are 2,200 agents of Irembo across the 30 districts of Rwanda, Irembo processes 160,000 applications per month, Irembo has so far served to 2,200,000 users and Irembo avails 7 payment channels

In short, E-government programs in Rwanda are presumed to facilitate streamline the Rwandan government for excellence in service delivery through the improvement of government services to citizens (G2C) and government services to businesses (G2B) which had an ambition to achieve a twenty four hours out of seven days a week self-service government, "cash-less" and "paperless" transactions, and to achieve 95% of government services transacted online by 2018 however this cannot be achieved without a proper evaluation in regard to state accountability which also must be proportionate to citizen satisfaction.

1.2. Problem statement.

Any individual at any point of time in his/her lifetime need to deal with the government (Kolachalam, 2002). And the government has to focus on delivering services to the public especially the citizen even though there is a range of interaction namely Government with Government (G2G) it may be one government department to another or institutions, there is Government to Business (G2B), Government to Employees(G2E), and Government to Citizen (G2C). In Rwanda as up to date more than 92% of the total population interact with the government at least once a year directly or indirectly when we base on the population that uses Community Based Insurance schemes.

According to Shareef, Jahankhani, and Pimenidis (2012) argued that e-government is an important tool for essential transformation of the way government provide services delivery to the stakeholders anytime and anywhere. Nowadays there is high traffic in the growth of the government customer base and with the high digital penetration, which has provided high interest on the use of ICTs in Government daily activities but we don't have a detailed information on how digital transformation in service delivery is contributing to user's satisfaction especially in government perspectives. In addition to that there was no statistical model found in the system to evaluate progressive improvement of electronic government in Rwanda.

Moreover, research in the field of ICT is growing much better in Rwandan context but still limited especially in the field of e-government on Rwandan context due the fact that is a new area although studies focused on e-government tool evaluation of its effectiveness, efficiency and applicability. Nevertheless, researchers need provide the role of e-government on building an accountable institution and this study will highly focus on the contribution of e-government to the accountability of Rwandan state institution focusing on User satisfaction.

1.3. Scientific Basis

The study focused on Unified Theory of Acceptance and Use of Technology (UTAUT) framework Developed by Viswanath Venkatesh , Michael G . Morris , Gordon B . Davis (2003). UTAUT and its extended theoretical frameworks are very popular and widely used to predict behavioral intention for the adoption of technology, within this study have been used as a predictor of user satisfaction on e-government. Venkatesh along with many other researchers illustrated that Users satisfaction for a technology

to be or being implemented are likely to be predicted by performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). Several modifications to the concept mentioned other several factors also. The researcher decided to include Rule of Law (RL) instead of Social Influence factor to establish the model in Rwandan context that reflect the good governance. Originally UTAUT was attained from its predecessor models i.e. Diffusion of Innovation Theory (DOI), Theory of Planned Behavior (TPB), and the Technology Acceptance Model (TAM).

1.4. Research Objectives

1.4.1. General objective

The main objective of this study was to assess User satisfaction of e-government platform in government service delivery process.

1.4.2. Specific objectives

a. To assess the performance expectation of e-government on services delivery in Rwandan state institutions.
b. To evaluate the effort expectancy of using e-government through Irembo platform in Rwanda.
c. To examine the rule of law enforcement in service delivery through by Irembo platform.
d. To explore the main facilitating conditions on proper adoption of e-government

1.5. Research Questions

a. How e-government has increased the performance on service delivery in Rwandan state institutions?
b. How much effort used on e-government platform-Irembo?
c. What extent Irembo platform enforced rule of law and governance in service delivery?
d. What are the facilitating conditions to use e-government?

1.6. Justification of The Study

The study emphasized increases and breached the gap in e-government research and provided a research basis in this field, it will be used by different scholars to understand and be able to make further exploration of electronic government. In other words, the study provides a new understanding of the researchers and others academician about

e-government phenomena. It has explored the role of information communication technology on building accountable state institutions on user satisfaction specifically on Rwandan context. It can be used as decision making basis for policy makers and implementers on which model could fit on evaluating technological advancement in a statistical manner. Furthermore, this study has been carried out to give the real picture and contribution of electronic toward law enforcement by a rule of law in service delivery.

1.7. Limitations of the Research

While undertaking the study, the researcher encountered various limitations. Respondents could not fill the questionnaire without the authorization. To overcome this, the researcher had to seek permission from the administrators as well as the heads of villages. The aim of the research was also explained to avoid any resistance from the respondents.

It took time travelling in different villages mapping the selected respondents in all the region under the study. Some respondents were inaccessible without a private car and sometime the researcher used motorbikes, with proper planning and organization and communication all required respondents were approached. Most respondents were businesspeople and most of the time busy and stressed with time, therefore drop and pick later method was used in order to give respondents enough time to go through the questionnaire and fill it, also telephone interview has been applied. The research also scheduled based on the get-ability of the respondents. The study was also conducted in a few selected districts out of 30 districts in Rwanda, more District would have been covered but time and financial resources hindered the work.

1.8. Delimitations of the Research

The study was designed to assess the performance of electronic government to user satisfaction from the influence of selected variables Performance expectancy, Effort expectancy, rule of law, and facilitating conditions. There are many other variables that influence satisfaction of citizens on adoption of technology that were not included in this study.

There are many models and frameworks that provides relationship of variables to adoption of technology but only a few were selected in this study to provide a guide to the relationship of the selected variables.

The study was restricted to few districts in Rwanda due to time and financial constraints. The study involved only the Irembo users while there is other e-government project and online platform that could be examined means other actors participating on the e-system were not included.

1.9. Organization of Study Structure

This study used University of Rwanda thesis writing manual in college of Business and Economics. And from there the researcher has divided this work into five chapters:

Chapter one is an introductory section contain the background of the study where demonstrated the e-government on international level and national level, problem statement that showed a motivation to the researcher to carry out the research, and research objectives which have been described as general objectives and specific objective to guide researcher.

Chapter two demonstrates a literature review from different researchers into different part including theoretical literature review, formulation of the conceptual framework and the empirical review and then after we demonstrated a research gap in this respective field of the study

Chapter three also explores the research methodology which defined the technique and methodology used to draw the result from a valid data set,

Chapter four has provided findings and data presentation of the study. In this section researcher presented findings guided by the research objectives and based on the methodologies that were appropriate to the study.

Chapter five brought up conclusion and recommendations. This where we summarized the findings and elaborated future research work.

CHAPTER TWO
LITERATURE REVIEW

In this section presented different literatures that have been conducted from different publications, articles about e-government. Even though there is a limited research available especially in developing countries like Rwanda, the research was done with investigation for articles related to the admissible set of keywords such as 'electronic government', 'e-government', 'e-gov', 'egov', 'digital democracy', 'online government', 'performance', 'theories in e-government', 'Users satisfaction'.

2.1. Theoretical Literature Review

2.1.1. E-government

Electronic government which is mostly known as "e-government" refers to deploy Information Communication Technology (ICT) techniques to improve the effectiveness, intelligibility, competence, and accountability within public governments institutions(Rana *et al.*, 2012).

Different countries are changing their operations with the help of ICT on how it can be embedded and be adopted for the public administration and various decision have been made to enhance people's wellbeing however the e-government means more than ICT.

While the expression of electronic government started to be used generally for 20 years past, the phenomenon have been advancing since the mid-1980s. A foundation was accepted and being applied by the New Public Management, which emerged in the 1980s and presumed different models of the role and instruments of government, highlighting perspectives delivered from the private sector like empowerment of managers, watchful on outputs and application of sound practices in management innovation (Alam, 2015). In addition, E-government may be categorised as growing from the important deals with three different sets of aspects, each of which have passed through its uniqueness transformation, management aspects, ICTs, and government itself.

There is so many interpretation and opinions of e-Government by which is quite broad and divergent. It should be noted that the e-government have been generally defined and described as the utilization of Information Communication and Technology (ICT) to

changes government by building most effective, accessible, and accountable states (United Nations, 2015).

Usually e-government have four or five stages which are identified in its development and it was delineated as information available on-line, one-way interaction, two - way interaction, and full online transaction where delivery and payment are inclusive to people's interaction. For more detailed explanation, recognition of Information Communication and Technology (ICT) projects are referred to e-government in small and e-government in broad areas. In first part, "e-Government in small or as narrow" is concerned with wielding of administrative processes, in a domain of e-Administration. For the second part e-government in Broad areas is defined as tool that can include all Information and Communication Technology (ICT) to enhance government operations, captivate citizens, and provide government services. Thereby, broader approach embraces the whole set of governance and administrative operations including e-services, e-voting, e-democracy, and e-justice and in some way e-education or e-healthcare are inclusive. Moreover, e-government is of use in gathering the information, uploading and downloading files or otherwise making online payment.

United Nations(2001) has defined electronic government (e-gov) as the use of the internet and the websites or World Wide Web to deliver services to citizens and holding government information easily accessible. And e-government is defined by the European Union (2015) Commission as the utilization of Information Communication and Technologies within public administrations including organizational change, new skills development in order to enhance public services and democratic processes and strengthening support to public policies(Kalamatianou, 2018,Terán, 2010).

Also Howard (2005) Described electronic Government as new application of the tools and techniques of e-Commerce to the work of government. These tools and techniques are intended to serve both the government and its citizens however the government should always analyse this method towards satisfaction and services to citizens, a regular approach to identify if people are happy with the system should be put in place.

2.1.2. E-Government Portal in Rwanda.

The scope of e-Government to the context of Rwanda Online Platform is defined as a Combination of external e-Services to stakeholders of Government institutions. E-

Government play an impactful role to provide interaction between different stakeholders in governance. These interactions have been described as follows.

Government to Citizens-G2C.

In this case, a platform is generated between the government and community or citizens, and it enables them to benefit from efficient delivery of a large range of public services (Twizeyimana, 2017; Rwandaoline, 2018). This expands the availability and accessibility of public services on the one hand as well as good perception (Mutimukwe, Kolkowska, and Gr 2017; Peter, Robert, and Bernd, 2016) and improves the quality of services on the other (Bakunzibake and Leader, 2018). It helps the citizens the choice of appropriate time of when to request and deal with the government e.g. twenty four (24) hours a day, seven (7) days a week, choice of appropriate place of where to interact with the state institutions (e.g. Service center, workplace), and how to interact with the government such as through face-to-face, email, internet, fax, telephone, etc. the primary role and purpose of the platform is to make government a citizen-friendly.

Government to Businesses-G2B.

In this case, an electronic tool is developed for the government that could be used to facilitate the business community providers of various products to perfectly make transaction with the government (Peter, Robert and Bernd w., 2016). The objective is to cut red tape, save time, reduce operational costs and to build a more transparent business environment when dealing with the government(Blair, 2000). The Government with Businesses initiatives could be transactional, like in process of procurement, licensing, permits, and revenue collection. E-gov could also be facilitative and promotional for example investment, trade, and tourism. These measures help to provide a congenial environment to businesses to enable them to perform more efficiently (Golubeva, Merkuryeva, & Shulakov, 2013).

It was been mentionned by Twizeyimana (2017) that for a solution to inefficient manual processes, delays in service delivery, long queues, bureaucracy-driven bottleneck in service delivery, and bridging the gap of access to information and public service delivery. The government of Rwanda has decided to push digitalization of government-to-citizens (G2C) and government interaction with business organization (G2B) services. And he continued suggesting that the adopted public-private partnership (PPP) approach to e-Government implementation in Rwanda provides opportunities to achieve a user centered e-government, and that user engagement in initial stages would facilitate to avoid basic

flaws and rise users 'capacity and trust, and decrease their probability to dismiss e-government systems(Twizeyimana, 2017). And this study was exploring how the performance of the platform affect the User satisfaction in terms of service delivery of the system.

2.1.3. E-government vs e-governance

Alam (2015) and Surbhi (2017) have provided overview on the terms "e-government" and "e-governance" which are currently in widespread use, sometimes interchangeably and continued saying that some authors describe that e-government constitutes only a subset of e-governance. It is important to develop a difference between the two. E-governance is implied to the enforcement and development of institutional policies, laws and regulations imperatively to support the functioning of governmental units Alam (2015) and Surbhi (2017), while E-Government refers to the utilization of Information Technologies by government agencies. E-government's attention is on stakeholders and constituencies from outside the institution, whether it is the public or private sector at the city, county, state, national, or international levels. On the other hand, e-governance focuses on administration and management within an organization, whether it is public or private, large or small(Islam, Momtaz and Ahmed, 2007).

E-Government and e-governance is defined as two very different terms. E-Governance is a wider phenomenon that deals with the whole spectrum of the interactions and networks in the government concerning the application and usage of ICTs (Andriyanto, Suhardi and Sofia, 2016). E-Government is actually a discipline dealing with the development of online services to the citizen Blair (2000) and Kolachalam (2002), more the "e" on any particular government services like e-transport, e-taxation, or e-health. This large concept defines that e-governance assesses the roles technologies are contributing on the operations and administration of governments and the interactions between public servants and the broader society, like dealing with the elected bodies or external groups such as non- profits organizations, NGOs or private sector corporate entities (Islam, 2016).

According to Obi (2007) E-governance encompasses a series of necessary steps for government institutions to improve and administer to assure successful

implementation of e-platform services to the public in general. E-Government is the conversion of inside and outside the public sector interaction and relationships, through Information and Communications Technology (ICT) in order to customize government service delivery and citizen engagement. E-Governance is the enhancement, enforcement and deployment of the policies, laws and regulations necessary to facilitate the applicability of a Knowledge Society as well as of e-Government (Obi, 2007; Islam, 2016).

2.1.4. E-Government Development Index.

Since 2001, the United Nations Division for Public Economics and Public Administration (United Nations, 2001) has described EGDI, an index that presents a global and less obvious measure of the e-government environment of a country. It assimilates the official online presence of a country, evaluates its infrastructure within telecommunications and evaluates the development of human capabilities. The extracted index captures and emphasizes the impact of the requirements that enable a country to maintain an e-government environment that ensures that every part of its population is not subject to any restrictions to access timely, useful and timely information and services. The EGDI report the e-participation of the citizens from all the region however it does not clearly identify which elements to be reviewed on measuring the satisfaction of the population that can be made as reference to the future use of the e-government, to the other side this study has explored from different theories that has been developed and merged to e-government context to validate a model on Rwandan platform.

2.1.5. Stakeholders theory

Stakeholder theory; It is a theory of organizational management and business ethics that etiquette morals and values for organization management; it was introduced in 1988 by an American professor Edward Freeman. Many researchers are calling Edward Freeman the father of Stakeholders Theory due to his contribution and to whom this study have interest to explore this concept in electronic governance by

strengthening state institutions capacity and accountability on stakeholders within the system.

Stakeholder theory seek to prescribe, describe, and derive possibilities for corporate governance that embrace and balance a multitude of interests by which it will give us a way to evaluate the institutions. A large body of research were done in order to verify the 'instrumental' claim that management of stakeholders is just a better management practice. This claim infers that institutions that practice stakeholder management would outperform firms that do not practice stakeholder management(Freeman, 1984).

There are three formulated branches of stakeholder's theory, Normative theory, instrumental theory and descriptive theory(Fontaine, Haarman and Schmid, 2006). Then the combination of normative theory and descriptive theory will provide a valuable asset to the study by analysing and predicting the future of e-government on Rwandan institution capability and accountability towards their stakeholders. Flak & Rose(2018) have brought the element of freeman in the test of the theory to applicability of the e-government as any other management decision to stakeholders.

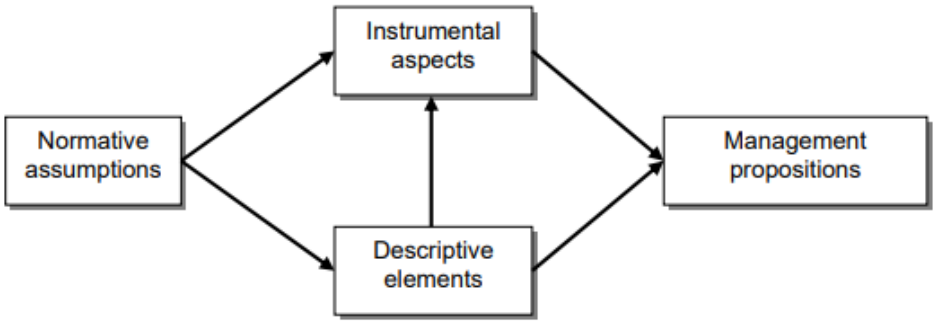

Figure 1: Components of Stakeholders Theory to e-government

2.1.6. Theory of Planned Behaviour -TPB

It was in 1985 when an article titled from intention to action by a professor with the origin of Poland called Icek Ajzen a social psychologist who brought the Theory of Planned Behaviour (TPB) firstly it has commenced just as the improvement of the Theory of Reasoned Action in the late 1980 to predict an individual's intention to participate in a behaviour at a particular time and specific place(Ajzen, 1991). The theory was focused to explain various behaviours over which individuals have the

capacity to apply self-control and then the theory stated that attitude toward a behaviour, perception of the behavioural control and subjective norms, by all-inclusive and shaping individual's behavioural intentions and behaviours. Moreover, the theory has been utilised by different organization as tools to monitor and evaluate the intention to use a technology.

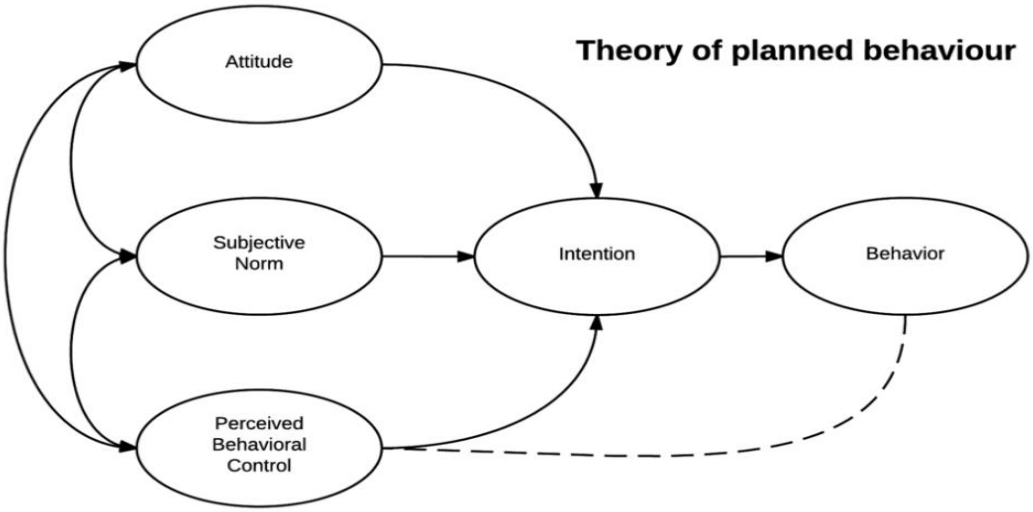

Figure 2: Theory of Planned Behaviour

From the figured 2 attributes a simplest mathematical function that have been developed as below from the three factors:

$$A \propto \sum_{i=1}^{n} b_i e_i$$

$$SN \propto \sum_{i=1}^{n} n_i m_i$$

$$PBC \propto \sum_{i=1}^{n} c_i p_i$$

$$BI = w_A A + w_{SN} SN + w_{PBC} PBC$$

And below is demonstration of words;

Table 1: Elements of Theory of Planned behaviour

BI	Behavioural intention
A	Attitude toward behaviour
b	the strength of each belief concerning an attribute or outcome
e	The measure of the attribute or outcome
SN	Subjective Norm
n	The strength of each normative belief of each referent
m	The motivation to comply with the referent
PBC	Perceived Behavioural Control
c	The strength of each and every control belief
p	The perceived power for the control factor
w	Empirically derived weight/coefficient

Source: Designed by researcher, June 2019

2.1.7. Diffusion of Innovation (DOI)

DOI model inspect the diversity of innovations by using four factors (which are channels' communication, innovation or social system, and the time,) which enables the spread of a upcoming ideas (Taherdoost, 2018). Diffusion of Innovation did not only be utilised at both institutions and individual levels however it has offered a theoretical foundation to discuss global applicability and adoptability. DOI model incorporates three key components: User characteristics, innovation characteristics, and innovation decision processes. In short, DOI-Diffusion of Innovation focused highly to the system characteristics, attributes of the organizational and aspects within environmental, it has less intended in explanatory and less practical for prediction of outcomes compared to other adoption models

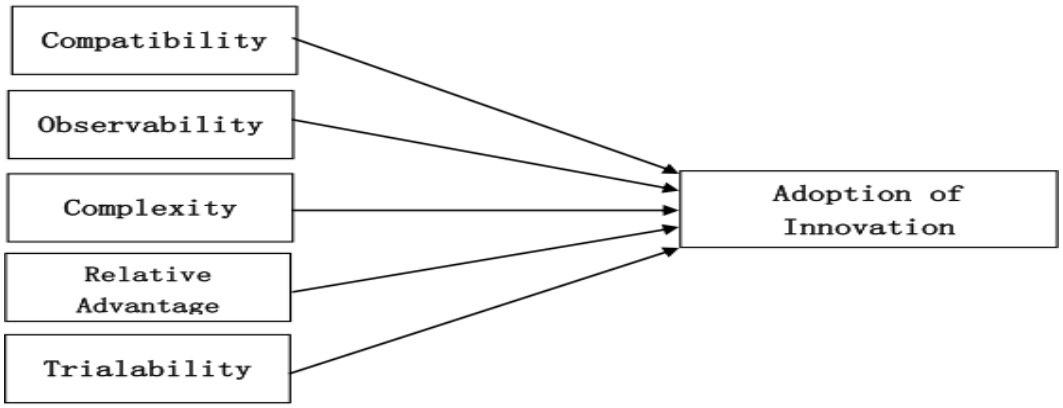

Figure 3: Diffusion of Innovation Theory

From a study of Liu (2017) that has been carried out in Vietnam by using the above model have emphasized that success in e-government implementation, government agency need to encourage the people to engage in government online services by increasing accountability of the services, strengthening the system trust, and making the sensitization of services because this sensitization can increase the people participation on e-government(Liu, 2017).

2.1.8. Technology Acceptance Model (TAM)

This Technology Acceptance Model, first was proposed by Davis (1989), a Technology Acceptance Model (TAM) is an information systems theory that demonstrates how users will accept and utilise new or exisisting technology. The model proposed that when users are given a new technology, various number of factors affect their decision about how and when they can use it, it includes key variables of adopter motivation that is perceived ease of use, perceived usefulness, and attitudes toward technology and outcome variables that is behavioural intentions, technology use. The following variables(perceived usefulness (PU) and perceived ease of use (PEU)) are regarded as key variables that indirectly and directly clarifies the outcomes(Rana, Dwivedi and Williams, 2013).

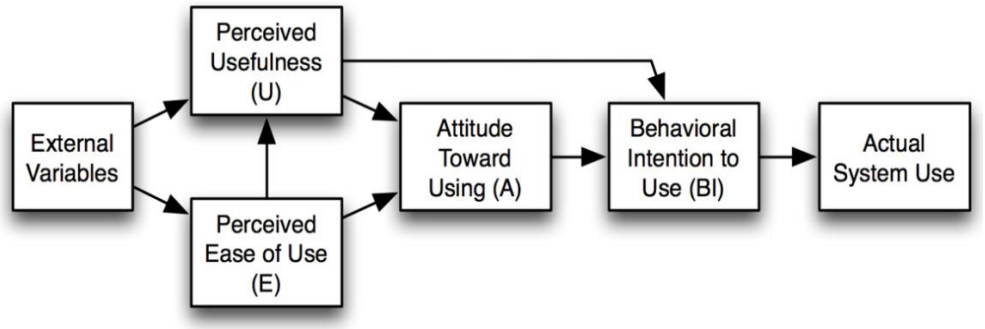

Figure 4: Technology Acceptance Model

Yarlıkaş, Arpacı, & Afacan (2015) have used the above model to demonstrate the user satisfaction of the e-school system based on the five variables which was utilitarian ease of use, system usefulness, system content, system usability and ease of use and they come up with conclusion that this system in turkey where it was been carried out are essential to the user satisfaction of the system however they did not show the factors that has contributed to beneficial of this elements.

2.1.9. Unified Theory of Acceptance and Use of Technology (UTAUT)

The study focused on UTAUT framework proposed by Venkatesh et al. (Morris *et al.*, 2003; Viswanath Venkatesh , Michael G . Morris , Gordon B . Davis, 2003; Alzubi, 2019). it is a revised and expanded theoretical frameworks become very popular and broadly used to assess behavioral intention for the use of technology by which it has been used to measure the satisfaction of the Users of Irembo. Venkatesh and many more researchers demonstrated that User's intention are probably predicted by performance expectancy (PE), effort expectancy (EE), social influence but this study considered the Rule of Law and governance influence (RoL) and facilitating conditions (FC). Several modifications/adoptions to the concept mentioned several other factors also. In this study we are encouraging to use the model in Rwandan context. Initial UTAUT originated from its predecessor models that was described above as the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), the Innovation Diffusion Theory (IDT), and Technology Acceptance Model (TAM),

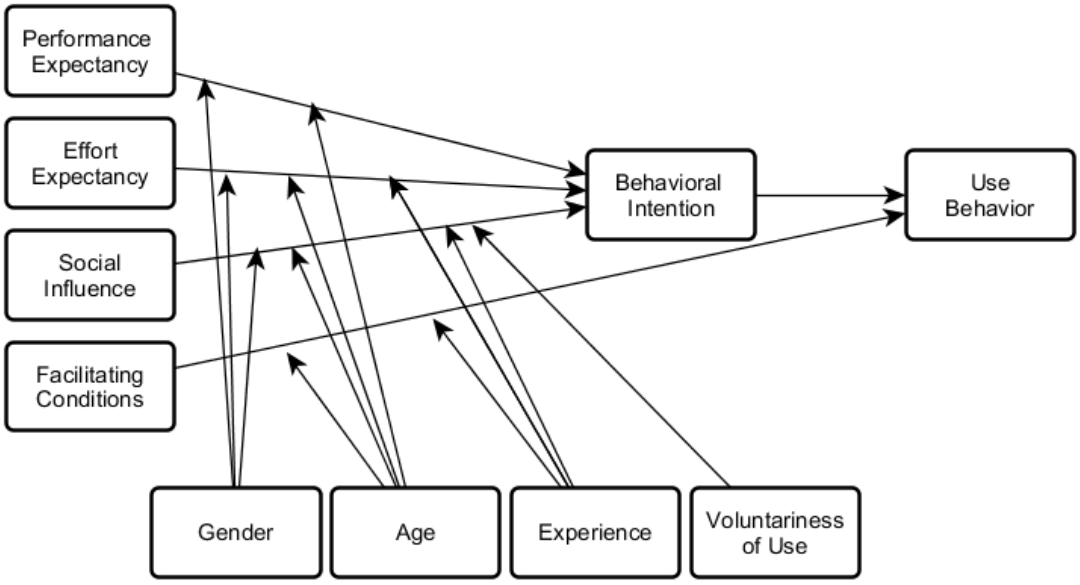

Figure 5: Unified Theory of Acceptance and Use of Technology-UTAUT

2.2. Conceptual Framework

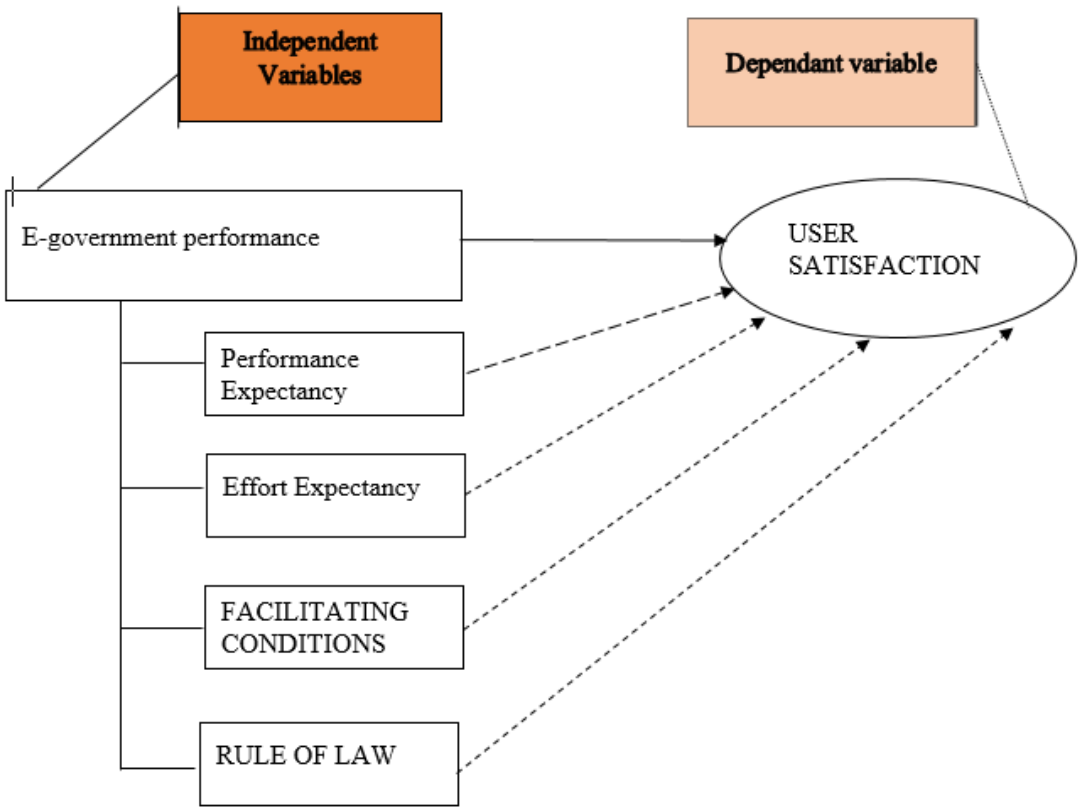

Figure 6: conceptual framework and relation of variables

Source: researcher, 2019

A dependent variable will be the satisfaction of the user from a service he got from the government by using Irembo as tool to get served.

An independent variable is extracted from the UTAUT that will measures the performance of the government tool to satisfy stakeholders (citizen) and UTAUT will be validated on Rwandan context by the end users' perspectives on; performance expectancy, effort expectancy, rule of law, and facilitating conditions.

2.3. Empirical Literature Review

2.3.1. User Satisfaction

User satisfaction for E-government adoption needs that people show highest levels of satisfaction with the online service delivered by the government. People's satisfaction with e-government service is related to the use of an e-government platform and it is positively associated with trust in the government. A satisfactory project offers users the ability to complete their tasks successfully. (Kharel, 2014)By asking them to reply if they are satisfied by a service, it can provide a measure of all the parties' contribution to the overall user experience, like ease of use, navigation and design.

According to Danila and Abdullah (2014) when they combined Theory of planned Behavior, Technology Acceptancy Model and with Information System Success Model they made a clarification by noting that e-government have to put into account both citizens needs and expectations in order to provide a better responsiveness and greater accessibility but the study did not include the facilitating conditions and social influence to give a wide picture of the system need to satisfy their citizens. And many other studies has been carried out and mentioned the User satisfaction as determinant of the e-government are positively correlated with adoption and acceptance (Yang, 2017).

2.3.2. Performance Expectancy

User's expectation on the performance of technology affect his/her satisfaction of which they consider utilizing the technology. Past research shows the evidence of influence by perceived performance on behavioral intention to adopt electronic government. Viswanath Venkatesh , Michael G . Morris , Gordon . Davis (2003)in their work provided evidence that user's intention to adopt technology depends on how they perceive the usefulness of the technology. E-government promises to be a fast

and portable media of financial transaction and therefore, user's perception of the delivery of those promises determine the success of this Endeavour. Researchers from different geographical regions in the world with various domains noted that performance expectation is a key factor to influence users rises their behavioral intentions. The performance Expectancy will determine the promises of how the e-government deliver the services to the citizens in terms of time and the actual time people have been served.

2.3.3. Effort Expectancy

Effort expectancy when is very high in a belief that using a given technology will be easy and without requiring other effort to use it, the satisfaction also will be high. Expatriates in technology adoption models pointed out that people's perception of ease of use demonstrates the acceptance of the technology. Easy to use and requirement of less effort is of the important reasons the users of Irembo services adopt the technology. The service is considered to make their lifestyle easy by delivering a user-friendly platform and quick tool of payment setups. The concept has been explored in the past by many researchers(Wairiuko, 2018; Morris et al., 2003).

2.3.4. Rule of Law and governance

The most important requirement for Good governance is fair legal framework which has been enforced impartially. Secondary good governance needs all protection of human rights, watchfully to those of minorities. Impartial enforcement of laws requires an operable system of an independent judiciary and an impartial and incorruptible system and it is a tremendous progress that government of Rwanda fought against Corruption and within this study evaluated how the e-government adoption is making an addition forces to increase the operability of the government service delivery just from the user’s perspectives.

In short, according to the general principle of international organizations, good governance means that the authority of the government rests on the will of the people and that it serves them. It is at this time that open democratic organizations allow full participation in political affairs and that the right to speak, to assemble and to protect human rights is guaranteed. Once again, it is when the government and government

agencies are pro-poor and promote the human development of all people. In brief, it separated between the corporation and processes of governance and their content and quality (Misuraca, 2007).

Even if governments kept a predominant preference on providing services via the Internet (or other technologies) as a means of boosting cost-efficiency, citizens in many places still show an important preference for a person or phone-based interactions with government representatives when they have questions or are requesting services which could be a motive to suspicion on violation of fair service delivery (Bertot, Jaeger and Grimes, 2010).

2.3.5. Facilitating Conditions

The users of technology depend on its functionality and their capacity to associate with the system and on the structural features of the environment, such as training, support, and access to technology. defined the 'facilitating conditions' attribute as "the degree to which system end user considers available infrastructure and believes on organization and technical assistance to help using of the system" (Viswanath Venkatesh , Michael . Morris , Gordon . Davis, 2003; Clark-Gordon *et al.*, 2019). The facilitating conditions will be modulated by the internet accessibility, ICT infrastructure, available assistance, and knowledge capacity of using the system.

2.3.6. Summary of the literature

AUTHOR	STUDY	PUBLICATION	YEAR
Viswanath Venkatesh	User Acceptance of Information Technology	Management Information Systems Research Center, University of Minnesota	2003
Wairiuko Jennifer Wangari	Organizational Internal Factors, Change Management and Adoption Of E-Government Service Delivery in Kajiado County, Kenya, University of Nairobi.	University of Nairobi.	2018
Taherdoost	A Review of Technology Acceptance and Adoption Models and Theories	Procedia Manufacturing. Elsevier B.V.	2018

Rana, N. P., Dwivedi, Y. K. And Williams, M. D.	Examining the Factors Affecting Intention to Use Of, And User Satisfaction with Online Public Grievance Redressal System (Opgrs) In India	Advances in Information and Communication Technology	2013
Freeman R Edward	Response: Divergent Stakeholder Theory Author	Academy of Management Stable	2017
Li Yongkui Lu Yujie	Evolutionary Governance for Mega-event Projects Meps: A Case study of the world Expo 2010 in China	Project Management Journal	2018
De', Rahul	Electronic governance theory	Proceedings of the 2nd international conference on Theory and practice of electronic governance	2008
TWIZEYIMANA Jean Damascene	User-Centeredness and Usability in E-government – a Reflection on a Case Study in Rwanda	Informatics, Örebro University School of Business, 701 82 Örebro, Sweden 2 University of Rwanda College of Science and Technology, P.O. Box 3900 Kigali, Rwanda	2017
Shareef, M, Jahankhani, Hamid, Pimenidis, Elias	Analysis of the e-Government stage model evaluation using SWOT-AHP method	School of Computing, IT and Engineering University of East London, UK	2012
Ciborra Claudio Navarra Diego D.	Good governance, development theory, and aid policy: Risks and challenges of e-government in Jordan	Information Technology for Development	2005

Terhorst Andrew, Lusher Dean, Bolton Dianne, Elsum Ian, Wang Peng	Tacit Knowledge Sharing in Open Innovation Projects	Project Management Journal	2018
Kaulio Matti A.	A Psychological Contract Perspective on Project Networks	Project Management Journal	2018
Hans J. Scholl	Applying Stakeholder Theory to E-Government: Benefits and Limits	University at Albany / SUNY, Jscholl@ctg.albany.edu	
Bannister Frank, Connolly Regina	The great theory hunt: Does e-government really have a problem?	Government Information Quarterly	2015
Eskerod Pernille, Ang Karyne	Stakeholder Value Constructs in Megaprojects: A Long-Term Assessment Case Study	Project Management Journal	2017
MUTIMUKWE Chantal, Kolkowska Ella	Trusting and Adopting E-Government Services in Developing Countries? Privacy Concerns and Practices in Rwanda	School of Business, Örebro University, Fakultetsgatan 1, 701 82 Örebro, Sweden.	2017
Murara Brice	RWANDA'S APPROACH TOWARDS EMERGING TECHNOLOGIES, opportunities and challenges	ITU	2017
Bakunzibake Pierre	E-Government Implementation in Developing Countries: Enterprise Content E-Government Implementation in Developing Countries: Enterprise Content Management in Rwanda	Örebro University, School of Business, Sweden bUniversity	2018

2.3.7. Research Gap

The term ‘electronic government’ was said to have first come to eminence when used in the 1993 U.S. National Performance Review, whereas ‘e-government’ seems to have first come to account in 1997 and it should be noted that e-government is at early stage of development.

This study will develop a theoretical approach on e-government projects evaluation by assessing its contribution to good governance. Electronic government is a combination of ICT, Management and Governance system but many researchers including (Bakunzibake and Leader, 2018; Murara, 2017; Mutimukwe, Kolkowska and Gr, 2017; Twizeyimana, 2017; Damascene Twizeyimana, Larsson and Grönlund, 2018) have focused on technical issues, software performance, and contribution of online service to digital transformation but they have ignored the concept of institutional capacity and accountability. This study will not cover but will bridge the gap in e-governance research base in Rwanda and Africa.

CHAPTER THREE:

RESEARCH METHODOLOGY

This chapter contains several sections, including the research design, population and sampling, data collection and data analysis methods. In addition, it explains the ethical considerations when collecting data for this research. Again, the research methodology is linked to the objectives of the research in order to allow an effective conclusion.

3.1. Research Design

The research concerned user's satisfaction of e-government projects which combined two different research design namely a descriptive research and Multivariate research design for applicability and relationship of different variables.

Descriptive research design was important to this study because it has provided good exploration of the phenomena and as it was highly noted that it helps description of the use of local community service (Star, 2006). Again, under descriptive research design the study give us the possibility to analyze the phenomenon without any intervention only by using central tendency (Mean, Median, and mode).

Multivariate research is a technique which has been used to establish a relationship between variables by using Chi-square, correlation and multi-regression analysis. Two different groups namely dependant and independent variable have been distinguished to conduct this research design method. No assumptions when evaluating a relationship between two different variables, and statistical analysis techniques are used in R to calculate the relationship between them.

3.2. Study Population

The Irembo portal was used as the case study representing other electronic government because is the platform that involves Government to Citizens interaction and again this is a platform which seems to be the most successful platform in Africa. And the population selected for this study are the people that have been involved in the system by requesting government services through Irembo platform.

3.3. Sampling Procedure

3.3.1. Method of Sampling

Sampling is the process of selecting a specific number of representatives from a population, but the selection is done on the basis to make a small but identical representation of the population. The sampling has been applied with proper consideration because the whole analysis and conclusion is based on the sample size that have been taken during this process. It has been taken more essential that population and the sample of the population are relevant to the requirements of the research to achieved reliable and authentic results for conclusion(Cochran, 1977; Hanley, 2003).

Also, this research is based on e-government and therefore it has been assured that sample and population are being relevant to this area. Researchers considered people who sometimes/often interact with the government by using e-government platform. The participants are a citizen of Rwanda that have been selected purposively because they have Irembo. During sampling, the Researcher did not consider any differences, and everybody had an equal chance of receiving the questionnaire if he has used the Irembo.

Two sampling techniques has been used on different basis. The first techniques that has been utilised is the convenience sampling technique which was used on pilot because the researcher wanted many people for a short period, so people that were willing to participate chosen at University of Rwanda- Huye campus and the data gathered helped the research to revise the hypothesis and validating the research tools.

The second technique was carried out when the actual data collection has started, and Simple random sampling as a statistical method of selecting *n* units have been applied further to complete the study data collection.

3.3.2. Study Units and Sampling Frame

The study unit's beneficiaries include citizens, government officers, IT specialist, and IREMBO platform agents that have accessed Irembo platform specifically from June 2018 up to May 2019. Due to the financial and time constraints the selected units are

the citizens only accessed Irembo as reported there is 160,00 applications per month (Rwandaonline Platform Ltd, 2019)

First of all, while working with a finite population and if the population size is known of the people interacted with the government using electronic method, The Taro Yamane method for sample size calculation have been formulated as the statistician Taro Yamane who have improved the slovin's formula. He developed this method in 1967 to decide the sample size from a given population. Given by Israel, (2003) from Florida University, below is the mathematical illustration for the Taro Yamane method:

Table 2: Assumption of the sample size

Sample size for ±3%, ±5%, ±7% and ±10% precision level where confidence interval is 95% and P= .5

Size of Population	Sample Size (n) for Precision (e) of:			
	±3%	±5%	±7%	±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.				

Source: Taro Yamane, 1967

$$n = \frac{N}{(1 + Ne^2)}$$

Where

n= corrected sample size,

N = population size, and

e = Margin of error (5%=0.05)

3.3.3. Sample Size

The sample size has been determined based on the above sampling frame method after getting the required sampling units and the sampling size used is 399 participants.

$$n = \frac{160000}{\left(1 + 160000(0.0025)\right)}$$

n= 399

3.4. Data Collection Methods

The research collected information directly "Primary data" and existing information "secondary data" to draw the right conclusion about a sustainable evaluation of e-government project in Rwanda from project management perspective.

Data collection is an integral phase of research as the research itself involves researching and becoming familiar with different sources to work on a selected field. There are 2 types of data sources named primary and secondary sources. Primary Source is based on data collection directly from the original source and does not include any intermediaries for receiving data. Primary sources consist of a questionnaire that has been formulated according to the objectives for the study. Secondary source, it relies on the collection of data on a secondary basis that are already present in different forms to exploit. It required a literature review of these sources in the form of literature, case studies, journals, articles, predominant international reports, and Web references and books

The basic tools used for data collection was a questionnaires and documentary analysis depending on the objective of the researcher.

3.5. Operational Definition of Key terms

The researcher used detailed Literature Review to bring up the conceptual design. However, because of the nature of the research primary data collection carried out as the principal approach by using questionnaire.

Questionnaires mainly focused on the research questions. It contains twenty-five 25 questions or sub variables of the main four (4) factors incorporated with UTAUT model. The questions were closed ended questions for better and quick response. The study population is based on Rwandan context mainly the people accessed the Irembo platform.

Researcher contemplated the work of Venkatesh and Zhang (2010), Tang and Chiang (2009)and used questionnaire items similar to theirs to define the variables to be employed within the study. Researcher asked questions looking on understanding performance expectancy as the degree to which a person believes that adopting e-government will help him/her gain a certain benefit using e-government performance. Questions on effort expectancy focused on the amount of effort required to use the e-government service. Questions on Rule of Law investigated how a person is influenced by governance and his authorities to utilise e-government services. Finally, the questions related to Facilitating Conditions demonstrated how the user's reaction on organization and infrastructure availability to access the Irembo platform.

3.6. Data Analysis

The Data analysis considers collection and organization of the Data so that you provide the right conclusion. This study was inspired by past studies to use IBM SPSS and R software as the modern programmatic statistical analysis tool. The screening of data collected have been done properly for data entry errors and unengaged responses. After that, reliability and validity were checked to ensure consistency of issues. To predict the UTAUT factors, a Multivariate analysis have been followed within this study through organized and ordered components from the beginning to the end.

SPSS was used as tool of coding, assignment of numeric values, and preparation of data in computerised model has been well manipulated for Analysis

R is a free software advanced in environment on computing statistical and presenting graphics. It compiles and runs on a large variety of platform to provide an advanced analysis and it was been chosen by the researcher to the fact that it provides a simplest computer programming space to combine different variables which can help the research to follow his/her model.

Descriptive statistics is the statistical terminology provisioned to the analysis of data that enables to describe, show or summarize data in a meaningful way. Descriptive statistics helped to make decisions beyond the data we have analysed or reach conclusions concerning any comparative or prediction that we might have done. It is simply a method for describing the presented data. Descriptive statistics are very important for the following reasons:

Measurement of central tendency: we used different ways of detailing the central position of a frequency distribution for a group of data. In this par, a frequency distribution were normally the pattern and distribution of the data from the lowest to the highest. We have described the central position by applying a number of statistics, including the minimum, maximum, and mean and standard deviation.

Measures of spread: these are ways to provide the summary of a set of data by showing how spread out the scores. To present this spread, various statistics are applied for this research, including the range, quartiles, absolute deviation, variance and standard deviation.

In case of descriptive statistics, it has been important to summarize our group of data utilising a combination of tabulated description (i.e., tables), description of graphics (i.e., graphs and charts) and statistical commentary (i.e., a discussion of the results).

Multivariate analysis as the term "multivariate statistics" is importantly used to include all statistics where there are more variables to be tested at once. The research has adopted Multivariate analysis because of the following reason:

- The research has more than two variables that have simultaneously analysed.
- The User satisfaction depends on different factors that should be combined.
- Variables within this study are continuous and discrete which requires a combination of different type of analysis

3.7. Ethical Considerations

Ethics is very important part of every research because it has several implied characteristics that are required to be complied. Ethical considerations were strongly considered on every single step in this study. There were not much more ethical issues which were expected in this research because the major ethical requirement was

getting of consent acknowledgement by respondent and protection of their personal information which have been highly respected. This was a big ethical considered in the conduct of this study and it has been applied duly.

In addition to this, there has been the use of several kinds of literature, journal, articles and web sources to complete the study and according to academic guidelines, it should be referenced properly. This is another ethical consideration and it has also been performed well by applying proper referencing method to cite each and every source utilized to accomplish this study and moreover some of authors have been approached and they have provided access to use their words in this study.

CHAPTER FOUR:

DATA ANALYSIS AND INTERPRETATION

4.1. Profile of Respondents

The population sample was made of 399 people to whom the same number of questionnaires were distributed in different region of the country. The number of returned questionnaires which was filled properly equals to 367 questionnaires (91% of the total distributed questionnaires).

Table 3: Age-Range of The User

Age	Number of respondents	Percentage to the total
18- 25 Years	254	69.2
26-35 Years	105	28.6
Above 55 Years	8	2.2
Total	367	100.0

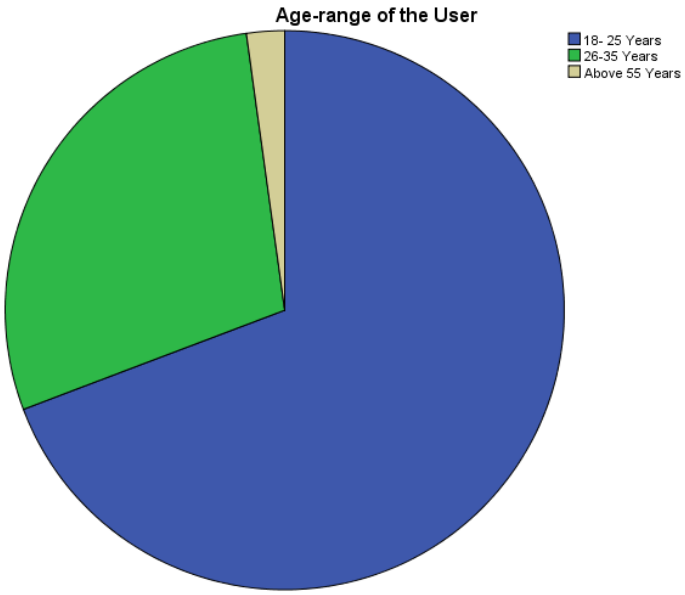

Figure 7: Age-range of the User

Source: primary data computed by researcher, June 2019

This table 5 and Figure 7 indicates that the major part of respondents is made of young people who can also be called digital generation of the age of 18 and 25 which has covered 69.2% of the total participation. The same table shows that people of 26 and 35 constitute the big part of the respondents compared to the people said to be old generation.

Table 4: Gender

Gender	Respondents	Percent
Female	109	29.7
Male	258	70.3
Total	367	100.0

Source: Primary data computed by researcher, June 2019

The result from table 6 shows that 29.7 % of the respondents were female, while 70.3 % were male. This implies that most of the respondents are male and this reflects the reality that the majority of the people that could use Irembo platform are male with an observation this indicate that women should be trained enough for the new technology to raise the level of satisfaction in the service delivery processes.

Table 5: Location/Region indicated by User

Location	Respondents	Percentages
Rural (Northern)	48	13.2
Rural (Southern)	105	28.6
Rural (Eastern)	44	12.1
Rural (Western)	61	16.5
Urban (Kigali city)	109	29.7
Total	367	100.0

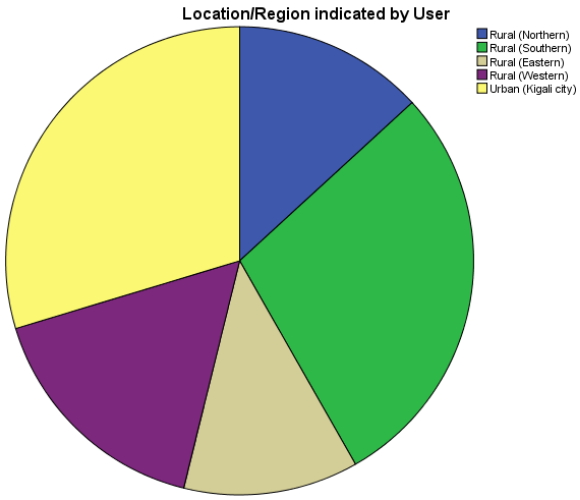

Figure 8: Location/Region indicated by User

Source: primary data computed by researcher, June 2019

Both the table 7 and the figure 8 above show the distribution of people responded from different region either be in Urban or Rural areas. Kigali city as the only region that has been considered as the urban region has covered 29.7 % of the total population and 70.3 covered the rural areas based the total distribution of the population.

Table 6: Highest level of Education completed by the User

Education level	Frequency	Percent
Primary level	8	2.2
Secondary level	307	83.5
University level	44	12.1
Never attended	8	2.2
Total	367	100.0

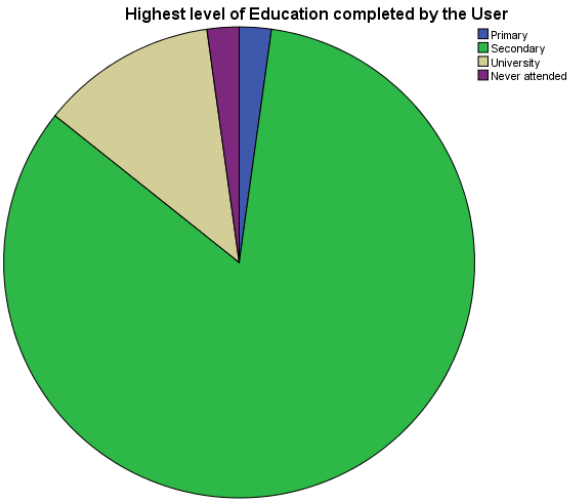

Figure 9: Highest level of Education completed by the User

Source: primary data computed by researcher, June 2019

The data above shows that most respondents are the ones who have completed the secondary school at the level of 80% of the total respondents above. The few remaining respondents completed the primary studies and only two respondents have not attended.

Table 7: Experience of the User on using internet and computer devices

Experience	Frequency	Percent
N/A	4	1.1
No Experience	16	4.4
Basic	16	4.4
Moderate	77	20.9
Advanced	254	69.2
Total	367	100.0

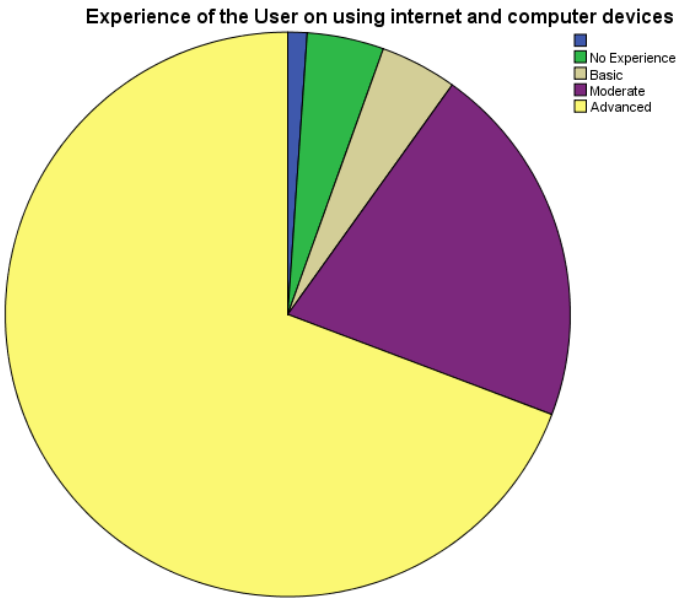

Figure 10: Experience of the User on using internet and computer devices

Source: primary data computed by researcher, June 2019

From Out of 367 respondent who filled the questionnaire, 69% of respondents are people who have been using the computer and internet for 4 and/more years and they have an advanced experience on internet and computer use. This implies that people with enough experience on internet and computer use could interact with any system that could be raised and influence them to satisfy their needs.

4.2. Data Analysis

4.2.1. Performance Expectancy

Table 8: The last use of the system

Time of Application	Respondents	Percentage
In a Week	28	7.7
In a Month	48	13.2
In 6 Month	138	37.4
In a Year	153	41.8
Total	367	100.0

Source: Primary data computed by researcher, June 2019

The table 10 indicate when the respondents have used the Irembo services and helped us to identify the performance of Irembo within the respected time and it was noted that all the respondent have used Irembo in the recent time not exceeding One Year at the time research has been conducted.

Table 9: Respect of Time in service delivery process

Process of delivery	Respondents	Percentages
Time is respected	258	70.3
Time is violated	105	28.6
N/A	4	1.1
Total	367	100.0

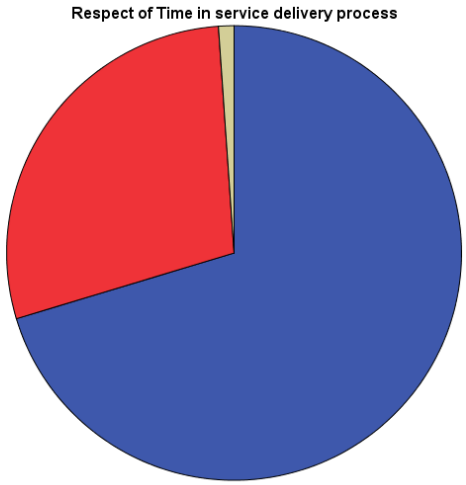

Figure 11: Respect of Time in service delivery process

Source: primary data computed by researcher, June 2019

The table 9 and the figure 11 shows how the time that have been indicated at the time of application with the time that have been used to end the process of the service delivery and it has been indicated that 70.3 % they are satisfied with the respect of the

time which shows a great progress from Irembo system as contributing tools to the satisfaction of the citizens for government services.

Table 10: Productivity increase from the system service delivery

System productivity	Respondents	Percentages
System increased productivity	355	96.7
No productivity	12	3.3
Total	367	100.0

Source: Primary data computed by researcher, June 2019

The Table 10 shown above elaborated that the people have argued the point of productivity increases at 96.7 % that the system is contributing positively to their daily productivity. And this implies the fact the electronic government increase the performance expectancy of the citizens.

Table 11: Satisfaction on the speed of service delivery using Irembo

Speedily satisfaction	Frequency	Percent
Yes	258	70.3
No	109	29.7
Total	367	100.0

Source: primary data computed by researcher, June 2019

The table 11 have demonstrated the people's satisfaction on the speed of services delivered from the system of Irembo and the study showed that 70.3 % of the people are satisfied with the speed of Irembo.

4.2.2. Effort Expectancy

Table 12: User's ability to make application

Ability to make application	Frequency	Percent
Able to make application	161	44.0
Unable to make application	206	56.0
Total	367	100.0

Source: Primary data computed by researcher, June 2019

Table 12 shows ability to make application is an indicator of the effort required to use the system which has been noted strongly that the less effort needed to accomplish the task the more the satisfaction of the event increases. In the table demonstrated above showed that the population is unable to make application for their own and the people that failed to make it themselves are 56% of the total population which can be reduced to increase the people's satisfaction.

Table 13: Easiness of the system.

System easiness		Frequency	Percent
	Yes	138	37.4
	No	36	9.9
	Total	173	47.3
Missing	System	193	52.7
Total		367	100.0

Source: Primary data computed by researcher, June 2019

The table 13 above show the experience of the 34 people made an application themselves on if the easiness of the system and it was found that people face some

little difficulties due to the fact that 20 % of the people that tried to use the system without further assistance they said to be difficult to use.

Table 14: Available facilitation for the users

Facilitators		Frequency	Percent
	Irembo Agent	218	59.3
	Government Officer	4	1.1
	Total	222	60.4
Missing	System	145	39.6
Total		367	100.0

Source: Primary data computed by researcher, June 2019

Available facilitation that was been studied and been presented in the above table 14 was the assessment of how people are being assisted if they are not able to use the system and it was found that the main principal person that can help the users are the system users and from 54 persons that were found unable to make application they have approached Irembo agents at 98.2 %

Table 15: Assessment of assistance payment

Assessment of Assistance		Frequency	Percent
	Assistance is paid	230	62.6
	Freely assisted	109	29.7
	Total	339	92.3
Missing	System	28	7.7
	Total	367	100.0

Source: Primary data computed by researcher, June 2019

In addition to table 15 the people that have used further assistance 67.9 % of them have paid additional amount to the service they were requesting too, and it has been indicated that it affects the overall satisfaction of the government service delivery processes.

4.2.3. Rule of Law and Governance

Table 16: Operability of The Government Services

Operability	Frequency	Percent
System is operable	302	82.4
System is not operable	65	17.6
Total	367	100.0

Source: Primary data computed by researcher, June 2019

It has been found that from the population selected the operability of the Government services has improved to the end user perspective at the level of 82.4 % from using electronic services.

Table 17: Trust of services rendered from the system

Are services trusted	Respondents	Percent
Yes	323	87.9
No	44	12.1
Total	367	100.0

Source: Primary data computed by researcher, June 2019

The people trust the services that are being rendered from the system at 87.9 percent which indicate the level of satisfaction and trust of electronic services through e-government processes.

Table 18: Information accessibility for new system

Information accessibility of the system	Respondents	Percent
Adverts	198	53.8
Friend/Family	48	13.2
Upon Request at Office	101	27.5
In government mobilization	20	5.5
Total	367	100.0

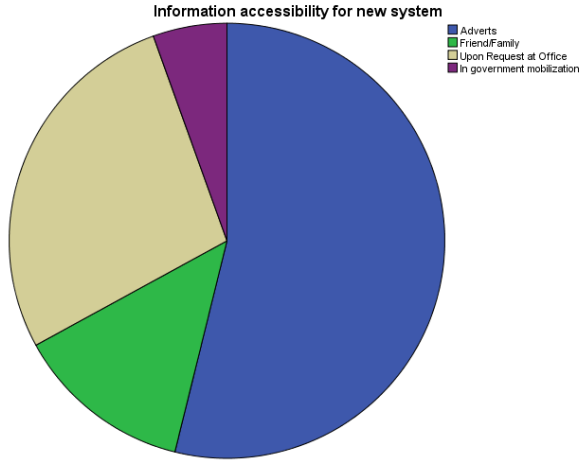

Figure 12: Information accessibility for new system

Source: primary data computed by researcher, June 2019

The source and ways of accessing information has been considered as the fact that affect the user satisfaction from based on the reason that easy access of information from the public affect the citizen satisfaction and we have found that the adverts are taking big part in informing the public at 53.8 percent and this implies that the channel could be used for tutoring the citizens on the use of the system.

4.2.4. Facilitating Conditions

Table 19: Available infrastructure

Infrastructure used	Frequency	Percent
Telephone	40	11.0
Smart phone	133	36.3
PC/ Computer	44	12.1
Multiple	150	40.7
Total	367	100.0

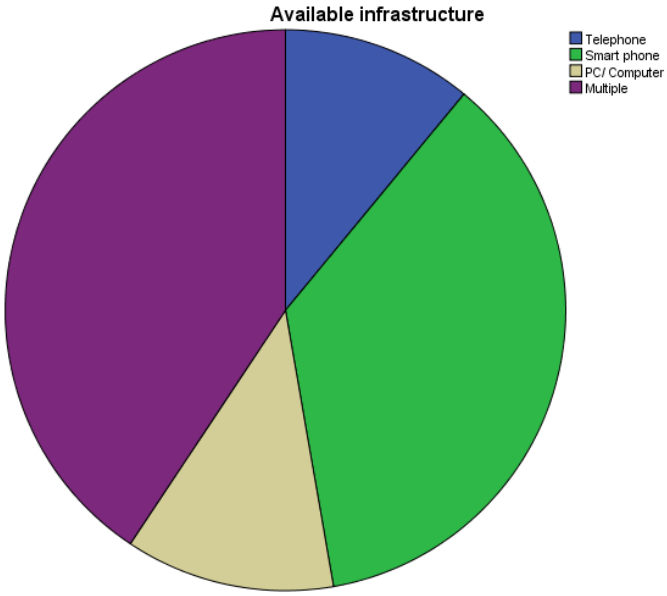

Figure 13: Available infrastructure

Source: primary data computed by researcher, June 2019

The above displayed statics comes in to demonstrate the devices that people are having to perform Irembo services and from our population we have found That 40.7 and 36.3 have multiple device and smart phone respectively and this indicate that people can access both the service available using USSD or Web services on Irembo.

Table 20: Device necessity for using the system

Device necessity	Respondents	Percent
Device possessed are helpful	254	69.2
My devices are not helpful	109	29.7
N/A	4	1.1
Total	367	100.0

Source: Primary data computed by researcher, June 2019

Device necessity was an assessment of checking if the device people that are possessing could be enough and necessary to access all the services from the irembo. From the point that many services of Irembo are web based and it was been contrasted by the fact that 69.2% concluded that the devices they have are enough and necessary.

Table 21: Knowledge capacity of using system

Knowledge to use system	Respondents	Percent
System is usable	182	49.5
Additional training is needed	185	50.5
Total	367	100.0

Source: Primary data computed by researcher, June 2019

Table above, shows the knowledge capacity of using the Irembo system is still very low because 49.5 % of the total population could feel comfortable to use the Irembo platform and in addition to that we have found that in Rwanda there is a significant dependency on knowledge capacity of using the system and satisfaction on service delivery processes.

Table 22: Accessibility of internet connectivity

Internet connectivity		Respondents	Percent
	Accessible Internet	141	38.5
	No internet	222	60.4
	Total	363	98.9
Missing	System	4	1.1
Total		367	100.0

Source: Primary data computed by researcher, June 2019

Again, the internet connectivity is a challenge to the applicability of the system because the people have showed that more than 60% are not accessing the service properly due to improper internet connectivity and this could affect user satisfaction at some extent.

Table 23: Service delivery process improvement

Process improvement	Number of Respondents	Percent
Yes	302	82.4
No	65	17.6
Total	367	100.0

Source: Primary data computed by researcher, June 2019

The population that have been studied has shown that people that have used irembo argued the improvement of service delivery process with 82.4 % responses confirmed that the Irembo is contributing more positively.

4.3. Results and Discussion

4.3.1. Descriptive Analysis

Table 24: Descriptive Statistics

Descriptions	Number of Respondents	Minimum	Maximum	Mean	Std. Deviation
Time used in service delivery	367	1	210	11.64	35.850
Distance covered for assistance	220		20	2.19	2.926
Amount paid for assistance	319		5000	503.45	654.581
Valid N (listwise)	220				

Source:Pprimary data computed by researcher, June 2019

From the above descriptive statics for Irembo service and by considering three variables we have brought the following analysis based on the Mean and the standard deviation.

Firstly study founded that the average time to be served is about two weeks and this was due to the fact that there is little delays and disrespect of time and during the time of data collection some argued that there a little exaggeration for some services which requires a lot of time that could be reduced and this is shown by the standard deviation to the mean and which could be reduced.

Secondary, there is hindrance of distance which is caused by overreliance for assistance to make application and the people are assumed to take 2.1 kms for making application and it can be reduced by ensuring people are knowledgeable to the use of the system.

Finally, there is high deviation to the mean due to lack of information and necessary knowledge on the use of the system and the internet connectivity based on location of

the respondent. The average amount to be assisted of 500 Rwf makes the service through Irembo more expensive which affect the overall satisfaction to the use of the system.

4.3.2. Chi-Square Test of Dependence and Independence of Variables

Chi-Square Tests of Independence User Satisfaction on Improvement Process of Service Delivery and Effort Expectancy

Table 25: chi-square test 1

Chi square test of Independence	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.320a	1	0.007
Continuity Correction b	5.906	1	0.015
Likelihood Ratio	7.81	1	0.005
Fisher's Exact Test			
Linear-by-Linear Association	7.239	1	0.007
N of Valid Cases	367		

Source: primary data computed by researcher, June 2019

This is the test of relationship between two variables improved process of service delivery and Effort expectancy these variables are related since p-value is less than 0.05 0.007<0.05 this means that there is dependency between these variables listed above, and based on finding we retrieved that the User satisfaction of service process delivery depend effort expectancy of the payment on assistance for application of services.

Chi-Square Tests of Independence between User Satisfaction on Improved Process of Service Delivery and Facilitating Condition to Access/Use of System

Table 26: chi-square test 2

Chi-square Test of Independence	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	18.808[a]	7	.009
Likelihood Ratio	15.047	7	.035
Linear-by-Linear Association	4.239	1	.040
N of Valid Cases	319		

Source: primary data computed by researcher, June 2019

This is the test of relationship between two variables improved process of service delivery and Facilitating condition (knowledge capacity) to access and use system these variables are related since p-value is less than 0.05 0.009<0.05 this means that there is dependency between these variables listed above, Based on finding we get that the user satisfaction on improvement of process to service delivery depend facilitating condition through changes of knowledge capacity to access and use system.

4.3.3. Regression Analysis

Coefficients						
Model		Unstandardized C.		Standardized C.	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.776	0.067		11.603	0
	Knowledge capacity of using system	0.204	0.08	0.27	2.55	0.013
	Amount paid for assistance	-8.924E-5	0	-0.154	-1.451	0.15
a. Dependent Variable: Service delivery process improvement						

Source: Primary data computed by researcher, June 2019

From the figure above from the SPSS output let us use;

Y= Service delivery process improvement

X1 = Knowledge capacity of using system

X2= Amount paid for assistance

Y=0.776+0.204(X1)-0.000089(X2)

If the amount for assistance(X2) increased by 1 the satisfaction will decrease by 0.000089 the easy way to say that as the amount of assistance (X2) increasing by 1000 the Y will decrease 8.9%

The person who has the knowledge of system(X1) are satisfied at 20.4%

For the person who do not have the knowledge on use the system and do not pay any amount of assistance are satisfied at 77.6%.

In nutshell the government cannot rely on the amount of assistance it is not significant so the government could focus on make easy the system because of the fact that when the citizen has the required knowledge to use the system the satisfaction will increase and again the government has to provide the training of get more about the system .

CHAPTER FIVE:
FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter contains the discussion of the main findings and the conclusion of the study as well as recommendations for further enquiries. This summative part has elaborated some conclusive points as this study focused on the user satisfaction of electronic government of government service delivery processes with the main objective of assessing the contribution of this electronic tools for government to build a capable and accountable state institutions specifically by looking at performance expectancy, Effort expectancy, Rule of law and Governance, and Facilitating conditions as it was been guided by the theory of Unified Theory of User Acceptance Technology.

5.1. Findings

The study has found that there is interdependency between variables and within our set of variables we used the chi-square test to identify the dependency and the significant results was found that Satisfaction on service delivery process by the user as dependant variable and the Independent variables as amount paid for assistance and the Knowledge on using the system. Moreover, the regression model shown that when the knowledge on the system use is provided the user satisfaction would increase and as well as decreasing the amount to be paid as extra amount to be assisted.

On performance expectancy the result has shown that 70% of the people are satisfied with the speed of service delivery through Irembo platform, 96% argued that the electronic government contribute positively to their daily activities, and 70 % of the service are rendered on time through by using Irembo.

With the effort expectancy that could be defined as the requirement of the user to perform the work the study found that there is always an additional cost for the people that are not able to make application and the average amount to be paid is 503 Rwf, again people that are not able to make application on their own they take two kilometres to be assisted which hinders the satisfaction of the User even though people who have tried to make application have claimed that the system is easy to use.

Rule of law and Governance, it should be noted that the government have gains more than 87 % of the people that trust the services through irembo and addition to this the study have found that 82.7% people who uses Irembo see the operation of the government more operable by using the new system.

By the facilitating conditions the study shown that the people have the devices that could be used to access irembo either be in Rural or Urban regions however it also shows that there is a limited people that could be able to use the system only 49 % percent of the total population have the necessary knowledge to use the system.

After all we have identified that from the model of the UTAUT the two variables are more dependable to the User satisfaction namely effort expectancy and the Facilitating conditions

5.2. Conclusion

As conclusion to this study that focused on the User satisfaction of electronic government, the government institutions has become more responsible and accountable to a greater extent by respecting the time in service delivery, contributing to the productivity of their stakes, providing the speedy service delivery process and making the government operations more operable however further improvement should be mad by increasing the tutoring institutions for equipping the citizens on using the new systems.

5.3. Recommendations

The study recommends the government of Rwanda as the principal stakeholder of the system of electronic government to focus on making the system easier to use by all user instead of agents and where necessary to provide community workshop on how to use the system as it has found that knowledge on the system use increases the satisfaction of the end user as well as saving income.

Secondary researcher recommends future researchers to make a comparative study by including other electronic government platforms other than the Irembo platforms.

Again, the government could provide the tutoring institutions that are in charge of providing guidance and training on how to use new system for the citizens in order to

build a digital citizen and different campaign could be organised to teach people on how they could become familiar with the systems.

Researcher recommend further the future researchers to expand the study to a large sample size and using many more other variables as constraints of time and financial means this study did not provide all the necessary factors to be considered.

5.4. Areas for Further Research

From this study that focused on the satisfaction of the users on the government service delivery processes through by using Irembo platform as form of e-government with major findings in the research process we have also identified further interesting part to be looked at it and demonstrate the findings.

Firstly, further research should be conducted to find out the contribution of facilitating condition and effort expectancy to the performance of government institution as part of government to government interaction and business to government (G2B) this will enables the researcher to generalise the result of implementing and adopting electronic government.

This particular study has focused on small part of electronic government mainly on reflection of service delivery, the future research is highly needed that they could extend the sample size from being 399 to a large number, also contrary to this study that focused only for the people used the platform, future researcher have to include the people that have not used the platform because they may have different view to electronic government

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