College Of Development Studies,

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Assessment of E-Service Practice and Quality from Users' Perspectives in the Case of E-Service Platform, the Eservice.gov.et of Ethiopia

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CERTIFICATE OF APPROVAL

This thesis by Robson Zelalem Beyene, entitled: "Assessment of E-Service Practice and Quality from Users' Perspectives in the Case of E-Service Platform, the Eservice.gov.et of Ethiopia", is accepted in its present form by the Board of Examiners as satisfying thesis requirements for the Degree of Master of Arts in Regional and Local Development Studies, at College of Development Studies, Addis Ababa University.

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DECLARATION

I, the undersigned, declare that this paper, entitled: "Assessment of E-Service Practice and Quality from Users' Perspectives in the Case of E-Service Platform, the Eservice.gov.et of Ethiopia", is my original work and has not been presented for a masters' degree in this or another university or college and that all sources used for this paper have been fully acknowledged.

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ABBREVIATIONS AND ACRONYMS

COM	Council Of Ministers
D&M	DeLone and McLean
FDI	Foreign Direct Investment
GTP	Growth and Transformation Plan
HR	Human Resource
IS	Information Systems
ICT	Information Communication Technology
OECD	Organization for Economic Cooperation and Development
LLDC	Landlocked Developing Countries
MCIT	Ministry of Communication and Information Technology
MIT	Ministry of Innovation and Technology
MOFA	Ministry of Foreign Affairs
MOP	Ministry of Peace
PMO	Prime Minister Office
TA	Technology Acceptance
TAM	Technology Acceptance Model
UTAUT	Unified Theory of Acceptance and Use of Technology
PU	Perceived Usefulness
PEOU	Perceived Ease of Use
TRA	Theory of Reasoned Action

ABSTRACT

This research was conducted with a key objective of assessing and analyzing the e-service quality and practices and evaluating the change e-service has brought about on public service delivery from the evidence of selected federal organizations on e-service delivered @eservices.gov.et. To that end, the study employed a mixed research approach with sequential exploratory and concurrent triangulation research design. It began with collecting qualitative data gathered through four different observations accompanied by unstructured interviews with two key informants to explore the e-service practices followed by unrepresentative survey data collected from fifty users on their perception of the e-service quality based on the adopted D&M IS success model as well as validated on-site. Qualitative findings have revealed that apart from problems related to language and code acquisition the system is showing relative success for the selected organizations. This in another way has been manifested in the quantitative findings which have revealed that all the six variables were quite successful and validated the qualitative finding with relatively lesser results scored on components of information quality (86% completeness, 76% up to date and 92% comprehensibility) and system quality (usability 68%, adaptability 72%, availability scored 80% positive). While time factor, security concerns and convenience generally influence e-service usage, yet in the case of this research security concern was not a point of concern for the users. Adaptability, language barriers and non-automation of back-office processes were identified to be the major problems with the e-service system. Furthermore, the e-service practice showed that the system is only translating the paper process to electronic public service delivery and hence no automation *per se* of the back-office process falling short of transformation. This implies that the eservice system did not achieve the vision of transforming public service delivery as envisaged in the e-government strategic plan 2020 in its current state. Based on this the research recommends among other things; the need for additional language on the portal, careful strategy to phase-out paper version, a body with clear mandate, responsibility, and diligence to coordinate and facilitate integration and interoperability of the e-services and more investment on key ICT infrastructures. Finally, future areas of study considering the context and realities of Ethiopia have been suggested.

Key words: e-service, service-seekers, service-providers, Information system, quality models, e-services portal

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

After the advent of ICT in the early 1980s, the business world didn't waste much time before harnessing the information communication technology (ICT) in general and the internet in particular, in order to maximize business success and to achieve optimal performance (Tian and Stewart, 2007). Hence, it has been common to hear phrases such as e-business, ecommerce, e-marketing and so forth in our daily life since back in the days.

However, it is only in the late 1990s (Tat-Kei Ho, 2002), that e-governance is seen as a component of the 'reinventing government' (Osborne, 1993; Osborne & Gablear, 1993) movement, as such was at the beginning viewed as a concept that is focused on exploiting advancement in the information and communication technologies as a means through which services are delivered (Tambouris, *et al*, 2001).

Less than a decade later, e-governance has been understood as a key factor in the public sector transformation for effective governance, transparency, accountability and citizen participation in democratic processes and policy making (Nataša Veljković, 2014). Accordingly, it has been established that e-governance is increasingly beneficial to society, citizens and businesses, including for faster request processing, timely response, reducing cost (both for the government and the service users), bridging the digital divide, tailoring services to individuals' needs and the active civic participation (Akman, *et al*., 2005; Csetenyi, 2000; Gupta & Jana, 2003; Worku & Hando 2019).

As much as E-government is correlated with quality of public service delivery it has also further implications on facilitation of FDI which is the main and preferred source of financial resource to fuel economic growth (OECD, 2002) which the country seeks to sustain. Estimates of the monetary loss by nations due to corruption vary in different situations and places but are recognized to be generally significant. In fact, the situation differs from country to country but the negative effect on economies is well recognized (Kolstad& Wiig, 2009).

Empirical literature also confirms that lack of transparency in the government and business and administrative inefficiency do not only disincentive investment, but it also works as an impediment to one (OECD, 2002; Teka, 2014 and others). Because of a chain of attributions especially the reduced FDI and Tourism inflow, the economic slowdown is posing many extended challenges to the nation as whole.

On the other hand, transparency constitutes one of the elements of open government and empirical researches underpin the role of e-governance adoption in increasing transparency and administrative efficiency (Bhatnagar, 2003, Sturges, 2004 Rajshree& Srivastava, 2012 & others).

Furthermore, research conducted elsewhere shows that e-government has helped to reduce corruption by opening up government processes and enabling greater public access to information and increase efficiency in public service delivery (Bhatnagar, 2003). However, it has also been argued in public management researches on the potential for information communication technology to cut bureaucratic red tape (which is excessive case of inefficient public service delivery) while at the same time, this relationship is heavily context dependent; the existence, magnitude, and direction of the relationship between red tape and ICT usage are far from conclusive (Bretschneider 1990; Heintze and Bretschneider 2000; Moon and Bretschneider 2002; Pandey and Bretschneider 1997).

Ethiopia has been favorably ranked from among developing nations with regard to ereadiness (UNDESA, 2018). Nonetheless, many questions linger in our head when it comes to the realization of benefits that should have been accrued to citizens, in this regard, to the businesses or other service seekers of e-government and specifically e-service, given the immense potential and promise that it provides and the perceived and empirical role it has in the realization of good governance (Ghayur, 2006; Worku & Hando, 2019).

In Ethiopia, though the development of websites for government posts precedes the year 2011, the first e-government policy and strategy came to existence in 2011 which was in use up to 2015 (MCIT, 2013). During the implementation period of the plan, the period which converges with the first national growth and transformation plan (GTP I), there have been

some achievements in the area of e-service specifically with respect to the informational e-services and not much in the case of transactional e-services (KPMG, 2016). However, when seen from a standpoint of e-services, those achievements were below the planned targets. For instance, the portal development, which is one of the 12 priority projects and enabler of the transactional services, as envisaged in the plan has seen undue delay and the portal became available to users only in the year 2017/18 as also depicted in the current E-GovStrategy 2016-2020 assessment baseline (KPMG, 2016). The 2011-2015 practice with regard to e-service implementation is such that even though informational e-service was by far available for the service seekers, it was barely known to the users (Meleket & Yun, 2019).

On the other hand, building up on the gains from implementation of the preceding plan such as implementation of 168 services on national portal and development of PPP model portal for utility services (KPMG, 2016), E-government strategic implementation plan 2016- 2020 sets out the vision which consists of seven components/elements represented by one word RADICAL (KPMG, 2016, p, 19).

> "To **R**ealize the economic growth of Ethiopia and provide **A**ffordable & quality services to all Stakeholders thereby **D**elivering effective, efficient and transparent governance, through **I**nnovation in everything we do, creating a **c**ulture of entrepreneurship, **A**ffecting the life of all Ethiopians and **L**everaging SMART government initiatives"

The focus of this research is to assess the e-service practice with regard to the second component of the E-government strategic implementation plan of 2016- 2020; the key points of the plan were provision of affordable and quality e-government services. Providing affordable and quality e-government service encompasses the provision of public services mediated by the internet, which simply means e-service (Orlikowski & Iacono, 2001). And providing quality e-services translates into the success of the overall e-service and the

quality of such service depends on the quality of e-service in general and the six components of e-service quality (Donell & Mclean, 2003).

D&M model is a model developed by DeLone and his associate Mclean in 1989 and expanded and refined in the subsequent decades by other scholars and themselves. It has been empirically proved and validated and it is believed to be the best model currently in use for measuring Information Systems (IS) quality success (see chapter two).

In terms of the quantitative aspect of this research, it seeks to apply the D&M e-service quality model (DeLone & Mclean, 2003) in the case of eservices.gov.et. As such though it indirectly or in away deals with validation, model validation or testing is not under the purview or purpose of this research. Due to this fact, the research holds that the basic assumption of D&M model that the relationship between the variables is both causal and process in the way elaborated in chapter two. These six components of eservice quality are categorized into two – those in the first category are service, system and information quality; and those in the second category are service use, user satisfaction and net benefit of the services provided (M&D 2003). The model is concerned with perception of e-service users limiting the focus of study to government to citizen (G2C) and government to business (G2B). In another terms these research does not directly focus on government to government (G2G) aspect of the e-service.

The affordability of public service through e-government is something which is subsumed in the last component of e-service quality i.e., net benefit and hence a redundant word (M&D 2003). The Ethiopian e-government strategic implementation plan 2016- 2020 identified areas for initiatives are enabling environment, e-readiness, and usage (KPMG, 2016). The document points out that Ethiopia aims, among others at increasing the eservice usage (which is a component in the D&M model as well) through e-government portal enhancement as one of the initiatives. On top of that, the part of the document which sets out this initiative states that the purpose is to “transform” public service delivery”. The egovernment strategy document in itself is also considered as one part of the second

National “Growth Transformation Plan”, hereafter GTP II. This is so because the egovernment strategic plan is believed to have been cascaded from the 2016 national ICT policy and strategy document which is in turn cascaded from the GTP II.

Both the e-government strategic documents (2011 &2016) will provide a strong basis to assess whether the e-service is being driven towards realizing this very aim of transforming public service delivery and components in the vision or not. More importantly, as it has been the case, the initial desk review shows that neither the strategic plan currently in force nor the pace of implementation seem to have taken in to account the current global health crises due to COVID-19 which has dramatically affected human relations in general and service deliveries in particular. As was intuitively expected at the initial stage of the outbreak of the pandemic most of the public services have gone virtual/online (WHO, 2020) as physical contacts are highly discouraged if not prohibited in order to halt a spread of pandemics, and Ethiopia is not an exception (WHO, 2001).

1.2. Statement of the Problem

In the year 2012 Ethiopian government launched the citizen’s charter – a document which sets out the time and quality of public services to be sought in different public services providing posts of either local or federal government (Fekadu, 2014). In addition to time and quality the documents also list various and specific requirements pertaining to various services provided by the public agencies which are to be adduced/availed by the service seekers (Tadesse, 2019).

In addition to that the government has launched the first E-government strategy in 2011 and embarked on diverse initiatives which aim at solving problems of bad governance. Among several initiatives implemented during the implementation period of the first strategy are development of portals providing over 200 informational and transactional e-services, 147 Community ICT Centers, Mobile Applications, Data Centers and so forth (KPMG, 2016). These led to the second E-government strategy in 2016 which builds up on the gains from the implementation of the first strategy. However, with regard to the portals

developed during the implementation of the first strategic plan, it was not meaningfully integrated with public service providers' back-end, to increase cross-departmental services in a way that it can provide a full-fledged e-services and specifically in relation to the transactional e-services as set out in the plan. The case in point is the portal eservices.gov.et. This necessitated planning of portal enhancements as one of the initiatives in the second e-government strategic plan (Belachew, 2010).

On the other hand, citizens' charter and e-governance have a reinforcing purpose and could be considered as complementary reform tools in the public service provision (IEG, 2008). The concepts of citizen's charter and e-governance have mutual aim of solving problems of good governance in the areas of public service delivery (Ibid). However, after almost a decade of resonance, there is still a feeling by citizens that more challenging and intricate problems of bad governance prevailed in the country (Yohannes, 2020). Despite these facts the Ethiopian government has at times attributed the challenges of bad governance to the ongoing political crisis in the country (Ibid). The crisis context is believed to have a nexus with administrative corruption and bureaucratic in-efficiency, and other political malice (Addis, AK. *et al,* 2020, WB, 2012).

Corruption and bureaucratic in-efficiencies constitute the main symptoms of bad governance. Yet there seems a sign of increasing public service-related corruption recently as public complaints relating to such administrative malpractice have mounted in the country (Debela, *et al*, 2020). This on the other hand points to possible drawbacks in the many initiatives which have been implemented over years to solve or at the very least ameliorate it.

Nonetheless, it is a matter of fact that information technology in general and the internet in particular has been put to use in Ethiopian public sphere since the onset of this century. The Covid-19 pandemic is exerting currently more stress on the relatively infant e-service in particular and the public service delivery which was already suffering from inefficiency and all sorts of maladministration essences in general. If these endeavors fail and a fair amount of vigilance is put on its quality and efficiency, which in its right presupposes regular

assessment and evaluation, it will result in a much more intricate impasse when it comes to the accessibility of public services.

Literature on e-government in Ethiopian context is scant; though there are some researchers who have studied e-government practices in Ethiopia, for instance, Belachew (2010), who assessed the e-government initiatives, Tola, (2020) on the Effect of E-

Government Based Service Delivery on Customers' Satisfaction, Worku, (2016) on the effect of e-service delivery on public service quality and good governance at FDRE Document Authentication and Registration Agency, Worku & Hando, (2019), on correlational analysis of e-government and good governance variables, Pathak *et al* (2010) on the correlation of e-governance and citizens perceptions, there is no independent assessment conducted on quality of e-services being offered on the portal eservices.gov.et from all the six quality components of IS to the best of the researchers' knowledge. It is against this backdrop that, this research assesses the practice, success or quality of the e-services provided on the portal in Ethiopia's context from the perception of service users specifically in the selected public agencies at federal level where the implementation seems to be actively going on as compared with other federal agencies and the regional states.

eService practice will be assessed to see if the initiative is serving the guiding principle of transforming public service delivery as set out in the strategic document and discussed in background section above. In this light, an understanding of transformation to transcend a mere change of process or means and rather radical change in public service delivery that automates major procedures and processes is considered. While mere change of paper process to electronic or online process just constitutes 'translation' of public service delivery, the strategic document aims transformation of one in the sense that the change will be radical with the eservice initiatives and this research will be the first undertaking to investigate the eservice practice from the kind of change it managed to bring about so far.

In this regard, though there were internal evaluation by the Ministry of Information and Technology, a little has been done in terms independent academic or professional investigation that were known to the researcher.

The findings will have a paramount importance in informing policy as it sheds light on successes which need to be kept up and scaled up and point out the problems in e-service provisions that need to be improved in face of uncertainties such as pandemics where eservice might necessarily become the only alternative for public service delivery if it were to be abide with the pandemic guidelines of “contact free service delivery” (WHO, 2020).

1.3. Objectives of the Study

The study aims at assessing the practice and quality of e-services on the portal eservices.gov.et (hereafter the portal) at selected Ethiopian federal public agencies from a user perspective and evaluate if the e-service practice is transforming or translating public service delivery. To achieve this main objective, the specific objectives identified for the study using the six components are to:

- Assess the e-service quality from the perception of users of the portal in selected federal organizations.
- Analyze e-service practices of the portal in these selected federal organizations.
- Evaluate whether the implementation of the e-service is transforming public service delivery from the evidence of the selected federal organizations using the portal.

1.4. The Research Questions

The study mainly inquires whether the practice and quality of e-services from the users’ perspective in selected Ethiopian federal public agencies are transforming public service delivery as envisioned in e-government strategic plan 2016 – 2020. To answer this main research question, the following specific research questions were designed. The answers to the main and specific research questions are believed to achieve the main and specific research objectives of the study. These are:

1. How is e-service quality at eservices.gov.et in terms of the six components of quality of eservice based on the perception of users at selected federal organizations?
    - What is Information quality of e-service of eservices.gov.et?
    - What is system quality of e-service of eservices.gov.et? - What is service quality of e-service of eservices.gov.et?
    - How is intention to use-use of e-service of eservices.gov.et?
    - How is user satisfaction of e-service of eservices.gov.et?
    - How is net benefit of e-service of eservices.gov.et?
2. What is the face of e-service practices in the federal organizations based on evidence from the federal organizations selected?
3. In what ways is the e-service provision changing public service delivery from the evidence of the federal organizations selected?

1.5. Significance of the Study

The study assesses e-service practices and success of the web portal e-services.gov.et from the user perspective. This leads to recommendations about required efforts to enhance the effectiveness of e-service from the different dimensions of information systems. The information generated will also help other organizations through informing issues needed to be considered for successful IS design and implementation, and also government agencies and policy makers at different levels, who are considering building robust e-services.

Therefore, this research is thought to help to highlight the need to take into consideration the interests of users in any effort pertaining to building successful information systems and particularly e-service adoption.

The research will also generate valuable information for policy community, academia, and practitioners on the indispensability of users' perception for building successful e-services. Furthermore, it creates awareness on the part of the e-service providers on the unrealized potential of e-services that could solve imminent problems of good governance of the nation. It should also encourage and arouse appetite for further research in the area leading to greater stock of knowledge with regard to e-service success and its evaluation. The results of this study may also help the Ethiopian policy community to understand the position of service seekers on online governmental services, to step up efforts for delivering more services through the internet while shrinking the number of manual activities, and to seize initiatives to expand the quality of e-services.

It is also a matter of fact that there is little literature on e-governance in Africa and specifically in Ethiopia related to e-services success evaluation. Research that has been done elsewhere in the world lacks the specificities of the Ethiopian context and those done in Ethiopian context was only done by the government agencies for internal consumption and only assessed from the agency's vantage points. This study therefore aims to bridge this knowledge gap for academics, bureaucrats, citizens and organizations dealing with governance, ICT and Development Studies who are interested in learning more about egovernance and specifically e-service in Ethiopia.

1.6. Scope of the Study

This study aimed at assessing e-service practice and the success of e-service in Ethiopia and specifically within the federal government public agencies yet only from the user's perspective. In the thematic area of this research and specifically in Ethiopian context most of the research conducted so far pertains to e-government in general and its relation to components of good governance and customer satisfaction. While e-government encompasses e-services, it also comprises a great deal of electronic governmental services such as telephonic, email and so forth. This research is specific to e-service and doesn't include other electronically mediated public services. In fact, it is also delimited to the eservices provided on the platform e-services.gov.et and hence doesn't investigate the eservice quality and practice of other portals such as that of Document Authentication and Registration Agency and others currently in use in the country as the research is constrained by resource and time.

In addition to that, even if this research presupposes that successful e-services have a positive impact on components of good governance, it doesn't seek to investigate the correlation between the two. Furthermore, e-service quality is assessed in this research only from the user's perspective and hence software and hardware configuration of the portal is beyond the scope of this research. Though the user's perspective presents only one side of the story it is an indispensable aspect of interest at stake, and it is the researchers' belief that reckoning with such interest yields a successful e-services system.

The research variables in these studies are those developed and identified in the D&M IS success model and are believed to include all the dimensions of IS success and their interrelations are empirically confirmed as presented in the literature review part. In fact, the proponents of the model and others have strongly cautioned against reducing those variables to some.

The narrow scope of the research in terms of research subject and is mainly due to its nature as academic research which is highly constrained by time and most importantly resource.

1.7. Limitation of the Study

As already mentioned above, as much as this is academic research it was constrained by time and resource. This challenge was dealt with through resource prioritization strategies. In addition to that the research was conducted against the backdrop of a global health crisis due to the Covid-19 pandemic which posed an extended challenge as physical contacts were discouraged and carried a scary health risk. The researcher followed a global pandemic guideline to manage this problem especially during interviews and administration of survey questionnaires.

The delimitation of the research scope to the quality and practice of e-services on a single portal rather than the whole e-government system makes the findings to also be restrained to this area. However, this portal encompasses most of the e-services being availed in the country.

Evaluating e-service quality based only on users' perception would risk representing only one side of the story even though that's the indispensable aspect. To mitigate this limitation, the researcher incorporated the viewpoints of the other stakeholders through interviews and observations.

Much of the analysis is on the electronic system so analysis on the manual application is very limited. This is due to the lack of literature on the manual service in English. In addition, getting responses from service seekers was very difficult since many people are only

interested in using the system and are not invested in evaluating it. However, the researcher has put further efforts to secure the respondents interest to fill out the questionnaires.

Furthermore, lack of well - organized data and high workforce turnover in the agencies have somewhat posed a challenge in tracing the background and virtual tracks of e-service adoption for the study. However, this problem was mitigated through detailed conversations with senior officials whose duties have direct pertinence to e-service in the agencies and referring to secondary data (strategy documents, reports, and internal assessments) as corroborative tools.

1.8. Ethical Considerations

The researcher has paid due attention to research ethics in conducting this research. Specifically in the process of data gathering, prior consent of the research subjects were obtained willfully, and hence the data used for the research were all willfully provided by the respondents including the agencies and their respective staffs.

Furthermore, due recognition was paid to the previous scholarly works and contributions through proper citations and referencing

Finally, the recommendations were made in a readily usable format so that practitioners in the field and others can use easily and confidently to build robust e-services that have users' best interests at heart and contribute to efficient and effective public service provisions.

1.9. Organization of the Thesis

The paper is organized into five major chapters. Chapter two presents the literature review in which the concept of e-service, the practice in Ethiopia and some of the major e-service dimensions which have become e-service success variables (Information quality, System quality, and Service quality, Intention to use-use, User satisfaction and Net benefit) discussed. Furthermore, the research model was grounded, elaborated and adopted with reference to empirical studies related to e-service success evaluation.

The third chapter covers in more detail the research methodology presenting the research settings, subjects and addresses research design, data types, instruments, sampling techniques and method of data analysis in a reasoned fashion.

Chapter four presents the major data results and discussion of findings of the study. Conclusions, some recommendations, and future research areas are presented in chapter five followed by references and appendices.

CHAPTER TWO: REVIEW OF RELEVANT LITERATURE

This chapter presents the concept of e-service in the extant literature and provides a review of literature on adoption of e-service in general and in Ethiopia in particular. The review literature also presents the adopted research model (conceptual framework) for e-service and its success factors. The six dimensions and subcomponents were operationalized to collect data and analyze results.

2.1. The Concept of E-Service and Measures of Quality

For the purpose of better understanding, practical utility and disambiguation, it is indispensable to unpack the concept of public e-service and position it in the extant literature Wang et al. (2005). From the semantic construction of the term “e- service”, it can apparently be inferred, e-service stands for electronic service which in turn connotes services offered through the means of information communication technology and it was specifically defined as an umbrella term which stands for services over the internet (Computer Language Company, 2009).

Among the array of electronic services available, dominant categories often heard of are ecommerce and e-governance (Tambouris, *et al*, 2001). However, the concept of e-service, as it is always the case for any other concept in social science field suffers from lack of consensus around the definition, “conceptual vagueness” (Yildiz, 2007), and more importantly “theoretical neglect” as asserted by Heeks and Bailur (2007) and others; a

phrase that refers to inconsistency in the use of terms and concepts which made it difficult to build up a stock of knowledge and theory development (Yildiz, 2007). For instance, the phrases used synonymously for e-services delivered by public agencies in journal articles, working papers and reports are e-government services, e-service, public e-service, epublicservice, digital service, and web-channel (Boyer, *et al.,*2002; Ebbers, *et al.,*2007; Karlsson, *et al*. 2012 and others).

Whereas Wang et al. (2005), defines e-services as "the information and services provided to the public on government websites." Rowley (2006) refers to it as: "…deeds, efforts, or performances whose delivery is mediated by information technology". Wang et al.'s definition seems to describe the state of e-services.gov.et, a governmental website for most e-services provided by the federal government agencies.

For the purpose of this research, e-service is to be approached and understood from three dimensions. The first two dimensions of e-service are "e" and "service"; 1). "e" stands for electronic or technology perspective and 2). service refers to intangible value creation. In addition to this as we consider the organizational context as to if the service is to be availed as either public or private, it gets another dimension which is 3. Public.

It becomes essential to shade light on these three dimensions for purposes of deeper understanding and contextualization. Service which originates from the word *servitium* in Latin used to connote "slavery" according to Computer Language Company (2009). However, the meaning of service has since evolved and as it stands currently does not have associations with slavery anymore and rather can refer to 1) The action or process of serving; 2) An act of assistance; and 3) A system supplying a public need (Computer Language Company 2009)

The major traits of service which have key implications for grandstanding public e-services are that a service can be taken as a "process" where someone gets service and, in this case, it is a must for a value to be created for the user (Ida and Gabriella, 2013). Furthermore, quality of the service is to be assessed based on this value, which is created

for the user of the service, thus there tends to exist an asymmetrical relationship among user/customer and provider/supplier, the felt and perceived experiences of the user being of paramount importance (Kvasnicova, 2016).

As is already mentioned above the other dimension of e-service is being electronic since eservice is an electronically mediated service (Rowley, 2006). Computer Language Company (2009) defines “electronically mediated service” as something which is produced and controlled by instrumentality of a computer or other related electronic devices. Computers and other electronic devices in turn refer to information communication technology (ICT) (Rowley, 2006).

More detailed definitions of e-services are put forth by researchers in the fields of marketing and e-commerce (Rowley, 2006 and Ruyter et al. 2001). Accordingly, the definitions provided by Rowley (2006) and Ruyter et al. (2001) emphasizes and perceives too that electronically mediated services as actions/dealings/activities mediated via the instrumentality of information technology. However, some scholars (Orlikowski & Iacono, 2001) specifically assert that in the case of e-service context, the prefix “e” typically stands for Internet-mediated technology, such as online or internet webpage. Yet, this in no way challenges the e-services which are currently being mediated through the means of SMS messages or smart phone apps to fall under a category of e-service (Ida and Gabriella, 2013). They are indeed e-services as though they are quite unique with regard to levels of interaction they provide, both types of e-services are surely integrated with back-office technological infrastructure on the side of the service provider institution (Ida and Gabriella, 2013).

When we take a look at the research in the e-government field, much emphasis is placed on the how of e-services supply and the evolution of e-services (Persson 2009). The concept of maturity models was largely employed (Layne & Lee 2001; Andersen & Henriksen 2006) to describe e-service evolutions. Maturity models are models presenting levels of evolution which have majorly four stages into which e-services provided by public agencies can be evaluated based on level of technology and service, assessing also the

level to which the system allows interaction with the service seekers (ranging from basic eservices which tend to be merely informational, to proactive and synchronized and hooked up services for conducting complete transactions) (Chan *et al*, 2008). To sum it up, eservice is like a synergic term and as such it is quite different from the mere sum of its component words (Ida and Gabriella 2013). E-service is not merely a public service mediated through IT, rather the technical aspect of the e-service leads to the need to understand, as well, mediation of the service and the interaction with the technical system supplying the service (Ida and Gabriella 2013).

The third dimension of public e-service is “public” The third dimension of public e-service is “public”. This prefix seems self-explanatory and meant to put in place to sort of identify the e-service as having to do with the public sector as opposed to the private sector (Kvasnicova, 2016). However, it is not as apparent as it seems because it could also mean

“availability to the public” (Kvasnicova, 2016). Hence some researchers (Buckley 2003 and Ilshammar *et al.,* 2005) sometimes use the public prefix to demonstrate the difference between governmentally and privately delivered e-services, in a way that acknowledges the distinction between the organizations, and in turn, services they deliver.

2.2. Operationalizing Public Services as E-Services

The presence of insufficient literary work especially on the traditional/paper based public service delivery goes against the imperative nature of public service activity (UNDP, 2015). Wang, et al. (2005) recognized that little effort has been made to assess and evaluate eservice applications and their ability to interact with users and the very service as a condition that leads to efficient service delivery. This may lead one to have a reasonable doubt with regard to its introduction and even its merits over the paper version might be rendered questionable in its entirety (UNDP, 2015).

Problems attributed to e-services tend to fall into the domain of “usage’’ (UNCTAD, 2019). This shades light on why Zhenji et al. (2005) held that e-service users sometimes do not

know how to use the systems or how to find information. Furthermore, Ching-Wen (2010) has found out that quality antecedents strongly influenced the usage of e-service systems.

These quality antecedents have been used in the analysis of this research with instrumentality of the D&M model (D&M, 2003). This model was put to use on e-service research in different countries including Taiwan and results proved that information and system quality were more important than service quality to the e-service users (Ludwig et al., (2010). Despite the quality characteristics pertinent to e-services, they also have problems pursuing them. HMRC (2007) and Bailing et al. (2010) pointed out security issues as the main factors for people rejecting e-services. Ludwig et al. (2010) used the Unified Theory of Acceptance and Use of Technology (UTAUT) model to validate e-tax usage in the USA. Accordingly, the service seekers who preferred the paper version over the electronic version were found to lack the confidence and trust in the electronic version (Ludwig et al. 2010).

On the other hand, Lars et al. (2006) conducted a research work involving 335 e-services in Sweden and came up with a conclusion that there exist several frameworks for e-services designing and evaluating. Interesting remarks on e-services in relation to contemporary technical trends were also made (Lars et al. (2006). They looked at e-services maturity steps in different countries and concluded that for an e-service to be called matured, it must fulfil the four steps in the Layne and Lee model (Layne and Lee, 2001) these stages are: - information, interaction, transaction, and integration. They agree that the development of an e-service should have citizens as its focal point yet at the same time they contradict that it could be tedious to get points of view from everyone. They also point out questions which are not researched in e-service adoption and development with regard to how to address the interests of the aged in the development phase.

Hence, e-government is a recent and trendy research area surfacing over the past three decades, which aimed at delivering information during its initial stages and later on also included more sophisticated and handy services to the citizens, business and governments as the fastest and cheapest (efficient) possible means (Layne and Lee, 2001). It has been

concluded that e-services are quintessential ingredients for e-government development (UNDP, 2015).

There were a lot of ongoing ambitious initiatives to launch e-services both at national and regional levels according to CapGemini (2005). It is clear from government strategy document (KPMG, 2016) that the focus areas of e-service project (and also the general research focuses of e-services converges in this regard) are related to aspects like: development of e-Services, the design of e-Services, the maintenance of e-Services, eParticipation, the quality of services, evaluation, interactions between different e-Services etc Löfstedt Ulrika (2008).

In addition to that, the lack of awareness and coordination of efforts for e-service research is becoming major hindrances in e-services (Belachew, 2010). In fact, even though the United Nations reports favorably ranked Ethiopia as one of the top e-ready countries among Landlocked Developing Countries (LLDC), it is believed that the level of e-readiness in Ethiopia is yet to be claimed generally satisfactory and extra inquiries are possibly resource constrained (Belachew, 2010).

Furthermore, the studies conducted elsewhere contemplate that the head of trust in eservices is equally a big question (Bailing Liu et al., 2010) and unawareness on its usage procedures and or rather existence altogether has slowed down use (Zhenji et al., 2005).

Lu (2001) embraces that e-services make it easier to reach a bulk of customers with less cost and time, broadening and reducing market barriers. Parmita Saha (2008) affirmed that the goal of e-services is improving customer satisfaction, developing strong relationships with customers and business partners, and reducing the burden of service delivery.

Furthermore, there were also prolonged debates going on in the academia on the issue of whether e-service shall transform or translate public services and the former surfs and seems to have convinced the practitioners in the field and policy makers (Bannister and Connolly 2012). Hence it is a matter of fact that transforming public service delivery is set out as one of the guiding principles of the ethiopian e-government strategic plan 2020

(KPMG, 2016). While the public service transformation refers to automation of some or all of the back-office processes, public service translation under the purview of e-service means just changing of the physical paper process to online electronic process (Bannister and Connolly 2012).

2.3. E-service Trajectory and Situation in Ethiopia

E-service is generally a recent phenomenon in the world and Ethiopia is not an exception in this case (UNCTAD, 2018). The assertion that both paper based and electronic (online) public service delivery has prospects in Ethiopia (KPMG, 2016) is sound but literature in this regard is scanty.

The 2016 national ICT policy and strategy document sets a vision of seeing that every aspect of Ethiopians life is ICT assisted (KPMG, 2016). It implores to foster the use of ICT for modernization of governance including the delivery of public services to promote good governance, enhance the use of Information Communication Technology across the wider economy for increased productivity and efficiency among other things (KPMG, 2016).

On the other hand, one of the MIT GTP 2 Strategic Pillars 2015-2020 is “upgrading the government electronic services". In this case given that the internet is a prerequisite for eservice usage, it is also worth noting that assessment of the implementation of the preceding plan provides a positive statistics of internet usage (KPMG, 2016). In the same vein, the strategic implementation plan 2020 of e-government outlines priority areas for stepping-up initiatives in the area with regard to enabling environment, e-readiness, and usage (KPMG, 2016). With regard to usage the document points out that Ethiopia aims among others at increasing the e-service usage through e-government portal enhancement as one of the initiatives (KPMG, 2016).

Before the year 2011, which is the reference point for the first e-government strategy, was launched at a national and regional level, there has been online presence of the government agencies through their websites which was developed specially during about the six years preceding the year 2011 (Belachew, 2010). During those days, the egovernment was at a

very rudimentary stage where the government portals/websites were only meant to provide some information and not interactive (Belachew, 2010).

However, e-service, which is provision of electronic public services through the instrumentality of the internet in its proper and current sense has only been presented starting from the onset of the second Strategic Plan of E-governance i.e. 2016 and it attained its current functionality starting from February 2018 though it had previously a discreet/on and off/ functionality (Debela *et al*, 2020). Hence it is a very recent indulgence from the government whilst over a decade of aim and ambition (KPMG, 2016). Some information on how the web portal operates and the features especially with regard to those three providers Ministries chosen for this research are presented in chapter three under the section which presents the study subject and/or area.

2.4. Theories and Models of E-Services

In this section the theoretical background and evolution of models of researching e-service success will be traced, analyzed/synthesized, and contextualized for the research. Accordingly, the theoretical background for IS success will first be presented and succeeded by the research model. The DeLone & McLean model is the most prominent among the three commonly known models introduced by researchers for defining IS success. The two others being Technology Acceptance Model as postulated by Davis (1989), and the Seddon Model by Seddon (1997).

2.4.1. Theoretical Background of IS Success Models

2.4.1.1. The DeLone & McLean (D&M) Model and the Updated Version.

The D&M model was built based on a model of communication previously developed by Shannon and Weaver in two different works Shannon, (1948) and Shannon and Weaver, (1949). And also the extension of the same communication model by Mason (1978). Accordingly, DeLone & McLean adopted the model of communication to evaluate IS success, the underlying assumption here being that “processes in IS is basically similar to that of communication systems" since IS is essentially understood to be a process of

producing, conveying and transmitting information to the targeted recipients (Shannon, 1948).

The three problems of communication to be overcome, according to Shannon and Weaver (1949), for an information transmission to be considered a success are technical, semantic, and effectiveness related. Technical problems are understood to be a problem of communication systems not being able to deliver information in an accurate and efficient way (Shannon, 1948). On the other hand, semantic problems are related to issues pertaining to the information transmitted by the system and specifically whether they are understood by the target recipients as intended (Shannon, 1948). Finally, when the information conveyed and transmitted fails to achieve the expected effect on the behavior of the recipient, it is understood to suffer from a problem of effectiveness (Shannon, 1948). Consequently, failure to handle these three problems properly, will result in a failed communication system (Shannon, 1948). After these postulates around the three problems in communication systems, DeLone and McLean, (1992) came up with a framework for evaluating IS success.

Accordingly, the instruments to measure system quality and information quality which respectively correspond to instruments to measure technical and semantic success and instrument to measure effectiveness success corresponds with that of use, user satisfaction, individual impact and organizational impact which altogether made the six dimensions or variables constituting the most important components of IS success (Petter et al, 2008).

Due to mounting recommendation and suggestions from other researchers in the subsequent years, the model was updated, and a number of modifications had been made taking into account the emergent dynamics of the IS field (DeLone and McLean, 2003).

These modifications brought about three primary differences between the updated and original model according to Urbach et al., (2009); (1) Adding service quality to reflect the importance of service and support in successful e-commerce systems (Parasuraman et al.,

1988); (2) Adding “intention to use” as a measure of user perception as an alternative measure of “use”. Furthermore; (3) individual and organizational impact have been replaced from the previous work with “net benefits” construct mainly because impact as in “organizational and individual impact” could either be positive or negative. Consequently, since success is only concerned with the positive impact, net benefit is believed to be a more relevant variable from the point of view of propriety (DeLone and McLean, 2003).

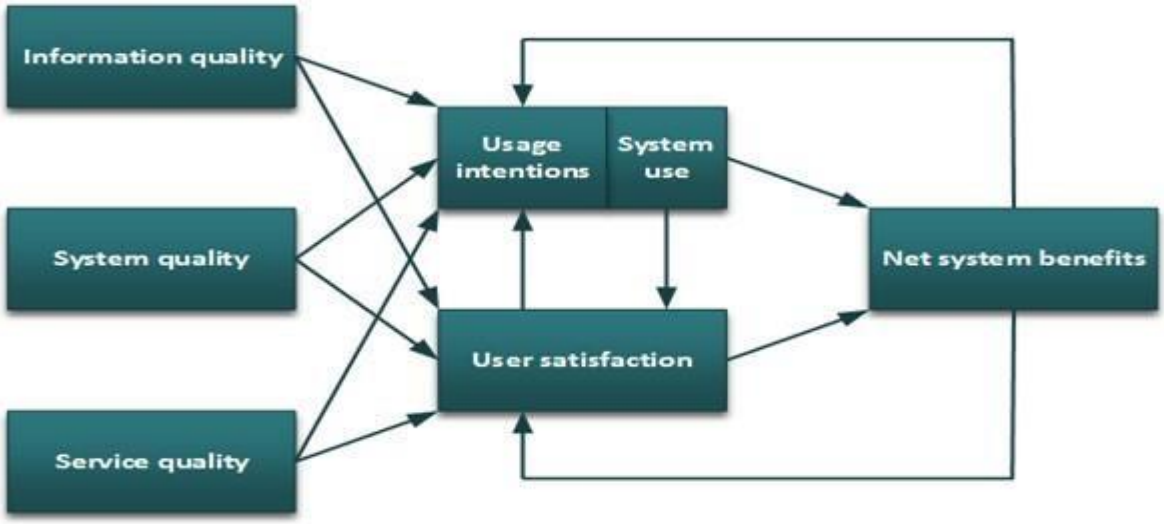


Figure 2 The Updated D&M IS Success Model (DeLone and McLean2003)

The D&M model had been tested and validated numerous times (Petter et al., 2008, Petter and McLean, 2009). All the six variables are to be presented in the section briefing the research model as they all constitute variables of the research.

Even though this model is well validated and widely used as a standard of measurement and specification for IS quality, it doesn't mean that it has never been subject to criticism. Accordingly, most of the criticism against the model are targeted at the behavioral components of “use” and “intention to use” of the construct. In fact, some studies have revealed that these relationships in the construct are not significant, providing only partial validity (Petter et al., 2008), (Petter and McLean, 2009). Some have even asserted that this would render the construct validity questionable and might even lower the predicting power (Mardiana *et al*. 2015), and proposed separation of intention to use and use on one hand and integration of technology acceptance models.

Here it is noteworthy that even the original proponents of the model DeLone–McLean had admitted it themselves that intention to use as an attitude is “notoriously difficult to measure” (DeLone and McLean, 2003). On the other hand, there might be an understandable level of difficulty for the researcher as to where to start measuring between use and intention to use as their relationship is an unending circle of causation as pointed out also by Mardiana *et al*. (2015).

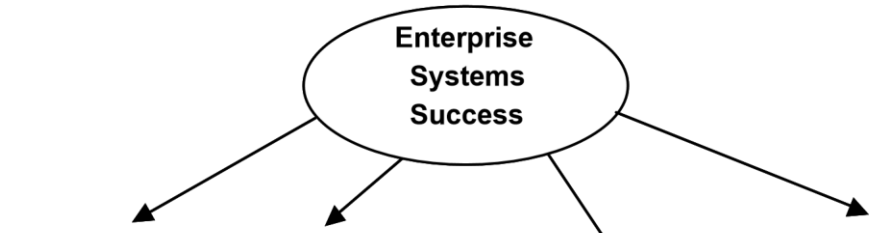
However, the researcher is strongly convinced that the solutions proposed to solve these problems are problematic by themselves and do not ease the complexity they purport to solve, basically for two reasons. First, even though intention to use is behavioral components and hence difficult to measure as such, breaking it down to behavioral components of Technology Acceptance (TA) & Unified Theory of Acceptance and Use of Technology (UTAUT) as set out in Mardiana *et al*. (2015) further complicates the measurement instead of easing it. This is because each of these components have a number of sub-components and further subcomponents for the sub components. In fact, this process amounts to meshing the two components of use and intention to use, as ‘use’ which was first separated from intention to use as a separate component comes back as “actual system use” a subcomponent of Technology Acceptance Model (TAM).

Second, separation of use and intention to use cannot solve the problem pertaining to measurement due to vicious causation that exists between the two (DeLone and McLean, 2003). If it is difficult to measure because it is interdependent and each causes the other, it is logically correct to treat them as such rather than separating (DeLone and McLean, 2003).

There are also others who developed and contextualized and validated the D&M model to their own subjects of study. The most notable one as acknowledged by Petter et al., (2008) is Sedera et al. (2004)’s multidimensional IS success instrument for enterprise systems. It measures and evaluates IS quality on four dimensions of system quality, information quality, individual impact, and organizational impact. As such it eliminates variables of user satisfaction and use from the success measurement model on the basis that user

satisfaction added little explanatory power after the primary four constructs and use was mandatory for the system under study causing little measurable variation in use.

The instrument has been applauded for its strong construct validity in that it captures multiple aspects of each variable (Sedera et al. 2004). That is nine items of system quality, six measures of information quality, four measures of individual impact, and eight measures of organizational impact (Petter et al., 2008) as can be seen in the figure below.



System Quality	Information Quality	Individual Impact	Organizational Impact
Ease of use	Availability	Learning	Organizational costs
Ease of learning	Usability	Awareness / Recall	Staff requirements
User requirements	Understandability	Decision effectiveness	Cost reduction
System features	Relevance	Individual productivity	Overall productivity
System accuracy	Format		Improved outcomes/outputs
Flexibility	Conciseness		Increased capacity
Sophistication			e-Government
Integration			Business Process Change
Customization			

Figure 3 Validated Measures of Enterprise Systems success (Sedera et al. 2004)

However, even if it might be helpful in cases where the unit of analysis is an organization as it was rigorously tested within the context of enterprise systems and validity ensured, it cannot be extended as it is to measure IS quality in other cases like this very study where user's perception is the focus (Delone & Mclean, 2003). Nonetheless, its strong constructs for information quality and system quality is something to be reckoned with. Hence they have been considered and incorporated in the contextualized construct of the components for this research as presented in the section detailing the research model.

2.4.1.2. The Technology Acceptance Model

The Technology Acceptance Model (TAM) was first introduced by Davis (1986) and it is one of the models which are most widely used to explain and describe behaviors of user acceptance. It is basically a model grounded in the general theory of social psychology and specifically the Theory of Reasoned Action (TRA) (Fishbein, & Azjen, 1975).

TRA propounds that, attitudes are influenced by beliefs, which in turn leads to intentions and consequently generate a behavior. Following this logic, Davis (1986 & 1989) came up with the original TAM constructs constituting perceived usefulness (PU), perceived ease of use (PEOU), attitude, and finally behavioral intention to use as demonstrated in the following figure. Among these constructs, PU and PEOU are the components forming beliefs of end-users and therefore key in predicting his or her attitude towards a technology and in turn predicting its acceptance (Davis, 1986).

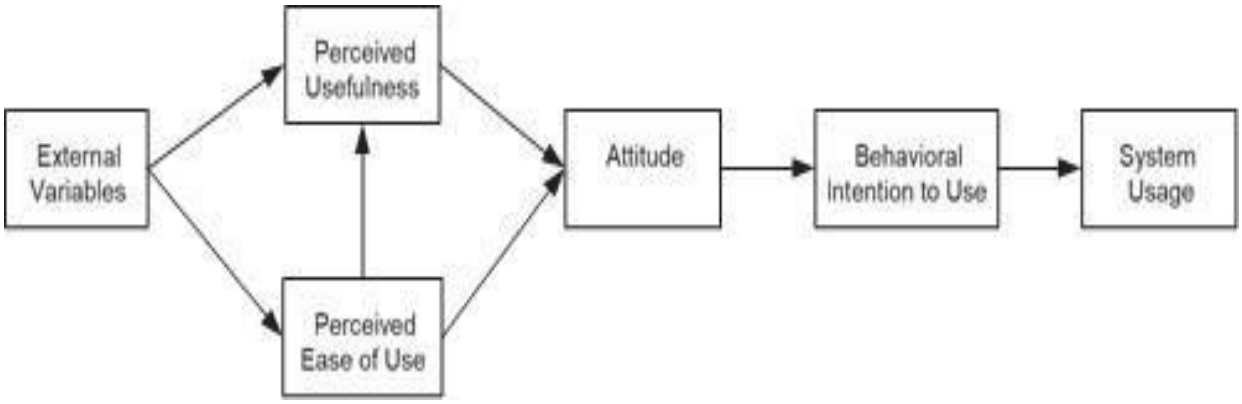


Figure 4 The original Technology Acceptance Model (Davis 1986)

Davis (1989) conducted various experiments in order to validate TAM by using PEOU and PU as independent variables whereas system usage as dependent variable. The finding was that there is a significant correlation PU has with both self-reported current usage and self-predicted future usage. On the other hand, PEOU had also shown significant correlation with current and future usage. The Overall result is that PU had a correlation which is significantly greater than system usage than PEOU. Furthermore, it was suggested through further regression analysis that PEOU might be a precursor of PU and not a direct

determinant of system usage; i.e. PEOU indeed affects technology acceptance (TA) yet indirectly through PU (Davis, 1989).

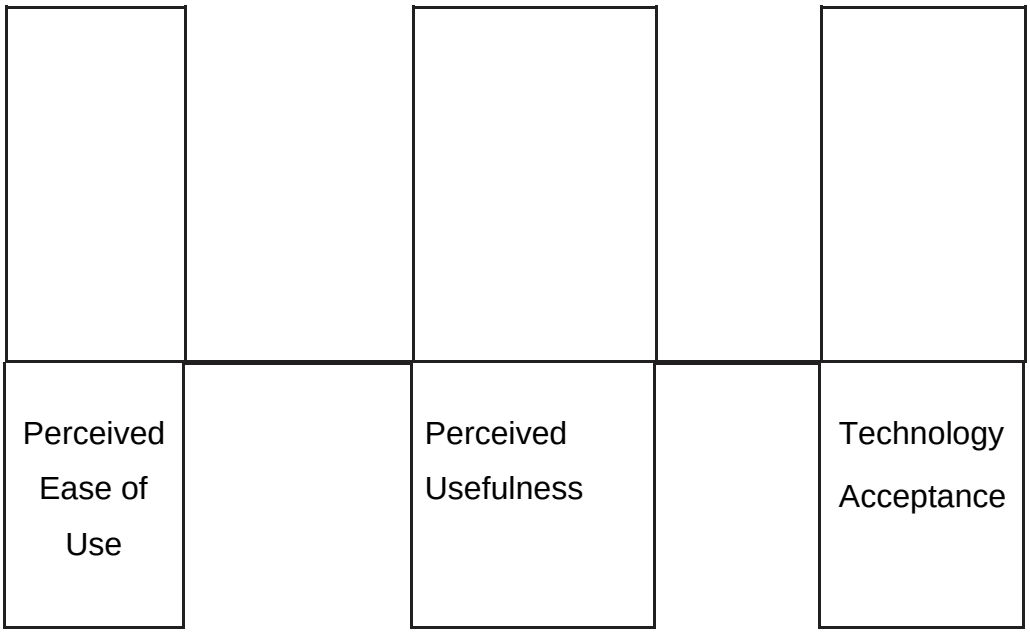


Figure 5 The Validated Technology Acceptance Model (Davis, 1989)

In the years succeeding 1989, after this theory was validated by the original proponent, TAM has enjoyed empirical support and considerable attention (Mathieson 1991; Taylor & Todd, 1995a).

Furthermore, it was applied to a great deal of various end-user technologies and applications for instance World Wide Web or WWW (Lederer, Maupin, Sena & Zhuang, 2000), email (Adams, Nelson & Todd, 1992; Davis, 1989), groupware (Taylor & Todd, 1995b), word processors (Adams, Nelson & Todd, 1992; Davis, Bagozzi & Warshaw1989) and spreadsheets (Mathieson, 1991). There were also studies which extended TAM by adding more predictors such as self-efficacy, culture, gender and experience. Generally, the overall tendency from researchers suggests that TAM is valid, robust and parsimonious (Venkatesh & Davis, 2000).

In his work Davis (1989) developed the scales for PEOU and PU and validated them and established six highly reliable components for each construct with a Cronbach's alpha of 98 and 94 for PU and PEOU respectively. In studies succeeding that of Davies (1989), the measurement of items for the constructs varied for various researchers (Adams, Nelson & Todd, 1992). Due to this, the overall number of items for measuring PEOU has increased from the original six to 38 and that of PU has increased from six to currently about 50 (Qingxiong & Liping 2004).

However, a closer scrutiny of the list in a meta-analysis of empirical studies (Qingxiong & Liping 2004) found out that the factor for differences in measurement items between studies is likely attributable to the fact that TAM applied to different technologies and hence different results in different contexts. Otherwise, it is believed that still basic definitions of the constructs to be measured are by far the same (Qingxiong & Liping 2004). Thus, it was concluded that how the constructs are measured does not affect much as such the empirical findings on the relationships between the constructs in TAM (Qingxiong & Liping 2004).

This theory also has since become a subject of criticism mainly for simplicity and limitations (King & He, 2006). Researchers such as King & He (2006) claim that the main reason for its widespread acceptance is owing to the fact that the model is very simple and hence easy to understand and not necessarily because of its suitability in practical contexts.

Furthermore, a number of researchers mounted criticisms against the model (Zahid, et al. 2013, Bashange 2015). Bashange (2015) suggests that a lot of the extant literature pertaining to the TAM do not regard it as a means of determining the factors which influence behavior rather than as a dependent variable. Another criticism as advanced by Zahid et al. (2013) articulates that the model does not take into consideration important factors such as education and age as external variables while they could logically influence acceptance of technology and/or willingness to use one.

Conversely, it could also be generally contended that measuring behavior is problematic, basically because behavior is often motivated by hidden personality traits (Bashange (2015). Accordingly, acceptance of and willingness to use new technology by potential

users may not necessarily be based on their perceptions of its usefulness and of how easy it would be to use, though the possibility of other external factors which could be responsible for acceptance of the technology suggested in the model (Zahid, et al. 2013.

2.4.1..3. The Seddon Model

The modification attempts made after the original D&M model was developed mainly aimed to re-specify and extend the model. For example, the emphasis of Seddon and Kew (1994), were the importance of including user involvement in a model of IS success. Whereas Seddon (1995) argument has more to do with the one of the model's variables, IS 'use' being confused with success. Having worked with the model for a number of years in his next work, Seddon (1997), examined the practical application of D&M's model and argued that the fact that D&M's model was specified as both a process and a causal (or variance) model was confusing. In fact, in the D&M model, IS 'use' could either be understood as the beginning of a process that leads to 'user satisfaction', 'individual impact', and consequently, 'organizational impact' or rather be interpreted as causal, as use of the system is essential for its success (Delone & Mclean, 1992). The underlying assumption is that systems that are heavily used are because they are successes, and conversely systems that are found to be failures are because they are unsuccessful from the very beginning (Delone & Mclean, 1992).

Seddon (1997) then provides his alternative of a re-specified and extended model which does away with the process part of the original D&M model and divides or splits the casual part into two models in itself: - one being a behavioral model and the other IS success model as demonstrated in the figure below. Behavioral model and IS success model are both connected through 'consequences of IS use' Seddon was of a belief that this model would provide a better and clearer theoretical foundation upon which the interrelationships between the different IS success constructs are examined (Seddon, 1997).

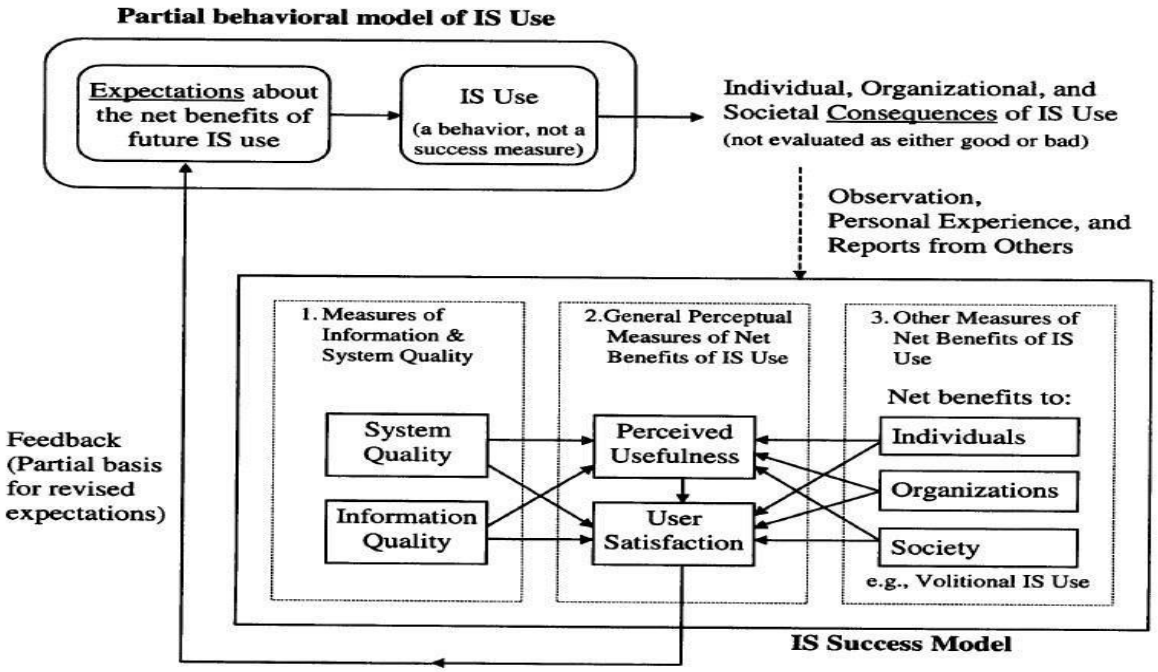


Figure 6 Seddon IS success model (Seddon, 1997)

On the other hand, in their 10-year review of the model DeLone & McLean agrees that the combination of process and variance interpretations of IS success in one model can be confusing, yet they believe that Seddon's reformulation of the D&M Model into two partial variance models, behavioral and success, unduly complicates the model, defeating the intent of the original model and its own aim DeLone & McLean (2003).

They debunk the critics of Seddon by further explaining how process understanding and variance models are both necessary in the model. Hence, each of the steps in the three components of the process model i.e., the creation of a system, the use of the system, and the consequences of this system use, is a necessary, but not sufficient, condition for the resultant outcome(s). A good example they provided was that without system use, there can be no consequences or benefits. While with system use there may also be no benefits, even in case of extensive use which is inappropriate or ill-informed (DeLone & McLean, 2003).

2.4.1.4. The Research Model

Initially developed in 1992, the DeLone & McLean model (D&M model) was reviewed and updated in 2003 by the same authors after it sustained years of criticism and feedback by scholars in the field as explained in the preceding sections. Accordingly, in the updated version of DeLone & McLean model, DeLone & McLean (2003), some of the variables were replaced or integrated or otherwise meshed.

The updated D&M model eased the measurement of IS from three different dimensions; "information quality", "system quality" and "service quality" (DeLone & McLean, 2003). All these dimensions are in turn related to "intention to use" and "user satisfaction" (DeLone & McLean, 2003). On another hand "Use" and "user satisfaction" have apparent causal relationship but here it is to be borne in mind that "use" must logically come before "user satisfaction"; i.e., for a real impression to be made, the user must first use a system.

Also, in this flow of causal manner, "use" is believed to lead to greater "user satisfaction" which would in turn increase intention to "use" and eventually more use (DeLone & McLean, 2003). Finally, "net benefit" will be caused by "use" and "user satisfaction". Here it is noteworthy that DeLone and McLean (2003) equally emphasizes the difficulty of analyzing and or rather measuring "net benefit", directly but only indirectly through "system quality", "information quality", and "service quality" variables.

The model was adopted for this research for a host of reasons. It has been acknowledged that the model has been widely applied in the field of information systems and specifically for e-service evaluation (DeLone and McLean 2003, H. Agourram 2009, H. Agourram, and J. Ingham, 2007) and become a standard for the specification and justification of the measurement of the dependent variable in IS research. Furthermore, this model since its maturity has been cited in over a thousand articles in refereed scientific journals and validated by many (Petter et al., 2008).

Presented below is the analytical framework of the study and relationship between the variables in context of individual level analysis.

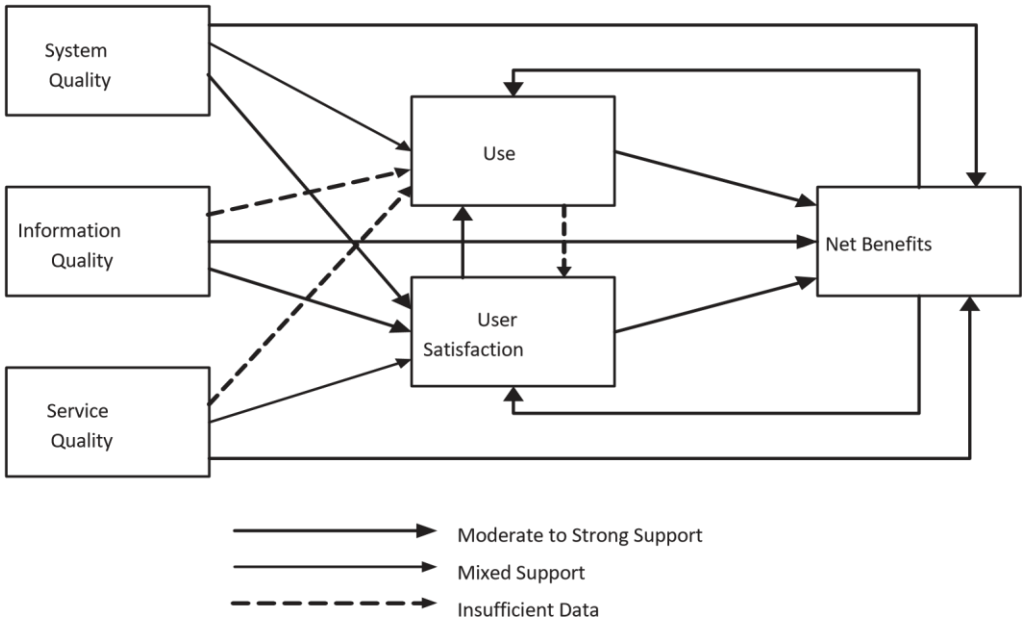


Figure 7 The D&M success constructs at an individual level of analysis (Petter et al., 2008)

More importantly, it was asserted (D&M 2004) that the model enables analyzing and evaluating the performance of Information Systems and equally ensures comprehensibility of IS quality. All the variables are interrelated which indicates that causality flows in the same direction as the information process itself as is always the case in success models (D&M 2004). Hence all the variables are used in this research. It was also cautioned (D&M 2003) that omitting one or more variables will distort the results due to this flow of causality between the variables.

The variables have three items each which were taken from the updated DeLone and McLean Model (DeLone & McLean, 2003) and the succeeding research works as presented who developed specific methods to measure the constructs, after the characteristics of each of them, where they summarized all the variables and came up with a checklist of generalized items (Delone & McLean, 2016). It is also worth noting that no significant drawbacks were established with the D&M model. However, this assertion does not mean that the model is perfect. It is rather the most excellent model on hand in e-service evaluation (Delone & McLean, 2016). The essence and characteristics of each variable which makes the items under the variables are set out as follows in the extant literature.

2.4.2 Information Quality

It is postulated (Rai et al. 2002) that this variable presents the character of the real information that is an output of the IS and the extent to which this information or the output produced by the system meets the expected needs of the users in terms of the characteristics of information which are accuracy, completeness or contains all the required information, currency, timely to support information needs, and usability etc. It is a subject of consensus among scholars (Ives et al., 1983; Baroudi & Orlikowski, 1988; Doll et al., 1994) that this variable is an instrument for a key dimension of end-user satisfaction rather than a unique construct on itself. Due to this fact Petter et al., (2008) recognizes that the measurements of this variable as a dimension are problematic in IS success research undertakings.

A generic scale of information quality has been developed by Fraser & Salter (1995). However, others preferred to develop their own scales based on relevancy of the scales to the type of information system they sought to evaluate (Coombs et al., 2001; Gable et al., 2003 and others)., This research seeks to establish the relationship between perception of users and three items or most important characteristics of information quality in terms of completeness, timeliness and understandability.

- Completeness - Information Systems should contain all the details needed by the user and specifically service seeker (Patterson, 2005). Completeness refers to the level to which the system contains all the important facts (Belle et al., 2001). Kahn, et al. (2002) refers to completeness as the extent to which the information is not missing and is of sufficient breadth and depth for the pertinent task.

- Timeliness - Timeliness refers to the extent to which the information is sufficiently up to date for the relevant task (Kahn, et al. 2002). Which means information needs to be on time for the purpose for which it is required, or data should be availed for the intended consumption within a period of time which is reasonable. Lee, *et al*., (2002)

suggests some measures of timeliness as; is this information sufficiently up to date for the task and etc.

- Understandability - Kahn, *et al*. (2002) defines understandability as the extent to which information is easily comprehended. Understandability can be measured by assessing whether a given information is easy to comprehend (Lee, *et al*., 2002).

2.4.3 System Quality

It's been established (Shannon & Weaver, 1949) that system quality deals with the technical aspects of IS. In a more vivid way, it can be termed as the desirable characteristics of an information system (Shannon & Weaver, 1949). Accordingly, a quality Information Systems is characterized with, ease of use, system adaptability, system reliability, ease of learning, intuitiveness, sophistication and etc. (Shannon & Weaver, 1949).

Due to its position as a key variable in technology acceptance model (TAM) (Davis, 1989) and because of the large amount of research pertaining to the model, 'perceived ease of use' is has become the most common measure of system quality. However, even though it might not cause major problems in assessing the general acceptance of certain ICT applications, PEOU as set out in the original TAM does not capture the system quality construct as a whole in other cases (Petter et al, 2008). In an attempt to propose a comprehensive measurement for the whole system quality construct, Rivard et al. (1997) came up with and tested an instrument consisting of 40 items to measure eight system quality factors. These system quality factors are reliability, portability, user friendliness, understandability, effectiveness, maintainability, economy, and verifiability (Rivard et al., 1997). There are also those who developed their own indexes to measure system quality as recounted by Petter et al. (2008) either based on dimensions identified in the original D&M model (Coombs et al., 2001) or based on extant system quality related literature reviews (Gable et al., 2003).

For evaluating technical aspects of the technology such as hardware and software configurations is beyond the scope of this research, this study chooses to assess system

quality based on the IS characteristics of usability, adaptability and availability believing that these items encompass the user perspective on the portal e-services.gov.et (Gable et al., 2003).

- Usability - if the system can be used without special training or awareness
- Adaptability - the ease or ability of users to change from paper to electronic
- Availability - if the system if handy/functional at all times

2.3.4 Service Quality

DeLone and McLean (2016) refers to service quality as the quality of the support that system users receive from the vendor organization or service provider and IT support personnel. These quality antecedents often pertain to responsiveness, accuracy, reliability, technical competence, and empathy of the IT personnel and etc. IS Service quality is often measured through instrumentality of SERVQUAL which is adapted from the field of marketing (Pitt et al., 1995). However, the validity of SERVQUAL as a service quality measure is a subject of debate (Pitt et al., 1995; Kettinger & Lee, 1997; Van Dyke et al., 1997). Whilst it has later been debunked through the use of confirmatory factor analysis that SERVQUAL scale is indeed a satisfactory instrument for measuring IS service quality (Jiang et al. 2002).

The scale (Parasuraman et al., 1985, 1988) is the differences between customers' existing expectations before a service and their perceptions of the service they receive. Accordingly, it uses five dimensions: Reliability, Responsiveness, Assurance, Empathy and Tangibles (Parasuraman et al., 1985). The differences are understood to provide a gap in the service quality upon which the service provider has to act to improve customer/user satisfaction (Parasuraman et al., 1985, 1988).

In the context of this research, since IS quality is being approached from users' perception i.e. physical impression interpreted in the light of experience, the focus is not on the gap between expectation and impression. Put in context, rather than the scale which depicts the gap between expectations and impression, service quality in this context assesses the

impression of users during their engagement with the system. Hence, the attainment of Service quality shall be assessed based on the factors of reliability, empathy, and responsiveness while factors of assurance and tangibles are deliberately left out as they don't have sound pertinence to users' impression (DeLone and McLean, 2016). Nonetheless the researcher recognizes that they are essential factors had the objective been comparison of expectation and impression.

- Reliability - the IS is dependable for safety and precision
- Empathy - the IS provides individualized care
- Responsiveness - the IS gives prompt service to the users and informs them exactly when the work will be carried out.

2.3.5 Intention to Use-Use

D&M (2016) refers to use as the degree and manner in which service seekers utilize the capabilities of the IS. This can be depicted by, amount of use, frequency of use, nature of use, purpose of use and etc. D&M (2003) recognizes that this construct determines success to some extent although it is not robust to conclude that the more the system is used the more benefit it bears without considering the nature of the use. On the other hand, it is asserted that (Rai et al. 2002) use is a prerequisite for net benefit.

This research assesses use from the characteristics of frequency of use, time of use and number of accesses in line with DeLone and McLean (2016).

- Frequency of use - how often is the IS used
- Time of use - if it can be used at any time of the day /24 hours
- Number of accesses - does it have too many access codes which are difficult to manage

2.4.6 User Satisfaction

According to D&M (2016) it is the level of satisfaction of users with reports, Web sites, and support services. The most widely used multi-attribute instruments for measuring user satisfaction are User Information Satisfaction (UIS) instrument by Ives et al. (1983) and End User Computing Support (EUCS) instrument by Doll and Torkzadeh (1998). On the other

hand, Seddon & Yip (1992) found that both the UIS instruments and that of EUCS contain items directly or indirectly related to other variables of IS quality i.e. Information quality, system quality and service quality, rather than only measuring overall user satisfaction with the system, D&M (2003) has recognized this problem and noted that it is dependent on the other variables.

Due to this problem with the instruments, there are those researchers who have opted to take out the various quality dimensions mixed from these instruments and resorted to either use a single item to evaluate the overall satisfaction with the IS (Rai et al., 2002) or apply a semantic differential scale (Seddon & Yip, 1992). Furthermore, others (Coombs et al., 2001) have used scales for attitudes that are believed to be compatible with the concept of user satisfaction in line with Seddon (1997)'s belief that user satisfaction is evaluated on a pleasant-unpleasant continuum.

In context of this research, neither UIS nor EUCS instruments are used. Since the other variables (information, system, and service quality) are already assessed independently by themselves, it is believed that user satisfaction needs to be assessed in and of itself as one construct without mixing items from the other components which would cause unnecessary redundancy and confusions (DeLone and McLean, 2016). Accordingly, three items; repeated use, impression of users as to if the system includes the interests of diverse groups in a society and the likelihood that they would recommend the use to others, are chosen as they are believed to capture and depict the satisfaction level of e-services.gov.et (DeLone and McLean, 2016).

- Repeated use- using the system more than one time
- Inclusivity - taking in to account the interests of diverse groups in society
- Likelihood to recommend to others

2.4.7 Net Benefit

This variable usually comes at the last stage of IS assessment to analyze the ultimate positive impact or benefit the system contributes to the pertinent actors including the system designer, the service provider, the user, and others (Petter et. al. 2008).

D&M (2002) asserts that “net benefits”, often termed ‘net impact’ (D&M 2016), is the most accurate variable to describe the final success of information systems. The contribution of IS might include improvement in productivity, increased sales, reduction of costs, increased profits, economic efficiency, users’ welfare, creation, jobs creation, and etc. (D&M 2016).

There are a number of methods developed to measure net benefits of IS which have evolved over time in two different segments of analysis i.e., individual and organizational levels (Petter et. al. 2008). Since the level of analysis for the research undertaking at hand is individual user, it is believed to be of importance to shade light on literature which deals with methods which have been developed to analyze net benefits of IS at an individual level.

For example, Torkzadeh & Doll (1999) tried to augment their EUCS instrument by creating an instrument to assess and measure different aspects of impact which includes task productivity, task innovation, customer satisfaction and management control.

Yet, among the methods existing to assess net benefits of IS at individual level, most commonly employed is Perceived usefulness. However, it was contended that there are problems related to the items of the perceived usefulness (Adams *et al*., 1992). Specifically, the data from the Adams et al., (1992) study was analyzed with instrumentality of confirmatory factor analysis and elimination of an item ‘works more quickly’ in the usefulness construct was recommended (Segars & Grover, 1993).

Furthermore, Segars & Grover (1993) found that ‘job performance’ and ‘effectiveness’ was not a good fit within perceived usefulness construct. Employing a three-factor construct of perceived ease of use, perceived usefulness, and effectiveness, these researchers used job performance and effectiveness items to measure effectiveness as a separate construct

which led to a relatively strong fit, as compared to the original TAM model (Segars & Grover, 1993).

In the context of this research, net benefits are referred to the benefits users gain from the online public service delivery system vis-a-vis paper/physical version. As such the construct is constituted from and assessed in terms of three items of.

- Cost savings
- Time saving
- Continuity (benefit positive feedback from users)

CHAPTER THREE: THE RESEARCH DESIGN AND METHODOLOGY

This section presents the study subject and area. It describes the overall approach and design of the study as well as the research method, sources of data, instrument and procedures of data collection, sampling techniques and determination of the sample size. It also presents the method of data analysis and presentation.

3.1. The Study Subject and Area

The Ethiopian e-service system termed also as 'national business portal' at e-service.gov.et is designed to provide a common platform and generic tools for online transactional services. The system was developed and administered by an ICT consultant firm known as Perago under the auspices of the Ministry of Innovation and Technology and its precursor Ministry of Communication and Information Technology. Through the means of the system, government organizations render electronic public services to all target groups and individuals including citizens, non-citizens, businesses, and governmental and nongovernmental organizations. It has been developed during the years preceding 2015 and afterwards enhanced as part of the E-government Strategic plan 2020.

To file a service request, a service user should login using his/her account or can register to the system to get a user account and continue with his/her application. After locating the electronic form for a particular public service among the services featured on the platform, the user is supposed to fill out all mandatory fields, upload documents, and submit the request after reviewing for error correction.

After submission of a request, the system generates an automatic application reference number for the user to track their application status. The tracking number is used to track the status and progress of the user applications, taking necessary appointments for visit, and also to submit any additional supporting documents and information that might be requested by the service provider agency in the due course of the process so as to finalize the service provision.

Below are explained each of the e-services provided on the platform by the three e-service provider public ministries/agencies at the federal level which were considered in this research. In addition to the lists presented here under the three, each provider by default has featured an Information desk and customer service which is believed to help customers of the organization get adequate, timely, accurate and first-hand information about issues such as services being provided by the organization and pre-requisites of the services. Besides, the service has a feature by which customers can present their inquiry about the

organization and its service provision and suggestions as to how the service provision can be improved.

These providers are selected taking into consideration the representativeness of the eservices selected for the research so as to make sure most of the members of society are represented in the research population. Accordingly, first due attention was paid to the featured e-services, and they were selected based on the various groups it represented for the whole research population. Hence, selection of e-services provided at the ministry of foreign Affairs was meant to represent non-citizens and that of the Ministry of Technology and Innovation are meant to include members of the business community and Ministry of Peace to represent the people of faith and the youth. It is to be noted here that while it is contended (Yin, 2003) that multiple case studies have some advantages over single case studies, the number of cases that should be selected depends on the context, upon how much is known and how much new information the cases bring. (Gustafsson, 2017). Given this, it is believed that adding more cases could not bring in more conspicuous data and valuable information to bolster the research findings.

3.1.1. Ministry of Foreign Affairs

The primary objective of the ministry includes a strong relationship with the Diaspora, enhanced foreign resources mobilized through business flow, ensured rights and benefits to citizens and organizations. It basically features more than three e-services on the portal. However, three of them are selected for this research as the others are just newly featured and thus unlikely for users to have made enough impression.

- **Issuance of Diplomatic ID Card** - Since Addis Ababa is among the top diplomatic hubs of our world, many members of diplomatic community reside in the city and need diplomatic ID during their stay in Ethiopia which is the case in all the countries of the world for it is provided for by the Vienna convention on diplomatic conventions and privileges and Vienna convention on consular affairs. Hence, the MFA provides the service of issuance of Diplomatic ID Cards, which serve as residence permit, to diplomats, staff of international/ continental organizations and their dependents from

countries and organizations with which the country has signed Memorandum of Understanding (MOU).

- **Issuance of Supporting Letter for Duty Free Privilege** - Duty free privileges are given to diplomats of other countries and staff of international/ continental organizations with which the country has signed Memorandum of Understanding (MOU) in order to import/buy goods free of duty and domestic levies. The ministry has two types of letters depending on the types or position of the service requesting body. It can either be a 6-month duration duty-free privilege or full duty-free privilege.

- **Issuance of Supporting Letter for Provision of Equivalent Driving License** - Many staff of embassies and international and regional organizations can come to Ethiopia for various businesses, if they wish to drive in Ethiopia, they need Ethiopian driving license. However, it is likely for them to have only a foreign driving license from elsewhere outside of Ethiopia. In such a case, equivalent driving license can be given to diplomats of other countries and staffs of international/continental organizations with which the country has signed Memorandum of Understanding (MOU) and other foreign individuals if they are authorized by the Ministry of Finance and Economic Cooperation to get the Equivalent Driving License.

3.1.2. The Ministry of Innovation and Technology

The Ministry is an apex institution mandated with development, deployment and use of communication and information technology to improve the livelihood of Ethiopians and optimization of its contribution to the overall development of the country. It had delegated its business portfolio prerogatives to its Standardization and Regulation Directorate. Accordingly, previously featured under this provider was four e-services three of which were later removed bringing the number of e-service the ministry provides to only one. It is not clear why the three e-services were taken down from the platform though it is understandable that Issuance of ICT company certificate of professional competency was supposed to be provided by the Ministry of Innovation and Technology, which is one of the

19 ministerial offices re-organized in a new manner, as per reshuffling and reconfiguration of ministerial posts in 2018 by the prime minister office right after the incumbent took office, under the proclamation of 1097/2011.

- **Issuance of ICT company certificate of professional competency** - the Ministry issues certificate of competency for ICT related companies providing the services of manufacturing, wholesaling, retailing, maintenance, importing, exporting and installation of telecom cabling and exchange equipment, telephone, mobile, computer and related equipment, Voice and data communication equipment and spare parts, software, networking, database works, and consultancy service.

3.1.3. The Ministry of Peace

This ministerial portfolio was established for the first time under the proclamation of 1097/2011 to improve the organization or to reorganize the executive organs. Accordingly, it has been entrusted with the duties and responsibilities to promote peace culture, enforce the rule of law, oversee establishment of a strong federal system, promote equitable development, and enhance the capacity of the peace and security sector. This e-service provider features five services on the platform includes;

- **New registration of religious organizations** - Religious organizations are required to get a Certificate of New Registration before starting services. The Ministry of Peace provides the service of Registration of Religious Organizations which helps ensure that peace and mutual respect prevail among followers of different religions and beliefs.

- **Renewal of registration of religious organizations** - Religious organizations are required to get Certificate of Renewal of Registration in every 5 years. If the applicant is Branch of Religious organizations the renewal is on a yearly basis. The Ministry of Peace provides the service of Renewal of Registration of Religious Organizations after reviewing fulfillment of service requirements.

- **Issuance of supporting letters for religious organizations** - Religious organizations can get the service of issuance of supporting letters issued by the Ministry of Peace addressed to various organizations that provide services to the applicant religious organizations. The Ministry of Peace provides the service of Issuance of Supporting Letters for Religious Organizations after reviewing fulfillment of service requirements.

- **Provision of certificates for newly registered religious organizations** - Ministry of peace issues new certificate of registration for religious organizations that are registered after fulfilling the prerequisites of registration.

- **Application for volunteer youth registration** - The Ministry of Peace registers Individuals who want to participate in various voluntary activities

Yet no data was sampled from the e-service for volunteer youth registration was practically collected as all the service seekers were found to not have experience with paper version and because they don't report to the ministry in person due to the nature of the e-service which is also seasonal.

3.2. Research Approach and Design

To assess the e-service practices and e-service success in Ethiopia and particularly public agencies at the federal level the study employed both qualitative and quantitative research approaches. The qualitative approach focused on narration of opinions. The quantitative approach focused on the level of agreement on the components of the quality of e-service provided at the selected federal institutions.

In order to substantiate evidence, the study employed a mixed research method with sequential and concurrent triangulation study design. Since study design is a blueprint or a comprehensive plan of a research process (Kothary 2004; Tochim 2009) and procedures (Creswell 2009) it helps the researcher to guide the overall research work from data

gathering to data analysis and presentation. Out of the six research designs of a mixed research method, the study employed a sequential mixed and concurrent triangulation research design. The study began with collecting qualitative data gathered through observation of the web portal, back-office work processes and admin page accompanied by unstructured interviews with two key informants to explore the e-service practices and this laid a basis for the second level of data collection on users' perception of the e-service quality in place according to the adopted D&M IS success model. When the qualitative and quantitative data were collected, on-process triangulation was made, and preliminary assessment was conducted to validate data and confirm the substantive evidence sets collected.

For this research sequential and concurrent triangulation design was preferred over the others since the main goal of the undertaking and overall approach is theory/model application and due to the nature of the data gathering instruments chosen which are interviews, observations and administration of questionnaires. Thus, the research relies on the data gathered through a qualitative method that led to quantitative methods and the on process validation and preliminary analysis of the evidence collected, hence making it sequentially exploratory and explanatory as well as validated on-site due to the triangulation and partly simultaneity of the data sets collected and analyzed.

In sum, the sequential exploratory and descriptive design was employed to collect qualitative experiences and opinions of respondents followed by quantitative unrepresentative survey data on the extent and level of agreement on the measures of eservice quality as perceived by e-service users. The concurrent triangulation design was employed to collect data on key e-service quality and e-service practice in simultaneous manner to validate data and conduct preliminary data analysis which was useful to identify outstanding data sets for exhausting data collection in the field.

Based on the data, quantitative data was collected according to the adopted D&M IS success model and conclusions reached.

The study has employed purposive sampling techniques in selecting the study settings and participants. Then data was gathered from service users on their perceptions and experiences with e-services on the six dimensions of the D&M IS success model. For this purpose, the sample size was determined through a statistical sample size determination method among the users of the portal (e-services.gov.et) which was reached directly through unrepresentative survey method.

In order to gather first-hand information, the chief data collection instruments/tools were observation checklists and questionnaires which were prepared encompassing the different dimensions of IS success. Particularly, the questionnaire was developed in the form of "Likert Scale" where respondents were asked to explain their perceptions and experience against various items of the six dimensions (variables) of IS success; information quality, system quality, user satisfaction, use, intention to use and net benefit. Data collected via questionnaire was sorted and summarized through descriptive statistics.

3.3. Study Population, Sampling Technique, and Sample Size Determination

3.3.1. Study Population

Since this is unrepresentative survey of service users' perceptions/opinions based on real impressions, the unit of analysis or the entity under study is individual users' perceptions. Hence, the appropriate population sample for the study should be selected from among the individuals who have used the electronic government services. Hence the study population is those people who have used the portal e-service.gov.et for the services rendered at the three public agencies described above along with the services they have featured on the portal.

3.3.2. Sampling Technique

The sampling procedure employed in the study was one of the non-probabilistic sampling techniques. Non-probability sampling is a technique of sampling whereby the population

samples are selected through a process that does not offer all the individuals in the population equal chances of selection as a study sample.

There are a number of non-probability sampling techniques while the most common of all is probably convenience sampling. With convenience sampling, the samples are selected because of their ease of accessibility and other conveniences to the researcher. Subjects are simply chosen because they are easy to recruit. This technique is considered the easiest, cheapest, and least time consuming. Nonetheless, in this research work purposive sampling techniques were employed.

In a purposive sampling technique, the study designer chooses sampled units who, by their judgment, will meet the specific purpose of the survey, which is in fact unrepresentative. Hence, the individuals selected in this research are those who have used and employed both paper and online government services. This same sampling technique was employed also in the case of selecting the eservices for which users' perceptions were sampled. The three institutions where data was gathered are selected because of the high e-service activity on the portal and also to represent a diverse group of people in the sample including businesspeople, private citizens and non-citizens to mirror the general population. They were selected based on the various groups it represented for the whole research population. Hence, selection of e-services provided at the ministry of foreign Affairs was meant to represent non-citizens and that of the Ministry of Technology and Innovation are meant to include members of the business community and Ministry of Peace to represent the people of faith and the youth. However, it is to be borne in mind that due to the purposive style of data selection as described above the research can not represent the whole population and conclusions reached are only pertinent to the selected providers and samples.

3.3.3. Sampling Procedure and Sample Size Determination

There are a number of known ways and techniques by which we can determine sample size and the techniques. They vary depending on whether we want to make quantitative or qualitative analysis, the degree of precision we would like to achieve etc.

In this research to determine the sample required to estimating a proportion with an approximate 85.9% confidence level, the following formula were used: -

$$N = 4pq/d2$$

Where: -

N= required sample size,
P = proportion of the population using e-services,
q= 1- P and d = the degree of precision/allowable errors

The proportion of the population (P) may be known from prior research or other potential sources; it is unknown use since the e-service is a new phenomenon and hence difficult to know. Thus, in such a case we set P= 0.5 which assumes maximum heterogeneity (i.e. a 50/50 split). The degree of precision (d) is the margin of error that is acceptable, and we are ready to accept ± 14.1% error and hence d= 0.141 in this case.

As we apply the formulae, we arrive at the ideal sample size.

Which is: -

N= 4*0.5*0.5/0.141sq = 50

We also split this sample size for the three government agencies under this study. That's 17 samples each from the Ministry of Foreign Affairs and Ministry of Peace and 16 from the Ministry of Innovation and Technology making the whole sample size.

This is based on the proportion of people who have used e-service being given at both ministries. And it roughly concurs with the number of average daily users at the mentioned government agencies. The sample size and the confidence level work well in the context

of this research where it doesn't claim to employ a representative survey, and nor does it generalize findings for the whole population.

3.4. Types of Data and Data Collection Technique

In this research both primary and secondary data were used.

3.4.1. Primary Data

Primary data sources are known to be original data sources, that is, one where the data are collected firsthand by the researcher/enumerators for a specific research purpose or project. Primary data can be gathered and used in research work in a number of forms and ways. However, specifically two types of primary data i.e. questionnaires and observations were used to inform this research work.

A. Questionnaires

A questionnaire is an important method of collecting primary data for research and also an instrument used dominantly in this research inquiry.

Accordingly, the questionnaire used here for the purpose of this research comprised 28 questions in total; 26 structured questions and two semi-structured questions, divided generally into four parts; i.e. Personal information of the respondents, their use and skills of the internet, their overall opinion on available electronic Services in Ethiopia and Personal Opinions on Online Services. The questionnaire was specifically developed using the constructs of all the six success variables of the D&M model (D&M 2003) which was adopted for this paper as has been explained and contextualized in the literature review part (chapter two). After being developed, the questionnaire was first pilot tested and then been somehow revised. It was prepared in English and Amharic and administered based on convenience and the language proficiencies of the respondents.

The application of the D&M model with regards to the e-service is based on D&M (2003) while for the paper process question 26 to 28 were the main tools. Each variable generated

three questions based on the summaries of the variables (D&M 2003) and based on other researchers' contribution on refinement of the constructs and subcomponents. Among many items which were attributed to each of the variables, only three in each case which deemed important for e-service evaluation were selected.

It is also noteworthy that the variables have diverse classification which could not be captured with only one question. All the questions are closed-ended but questions 25 and 28 which aimed at capturing the existing problems and hence giving the respondents a chance to express themselves more. It is to be noted that closed-ended questions limit responses though easy to analyze statistically. Though reliability test was not conducted in the interest of time, an attempt to address the issues of reliability was made through pilot testing the survey and adjusting questions accordingly in a way that they could attract consistent understanding and hence consistent responses and through making sure respondents understand the questions in such a manner during the survey administration.

Questions on profession and nationality were included to capture significant information. It is likely that non-Amharic and non-English speakers will have problems because of language since the e-service portal is provided only in Amharic and English. It is also the case that the nature of one's job or educational level could affect e-service adoption and usage be it positively or otherwise.

Only users who have experienced both physical/paper and electronic/e-service were allowed to respond to the questionnaire. The aim of this was to get conspicuous data which could only be extracted from people who have relevant experience. It has to be borne in mind at this juncture that perception in this paper goes with experience and allowing response from all regardless of experience could have produced a cloudy and faulty data which could have taken much time to crack down. The data was simplified using descriptive statistics.

The response rate was 100% as the season at which the data was collected is neither peak nor low time as informed by the service providers. That is in June 2020 and also since the researcher managed to get the respondents focused and fill out the questioner in a

controlled environment employing different tactics. The reason for a perfect response rate is also because of the pilot test which helped the researcher on how to get the relevant respondents' willingness and the researcher has been well introduced to the work environment because of frequent visits and the rapporteurship that is built over time with the relevant staff members.

B. Observations

The researcher has also engaged in observation of both the portal and the premise and the facilities at a locus of a contact point for the service seekers. The observation of the web portal through the access of the system administrators was necessary to get overall information about where the e-services are going on actively and the proportion of the people who use the system at each government agency which among others helped to decide where the data had to be collected.

Furthermore, the observation of premises and facilities was important in order to gain firsthand experiences in the e-service provisions at the agencies whereas observing the platform was important to see how it feels as a user in the endeavor to have a good understanding of the system which has also in a way helped in the analysis of the research findings.

The portal was accessed as a user by following the due procedures i.e., through registering as a user and getting passcodes which might be considered as a partly participatory observation. Observation of the admin page was conducted through cooperation of the consultancy firm (Perago) to observe some features which are not accessed as a user.

The observation of the premises and the facilities/contact points were that of nonparticipatory as the researcher just sat at the venue where the physical appointment was held and observed the ongoing practices and users' situations without participation in the processes but just took note of the interactions and activities.

The observation process generally constituted four rounds of observation missions: preliminary observation, observation of back-office work processes, observation of service

seekers interactions with front desk officers and finally observation of the platform as a user. The first observation was to make a preliminary assessment of the e-service processes and decision as to where the data needs to be collected and emphasized. Hence it was accompanied with brief unstructured interviews with the head of the consultancy firm “Perago” & E-government department head of the Ministry of Innovation and Technology who served as key informants 1 & 2 consecutively for that matter.

The second round of observation mission, back office, was conducted with instruments (observation checklist) and to the premises of the provider public agencies, Ministry of Peace and Ministry of Foreign Affairs, to boost the researcher’s knowledge of the system and the bureaucratic processes in place. Thus, it was conducted in a non-participatory semi-structured fashion. The checklist constituted decision making processes and procedures.

The third observation had a purpose of observing what is involved in the physical interaction between service seekers/requesters and e-service front desk officers in order to make sure that the overall process of e-service is assessed by users. It was conducted at Ministry of peace and the observation checklist for this observation encompassed the possible purposes of physical visits by service seekers, whether the service seekers are first time or frequent users of e-service, whether it involved guidance/advice or not, and amount of time it took to process the matter in person.

On the other hand, the fourth and final observation is observation of the e-service platform (e-services.gov.et) itself as a user (due procedure is followed as any user), hence structured and participatory, at the same time. In this case the checklist constituted the signing up, code acquisition processes, the languages with which services are rendered and application tracking related issues. For further details, the observation checklists are attached at the end of this thesis as appendices.

C. Interviews

To substantiate and triangulate the data gathered through observations, unstructured interviews were conducted with two key informants: the head of the consultancy firm "Perago" (key informant 1) and E-government department head at the Ministry of Innovation and Technology (key informants 2). The relevancy of these key informants is determined purposively because the firms in charge of the portal enhancement project and as such implements the project activities in this regard and the ministry and specifically its egovernment department serves as oversight agency for the whole e-government and eservices plans, strategies, and initiatives.

3.4.2. Secondary data

Secondary data is the data that have been already collected by others and made readily available from other primary sources. Such data are relatively cheaper and more quickly obtainable than the primary data and may be available when primary data cannot be obtained at all or else it can play a good role of corroborating or substantiating the primary data.

Secondary data is often used to increase the sampling size of research studies and is also chosen basically for the efficiency and speed that comes with using an already existing resource. Secondary data would facilitate large research projects, in which many research groups working in tandem collect secondary data. The main researcher will then be allowed to focus on primary research or particular areas of interest. Such division of labor would help researchers learn more of the subject matter in less time than it would take in a normal course of things. Common sources of existing secondary data include data collected by governmental or public services departments, libraries, internet searches and censuses to name a few.

The benefit of using secondary data is that much of the preliminary work is done and the data might be semi-processed in some instances. The data might have already been sorted in an electronic format, published, and reviewed with case studies already conducted.

Secondary data can quickly become more or less public knowledge by dissemination through the media. Due to this exposure and also public examination, secondary data have the capacity to carry more legitimacy than primary data and hence are often used as verifiers of primary data.

In the case of the research at hand, literature and secondary data on the subject and especially non-electronic/physical systems happened to be very rare. Nonetheless, the egovernment strategic plan and other official documents of the Ministry of Communication and Information Technology, the forerunner of the Ministry of Innovation and Technology were consulted. This ministry, as has already been mentioned, is an oversight agency for the whole e-government and e-services plans and strategies.

Other than e-government strategic plan and other official documents of the Ministry, the secondary data used in this research was different reports prepared by and under auspices of the Ministry Of Communications and Information Technology as an assessment of egovernment implementation performance (quarterly, biannually, yearly and etc..) as it was deemed important to know the history, status and future projections with regards to egovernance in general and e-service in particular and to substantiate and compare the research findings.

In addition, literatures on the research subject have also been accessed from the online databases and libraries and used to inform and enlighten the researcher on the subject matter and to boost the overall research work.

3.5. Data Analysis Methods

The data analysis method followed in this research work was also that of mixed (majorly qualitative and corroborated by quantitative data and interpretations of descriptive statistics) in line with the nature of data gathered and the instruments employed, which are mainly questionnaires and observations.

This approach was used since it can help in assessing the characteristics of the e-service process from qualitative standpoints i.e., explore the state of affairs from qualitative standpoints as explained by Creswell, (2014) and also capture numeric data to explain the quality of e-service.

For the data gathered qualitatively through observations, thematic analysis was applied and hence the findings were presented in a form of narration according to the theme and purposes of observations. On the other hand, for quantitative parts, data analysis and presentation of findings were made according to Cynthia and Barnes (2006) quantitative analysis; the following Likert-like scales values have been applied. “Strongly agree” plus “agree” amounts to “agree” and this is generally regarded positively. “Strongly disagree” plus “disagree” generally amounts to “disagree” and this is taken as negative. The same procedure holds for the “likely” scales and these combinations make the pattern of positive and negative ratings more obvious for the research variables.

The data was summarized in tables and descriptive statistics which brought forth scores for particular values from the lowest to the highest and also in percentages. The findings from the observations were also used to elaborate and triangulate the quantitative findings and also analyzed in tandem with the quantitative findings. The results were interpreted and expatiate in the discussions summarizing users' perception of e-services quality. These results were later validated to justify their reliability.

Furthermore, the secondary data, particularly the strategic plan, national ICT policy and strategy document and other internal documents was analyzed and presented from the purview of e-service quality and practice on one hand and the e-government vision 2020 on the other hand. The primary data gathered through observation were mainly analyzed and presented to assess e-service practice and evaluate if the practice is geared towards achieving a target of transforming the public service. The interviews are mainly analyzed and presented in tandem with and to triangulate the results of the observations to corroborate and validate the later. The data gathered through instrumentality of the questionnaire was analyzed and presented to assess the quality of e-service as envisaged in the strategic plan.

Hence, the concurrent and sequential triangulation of data manifested validity of evidence. In particular, analysis of the interview data validates the quantitative evidence and that of the observation data validates the quantitative data.

CHAPTER FOUR: DATA RESULTS AND DISCUSSION

4.1 Introduction

Under this section, data results from the observations, the interviews and unrepresentative survey questionnaires were presented in mixed analysis. The data items were substantiated on the e-service practice and key e-service success factors (quality measures). As indicated in the methodology section, both sequential exploratory/descriptive and concurrent triangulation research designs helped the researcher to generate adequate data sets, validate the data sets during data collection, conduct preliminary analysis during data collection and identify outstanding data sets until the researcher was sure that adequate data items were collected, and evidence was substantiated to support the claims of the study and answer the research questions.

4.2. Data Results, Findings and Analysis

In this section, data results and findings were generated on e-service quality and practices by the selected federal organizations and analyzed. The results were presented, and analysis was made in line with the research questions and objectives of the study.

4.2.1. Observation and Interview Data Results, Finding and Analysis

As already mentioned above in the research methodology part, the first observation, which was observation of the admin page with the consultancy firm which runs the system as admin and the respective ICT departments of service provider agencies and accompanied with unstructured interview was as a way of preliminary investigation and mainly helped in setting the research framework and other indirect benefits throughout the research process. However, some other findings from this specific observation stand out for the overall research finding and conclusions and hence are noteworthy.

The first and second key informants in this case are the head of Perago (the consultant firm) and E-government department head at the Ministry of Innovation and Technology respectively.

Accordingly, observation of the system admin page shows that the consultant firm which runs the system (Perago) prepared a list of e-services (from federal government's public offices) to be featured on the platform in consultation with the service provider agencies according to the suitability of the public services for e-service processes and also according to the readiness of the public agencies, facilitation role being played by Ministry of Innovation and Technology. In this case there are a host of e-services ready to be featured on the platform yet to be functional as they are awaiting the provider agencies to give inputs, mostly information and back-office work process readiness, for them to be functional. In this case, the words of the head of the consultant firm (key informant 1) goes as.

> "*As far as they [the providers] are ready in terms of their own back-office work processes, we are ready to launch any e-service which we listed here as set a priori in consultation with them, as you can see here on the screen, everything is ready from our side….*"

This shows the fact that the services these providers feature on the platform keeps increasing than the one which was there at the time of data collection.

In Addition to that, the firm has also developed some advanced IT features which, when becomes functional, will take the overall e-government to the next level, and make the eservice complete. The case in point is known as "Enterprise Service Bus" where a service seeker doesn't need to go to various public offices for the services which would otherwise require doing so. As it is meant to realize horizontal integration of e-government, this feature makes it possible for the application to be forwarded over the platform itself to the next agency for the next step. This will ease the hustle of the service seeker needing to collect one paper and apply to the next e-service separately.

However, the downside of this is that this feature needs alignment or synchronization of work processes, coordination and cooperation across different public agencies which is not worked on as the agencies seem to lack appetite for achieving something outside the domain of their own portfolio and the Ministry of Innovation and Technology with its oversight authority has done nothing noticeable in this regard. So, this can be regarded as

unused potential of the system which needs *bona fide* intervention from the government in general and specifically the E-government division at the ministry of Innovation and Technology to realize the potentials in to its fullest.

On the other hand, this would also affect the potential net benefit of the IS negatively and the amount of turnaround time and cost the e-service would have reduced is flipping away. But the fact that this is not reflected in the perception of the service seekers might be attributable to the fact that the service seekers didn't know, as it is not functional at the moment, about this unused potential of the system and hence were not able to make any impression.

According to the Firm's head, the IT department heads at the respective agencies serve as liaison officers with the consultancy firm with regard to e-service and the overall e-service practice is facilitated and over-sighted by the Ministry of Innovation and Technology. For a question of whether they are the sole system administrators, the key informant 1 said that the respective IT department heads can access a limited feature of the system as admin, specifically the admin functions pertaining to e-services their respective agencies feature on the portal. And according to Key informant 2, the IT departments of these public service provider agencies in turn work in collaboration with their respective back-office colleagues on relevant matters rarely asking for intervention by the ministries e-government department which mostly engage through the fortnight meetings conducted by the facilitation and chairmanship of the ministry and specifically the office of key informant 2.

For the question as to what the main purpose and activities of this meetings are, the key informant 2's words runs;

> *"Before and during the launching processes there were mostly training sessions given to the respective ministries staffs who work on the e-services, but nowadays as they have already been on-boarded trainings are only demand based and is mostly for newly assigned/employed staffs"*

However, he says that recently the meetings are serving as a steering platform where technical and other problems facing the e-services are pointed out and the possible

solutions are discussed and agreed upon, which is also in a way helping as a venue to learn from each other and harmonize activities across public service providers involved.

4.2.2. Observation Result and Findings on Back-Office E-service Processes

As explained above this data was collected at the ministry of Foreign Affairs (MFA) and Ministry of Peace (MOP) through instrumentality of semi-structured observation.

Generally, four staff of the ministry of foreign affairs are directly involved with the e-service delivery in one way or another. These are the Director General of Protocol Department, Director of arbitration and dispute resolution and an officer under the same division who also directly deal with service seekers in person. The fourth official involved with e-service at the ministry is the head of the IT department of the Ministry as mentioned above. The role of the IT department head has already been explained in the above section. The role of the other three officials will be explained in line with the decision-making processes as follows.

The officer also serves as a front desk for matters pertaining to e-service delivery of the ministry. Hence, she is a contact point for every service seeker who comes to the ministry in this connection. After a service seeker completed the online application process, this officer downloads the application and the concomitant files. After making sure it fulfils the requirements and necessary documents are provided, the applications are presented to the director who further screens and, either returns them back to the officer who should communicate with the service seeker to provide more documents or, passes it over to the Director General for the final decisions when the application is complete, and all the necessary files are attached with the applications. After the final decision is granted, they are to be kept at the officer's office and made ready to be collected by the service requestor on the date of appointment either as generated on the platform or communicated to them on phone.

For any technical issue encountered with the system, the officer promptly notifies the ICT department head and in most of the cases it is a misunderstanding related to how the

system functions and clarified for them accordingly. On the date of observation, a service seeker who requested a service yet did not complete the application process reported in person and complained about not being contacted nor given an appointment for a decision.

As they were not satisfied with an explanation from the officer, they were referred to the ICT department head who can access all the pending and completed application features as a system administrator. Hence, told the individual that the application process is yet to be completed and advised them to complete it which convinced them to go back and complete it.

In the case of ministry of peace, even though the ministry has a host of portfolios under its purview, the e-services it features on the portal are only related to religious organizations registration, renewal, letter of support and certificate. The only exception in this case is registration of youth volunteers. Like that of MOFA, the number of the staff members working on e-service related activities is four in number constituting a designated front desk officer, director at directorate of charities and societies' regulation, the director general of charities and societies affairs and officer from the ICT department of the ministry. The decision-making process at back office is almost the same as that of MFA except in this case youth volunteer registration does not have immediate or short time appointment. Once they are registered, they are told to wait for further notice and that's when they are assigned for voluntary activities or campaigns.

4.2.3. Observation Result and Findings on Service Requesters Encounters with Desk-Officers

As has already been mentioned in the preceding chapter, this data is collected in a nonparticipatory and structured manner at the MOP. The number of service seekers/requesters who came to the desk officer on the day of observation were 20. Among them, 2 people reported in person to seek service in person rather than e-service and the others up on appointment.

In most of the cases, the people who reported in person without appointment or prior communications were people who didn't have knowledge of the e-service or else thought the e-service was only an alternative to the paper version. In fact, as a matter of principle it was meant to be an alternative in recognition of the digital divides between citizens as pointed out in the e-government strategy document. However, those people who opted for the paper version for any reason was told that the service is only available in the electronic e-service form i.e., iff they request it on the platform.

Hence, they were advised to access it through online procedure and to come to the office only afterwards up on appointment which will be generated by the system in due course of the application process. Nonetheless, the service seekers have obtained guidance as to where to go should they need assistance to complete online applications, from nearby business entities who give services in this regard which is billable.

Those who reported up on appointment were the people who instituted/filed the e-service application and in communication with the desk officer/provider. As witnessed during the observation, these people reported based on appointment for purposes put in three scenarios; 13 people to provide original documents and collect the final result, 1 person to provide original documents, 4 people to collect the final result. The findings have been summarized in the following table as follows.

Table 1 Summary of findings of observation on the challenges of online service seekers

Keys to observation and analysis: (in the observation process, number of first time uses, number of frequent users, number of public servants dealing with service seekers/users in person, number of users received guidance/advice and Amount of time spent in minutes/service were noted).	
The purposes of the appointment/visit	Explanatory remarks on the data result matrix
To Seek service in person/paper version	One of the users were unaware/no know-how

To show off original documents and to collect the final result.	Three of the users were well acquainted with the system Three people that were showing off the original document was not necessary/they had a pre-existing profile dossier with the ministry.
To collect the final result.	Provided original documents previously
To provide additional documents	. A religious organization that was seeking a letter of support and had to discuss with the director on undisclosed matters was to come several times to the organization

As a note, the back office follows the normal official work process where the applications are sorted out by an officer and passed over to the specific business line team leaders for decisions then collected and made ready to the users on appointment date at front desk contact point and almost always with a duty to show off original documents to be verified against the one submitted electronically along with the application.

4.2.4. Result and Findings from Participatory Observation of the Platform

This is a finding of participatory observation of the e-service platform at e-services.gov.et. As such it was conducted online on a web browser by writing the e-services.gov.et in the URL. The platform has two segments. One is a business portal and the other customer portal targeting the business community and private citizens or non-citizens for business engagements. The portal URL address opens the business portal by default at https://www.e-services.gov.et/business/home and one needs to go to the URL bar and edit it to go to the customer platform at https://www.e-services.gov.et/ which would create some confusion to the users.

4.2.4.1. Registration and Acquisition of Activation Code

In order to file an application for the e-services on the platform, one needs to first undergo the registration/signing up process to create an account or user profile. However, there is a

limited amount of information on how to go about the e-services and some basic information that can be accessed even without creating a user profile.

The registration process is generally easy but has some inconveniences related to confirmation code acquisition. Registration necessarily needs a phone number which also is the only means to receive profile activation code and there is no email alternative to it and on top of that it takes more than 15 minutes to receive the code which is also recognized by the system as it mentions so making it a time taking process.

Furthermore, it seems possible to use a phone number other than Ethiopian as the system provided the options to select from the country codes around the world on the first attempt. However, during this observation a non-Ethiopian phone number was tried for registration, yet the system was not able to send the activation code to this number and hence it had to be done the other way round. Though this might cause hindrance or at least inconvenience to anyone who wants to create a user profile or file applications being outside of Ethiopia, it might cause particular inconvenience in the case of the business portal where the users would be investors based abroad who want to do these things remotely, ripping off back the country the potential it provides up on face value in this regard. The system provides a second chance to resend the activation code if one didn't receive it on the first attempt by default and a number to dial (+251941047410) if the second attempt didn't work either. The problem here is that this phone number is answered manually restraining availability of the service to official working hours.

4.2.4.2. Application, Appointment, Tracking & Languages

For the observation purpose, a bogus application was filed for registration of a new religious organization at MOP which generally took over 30 minutes to fill-out the forms and upload the required documents. After the application was submitted, it prompted application tracking number and redirected to the “my applications” section where progress of the application can be tracked as can be seen in the following figure.

Here it is worth pointing out that appointment date was not provided forthwith. It is rather notified through the system in the application tracking section and also over the phone provided for the registration process. This is partly owing to the fact that the application needs to be sorted manually by the relevant officers from the provider's end. But also, it can point to the fact that this activity is not automated over the system and that the eservices system translates the paper process to just an online process instead of transforming it, which would have mainly manifested through automation of key processes such as this one and others including online payment infrastructure which also lucking in this case.

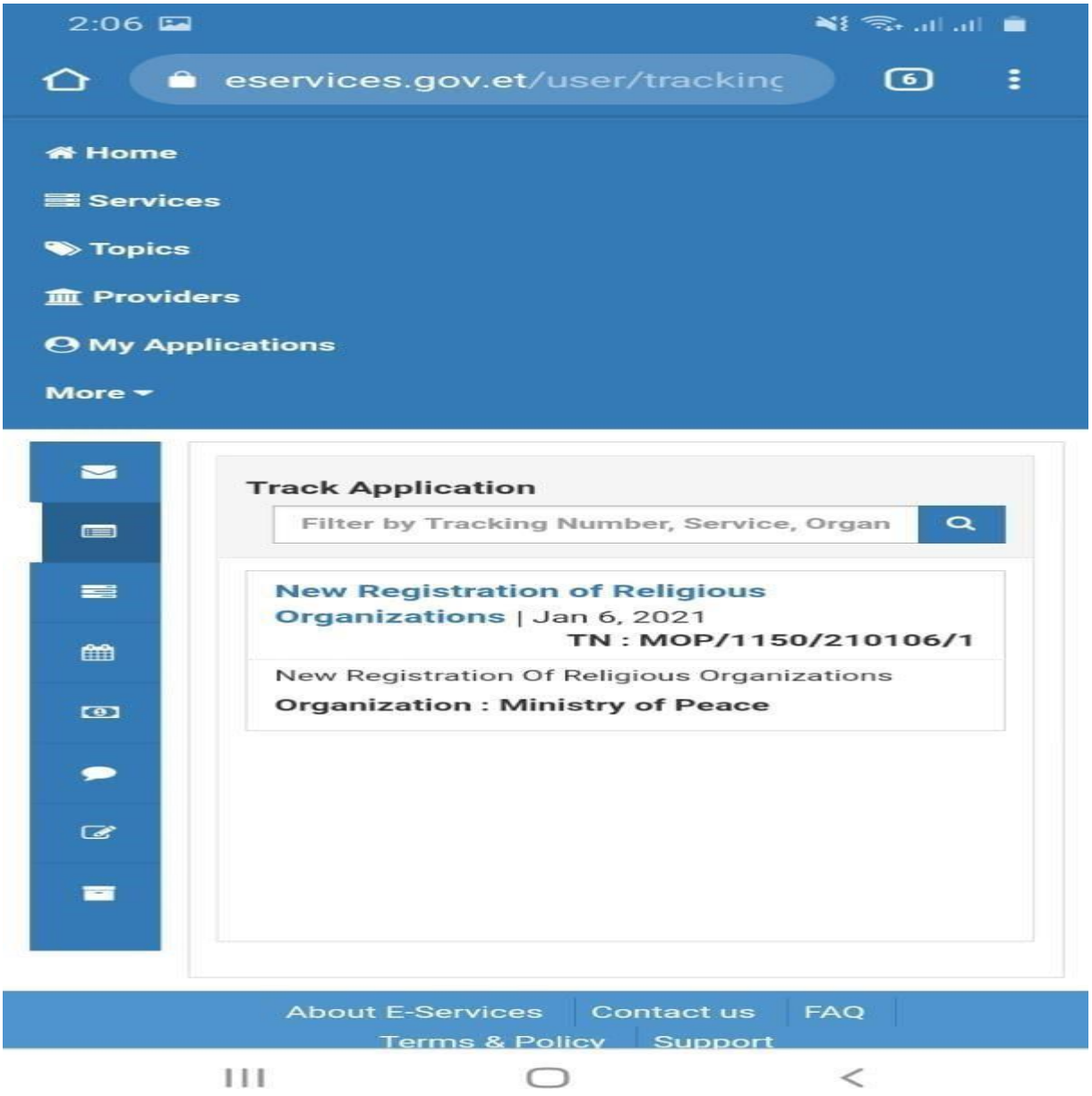


Figure 8 Application tracking section at e-services.gov.et platform

Furthermore, manual sorting of applications by providers creates some sort of inconvenience to the users particularly with regard to turn around time. For instance, the application instituted for the sake of this observation was done on a day preceding a holiday and hence took a couple of days for the provider to sort the document and communicate back or give an appointment date. See the table below for summaries of the findings.

Table 2 Summary of findings of observations of users' page on the platform e-services.gov.et

Activities		No. of attempts	Challenges	Remarks
Registration		2 times in a day/24hrs (the first attempt failed because of the use of non-Ethiopian number and the second succeeded)	Confusion as to how to access the customer portal/home. No call outside of working hours. No email alternatives No use of nonEthiopian number	Generally easy
Code acquisitions	Activation code	4 times a day/24hrs (the default and the resend command both failed. The alternative phone number was dialed at night and not answered. Finally, registration with Ethiopian no. succeeded.)	Sluggish No/difficult/inefficient alternative	Should have been sent through email alternatively.
	Application trucking code	1 time– the code was automatically generated up on submission of application.	Not accompanied with appointment date as it needed to be manually sorted first.	Prompt

Application	1 time – once the fields are filled out, necessary documents attached and submitted application tracking number was sent signaling the finalization of the application on the	Took more than 30 minutes because of the need to upload many files.	Reducing the number of documents or meshing it up to single file would cut the amount of time it takes.
	side of service seeker.		
Appointment	1 time would have been granted after manual sorting of application for 1-2 working days.	• Manual processing	Needs further automations
Application tracking	On the platform & over the phone	no email and phone communication alternative provided	Email & phone communication alternatives needed
Languages	Both English & Amharic	Service in only few languages Amharic can't stand on itself	One needs to be able to understand English in all cases.

In the portal some errors like uploading documents are automated and made compulsory by the system in order to finish the application process. However, relevancies of the uploaded documents or requested ones are decided manually by the officers. The system could have been calibrated only to accept the relevant documents or could be given options to be communicated ahead of seeking the service, such as through phone, to be provided for the application to be finalized.

With Regard to application tracking, for the requestor it can be done only over the platform as mentioned above but also the provider might opt to communicate back over the phone in which case the applicant gets a contact of an officer in charge (a contact which is otherwise not provided on the platform) easing the follow-up for the requestor. In the case of this observation application, the officer reached out through the phone number used for registration and made some logical queries and possibly would have given an appointment afterwards had it not been for a bogus application just for the sake of research.

The last point in this observation of the platform is pertains to service provision languages. The e-services are provided in two languages English and Amharic. However, the Amharic language was not sufficient to access the e-service as some of the information even when Amharic is opted for is nonetheless provided in English. See the screenshot below.

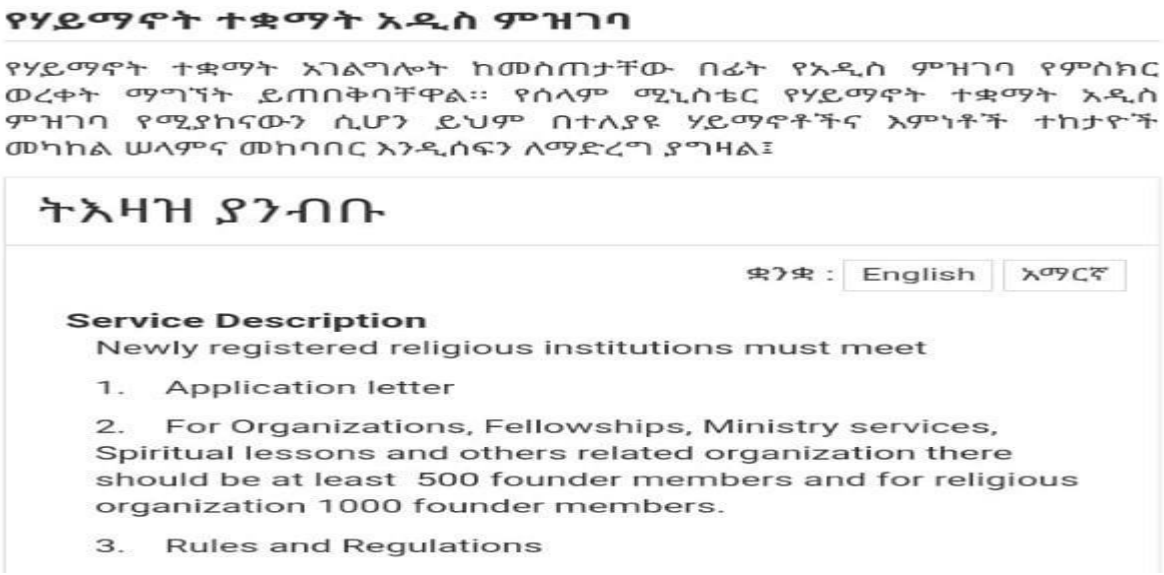


Figure 9 Screenshot showing e-services provided in Amharic at eservices.gov.et

It is also to be underscored that in a country of diverse languages where the majority of the population cannot use both English and Amharic, there is a need to include other languages for the convenience of the users and usability of the platform by the taxpayers.

4.2.5. Results, Findings and Analysis With-regard to Six E-service Success Factors

Here in this section, finding and discussions of the quantitative data is presented under each component of the e-service success dimensions variables.

4.2.5.1. Sex, Age Distribution and Internet Skills

Majority of the respondents -98% (N=50) were males while 2% were females. A lesser proportion of the respondents 4% (N=50) ranged between ages 20 and 29 years while 3039 years made up a relatively higher proportion 48% of this study. Those who ranged between 40-49 years made up 12%, 50-59 years 14%, and none in the 60-64 year and above 65year category. While respondents at MFA came from 17 different countries though majorities were Ethiopians, those at MIT are all Ethiopians. Respondents were from many and varying walks of life both academic wise and practical or physical jobs, that is, system developers, traders, diplomats, engineers, etc. A total of -77% (N=50) agreed they have good knowledge in internet use while 15% disagreed. The responses to frequency of usage were very encouraging as -81% (N=50) used the internet every day, 17% used it three times a week, 3% about once a month and 1% less than once a month. These make the selected individuals' likely users of the internet and e-services since they are employed and use the internet often. Those who were uncertain about their internet skills were mostly the old people or people with non-academic jobs. No vital information was recorded on sex difference, but age greatly affected e-service use.

4.2.5.2. Information Quality

Three questions were used to investigate the user's perception on this variable. The questions were based on complete, up-to-date and comprehensibility of the information on the website. A total of -86% (N=50) overall accepted that the information was complete. Only 30% (N=50) of respondents somewhat disagreed and 12% (N=50) were neutral. With regards to up-to-date information, -76% (N=50) were positive about this question while there was a 2% (N=50) disagreement among respondents and 16% (N=50) undecided cases. In the light of comprehensibility, majority -92% (N=50) were positive while 8% disagreed.

Table 3 Summary Findings with regard to information quality

Complete information	Up-to-date information	Comprehensibility
	Only two persons disagreed	All respondents answered this Question
Those who were indecisive were mostly people whose jobs are more practical or physical, so they probably do not know what more was required on a website.	To this statement. 6 were neutral and both are customers of MIT.	Majority agreed most of which were Ethiopians. Those who did not agree were customers at MIT probably attributable to specific problems with the ministry related information on the portal.

4.2.5.3. System Quality

Three questions were developed using characteristics of system quality in the D & M model. These questions investigated system quality in terms of usability, adaptability and availability. Results showed that -68% (N=50) accepted that the application was easy to use. While 28% disagreed 4% were neutral. The disagreements majorly come from the respondents at MIT. Adaptability had also more positive perception. A total of 72% (N=50) accepted that the e-service system feels the same as the paper version. Amongst these numbers, majority 76% strongly agreed so only 24% accepted partially (somewhat agree). Furthermore, 24% disagreed while 4% were neutral. A total of 80% (N=50) were positive about the availability of the e-service. Disagreement cases amounted only to 20%. Detailed insights are presented on the following tables. Among the respondents, people who agreed in information quality also agreed in system quality. These two variables seem to be bonded.

Usability	Adaptability	Availability
Majority agreed. Few times users of the internet and diplomats who have language problems thought it was difficult to use. Majority of Ethiopians accepted the system was easy to use except for the aged.	Although the majority agreed, the number for disagreement was high. It was not obvious to the respondents if the electronic version was derived from the paper version. Majority of those who did not agree here were mostly the older people.	Few times users and visitors of the e-service will not know if it is sometimes unavailable. People with non-academic jobs, those who did not use the internet regularly and the old were neutral.

Table 4 Summary of Findings with regard to system quality

4.2.5.4. Service Quality

This variable was investigated in terms of security, user's best interest and how clear the procedures are presented on the e-service. Good number of the respondents 76% (N=50) were positive about security issues. This question recorded 16% undecided and only 8% disagreement cases. The question on empathy recorded a total of -80% (N=50) agreement cases majority 56% agreed fully. A sum of 12% disagreed while 8% were neutral. A vast majority 92% (N-50) were positive about the presentation of the navigation steps on the eservice while 8% disagreed.

Table 5 Summary Findings with regard to system quality

Security	Empathy	Clear presentation of navigation steps

More people were positive about security since it did not pose a threat to them. Only a few people disagreed, and these were mainly those who expressed incomprehensibility to the language. Those who were neutral seem to lack knowledge about security risks.	This suffered bias from the respondents because everyone wanted their needs to be accommodated. Most of the respondents think their various languages should be included.	Majority were positive with the presentation of the steps. A larger portion of these were people who did not have language barriers. Respondents who did not speak or understand Amharic and English very well agreed partially or disagreed.

4.2.5.5. Intention to Use/Use

"Use" was examined in terms of frequency, time of use and access codes. According to the results, -72% (N=50) accepted that since they became aware of the e-service, they use it frequently.

While 8% was undecided 20% disagreed. Near half of the respondents 54% (N=50) accepted that the e-service was available 24/7. Undecided cases were 42% while 4% disagreed. Ease of access codes management recorded a total of 64% (N=50) agreement while 16% disagreed and 20% were neutral.

Table 6 Summary of Findings with regard to intention to use/use

Use Frequency	Use Time	Access codes
Majority of the respondents accepted that they use this application to get the government services every time they need to. Those who rated negatively were mostly the first-time users and older people. In cases of complications and enquiries, frequency of use reduces.	Majority ratings on this question were positive and just 2 disagreed. This shows that the website was available most of the time. Nonregular users of the site would not tell if it was available 24/7.	Although majority rated this positively the difference between those who strongly agreed and partially agreed was slim (6). Majority of respondents who agreed partially or disagreed were either foreigners or those with non-academic backgrounds.

4.2.5.6. User Satisfaction

This IS success variable was studied in this paper from three values: repeated use, inclusivity, and likelihood to recommend to others. A majority -92% (N=50) were positive

about using the e-service in the future. Only 8% disagreed. A sum of -92% (N=50) would likely recommend the e-service to others and the others are not sure if they would or not. As to inclusivity, 62% (N=50) agreed that the e-service was developed for all. 8% did not agree and 30% were undecided.

Table 7 Summary of Findings with regard to user satisfaction

Repeated use	Recommending	Inclusivity
Majority rated this aspect positively with the exception of 4. These are those who do not feel secure using it either because of language or other barriers.	None disagreed to this question, the majority accepted and just 4 respondents were neutral. This shows that the probability that they would recommend to others is high.	This question had a relatively high number of negative ratings. Those who rated it positively were the young Ethiopians. Those who disagreed were either those who had problems understanding English and Amharic or the older people and people with less education.

4.2.5.7. Net Benefit

Net benefit was researched from three categories: cost and time saving and continuity.

Table 8 Summary of Findings with regard to net benefit

Cost and time saving Electronic version	Cost and time saving Paper version	Problems with the system
Majority rated this question positively. 6 people disagreed and only 2 were neutral. Those who were neutral were mostly those who do not use the internet regularly.	This question has not many negative ratings as might be expected. This shows that some respondents prefer the paper version. Those who agreed to this question advanced some advantages of paper filing. There might also be confusion as to which one is time saving owing to	20 respondents believe that the system was free from technical faults while 30 people said yes. Their reasons were summarized and technical problems faced are mainly connection problems, system shutdown, absence of timely notifications and link to the next stage, not functional on mobile phone, sometimes applications do not reach the
	some problems they face throughout the process.	service provider and reapplication required.

Continuity was included here as a feedback option with regards to the technological aspects of the systems. That is in case the users feel some aspects of functionalities are missing from the application. With regards to the e-service as a cost and time saving tool, a mass of 84% (N=50) accepted that they save time by using the e-service. 12% disagreement was recorded and 4% neutral. But it is a little bit confusing that, paper version as a time saving tool had no contrary result. Minority 34% (N=50) disagreed to this question while 54% agreed and 12% were neutral. Question 25 basically investigated the technical aspect of the e-service. Some 40% said “NO” problems have been registered while 60% said “YES”.

Questions 26 and 27 were aimed at getting the comparison of the paper and online process by respondents in the e-service. Respondent’s ratings amounted to 80% for eservice showing more advantages over the paper version and 80% accepted that it has simplified the public service delivery in Ethiopia. Look at the table below for pros and cons of both versions summarized perceptions of users.

Table 9 Summary of Findings with regard to paper and e-service comparison

E-services		Paper version	
Advantages	Disadvantages	Advantages	Disadvantages
Quicker	Lack of Multi Language function	Face-to-face gives confidence	Slower
Easy, less time	Needs resources such as computers, scanners and internet which is costly for Ethiopians.	Easy for some people.	Time consuming (long queues)
Transparent	Slow internet connection.		Insecure
		Safe reading paper forms	

Faster		Good for those with no access to internet	
Reduced errors	Hard for non-regular internet users	Good for the elderly and uneducated	non reuse of paper bad for environment
	Problematic codes	Best in case of enquiries	

4.3. Discussions of Findings

The objective of this paper has been to assess e-service practices in Ethiopian federal government and the user's perception of e-service quality and e-service and paper version. Some findings have been discussed in the respective sections where they are presented. However, the researcher is convinced that it is imperative to further discuss some findings *vis-a-vis* the research questions on one hand and facts and conclusions in the literature review part on the other hand.

Accordingly, it can be confidently asserted that the study was able to adequately answer all the research questions. As has been found out through observations of the e-service practices from different vantage points, the e-service mostly takes to the online platform/electronic version, only the process of application for public services which is not bad in and of itself. Other than the logical benefits of such convenience created through putting people online instead of in line, there is no “much change” in the process because of the electronic mediation. Put in context, the e-service just translates the physical/paper process to an online electronic process and there is no automation of some processes at back office and as such we cannot refer to the e-service as a transforming of public service delivery as such.

However, looking at the potential of ICT in this particular case and as was well acknowledged and aimed in the strategic documents and plans presented previously in chapter one to “transform public services”, much more benefits could have been borne of the system if some of the routines can be automated. Yet as it stands now, the system is just serving a purpose of translation of paper process into electronic process.

The web portal e-service.gov.et represents a technological facility of a single contact point as all the e-services provided by each federal public agency are featured on the platform.

However, there are still a number of problematic situations with the functionality of some of the portal features in practice. That includes among others the non-functionality of the features such as enterprise service bus, which was meant to make it possible for eservices delivered by different providers mutually interacting (interoperable) enabling the user to collect the final file with a single contact point or the final public provider, and the fact that it is also not accompanied by such work process of the concomitant physical onestop-shop facility. The feature of interoperability of different e-service processes is hampered among other things, owing to the problem with certain public agencies/e-service providers who are still left behind in implementation and not ready to fully embark on the e-service delivery and lack of commitment or meaningful effort from the oversight ministry.

When it comes to users' interests and perceptions, although most of the people were positive with e-service, some are still unwilling to do away with the paper counterpart. Respondents strongly feel that both means of public service delivery shall work in parallel in different circumstances and complement each other and users be given both the alternatives. This has two benefits; not leaving out people who cannot use the system for any reason and to not expose users unfairly to the means of service provision they would not like. To encourage the use of the system and discourage paper versions, the providers need to devise positive strategies rather than blatantly disallowing the latter.

Most respondents expressed their dislike for the paper process because they think it has no/less net benefit. Time factor and convenience were the most recurrent shortcomings of the paper version. E-service users would want to complete a task in the shortest possible time; therefore E-services deserve applause for managing such problems.

Security issues did not seem to be a problem according to this research finding as the majority was positive. The issue of security in online transactions is plaguing e-services according to previous research elsewhere by Bailing Liu et al., (2010) but this study proves it contrary in the case of Ethiopia. One might assume that might be because of peoples

less alertness to the right to privacy in general and online security in particular as a third world society. However, there are research (Ilshammar, L., *et al* 2005) findings even in the first world countries where the users tended to not worry about their online security much. In the case of eservices.gov.et, there is no case where transactions like payment of fees are conducted online as the system does not provide such infrastructures and features. Hence the relative insensitivity to security might be attributable as well to this and other cases of relatively less risk factors.

It is also interesting to note that the quality of information on the e-service system or the web portal eservices.gov.et is constructive. Yet the problems related to codes, adaptability, lack of multi-language function and inclusivity particularly affects the usability of the system by some groups of people including old people, people who can't speak Amharic and English and people with less or no know-how.

One of the challenges at the developmental phase of e-services, is how to make it inclusive, particularly the people who can't use e-service owing to their academic background and the older people. As they represent the lowest number of respondents in this research, the benefits of e-service might not be clearly comprehensible to them. They seem to have a problem with adapting from paper to electronic version and this would possibly make them stick with the traditional method of public service delivery. But also, it has to be borne in mind at the same time that adaptability is not only a problem of the old people or the uneducated, because it can be the case as well even for the young and educated. During the face-to-face questionnaire administration and observation process, some educated and young people declared their ignorance with the e-service and these people could be considered potential e-service users up on face value.

4.4. Assessment of the Validity of the Findings

The D&M IS success model was quite valid for evaluating user perceptions. Information quality and system quality portrayed a synchrony. That is, positive perception in information quality positively affected system quality. Net benefit on the other hand is more

appropriate when evaluating e-services from an organization's perspective. This is so because users might not be able to clearly see the benefit in using e-services. They might possibly feel that it benefits organizations more since they will have less work on their desks. However, from the pragmatic point of view, it is clear that e-service has net benefits both for the organizations and the users though the relative significance and the magnitude needs independent research by itself.

As compared to a similar study in Sweden that was conducted on citizens' perceptions on e-tax (Mustansar and Zulfiqar, 2010), significant similarities in the results can be established. In fact, the fact that the e-tax system is matured in Sweden and has made impressive progress is believed to have led to the IS success variables showing high success levels.

In the case of Ethiopia and particularly the e-service system under assessment, there is no known research assessing its progress and specifically its maturity level which needs independent investigation. However, it is obvious from the outset, as have also been pointed out here and there under different sections of this research, that many features of matured e-government such as key ICT infrastructures are lacking casting doubt on the maturity level of Ethiopia's e-government. Nevertheless, the IS success variables have similarly shown relatively impressive success levels in a similar fashion even in the case of Ethiopia. This might seem a sort of anomaly as we reckon with the above-mentioned assumption. Yet at the same time it has to be borne in mind that it is only an assumption which prevails over doubts and hence shall not be seriously considered in the absence of research finding. What shall in fact be considered seriously is the need for research investigation into the maturity level of e-government in Ethiopia and the case of the eservice in particular.

In addition to that, in both the research findings security did not pose a threat to e-services in Sweden. This as mentioned above in the discussion part debunks the belief that societies from developing nations or third world countries are less sensitive to their privacy

in general and online security. The correlation between development level and privacy seems not to hold true in the case of e-services or at least in the case of this research.

No significant discrepancies were recorded with regards to the lack of Multi Language functions in their paper. The slight differences could be as a result of the different questions coined in both researches.

The 2012 EC e-government implementation report of the MIT which assesses among others the e-services current status has also been consulted. Accordingly, the document admits and concludes that the e-service implementation is falling short of the plan; this conclusion is also concurred in this research validating the findings.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1. Introduction

This research was conducted to achieve an overarching objective of assessing the quality and practice of e-services at the web portal e-services.gov.et particularly by trying to answer three research questions pertinent to the set objective. Accordingly, the e-services quality and practices have been adequately assessed with a research rigor which applied throughout the study process.

Speaking of the e-service quality, the six dimensions of success/quality which have been measured showed a relative success (for the selected organizations and respondents) with varied measure figures between dimensions and each variable of the specific dimensions. When it comes to the state of e-service practice, it can be concluded that remarkable achievements have been made even though some constraints have also been noted including the gap between the strategic plan and the pace of project implementations among other things. With regard to the kind of change the eservice practice is bringing about to the public service delivery, one can safely conclude that the e-service system as it

stands now is just translating the traditional public service delivery to electronic service delivery.

5.2. Conclusions

General conclusion reached indicates that Ethiopia has made big progress in providing successful e-services at the federal public services providers. The use of the system is ever increasing as the number of people who use the online public service were observed to increase on a monthly basis. The fact that the e-services showcased on the portal are not horizontally integrated and hence do not inter-operate compounded by the finding that the back-office processes are not automated adds up to a conclusion that the e-service system just translate the traditional public service delivery to electronic/online one and hence hasn't brought about transformation of one as it stands now falling short of realizing the full potential of the system.

On the other hand, it has been found out that some of the e-services featured on the portal are not currently up and running, the process of signing up/code acquisition has some hurdles as it needs repeated trial in some cases and the gap between the strategic plan and the pace of project implementations is also noteworthy. The implementation pace of the system deserves to be criticized sharply as it was too slow especially in the years preceding 2018. However, when we look at what has been achieved since then, it is encouraging and deserves applause even though there is still a long way to go which are partly outlined in the recommendation section below.

Furthermore, the overall responses analyzed in the unrepresentative survey shows that the electronic public service delivery system for the selected organizations and respondents has succeeded to a larger extent and is indicative of the fact that much progress has been made over time and believed to continue the virtual path as it is a process which builds on previous gains. In this regard, all the six variables have generally registered a higher success level although system quality was slightly lower which might

possibly be attributed to language related problems which was also pointed out in the qualitative findings.

Despite the fact that e-services are somewhat new, most of the respondents think they are indeed the quickest and most convenient methods to execute actions which have been voiced as drawbacks to the paper version in another way. While the older people, people with non-academic jobs, and the less/uneducated are adapted to the paper versions, the reverse is generally true for the younger and educated. To sum it up, given the fact that eservices are integrated over time, citizen's perceptions equally need time to change. This confirms that the research model (Delone & Mclean, 2003) works in this case showing the reasonable success level of each dimension of the e-service platform. These conclusions confirm that the research objective and the set research questions have been dealt with.

5.3. Recommendations

The key finding of this research is that even if the e-government initiative of provision of eservice is implemented as a new system of public service delivery with a vision to transform it and thereby curb bad practices or problems of maladministration, the practice of eservice system falls short of this purpose it was meant to serve. On the other hand, assessment of the system success based on the users' perception around the six dimensions of IS quality shows a remarkable success of the same. This anomaly is however reasonably explained in the specific findings, in the information quality and system quality variables, where results manifested the system shortcomings pointed out in the qualitative assessment.

Nonetheless it is still noticeable that e-service as a public service delivery tool has not achieved the purpose of transformation of public service delivery as it stands now. And even if e-service portal enhancements are incremental and hence there is still a hope that the vision can be achieved in the future, it is not premature to conclude the problem of failure of public service delivery tool has also manifested in case of the e-service system

like previous cases given that the vision was meant to be achieved by 2020. This can be solved by successful project implementation which entails better project coordination efforts.

The responsible actors in this case are mainly respective ministries ICT and HRM departments who can work together to automate back-office work processes using the platform as a tool and the department of e-governance at the Ministry of Innovation and Technology by playing a more active coordinating role. The Prime Ministers' Office (PMO) has also a responsibility to coordinate activities. These responsibilities were not adequately addressed so far because the respective responsibilities of each actor were not articulated very well. This is a cross cutting issue as it involves multiple government Ministries with independent power prerogatives working together under the coordinating role of one of them (MIT in this case). In such a case, the power dynamics and relationships need to be managed consciously and responsibly so that the specific objective of the concert can be achieved. The policy intention of the power delegating body, PMO, in delegating coordinating roles to one ministry (MIT) in this case is also to confer the necessary power along with the role within the scope of the specific objectives of the relevant team/concert.

5.3.1. Recommendations for Delegating Authority (PMO)

As briefly explained above, the role of horizontally coordinating activities of ministries emanates from and is delegated by the PMO or the Council of Ministers (COM) to which they report back. However, given the fact that all the ministerial posts enjoy their respective power prerogatives with relative independence, the issue of horizontal or inter-ministerial coordination inevitably carries along horizontal dynamics of power.

Because of this and other group dynamics in the committee composed of different public service providers to coordinate a-service implementation activities under the general oversight of MIT, the committee and the e-government department of MIT who is responsible are constrained in many ways to implement the initiatives. Hence it is highly

recommendable if the delegated role is clearly specified along with the necessary power to execute the specific objectives of the projects.

5.3.2. Recommendations for the Respective Public Service Providers

The public service provider authorities have to generally introduce some sort of benefit, which could be financial deductions of fees, for those who opt for an online process. Such kind of incentives would encourage and increase the number of e-service users and gradually the paper version will become obsolete overtime. Until then, the number of people going through the physical application process would be highly suppressed.

Contrarily, the manual application becoming obsolete could also pose a threat to people with no regular internet access or knowhow including the old people. Hence the strategy to reduce paper version to bare minimum shall be forged carefully and further research on the particularities are recommended. Until then both electronic and paper public service provisions have to complement each other.

As most of the e-services provided by the federal agencies are mostly business related and need speedy process and service delivery, the user might need to consult the office in person, in cases of enquiries or wrong data. In such a case and where the back-office process is still mostly manual, it would be recommendable for the requesters to be automatically given contacts of the officers in charge for convenience of follow ups.

As much of agency specific technical support and guidance are given by ICT departments of the respective ministries who also liaison with the portal provider and administrators, they are required to step up more active roles in automation of back-office work processes in collaboration of the respective Human Resource departments of the ministries. These HR departments are also responsible to study work processes of the ministries, identify and align those which can be automated and refer it to the ICT departments if the e-service system has to transform public service delivery.

5.3.3. Recommendations for the Portal Providers

The portal is owned and provided by MIT with assistance of a project contractor “Perago”. Even though the e-service system has so far achieved some of its goals, there are still adjustments to be made especially with the language issue. Additional languages need to be added to the system given the diversity of languages in the country, bigger turn over on investment and to meet the target plan of increasing usage of the system. Moreover, the Amharic version of the system needs to stand on itself and all the information needs to be availed in one language for users who opted for that specific language.

Integration of the e-services across the spectrum is another issue that needs to be resolved. As the system has already a non-functional feature which is meant to serve for this purpose, which is called “enterprise service bus” as pointed out in the observation findings section. Provided that the issues of horizontal power dynamics between the ministries and MIT as explained above is managed, it is not that difficult to coordinate between provider agencies' back-office process for the feature to be functional. This coordination is the duty of the e-government department at the MIT and hence they need to take steps toward making this feature functional as this unrealized potential will create more value in terms of convenience, time, and cost saving. This specific ministry needs to embrace its duty and the necessary commitment.

Integration and interoperability of the services and provider agencies at the same time will serve as a push factor for automation of back office which will in a way realize the aim of transforming public service delivery instead of just translating it from physical to online as it stands now. However, this recommendation shall not be construed to mean that automation is only needed for the purpose of horizontal integrations. In fact, the automation of back-office processes needs to be worked on in and of itself as it is a major aim of the overall e-service exercise.

Alternatively, the Council of Ministers with the PMOs’ recommendation can consider setting up an independent E-government Agency or Authority with the oversight and

coordination function for all the federal governments' e-government related projects, activities and efforts with clear and specific power, responsibility, and independence to directly be answerable to the Council of Ministers. This will help the better facilitation and coordination of the projects and efforts with clear mandate and responsibilities and at the same time solve the problems which have currently hinder implementations and progress as planned. Furthermore, the government needs to put attention and invest in public key infrastructures related to ICT that enable many online features both in the public and business industries across the board. Intuitively, such public investment will have a multiplicative effect on the economy and the absence thereof will conversely affect and hold back the economy and the society.

5.3.4. Recommendations for the Beneficiaries and Research and Knowledge Organizations

Beneficiaries are mainly societies at large, business communities and organizations of various nature and purpose. The bodies need to give constructive feedback on their interaction with the system and suggest improvements with regard to the challenges and inconveniences they have possibly encountered with the e-service system.

Research and knowledge organizations also need to discharge their social duties through conducting practical research and generate more knowledge and ultimately recommend improvements according to the specific contexts and realities of the state of e-service provisions in the country.

5.4. Recommendations for Future Study

Finally, the researcher would like to recommend and encourage more research enquiries specifically in Ethiopian context in the areas bullet listed below, which were not part of the objective of this study and but also opted out mainly because of limitation of budget, time and specific expertise in some areas.

- The overall E-government maturity level of the country

- Comprehensive E-service success which takes into account objective variables like software and hardware configurations of the systems in addition to users' perceptions.
- E-government role in overall public administration system
- Correlation between e-service and each component of good governance.

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- E-government strategic implementation plan 2016- 2020
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Appendices

Appendix 1 – Interview Guide and Observation Checklist

The interview guides and observation checklists are designed for respondents and services provision clusters at three levels. The checklists and guides were designed for observation at and for those respondents who are working at: (1) back office e-services processes; (2) Front Desk of the e-services provider agencies; and (3) the e-services portal eservices (@gov.et). The specific questions and checklist items are as follows:

Part I - For Back Office of the e-services processes - non participatory, semistructured.

1. Name of the public service provider agency _____
2. Number of officers involved with eservices. _____
3. Decision making process._____ _____
4. Decision making procedures._____ _____

Part II - For the e-services processes at Front Desk of the e-services provider agencies - non participatory, semi-structured.

1. Number of the relevant front desk officers at service. _____
2. Purpose of the appointment/visit _____
3. Frequency of e-service use. A. First time _____ B. Several times _____
4. Service received _____
5. Amount of time the process took in minutes_____
6. Remarks_____

Part III – For the e-services processes on the e-services portal eservices.gov.et

1. Registration_____
2. Code acquisitions_____
3. Application_____
4. Application tracking_____
5. Languages_____

Appendix 2 – Survey Questionnaire for Service Seekers and Service Providers of the Portal (service.gov.et)

Instruction: The questionnaire is designed to collect data from users (service seekers) and providers (portal administrators & decision-makers) for the purpose of using the data (information) for writing a Master's thesis. The information you give is kept confidential and only used for the purpose of analysis and generating evidence to support the arguments of my thesis. Please feel free to give the answers you feel correct under each questionnaire item. Please if you have information you thought you forgot during the interview time, please give a call to my 0911956792 number and provide the information you want to be included during analysis for the thesis reporting. For sections part I and II, please choose from the possible answers or write a short note in line with the questions in each section. For section three, please follow the instructions provided.

Part I Personal Information

1. Your gender? (1) Male (2) Female
2. Your age group? (1) 20-39 years (2) 40-65 years (3) Above 65 years
3. What is your nationality …… 4. What is your profession ……..

Part II. Skills & Use of Internet

5. How is your proficiency in internet use? (a) Proficient (b) Intermediate (c) Low (d) I don't use

6. How often do you use the internet? (1) Never (2) Every day (3) Few days in week (4) Every month

7. How often have you used the portal in the last two weeks? (1) Always (2) Once (3) Several times

Part III Overall Opinion on the E-Services

The following section is about e-service. Given that you have used e-service, it will be beneficial if you can provide us your honest feedback. Remember your responses to this survey are important. Please check this ☑ in line with the option that indicates your level of agreement with these statements

Key: SD = strongly disagree; D = disagree; SWD = somewhat disagree; U = undecided; SWA = somewhat agree' A = agree; and SA = strongly Agree.

R. No.	Questions (statements)	Level of agreement or disagreement						
		SD	D	SWD	U	SWA	A	SA
8	**Information quality**							
8.1	The e-service.gov.et portal provides sufficient information							
8.2	The information on the portal e-service.gov.et is up-to-date							
8.3	The information on the portal e-service.gov.et is understandable							

9	**System quality**							
9.1	The e-service.gov.et portal is easy to use							
9.2	Using the portal feels same like the physical application							
9.3	The e-service is available at all times							
10.	**Service quality**							
10.1	I feel secure using the e-service							
10.2	The system was designed in a ways that fulfill user's best interest							
10.3	The steps on e-service application are clearly written							
11	**Intention to use-use**							
11.1	I use the portal all the time since I knew when seeking services							
11.2	This portal is available for use in all times i.e. for 24/7							
11.3	The access codes acquisition processes are easy to manage							
12	**User satisfaction**							
12.1	I want to always use the online eservice system again in the future							
12.2	I recommend the online service system to my friends/ colleague/family members							
12.3	The eservice system is fit for persons with special needs							
13	**Net benefits**							
13.1	By using the e-service, I save my time & money							
13.2	In using physical application process, I save my money & time							
13.3	The eservice portal at e-service.gov.et has to be improved							

Part IV: Overall Opinions on Online Services

R. No.	Questions (statements)	Level of agreement or disagreement						
		SD	D	SWD	U	SWA	A	SA
14	The portal process has advantage over physical application							
15	The portal process is a simplified process during usage							

16. What do you like most and least about both online and paper processes?

(1) Like most online (2) Like least online. Please write your reasons for your answer

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……

17. What do you like most and least about both online and paper processes?

(1) Like most on paper (2) Like least on paper. Please write your reasons for your answer

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