The Practice, Challenges, and Prospects of e-Government: The case of Ethiopian Revenue and Customs Authority (ERCA) Large Taxpayers Office (LTO)

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This is to certify that the thesis prepared by Samuel Eshetu Tadesse entitled "The Practice, Challenges, and Prospects of e-Government: The case of Ethiopian Revenue and Customs Authority (ERCA) Large Taxpayers Office (LTO)", which is submitted in partial fulfillment of the requirements for the Degree of Master in Public Management and Policy (MPMP), complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Abstract

The economic imperative of ICT on public agencies is becoming paramount. Accordingly, ERCA has been automating its tax assessment and collection systems, which it claims assist to achieve increase in its tax revenue. This increase, however, is reported to be low compared to the tax base of the economy. Other studies have also revealed high administrative burden for paying taxes and noncompliance to tax laws that result for the country to lose millions of income from tax revenue. The study aimed to examine how well e-Government is recognized and comprehensively rolled out as a strategic tool to solve such drawbacks on existing tax administration systems at ERCA LTO.

ERCA has been investing to reform its tax administration system. However, the changes made are not harmonized with the national e-Government plan, focusing only to reach around 1,000 large tax payers (than its potential capacity to expand the tax base), not striving towards bringing holistic e-Government, and is mostly piecemeal. The overall level of satisfaction of large taxpayers on ERCA's website as a primary source of one-stop-shopping portal is also found to be only 52%. In terms of the stage of e-Government, ERCA is found at its emerging stage where most of its e-Services are informational (static) than transactional. Benchmarking of its e-Services with selected Sub-Saharan African countries has also revealed that a lot has to be done for ERCA to evolve its e-Service to a stage where all its services are integrated in seamless manner; fiscal transparency is enhanced; knowledge management (for example to control tax evasion) is optimized; and e-Payment augments e-Filing. To address these findings, the study recommends a more robust transformational change, than mere automating of existing process, towards the higher stages of e-Government directed by a comprehensive e-Government strategic plan.

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Acronyms

ASYCUDA	Automated System for Customs Data Management
CRGE	Climate Resilience Greener Economy
CRM	Constituents Relationship Management
EGDI	e-Government Development Index
ERCA	Ethiopian Revenue and Customs Authority
ESD	Electronic Service Delivery
ESRM	Electronic Sales Register Mahcine
FAQs	Frequently Asked Questions
FDERE	Federal Democratic Republic of Ethiopia
ICT	Information Communication Technology
INSA	Information Network Security Agency
ITD	International Tax Dialogue
ITU	International Telecommunication Union
LAN	Local Area Network
LCC	Least Connected Countries
LDCs	Least Developed Countries
LTO	Large Taxpayers Office
LTU	Large Taxpayers Unit
MAC	Media Access Control
MIS	Management Information System
MoCIT	Ministry of Communication and Information Technology
MoFED	Ministry of Finance and Economic Development
NPM	New Public Management
NRI	Network Readiness Index
OECD	Organization for Economic Cooperation and Development
OFAG	Office of Federal Auditor General
PAYE	Paye As You Earn
PPP	Private Public Partnership
RSS	Rich Site Summary
SIGTAS	Standard Integrated Tax Administration System
SMES	Small and Medium Sized Enterprises
TCC	Tax Clearance Certificate
TIN	Tax Identification Number
UN	United Nations
URL	Universal Resource Locator
VAT	Value Added Tax
WEF	World Economic Forum
WoP	Withholding Tax on Payment

Chapter I: Introduction

1.1. Background

Post 1990 earmarks "digital revolution" where the emergence of internet and parallel development in processing capacity and data storage significantly altering the environment for ICT use across all society and government. As business that fail recognize the strong 'economic imperative of IT' would fall behind in an increasingly competitive world (Bellamy, 2003), so do government will lag behind in their efficient service delivery if they are not technologically enabled. Otherwise, (UN 2014) with insufficient investment in infrastructure and the lack of long-term e-Government planning, Least Developed Countries (LDCs) will lose out on the crucial benefits of e-Government in making public administrations more cost-effective, efficient, citizen-centric, transparent and accountable.

Considering this global trend, the National ICT Policy and Strategy of Ethiopia sets a goal to vigorously promote the ICT sector and enhance its contribution in political, social and economic transformation. As one strategic objective of the document, introduction and utilization of e-Government system is recognized as major tool to modernize and streamline public sector management in order to achieve an efficient and effective delivery of public services.

With this global trend, the UN has been conducting a survey on e-Government since 2003 (United Nations, 2014). The survey evaluates countries based on three dimensions of e-Government: provision of online services, telecommunication connectivity and human capacity. Based on result of this assessment, the survey grouped countries into four categories of e-Government Development Index (EGDI) as very high, high, middle, and low. According to the 2014 report, Ethiopia is classified under the Middle EGID. When compared to previous years, there was an improvement as the country used to be in the low EGID tier in all the previous surveys. However, still the country is out of the top 20 e-Government best performing African countries, which includes such low income neighboring countries as Kenya, Rwanda, and Zimbabwe.

Another study on countries regulatory environment conduciveness for Small and Medium Sized Enterprises (The World Bank (2015), under the category of Paying Tax Records (the taxes and mandatory contributions that a standard medium-size firm must pay in a given year and the administrative burden of paying taxes and contributions), Ethiopia still scored poor record on paying taxes ranking 109 out of 126 countries, which

1.2. Statement of the Problem

These international studies signifies where the country's tax regulatory body, Ethiopian Revenue and Customs Authority (ERCA), stands in terms of modernizing its tax administration system while ERCA has long set objectives that have the basic elements of e-Government, namely:

1. To establish modern revenue assessment and collection system; and provide customers with equitable, efficient and quality service;
2. To collect tax revenues generated by the economy timely and effectively;

Despite these noble objectives, the private sector was reported (Amina, 2010) to lack the required efficient services as the tax administration system is inefficient, arbitrary, has not developed a strategy for collecting taxes, has shifted the costs of collection onto the private sector, and support to taxpayers service is grossly inadequate.

ERCA is expected to raise 70% of the GTP's required total revenue (615 million birr) to come primarily from domestic tax. According to the GTP Annual Progress Report for F.Y. 2012/13 (MoFED, 2014), even though there is a continued tax revenue increase, it still remains low compared to the tax revenue generating capacity of the economy, the financing requirements of the development programs, and the average performances of sub-Saharan countries. The government urges the need for continued deepening on the implementation of undergoing tax administration measures to further increase tax revenue.

The Office of Federal Auditor General (OFAG) (2015) has also reported on alarming cases that further reinforces the GTP's call for further deepening of the tax administration reform measure. Reported cases include noncompliance to applicable tax laws (results in loss of birr 32.1 million birr), failure from lack of timely follow up on tax arears that amounts birr 286.8 million, and lack of data/information and proper documentation for birr 42.9 million.

The researcher believes that such drawbacks in existing tax administration system require greater holistic tax administration system that benefit from the 21st century digitalization through ICT.

Previous studies made on e-Government at ERCA are very minimal. Effort was made to get related studies or assessments made by ERCA, as part of the introduction of e-Tax or the decision to open separate office for LTO, but was not possible. The only study found was one at ERCA website by the former Deputy Director Gebrewahid G/Giorgis.

Gebrewahid (2012) studied the practices of other countries on tax compliance as a benchmark to distinguish where Ethiopia stands and to recommend on strategies for enhancing culture of voluntary tax compliance in the business community. The study examined the effect of non-compliance to the tax law leading to tax gap, i.e. the difference between what the economy can generate and what actual tax is collected. For example for 2003 E.C., the GDP was birr 511 billion and was expected to collect birr 81.22 to 84.85 billion (under 15.89% and 16.6% Tax to GDP ratio scenarios respectively), but the actual tax collected was birr 59.98 billion resulting in a deficit of birr 22 to 25 billion. The study also pointed out that out of the 59.98 billion birr tax collected, 3.37 billion birr was made possible through the use of law enforcement actions by ERCA, while 55.61 billion (68%) coming from voluntary compliance of the tax law. The study finally forwards its recommendation on how to further improve on voluntary tax compliance, but with no contribution, except a passing remark on further deepening the tax administration system, to come from e-Government.

The study by Merima, et. al. (2014) on the move towards implementing electronic tax system limits its scope only on the use of Electronic Sales Register Machine (ESRM). Merima, el. al, concluded

that the introduction of ESRM resulted in large and significant increase in tax payment that also reduces tax evasions. However, while ESRM can be an input to e-Government, it cannot be taken by itself as a comprehensive electronic tax system to fully address e-Government capabilities, which also has a number of technological drawbacks (for being not a real electronic system relaying data online to central database), is found in this study.

Alemayehu and Abebe (2005) studied the reforms in the tax system made in the country from 1999 to 2003. This was with the objective to examine the effect of tax reform on revenue raised. The reforms discussed primarily revolve around change in legislations and administrative restructuring, but with two lines remark on the need for the introduction of ICT to increase the efficiency of tax administration. Amina (2010) also made a comparable study (covering the period 2002/2003 to 2007/2008) on the impact of tax reform on the private business sector, which still primarily discussed about legislative reform and its effect on the private sector development. The study findings by Amina (2010:59) detailed out challenges experienced by the private business sector coming from the tax administration system with a recommendation only limited to suggesting for ERCA to adequately equip itself with appropriate IT with trained staffs to operate it.

The other study consulted was a Master's thesis by Worku (2009) on the challenges and practices of e-Government in Ethiopia at Civil Service Organizations (36) including ERCA. The result of the study presents the overall aggregate result on practice of e-Government by all the 36 agencies, which constrained for this study not to examine how much ERCA was performing in e-Government. Moreover, in terms of availability of informational services, the study focuses more on counting on presences than contents, as it can be evidenced from the limitation of the study that asserts the design issues of the systems was not covered while this study utilizes observational assessment by experts on the field and also benchmarking of design features with other Sub-Saharan countries. On the existence of transactional services, which the study called it service delivery, it was concluded that none of them (the civil service organizations) allow electronic service. However, has started the online transactional services after the study.

Generally the related studies reviewed lack the comprehensive discussion and result on e-Government, tend to focus on the legislative part of tax reform than the system transformation, and also are not current. The study, is therefore, found necessary to fill these gaps identified.

1.3. Research Questions

Considering the wider consensus on the contribution of e-Government for a nation development endeavors, the study aims to get answer to the basic research question: "Recently, how well is e-Government recognized and rolled out as a strategic tool towards the GTP's high remark on the need for continued deepening on the implementation of tax administration measures?"

To further analyze on the research problem statement, the following related questions were also formulated:

A. How much is the legal/policy frameworks of the country nurtured to develop and to enforce electronic service delivery? How much is the level of harmonization of ERCA's e-Government with these national frameworks?

B. On overall terms, where do ERCA stands in terms of web presence? When benchmarked against selected sub-Saharan countries, where does ERCA stands? What best practices can be adopted from these countries?

C. What are the existing e-Government services being offered to Large Taxpayers and how much responsive is it to their need? Are Large Taxpayers enjoying an improved efficient service through one-stop-shopping electronic service delivery?

1.4. Objective of the Study

The general objective of the study is to examine the level of roll out of e-Government at ERCA LTO for improved service quality and to recommend on solutions for challenges and system flaws experienced so that ERCA's contribution towards the GTP goal is enhanced.

Specific objectives to be achieved by end of the study include:

i. To access the legal/policy frameworks conduciveness for e-Government and to reflect on what need to be done for enhanced working environment for e-Service.
ii. To examine the maturity level of e-Government and to recommend what to be done for evolution towards the optimal stage of e-Government.
iii. To evaluate the level of satisfaction of Large Taxpayer on ERCA's e-Service via its official website and to provide feedbacks on reported drawbacks/challenges.

1.5 Significance of the Study

Apart from of its significance for academic requirement, this study will be help full for the fallowing parties:

i. Ethiopian Revenue and Customs Authority (ERCA)

The result of study is primary expected to contribute to ERCA's continued effort in enhancing its tax administration reform. The assessment and recommendation on existing internal work flows and service delivery modalities could also be a starting point or complimentary to 'citizen-centric' effort of ERCA.

ii. Ministry of Communication and Information Technology (MoCIT)

The study could also provide information to MoCIT on the status of cascading of e-Government at ERCA as compared to the national ICT Policy and e-Government Strategy and Implementation Plan.

iii. Large Taxpayers

The study is believed to be one source of media to share its voice and perspective on the tax administration burden and to convey its message on its level of satisfaction and recommendations as a way forward.

1.6. Scope of the Study

The study has the following scopes:

- The technical aspect of e-Government is out of the scope of the thesis. This includes how much ERCA is equipped with required hardware and software infrastructure.

- e-Government is comprehensive ICT solution constituting varying modalities. According to the National ICT Policy and Strategy of Ethiopia (2009), the E – Government strategy of the country is expected to target Government to Government (G2G), Government to Business (G2B), Government to citizen (G2C) and Government to Employee (G2E) programs. The scope of this study focuses on the modality of Government to Business (G2B) where e-interaction is made between government and private sector.
- Since 2010/2011, considering the high contribution of Large Taxpayers (those whose annual sales turnover is more than birr 27 million), to the national domestic income, ERCA opened a separate office to Large Taxpayers called Large Taxpayer Office (LTO). The study mainly target on the e-Government aspects that have been undergoing with the Large Taxpayers Office (LTO).
- ERCA is providing its service to the business community in the areas of Foreign Trade (customs and duties service for import and export) and Domestic Tax Administration. The focus of the study is on the domestic tax administration front end e-Service by ERCA.

1.7. Limitation of the Study

The first limitation lies on the subject matter itself. E-Government is a broad subject. It covers both technical and non-technical aspects. The study has not addressed the technical issues of the system as constrained by lack of expertise by the researcher and time. But, even time and expertise could be there, the level of willingness from ERCA to open up itself for such assessment was very limited.

Moreover, the study was faced with a limiting factor from lack of willingness to provide full data (with the 'pretext' confidentiality' requirement) as well as availability of up-to-date and comprehensive primary data on the study variable. Effort was made to fill these gaps by using methodological triangulation from secondary sources, as there was also usually tendency by the interviewees to direct you to such secondary sources for further information or data.

1.8. Organization of the Thesis

The study is organized in six chapters. Chapter I is Introduction. In this chapter, the basic framework of the study including Background, Statement of the Problem, Objectives, and Research Questions are discussed. Chapter II presents the research methodology used in carrying out the study. In Chapter III, review is made on literatures and related studies. Chapter IV is dedicated for the detail discussion and analysis based on results from data collected. Chapter V summarizes and concludes the findings of the study. Finally, Chapter VI forwards recommendations for ERCA and for future studies.

1.9. Operational Definition of e-Government

The terms e-Government, e-Service, online service delivery, and electronic service delivery (ESD) are discussed in the literature of this study and also are found in various related studies, with no comprehensive definition but under the broad domain of e-Government. The commonly used are, however, e-Government and e-Service which are accorded close similarity concept, principle, and practice. Therefore, for common understanding and avoiding confusion by readers from its technicality, the terms e-Service and e-Government are used interchangeably to primarily mean electronic delivery of services over the internet.

Chapter II: Research Methodology

2.1 Research Design

Qualitative research approach is followed as this method is found appropriate in order to understand, describe, and explain the dynamics of the unit of analysis (e-Government and its relation to efficient government service delivery). The quantitative approach is also considered to be useful to probe the research question in depth. Through the descriptive quantitative research approach, the research problem is diagnosed and alternative solutions/recommendation, where there is gap between practice and recommendation from literatures, is also made. Where quantitative data is available, the study uses the benefit of basic statistical tools for better presentation and interpretation of the results of the study.

The research method found appropriate for this study is a Case Study. The phenomenon of e-Government within its live context at ERCA is analyzed holistically through the use of multiple sources (using various data collection instruments).

2.2 Participants

The participants of the study include organizations (ministers, offices, agencies, business organizations), and people (employees at those organizations and expertise/consultants) that have a stake on e-Government. To list them, are:

i. Organizations- MoCIT, INSA, ERCA LTO, Large Taxpayers (private business organizations).
ii. People- employees of respective organizations.
iii. Consulting firms on web developments
iv. Official websites of selected Sub-Saharan African Countries used in the benchmarking

Currently there are around 1,000 Large Taxpayers at ERCA LTO. However, the exact number of Large Taxpayers who took the training on e-Tax and ready to use e-Tax is not readily available, but estimated to range from 750 to 950. In order to be more objective, the reported figure at the 2013/2014 GTP Annual Progress Report for those taxpayers under e-Tax system, i.e. 634, (see section 4.3) is taken as the study population for the Large Taxpayers.

2.3 Sampling

The list of Large Taxpayers with their address was secured and questionnaire is distributed to 10% of the 634 large taxpayers through email, personal visit to offices, through colleagues, at the counter of ERCA Large Taxpayers reception. The method used is convenience sampling as participants of the study are selected as found easily reachable for survey distribution and follow up and also as found to be willing to respond. Consideration was also made on the benefit of convenience sampling over the cost and time needed for other possible sampling methods so that the study is completed within its due date.

Moreover, in order to have a comprehensive perspective on the practice and prospect of e-Government and for better triangulating the study findings, the following study groups are also contacted.

I. **Website Developers (private consulting company and ICT professional)**
It is not possible to get full listing of companies and individual ICT consultants who are currently engaging in the business of web site/electronic service delivery websites development. The researchers own source from existing working relationship was used to identify and select 2 web development professional. Their experience in similar web portal projects and their technical expertise is used to assess the existing web functionality of ERCA official website.

II. **Ministry of Information Communication and Technology (MoCIT)**
The ministry is included in the study as it is mandated for over sight of the national ICT and e-Government Strategic documents. The e-Government Directorate at the ministry is interviewed to learn more on the ICT Policy and e-Government Strategy practices and challenges.

III. **Information Network Security Agency (INSA)**
The primary channel of e-Government is internet networks, which has an inherent risk coming from cybercrime. To this end, INSA is mandated by law to ensure that information and computer based key infrastructures are secured so as to be enablers of national peace, democratization and development programs (Proclamation No 808/2013).

IV. **ERCA Large Taxpayers Office (LTO) Employees**
Employees involved in direct service provision to Large Taxpayers are interviewed so that their view on LTO services studied. To this end, ERCA assigned its Senior Officer for Education and Customers Support as his unit is responsible for Large Taxpayers initial training on e-Tax and continued support.

2.4 Data Collection Techniques

The primary source of data for the study was collected using the following tools:

I. Interview is conducted with MoCIT, ERCA Customers Training and Support Team, and INSA. The interview questions are open end questions compiled from the literature review with a purpose to get answer to the research questions.
   - MoCIT - the interview questions are designed to seek explanation on e-Government roll out/cascading status at ERCA and how coordination, support, and follow up is made on progress towards e-Government Strategic outcome.
   - INSA - the interview questions are structured with the purpose to comprehend the overall readiness of existing legislatives and legal organs on electronic transactions and the related risk of cybercrime.
   - ERCA LTO – the questions access a range of factors that are critical for e-Government success, namely: availability of policy frameworks, status of interoperability, process of knowledge management/information generation, infrastructure development, human resource development, process re-engineering, and monitoring and evaluation systems. It also raised questions on e-Tax to examine the surrounding practice and challenges.

II. Survey questionnaire is distributed to 63 Large Taxpayers to get information on their service experience and level of satisfaction with existing e-Government services; and to get recommendations for future improvements. Fifty six completed questionnaires were collected, with 88% return rate.

III. Heuristic Analysis (experts review) on web functionality is made by those web development professionals that have prior experience in similar e-Service and or e-Commerce webpages. To this end assessment checklist is developed based on literature research findings on best practices.

IV. Benchmarking of ERCA website is also made against those African revenue authorities (Kenya, Mauritius, and South Africa) that have very good web presence, as witnessed by the World Bank Report on *Doing Business Report 2014*. To this end, the checklist developed for Heuristic Analysis was further refined to focus only on selected elements of web functionality measures.

Review on other secondary sources is also used to complement and triangulate the primary source of data. These include policy and legal documents, international reports on countries' e-Government and ICT development, official reports from government websites, news and interview on ERCA as published by local reputable newsletters.

2.5 Data Analysis

Data collected using the tools described above has passed through the following quality control processes.

I. **Validation** – to check on the required number of sample size is obtained.

II. **Editing-** to discover errors and omissions, the returned questionnaires are tested for:
    a. Completeness - to see if all questions are answered.
    b. Accuracy - to see if all are answered accurately, not carelessly nor deliberately confused.
    c. Uniformity - to see instructions are followed correctly
    d. Consistency - to check those questions that can't be mutually exclusive

V. **Coding** – to reduce the mass of data to a form suitable for analysis and interpretation, codes are constructed into the questionnaires.
    a. Questionnaire from Large Taxpayers are provided with codes that start with 'LTP' followed by serial numbers from 01 to 56. Each question is also coded in a way that identifies its related section, number of the question within a section, and sub sections. For example a code LTP23, 2.2.d. represents response from the questioner paper LTP23 for Section 2, question 2, sub question d.
    b. For opened ended questions, a broad category of possible responses were created. For example for a question on recommendation on ERCA e-Tax service, such major categories as internet connectivity, lack of online support, outsourcing of some services, infrastructure development were used. For specific or additional information, either a remark column is used or one can go back to the questionnaire completed using the respondent code.

VI. **Data Presentation** –Microsoft Excel's strong functionality of pivot table and charting is used for data summarization and presentation.

VII. **Analysis and Interpretation** - appropriate statistical tools such as frequency tables, percentages, and charts are used in the analysis, interpretation, presentation and drawing of conclusions.

a. For the purpose of data analysis, for section 1.2 (rating on responsiveness of ERCA services via its website) and section 2.2 (level of responsiveness of ERCA e-Tax for their business need), both aggregation of the result for all question and presentation on those response areas with highest dissatisfaction or highest satisfaction rates are made. To do this the following method was used:
    - To know the overall response rate of these sections, the aggregate percentage for each possible answer (Strongly Agree, Disagree, Neutral, Agree, and Strongly Disagree) is computed after total counting is made for each response and then divided by the total possible points for all sub questions.

b. Evaluation of findings with analytical frameworks as found from literature review/related studies are also considered.

c. Benchmarking of ERCA website with other peer African countries is also use to compare and contrast and also to determine stage of web presence by ERCA.

Chapter III Review of Related Literatures

The term e-Government has long been a subject area widely researched and experimented by both academicians and practitioners. In this section, effort is made to examine the various aspects of e-Government so that a theoretical framework that leads the study is formulated. In doing so, various publications, books, surveys, models, etc., were reviewed. The result of the research on related literatures is presented in a manner that shows the historical evolution of the concept and practice from the traditional public administration to the recent digital era. Finally, conceptual frameworks and assessment/evaluation checklists are developed that are used in the data collection and analysis of the study.

3.1 The Movement for Reform and Modernization in Public Administration

Post 1980 marked a major movement in the development of public management. The traditional model of public management was under wide-ranging attacks from citizens, practitioners, academicians, and researchers for it being traditionally structured, rigidity, in ward looking, and for its outdated competencies (WEF, 2011).Heeks (1999) presented the critics on the public sector perceived problems coming from **Inputs** (unsustainability increase in public expenditure), **Process** (a concern about waste, delay, mismanagement and corruption within the public sector all of which contributed to inefficiency in the conversion of public expenditure into public services) and **Output** (the public sector was not delivering what it should).Hughes (2003) also summarized the causes for the traditional public administration out datedness resulting from three major aspects: ***scale*** of the public sector (for being simply too large: consuming too many scarce resources); the ***scope*** of government (involvement of government in too many activities); the ***methods*** of government, with bureaucracy in particular becoming highly unpopular.

By the beginning of the 1990s, a new model of public sector management, popularly called New Public Management (NPM), had emerged in most advanced countries and many developing ones.

The movement for reform was also further advanced by emerging imperatives coming from globalization, new expectations/demands from citizens, fast growing array of new tools and technologies (Hughes, 2003, WEF 2011).

Therefore, to be efficient and effective in the ever complex, interlinked and fast changing environment, Hughes (2003) called up on a major reform in management style that transforms the role of government in society and the relationship between government and citizenry. Arch Mann and Iglesias (2010) called this reform as '*Transformational Government*': a government that meet and maintain the highest standards; adopt a citizen centric approach; that work towards minimizing the burden for citizens and businesses; learn how to take advantage of the opportunities offered by ICT; and a government that takes a leading role in promoting innovation and become a driver for modernization, improved quality and best-value delivery.

The WEF (2011) stresses the future of government should be a FAST (flatter, agile, streamlined, and tech-enabled) government. **Flatter:** through c*itizen engagement (*decreasing the distance between government and the people); *administrative efficiency (*decreasing layers in hierarchies between top management and line personnel); and *intergovernmental and cross-sectorial collaboration.* **Agile:** innovative government, responsive and/or adaptable to challenges. **Streamlined:** slim and streamlined organization that can thrive in the new world order. **Tech-enabled/Tech-savvy-**government: fully tech-enabled with a tech-savvy workforce.

Lyne cited the analytical model depicted by Toonen (2001, 186) as particularly useful for describing the contemporary developments on NPM as:

- a business-oriented approach to government;
- an emphasis on improved public service delivery and functional responsiveness;
- front-line operators delegated and empowered for decision-making authorities to exercise creativity and innovation in the pursuit of more effective services to customers.
- wherever possible, the retreat of (bureaucratic) government institutions in favor of an intelligent use of virtual markets.

All these discussion on the need for reform, explicitly or inherently, looks on the enabling role of technology, which is going to be interchangeably used with the term Information, Communication, and Technology (ICT) in subsequent sections. Kavanagh (2007) affirmed that technology has the potential to completely transform the way governments do business and how citizens relate to elected officials and public agencies.

3.2 Leveraging Reform with ICT

A review on industrial revolution timeline accounted such technology related inventions as electric telegraph (1774), telegraph (1837), facsimile (1843), modern typewriter (1867), electronic digital computer (1942). All have been tools used in the public administration. Hughes (2003) described how there was a best fit between this inventions and the principle of bureaucracy. All helped the bureaucrats to had only one way communication, centralization, and ensuring hierarchy in approval! The passage of single pieces of paper induced transaction costs just by having to proceed from desk to desk via the centralized mail system.

A central part of Weberian bureaucracy is also the concept of 'the office', a place where officials go to work, where the public goes for its interactions with the agency and where records are kept. The office is also the central place for organizational technology and for processing information (Hughes 2003). However, ICT has enabled to create virtual offices, cloud computing, tele/distance communication that significantly reduces the need for physical attachment to the so called 'office'.

Generally, invention in computer passed through five generations (1942-1990). In the first three generations, the use of computers in the traditional public administration was mostly limited to few users/agencies due to cost, size, and technical expertise. Hughes (2003) described the period starting 1960s governments became assiduous users of computers, but in a limited way. Bellamy and Taylor (1998, p. 11), as cited by Hughes, characterized it as an early days of computer where the mainframe computer was being used to process large data scale at lower cost with central corporate functionality, having little impact on organizations, as they were introduced in ways to sustain and even to reinforce those features of large scale bureaucracy.

Through continued learning effect, the fourth generation (post 1990s) computers became more powerful, compact, reliable, and affordable. As a result, it gave rise to personal computer (PC) revolution. Some computer types of this generation include desktop, laptop, Notebook, Ultra Notebook that are still capable of processing large data with even lower cost, but with less central corporate functionality. This period was also a period of innovations such as the Internet and World Wide Web, widening public acceptance of plastic card technology and online shopping, the imminent advent of third generation (3G) mobile phones and digital interactive TV (DTV) capable of connecting to the Internet (Bellamy 2003). In many literatures, this is termed as the 21st century digital revolution, the named coined to distinguish it from its predecessor industrial revolution.

The effect of the digital revolution on societies was also accounted in the work of Arch Mann and Iglesias (2010) as follows:

> The modern societies we live in, often called knowledge societies, are extremely dependent on information, but also have the potential to distribute knowledge in a more equal way and to offer job opportunities that overcome the traditional barriers of distance or physical space. For many of us, ICT has penetrated virtually all aspects of our daily lives, from the way we shop to the way we communicate, work, share and network. Web 2.0 has had a major impact in transforming not only the way in which citizens communicate in their private sphere, but also the way in which civil society and politics work.

The contribution of ICT to NPM, as enabling tool for better government, has wide proponent in the different literatures consulted. Here are some of the major findings that this research considered as major contributions of ICT to NPM:

i. ICT as a tool to narrow physical factor of distance and time

When information is digitized and shared, geographic distance becomes less relevant— and in most cases irrelevant—to information flow, making possible geographically distributed partnerships/citizenship, collaborative problem-solving, and highly coherent organization. Time also may be said to become more fluid as a bureaucracy uses asynchronous communication (Fountain 2001).

ii. ICT for Knowledge Management

Shared databases can create organizational memory (storage, organization, and retrieval of data). Through Knowledge Management System, facts and figures held in computer systems and manual files (data) passes through the process of ordering of data into resources instilled with meaning and relevance (information); and finally the information is used in constructing a shared understanding of how information can be applied to solving problems and getting things done (knowledge). In this overall process, ICT is an enabling tool to transform that part of organizational memory that was traditionally stored on paper in files to be accessed systematically, analyzed for patterns, to bring better insight on organizational problems, and used for future decision making (Fountain, 2001, and Bellamy 2003).

iii. ICT for Reducing Administrative Burden

ICT is also an instrument in reducing the administrative burden on citizens and businesses. Public agencies process hundreds of millions of paper based transactions annually. Movement from paper-based to web-based processing of documents and payments typically generates administrative cost savings (Fountain 2001) and minimizes or eliminates the costs linked to complying with the information requirements of public administration (Arch Mann and Iglesias, 2010).

iv. ICT for Reducing Redundancy and Outdating data

The interconnectedness of agencies through telecommunication networks has the advantage of maintaining a centralized/integrated database, while still accessible from decentralized locations. Thanks to ICT, now a day, at different level/locations of public agencies, simultaneous centralization and decentralization are possible. The bottom line being, there is no need to maintain duplicate data at different locations as the results of local activity in a given branch office in digital form is transferable to central databases almost immediately, thereby ensuring freshness of data.

Rather, as Fountain (2001) explained, the critical management tasks should be deciding which data are needed at which organizational locations, how current those data should be, and in what formats they would be most useful to the decision makers who will use them.

v. Change in Hierarchy

With the well establishment of virtual offices through telecommunication network and knowledge management system, which rests primarily on well-developed database system, a change in organizational structure is a necessity, the result being (Hughes, 2003) organizations will need fewer middle managers. Middle managers are the contact points between higher and lower levels, with their main roles being: first, to process information from below and pass it on to higher levels; secondly, to transmit information and instructions from higher levels; and thirdly, to supervise staff.

There is also likely to be less need for lower-level staff. For example, on-line entering of data greatly reduces the staff needed to process paper forms. Much of the data needed is placed into the relevant parts of the database by the client, meaning that it can be processed directly by the assessor, instead of anyone else being needed at lower levels to get the data ready.

A further effect on hierarchy is that the use of powerful database software enables higher-level tasks to be done by lower-level staff. As Fountain argues (1999, p. 139):

> Knowledge workers and knowledge work have replaced simple, repetitive, clerical tasks required in paper-based bureaucracy. Case workers, whose desktop computing capacity provides access to several databases and powerful analytic tools, perform work previously disaggregated into several positions. In some cases, automated tools allow relatively simple employees to make sophisticated evaluations. Task integration due to information technology has resulted in a collapse in the number of job categories and simplification of the position classification system in the federal bureaucracy.

Generally, through all these value laden effects, one can conclude that ICT offers a way to break out of the silo environment of public administrations.

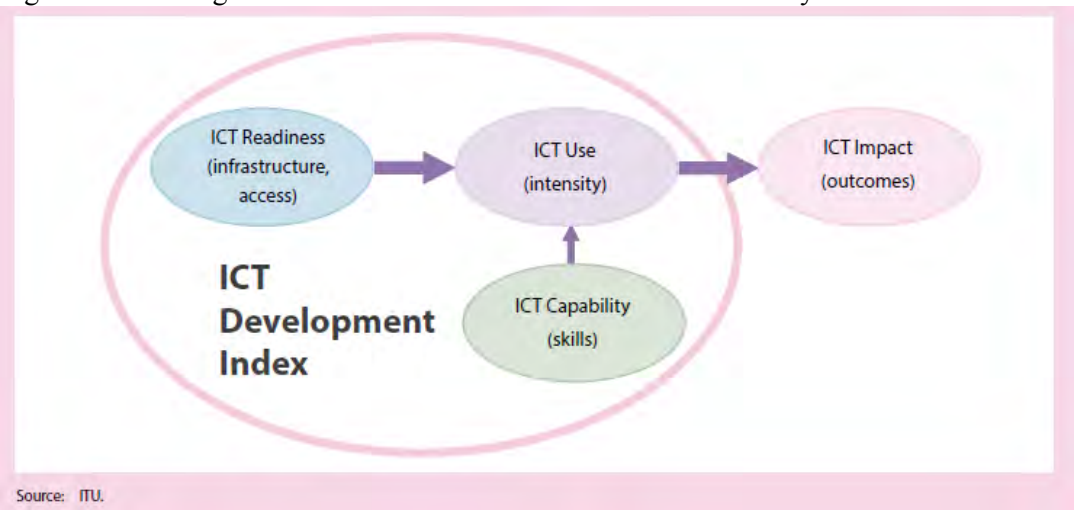
The International Telecommunication Union (2014) presents a three stage model (figure 1) for ICT to be development enabler and for a country to becoming an information society.

3.3 Evolution of e-Government

The NPM ‘reinventing government’ movement took its form of ‘electronic government’, following the wide application of e-commerce and e-business models in the private sector. In the early stages, a business would simply place information about their firm and its products on a website; later there would be interaction, such as the ability to place orders over the Internet and ways of using the information as a resource (Hughes, 2003). The so-called ‘dot.com’ companies were set up to exploit opportunities that arose from a different way of doing business.

A key phase of the Internet’s impressive growth began in 1993, coinciding with the initial period of a major government reform effort, the National Performance Review, led by Vice President Al Gore (Fountain 2001). The NPR was established during the Clinton Administration and was given the task of developing recommendations to ‘reinvent’ the Federal Government, with the aim of having a government with these qualities: “works better, costs less, and gets results Americans care about” (Salem 2003, p.15).

Figure 1: three stages in the evolution towards an information society.



In September 1993, NPR staff produced "Reengineering through Information Technology," a report that included thirteen recommendations for using IT to reform government.

Category	Recommendations
Leadership	• Strengthen leadership in information technology (IT).
Electronic Government	• Implement nationwide, integrated electronic benefits transfer. • Develop integrated electronic access to government information and services. • Provide intergovernmental tax filing, reporting, and payments processing. • Create a national environmental data index. • Plan, demonstrate, and provide government wide electronic mail.
Support Mechanisms for Electronic Government	• Improve government's information infrastructure. • Ensure privacy and safety. • Improve methods of IT acquisition. • Provide incentives for innovation. • Provide training and technical assistance in IT to federal employees.

Source: extracted from Fountain (2001) NPR Report

Such e-government initiatives focused on the production and dissemination of information over the Internet resulting in a huge number of government web sites with static information. The significant increase in the availability and use of government information and services online is a testament to the importance of e-government (Muir & Oppenheim, 2002).

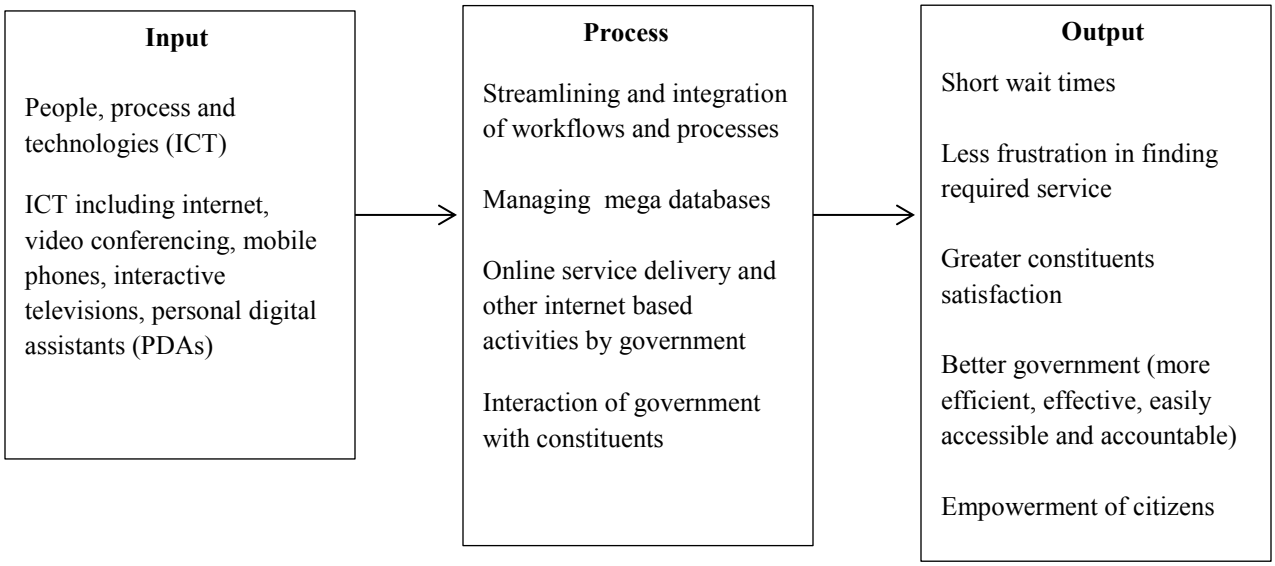
Hughes (2003) argued that what actually brings the theoretical changes of the public management reforms into reality is e government. He referred also the special survey on e-government by *The Economist* that also argued 'for the first time since the establishment of the modern welfare state, there is now a real chance to "re-invent" government – and make it a great deal better' (24 June 2000).

3.4. e-Government Conceptual Framework

3.4.1 What is e-Government?

But what exactly constitutes e-Government? There are a number of definitions of e-Government and also the term being used with synonymous to describe e-Government as a combination of people, processes, and technology used to deliver superior service to the constituent.

This study uses the information system model (Input-Process-Output) to synthesize the definitions found in the various literatures reviewed and gives a comprehensive framework for e-Government.



Source: compiled by the researcher from the various concepts, definitions, and models on e-Government found in the literatures reviewed.

3.4.2. Stages of e-Government

Various authors recommend the stages through which e-Government should evolve, which shows the maturity level or evolutionary development of e Government. Kaaya (2014) study on a couple of models from various works (Layne and Lee 2001, Netchaeva 2002, Silcock 2001, UN 2002, UN 2001) and summarizes them in four stages:

- **Website creation -** this involves setting up of websites to provide information about structure, functions and services of a government agency (information publishing and dissemination). At this stage, there might be links to related websites.
- **Initial two-way interaction -** at this stage, the website also includes downloadable forms that can be submitted offline and there can be a two-way interaction between government officials and users via e-mail.
- **Online transactions -** at this stage, the website supports some formal online transactions; these can be payments or creating and submitting information such as renewing driving license and filing tax returns.
- **Comprehensive government portals -** this stage exhibits availability of comprehensive government portals that can provide a wide range of information to users and supports one-stop transactions without the need for dealing directly with different agencies.

The UN has been in the business of measuring its member states e-Government status and progress since 2002. It has been updating its survey methodology through time so that contemporary

developments are well incorporated through time. One of the areas this development is taking place is the stages of online service development (UN 2014). It uses four stages of online service development model.

Stage 1 Emerging Information Service
Government websites provide information on public policy, governance, laws, regulations, relevant documentations, and types of government services provided.

Stage 2 Enhanced Information Service
Government websites deliver enhanced one-way or simple two-way e-communication between government and citizen, such as downloadable forms for government services and applications. The sites have audio and video capabilities and are multi-lingual. Some limited e-services enable citizens to submit requests for non-electronic forms or personal information.

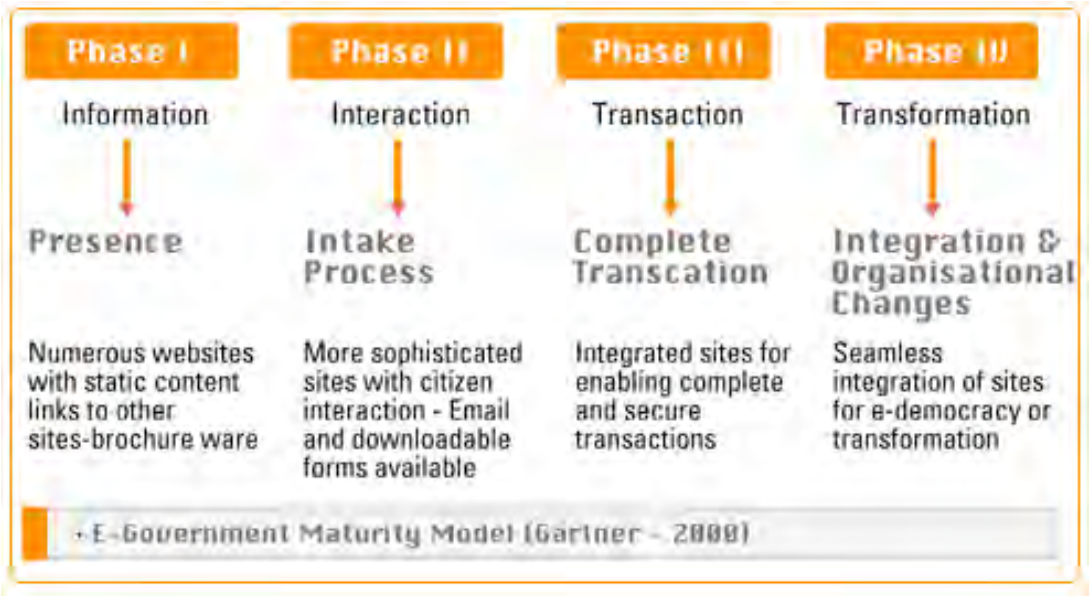
Stage 3 Transactional Service
Government websites engage in two-way communication with their citizens, including requesting and receiving inputs on government policies, program, regulations, etc. Some form of electronic authentication of the citizen's identity is required to successfully complete the exchange. Government websites process non-financial transactions, e.g. filing taxes online or applying for certificates, licenses and permits.

Stage 4 Connected Service
Government websites have changed the way governments communicate with their citizens. E-services and e-solutions cut across the departments and ministries in a seamless manner, information, data and knowledge is transferred from government agencies through integrated applications.

The main challenge of considering the UN stages of on line service development is that it focuses more on overall government portals with primary focus on citizens' engagement in the overall governance. It requires more adaptation to be used for public agencies, like ERCA.

The UNESCO (2005) suggests use of Gardner's e-Government Maturity Level.

Figure 2 Gartner E-Government Maturity Model



This model, for the purpose of this study, has a shortcoming in its less consideration of the early stage of e Government. The informational Phase is way more than early infant stages of web presence that are limited to stand alone web site, i.e. very few or no links to other sites.

Hughes (2003) used the level of interaction allowed as a basis for a four-stage set of developments of e Government:

- ***Information*** the first stage involves departments and agencies using the world wide web to post information about themselves for the benefit of external users. Websites provide information in a passive way that does not include real provision of services. Websites are provided by departments rather than functions and have limited capacity for updates.
- ***Interaction*** - these sites become tools for two-way communication, allowing citizens to provide new information about themselves (i.e. change of address), gathered using instruments such as e-mail. It is no longer necessary to phone or write a letter to contact government. Content files present information about more issues, functions and services which can be downloaded; forms may be downloaded and completed offline and posted in the normal way. However, feedback is limited. There are large numbers of such sites in existence, many of which depend on the relatively low technology of e-mail.
- ***Processing*** - a formal quantifiable exchange of value takes place, such as paying a license or a fine, even filing a tax return. This level allows for tasks, previously carried out by public servants, to become web-based self-services, although they require off-line channels for completion.
- ***Transaction*** This is where a portal for a wide range of government services is provided. A portal means much more than a simple web site. It is able to integrate government services and provide a path to them based on citizens' needs, replacing the traditional structure of department or agency. Through a portal, the information systems of all departments and agencies can be linked to deliver integrated services in a way that avoids users having to understand the agency structures of government.

This study founds the four stages of the UN Online Service Development to comprehensively show a public sector road map to a full-fledged e-Government. The notion of 'level of interaction allowed' by the other models is also transplanted so that the stages to scope around such online service functionalities as usability, customization, openness and transparency. As a result, a more customized model that will be used to access the level of maturity of e-Service at ERCA is adopted and presented as follows:

Stage 1 Emerging Information Service
Key indicators/attributes of the stage:

- Online websites provide information on policies, governance (structure and function) services), laws, regulations, relevant documentation, and types of government services provided.
- However, the websites provide information in a passive way that does not include real provision of services.
- At this stage, there might be links to related websites.
- Websites are provided by departments rather than functions and have limited capacity for updates.

Stage 2 Enhanced Information Service
Key indicators/attributes of the stage:

- Online websites deliver enhanced; one-way or simple two-way e-communication between the public agency and the private sector.
- Some limited online e-services enable the private sector to submit requests for non-electronic forms or personal information via e Mail.
- Content files present information about more issues, functions and services which can be downloaded; forms may be downloaded and completed offline and posted in the normal way. However, feedback is limited.
- The sites may start having audio and video capabilities and are multi-lingual.

Stage 3 Transactional Service
Key indicators/attributes of the stage:

- Online websites engage in two-way communication with the public sector, including requesting and receiving inputs on public agency policies, program, regulations, etc.
- Online websites allows for tasks, previously carried out by public servants, to become web-based self-services, although they require off-line channels for completion.
- Government websites process non-financial transactions, e.g. filing taxes online or applying for certificates, licenses and permits.

Stage 4 Connected Service
Key indicators/attributes of the stage:

- e-services and e-solutions cut across all departments in a seamless manner; data, information, and knowledge are transferred through integrated applications.
- This is where a portal for a wide range of government services is provided. Through a portal, the information systems of all departments can be linked to deliver integrated services in a way that avoids users having to understand the agency structures of governance.
- Online websites can provide a wide range of information to the private sector and supports one-stop-transactions without the need for dealing directly with different departments.

3.4.3. Business Case for e-Government

The benefits derived from a CRM system are many and varied. Benefits fall into three main categories: financial return on investment (ROI), tangible strategic and intangible strategic (Kavanagh, 2007). ROI consists of identifying the financial benefits (cost savings or revenue enhancements) and total costs of ownership. Tangible strategic benefits advance the strategic mission of the organization. Tangible strategic benefits are those that can be quantified and measured although they do not directly generate revenues or cost savings (e.g. better access to information, employee productivity/improved service delivery). Intangible Strategic Benefits are generally impossible to quantify in monetary terms, but their value is undoubtable. For example Business Analytics is one example where data warehouse that can be queried to collect customized data on segments of constituents available for their decision-making process.

Further intangible strategic benefits of e-Government can also be referred from OECD (2005) and UNESCO (2005) that discussed the contribution of e Government to achieve economic policy objectives (for example reduced government spending through more effective program, and efficiencies and improvements in business productivity through ICT-enabled administrative simplification and enhanced government information; to enhance transparency & to increase accountability of a government; to improve the relationship between a government and its citizens ; and for the e-Government to empower citizens through greater access to government information.

3.4.4 e-Government Guiding Principles

All the highly spoken testaments about e-Government becomes only noble theories that have no operational utility unless transformed into the actuality/application through sound guiding principles and implementation strategies.

A more comprehensive guiding principle for e Government is provided by OECD (2003). It recommends 10 guiding principles of e-Government categorized under four themes: vision/political will, common framework/cooperation, customer focus, and responsibility. The principles raise such important building blocks for e-Government as: the need for leadership commitment, the need for e-government integration into broader policy/goals, the need for inter-agency/departments collaboration to be able to operate within common frameworks to ensure interoperability, the need for citizens to have choice in the method of interacting with government (the principle of "no wrong door" to access the administration), the opportunity for e-Government to open up government and policy processes and enhance accountability, and the need for monitoring and evaluation to measure impacts of e-government.

3.4.5 e-Government Success Factors

In addition to the use of these guiding principles as building blocks, the implementation of E-Government does also require conducive environment to realize its potential for development. Otherwise, failure will be enviable. As per UNESCO (2005) recommendation, it is very important that a country assesses its e-readiness and tries to adjudge how prepared it is for adoption of e-government.

Dada (2006) referred Heek (2003), who has done substantial research around effectiveness of e-Government in developing countries, most implementations of e Government in Developing countries fail, with 35% being classified as total failure (e Government was not implemented or was implemented but immediately abandoned), and 50% are partial failures (major goals were not attained and/or there were undesirable outcomes). Considering the huge investment involved in e-Government (for example the first phase of Ethiopian government e Service project costs 3.8 million birr), such failures are devastating for poor developing countries as Ethiopia.

Kavanagh (2007) was cautionary to use the term Constituent Relationship Management (CRM), instead of E Government, to refer a combination of people, processes, and technology used to deliver superior service to the constituent. e-Government is not merely the computerization of government system but rather, as Heeks (2002) cited Leavitt's (1965), is dimensional fit of one or more dimensions of organizations (e.g. process, structure, people, and technology) to be brought into convergence at the same time, even though Heeks (2002). This is also affirmed in the National Policy of ICT stating that e-Government is not translating processes, but rather transforming of processes.

Heek (2002) rather proposed a temporal fit and systemic view of technology. He proposed that it is the match or mismatch between a system now and that system in the future as important determinant of the likelihood of the system in the future falling into one of the success or failure categories identified, which he called it **Design-Actuality Gap**.

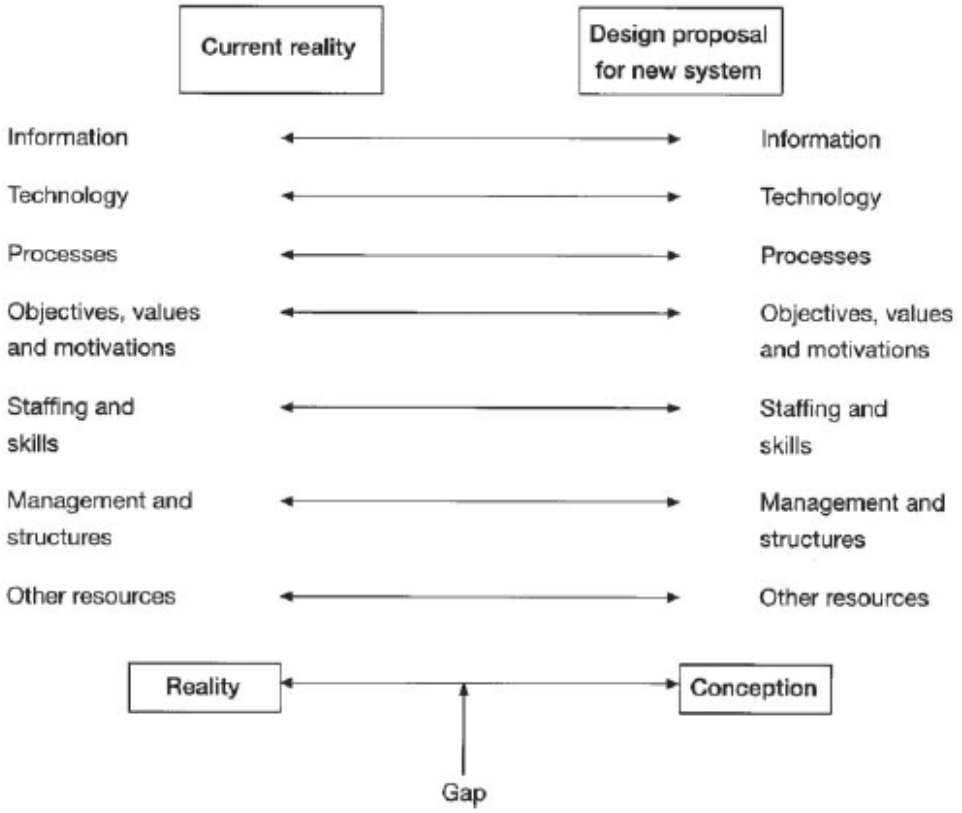


Figure 3: Heek's Design Reality Gap Model (1999)

A further enrichment of the seven dimension of relevance to design-actuality gaps by Heek (2002) by other related works is presented below.

Heek's Seven Dimensions of Relevance to Design	Heek's definition of the Dimensional elements	Enrichment by other literatures
Information	Data stores, data flows, etc.	**Infrastructure**- National and State, Level Data Centers (UNESCO, 2005) **Application and Services:** Websites/Portals, Back-end Automation, Application Software, Electronic Delivery of Services (EDS), Data/Metadata Standards, Interoperability Framework (UNESCO, 2005)
Technology	Both hardware and software	**Infrastructure:** High End Computing Infrastructure, Networking, Fiber Optic/Satellite/Wireless/Wired Networks, National/State level Network Backbones, Service Gateways/Payment Gateways etc. (UNESCO 2005). **Telecommunication Infrastructure:** Internet, fixed telephone lines, mobiles, wireless broadband (UN 2014).

Processes	Activities of users and other	
Objectives and values	Culture and politics	**Political and Regulatory Environment:** commitment of the top leadership, ICT Policy, ISP Policy/Broadband Policy, E-Gov Policy/Action Plan, Legal recognition of Digital Signatures, Privacy Policy (UNESCO, 2005). **ICT Usage Scenario/Environment:** ICT Usage by Citizens, ICT Application in Government, ICT Application in Business, PC Penetration, Internet Reach (UNESCO, 2005) **Digital Divide:** The need to narrow the gap between those with full access to electronic information and those without it, i.e. e-connectivity for all (Hughes 2003, UN 2003)
Staffing and skills	Quantitative and qualitative assessment of competencies	**Human Capital:** ICT Skilled Manpower in Govt/Industry, ICT Literacy in Government, e-Literate Citizens, ICT Training Facilities (Basic & Professional), ICT Education in Schools and Colleges (UNESCO, 2005). Adult literacy (UN 2014)
Management system and structure		**Holistic Government through Interoperability Framework:** Joined-up government, joined-up services, joined-up data and networked citizens (Bellamy, 2003) One stop integrated, client-centric government services to the citizens (UNESCO, 2005) The ability of government organizations to share and integrate information by using common standards (OECD, 2005) Ability of back-office systems to coordinate and share information (Archmann and Iglesias, 2010) **Private Public Partnership (PPP):** Social enterprise for development; (WEF, 2011). The need for governments to get into partnerships to leverage on the strengths and resources of the private sector (UNESCO, 2005) **M&E:** Effective integration of e-service

		delivery into development strategies requires programming and planning; research and development; and creating monitoring and feedback systems (UN 2003)
Other resources	Particularly time and money	**Financial Infrastructure:** Financial Institutions, Financial Resources, Budgetary Allocation (UNESCO,2005)

What Heeks (1999, 2002) concluded from his model is that for each of the seven dimensions (which are abbreviated as ITPOSMO), the gap between design and actuality can be accessed and rated (e.g. low, medium, high). Overall rating will give a sense of mismatch between design and actuality and hence, a view of the likelihood of failure. In tandem, however, it will be valuable to make use of techniques which either (a) prevent large gaps arising in the first place, or (b) reduce those gaps once they have been identified. In the latter case, there are two main ways in which a gap between reality and proposal can be reduced:

- change the proposal to make it closer to reality; for example, by making the design simpler and thereby reducing financial costs;
- change current reality to make it closer to the proposal; for example, by seeking support from a central government fund and thereby increasing the supply of available finance.

3.5. Measuring and Evaluating e-Government Initiatives

3.5.1 User Focused e-Government

The 2011 World Economic Forum pointed out that the effort on e-Government around the work is forging ahead with the introduction and continuing development of web-based information, tools and services for citizens. But also questioned that: "Are all of these efforts producing public value? Are they designed keeping in mind the perspective of the citizens? Is design and delivery optimized (e.g. to reduce costs)? Do decision-makers have the appropriate metrics available to determine this is the case?"

e-Government is based on the principle of enabling users to access government information and services, when and how they want (*i.e.* 24 hours a day, seven days a week). User-focused e-government requires both an understanding of user needs and the ability to deliver services according to those needs (OECD, 2005). In order for e Government to be built on these user needs, public agencies must involve citizens in every stages of e Government life cycle (identification of citizens' needs, design of services, service delivery, and performance assessment and evaluation (WEF, 2011). Kavanagh (2007) complement on this saying that success is most easily measured by capturing pre- and post-implementation performance metrics and then tracking these metrics over time to indicate continuous improvement, which called up on the need for baseline value of the Key Performance Indicators (KPIs) based on users need assessment.

3.5.2 Accessing e-Services Functionality

Different tools are used by different parties to measure web portal functionalities. This ranges from a very simplified (very few variables) method to an automated complex system of measuring web functionality.

To start with the simplified version, the WEF (2011) recommends web analytics, customers' views and customers' experience replication as metrics to measure citizens' satisfaction with e-government. The elements in each metric to include the following:

Web Analytics	Customers' Views	Customers' Experience Replication
•**Number of Visits** • **Pages Viewed** • **Downloads**	• Surveys • Pop-up Surveys • Social Media	•Review individual experience • Identify difficulties

Kaaya (2025) studied government websites of three East African countries, namely Kenya, Tanzania and Uganda (with focused on the websites of central governments only) by employing a combination of selected attributes from WAES (adapted from La Porte et al (2002) and utility indicators (adapted from Holliday (2002). The variables used include:

- **Website visibility** - using Holliday's (2002) approach to assess the visibility of the website, the Internet was searched using three of powerful search engines - Google, MSN and Yahoo! It was expected that early appearance of a government website, that is if it appeared within first 10 hits of the results, would confirm its visibility.
- **Website Establishment Date -** the establishment date is an important parameter of a website as it helps to derive the extent of learning experience of the website owners (Ho 2002). As the website owners gain more experience in maintaining the website, they tend to incorporate more information for the users and the websites become more and more sophisticated and interactive (higher stages of development) with corresponding e-Government services. Moreover, capturing establishment dates will give a pattern of growth in implementing e-Government services over time. The study uses the information searched from the Internet Archives' 'Wayback Machine' from http://web.archive.org/.
- **Website ownership**- it is important to take note of the website's owner as it reflects the seriousness, cited Porte (2002) saying agencies that own their own Web operations are more likely to consider it a key part of their organizations compared with those that leave the development of their web site to others"(p.415). The ownership data was captured from the copyright information given on the homepages of the websites.
- Website freshness - like ownership, assessment of the website's freshness gives a general picture of how serious a government agency considers e-Government services by committing necessary resources for costly updating of the website (La Porte, 2002). Date of last update of each website was captured from both the website and the Internet Archives (http://web.archive.org/).
- **Website usability**
    - **Important links** - a website providing links to relevant bodies within and outside the government system is considered user-friendly since the user just clicks to that link to access needed information instead of conducting a new search.
    - **Contact information** - contact information is an important attribute of a website important because it enables users to contact relevant officials in relation to that website's content or any other queries. The information captured includes contact email address to the webmasters and, more importantly, names and full addresses (postal, telephone, fax, e-mail) of relevant government officials.

- **Interactivity** - website interactivity signifies the level of two-way communication between a government agency and users. Interactivity attributes captured from websites under analysis include hot-linking addresses for easy contact; provision for user searching, downloadable materials or forms; and feedback.

Gant and Gant (2002) endeavor to measure the web functionality of 20 states of the United States of America in terms of: usability, customization, openness, and transparency. They use these dimension as they represent the key aspects of portal functionality. What the study finds out as more practical application input is the list of steps followed to measure the dimensions.

Usability (ease with which users can access information and navigate the web portal)

- To measure the usability of the state web portals, they recorded features that increased the ease of use of the portal, making it easy to navigate and find necessary information. These features included intuitive menu systems, site maps, new information indicators, search tools, uniform masthead, and dynamically generated list boxes. They also measured the level of accessibility of the portals by recording features such as help sections and FAQs.
- Well-designed portals also ensure access to the portal for users of different skill levels and abilities. User help, online training, and assistance focused on new users are essential features that make using a portal and the rest of the e-government site easier.
- In addition, they performed a Bobby analysis on each state web portal. Bobby is a web-based analysis tool developed by the Center for Applied Special Technology (CAST), which identifies existing or potential problems with the structure and content of the website for a person with special needs. Included in these criteria are text equivalents for all images and multimedia items, logical organization of content, alternative content for advanced technological features, and browser compatibility.
- We examined each web portal for features that allow users to interconnect with peripherals such as PDAs other wireless applications, interactive voice response, and call center support. These technologies extend access to the portal beyond a computer and open up new opportunities to interact with state government.

Customization (ability of the portals to provide targeted information)

- They measure web portal customization based on the ability of web users to uniquely tailor views based on user registration data, to identify themselves with distinct user groups and the extent to which the web portal dynamically recognizes these user groups and displays specialized content for them.

Openness (extent to which a government website provides comprehensive information and services, and maintains timely communication to all key public audiences)

- To measure the openness of each of the state web portals, they recorded the number and type of services available, the number of steps required to perform these services, and the extent to which personal data followed the user through their use of portal services.

Transparency (how easy it is for the users to assess the legitimacy of the portal content)

- To measure the web portal transparency we examined the portal for content and features designed to confirm the legitimacy of the portal and its interconnected web sites, services, and information. They examined the portal for features and content that indicated who or what agency is responsible for the portal and a way to contact via e-mail, telephone, or mailing address, them.

- As with buying groceries, paying bills, or even registering a car in a department of motor vehicles office location, each person completing a transaction online should be able to obtain a receipt or other certification.
- Following the trend on high-quality e-commerce web sites, they expected the state portal to have a statement of its security policy or post an independent security certification, particularly if the web portal launches you into applications that take personal information.

A comprehensive framework, however, is found on the works of Maheshwari, Kumar V., Kumar U., Sharan (2007) who made an extensive review on various studies (Zhang & von Dran, 2001; World Market Research Council, 2001; Fang, 2002; Gant & Gant, 2002; Macintosh, Robson, Smith, & Whyte, 2003), and McNeal, Tolbert, Mossberger, & Dotterweich, 2003). However, they criticized that that most only consider the social and technical aspects of IS i.e. front-end attributes of the e-government portals disregarding the political aspects of IS.

However building on these studies, Maheshwari, Kumar V., Kumar U., Sharan (2007) come up with a framework (figure 4) that consists of eight key e-government portal design and development attributes that have been categorized into front-end and back-end attributes that consist of administrative, technical, and political issues concerned with e-government portals.

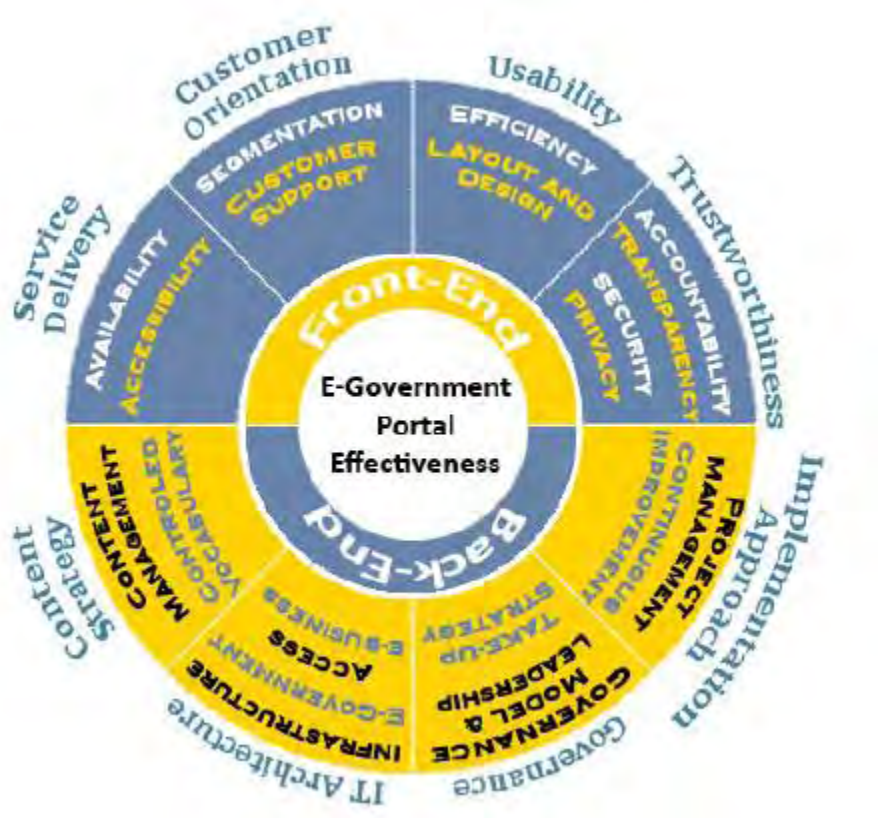


Figure 4: e-Government Portal Effectiveness Framework

A full description of the framework is annexed at Appendix 1.

However, since the back end framework is too technical, both for the readers and also in consideration of the study objective, more taken on is made from the front end attributes.

Building on all literatures reviewed, an assessment tool for the web site of ERCA is developed to be used as a data collection instrument (see Appendix 4.4).

3.6. e-Government for Large Taxpayers

3.6.1 The Need for Self Tax Assessment

One of the guiding principles of modern tax administration is voluntary tax filing. The international trend is for tax authorities to administer the tax regime in a way that encourages and expects taxpayers to self-assess their tax liability and then remit the relevant amount of tax to the government. Hodges-Deloitte Consulting LLP (2013) complement that this practice has two sound conceptual validities: first, the taxpayer generally has better information on his/her sources of income and expenses; and second it is relatively expensive for the government to assess every taxpayer's return. Therefore, a modern tax administration system should rely on a system of voluntary compliance, where taxpayers pay what is due, when it is due, and without coercion. Otherwise, (McCarten, 2014) the absence of self-assessment encourages taxpayer disputes and imposes significant compliance costs on taxpayers; the extensive contact between tax-payers and tax authorities creates opportunities for bribery and associated loss of revenue.

However, it should be noted that still self-assessment constitutes a huge risk if not well managed, especially through ICT strategic interventions. As McCarten (2014) describe, if it is not implemented properly, it could do substantial fiscal damage.

3.6.2 The Rationale for Large Taxpayers Unit (LTUs)

Tax is the major source of revenue for governments' revenue for political, social and economic programs. Especially, the Ethiopian government has been in a constant strive to base its revenue for its annual budget from domestic taxes. The GTP envisages domestic tax revenue from tax requirement of the country over the five years period to account 70% out of the total country's revenue projection. This is a huge target that needs any sort of spring board that sprints the tax administration to its target, among which a tax reform build on ICT is in the fore front.

There is varying approaches and practices about how tax offices should be organized. The major two approaches are organizing tax office based on geographic proximity and organizing tax office based on customer segmentation based on revenue targeted. McCarten (2014) elaborated the two approaches as follows:

> Tax administrations in many developing countries are organized by 'type of tax' with additional tiers of organization determined by geographic. This design is tied to the belief that close geographic proximity should be maintained between taxpayer and tax collector. … Tax administrative work in such a traditional setting has low incremental revenue productivity because of inadequate specialization of tasks and an inability to concentrate resources on the high risk components of the revenue base… This type of tax and geographic approach results in administrative units that are ill suited for effective use of information technology and for the monitoring of staff performance… A modern organizational structure for a revenue administration will enable senior management to allocate routine and standardized work to specialized units supported by information technology...

According to International Tax Dialogue (ITD) (2010), revenue patterns in most countries show that a small number of large enterprises account for the majority of tax revenue (60-70% of total tax revenue). Usually, this majority of tax revenue is classified/termed under Large Taxpayers. OECD

(2009) defined large taxpayer enterprises as those organizations that engage in large-scale, complex/specialized, and often global operations.

Due to complexity of large taxpayers, they present a major tax compliance risk to revenue bodies, so considering their critical role in revenue collection; it is the responsibility of tax administration to be ahead of large tax payers in technology in order to curb cheating (Chatama, 2013 citing Suluo, 2003). Guiterreze (2010) recommends the adoption of an integrated management model, which presumes use of ICT as one system component, for the adequate functioning of tax administration that aims enhanced compliance, evasion reduction, and increase in tax revenue.

McCarten (2014) emphasized that for LTU to accomplish its intended goal/purpose, countries should work towards, among other strategic interventions, reducing the potential for corruption by automating and restructuring control systems; and simplifying and reducing paper handling through appropriate use of information technology.

3.6.3 Maturity Level of e-Filing

Hodges-Deloitte Consulting LLP (2013) recommends the use of a four level maturity model with respect to taxpayer services to help interested officials make self-assessments about strengths and weaknesses in their respective tax administrations. Only those checklists that are applicable to the study are discussed below.

Taxpayer Services: Maturity Level 1

Key word: "Ad hoc"

- The tax administration may undertake a number of different initiatives to improve taxpayer services as a vehicle for improved voluntary compliance and enhanced revenue, but without making any major investments.
- Taxpayer service units are severely understaffed, with personnel not trained to do the job effectively, resulting in a high level of taxpayer contact.
- Information, support, and education are usually limited to a single channel – a visit to the tax office – and are hence specific to each taxpayer's individual inquiry and provided only when the taxpayer visits the office.
- Unreliable registration, TINs, and taxpayer accounts create difficulty for taxpayer service staff in resolving taxpayer accounts, thereby negatively impacting the level of service provided.
- Most of the work is done manually since little modern technology and equipment is available, and that which does exist is supported by outdated technology, thereby limiting access to taxpayer account information and hindering the level of service provided.
- The level of service is ad hoc and inconsistent, with little communication between functions, due to different levels of institutionalization of procedures across taxpayer service units and varying staff skill levels. Minimal procedural manuals are developed on an ad hoc basis.

Taxpayer Services: Maturity Level 2

Key word: "Formalized"

- Managers focus on the level of service provided to taxpayers via the goals and objectives outlined in strategic plans, along with the development of vision and mission statements with an emphasis on service.
- Recruitment of personnel with customer service friendly skills is undertaken, and staff development and training are initiated.
- Brochures, informational publications, and Frequently Asked Questions have been developed and are available in hard copies and via the administration's website.

- Information, support, and education are limited to ad hoc, very high-level instructions for common processes (e.g., filing). These are updated very rarely, usually with changes in the law.
- Information, support, and education are tailored to type of tax, but not to types of taxpayers. Information, support, and education are limited to a couple of channels and vehicles (typically narratives on the government's web sites and paper brochures).
- Coordination between the functional areas is initiated in an effort to enhance the level of service provided. There is a somewhat proactive effort to promote the concept of voluntary compliance through outreach and educational campaigns.
- Only limited modern technology and equipment are available to enable access to information to assist in resolving taxpayer concerns.

Taxpayer Services: Maturity Level 3

Key word: "Integrated"

- Instead of fixing problems, the focus turns to business process reengineering to enhance the level of taxpayer service provided. There is a focus on improving the level of service provided across the full life cycle of a taxpayer interaction with the organization – from registration to deregistration.
- Units are properly staffed with personnel trained in effective communication, conflict resolution, etc. However, the curriculum and course content are not updated regularly.
- Various channels have been established to interact with the tax administration, including face-to-face, telephone, and online. There is, however, a need for expert technicians for complex queries.
- Information, support, and education are provided through somewhat detailed instructions and usually for common processes (e.g., filing, but not audit or collections). These are updated rarely and not on the basis of taxpayer feedback. Taxpayer services are tailored by taxpayer segment (individual / business, large / small, etc.) and by type of tax.
- A business process review begins, with an evaluation of current practices, through an analysis of people, process, and technology focusing on efforts to enhance the level of service provided.
- The tax IT system ensures that taxpayer service personnel have ready access to appropriate information to properly address taxpayer concerns.

Taxpayer Services: Maturity Level 4

Key word: "Strategic"

- Taxpayer experience is a key concern of every initiative undertaken. All employees feel ownership for maintaining a culture of strong taxpayer service. Every decision within the organization takes into consideration the needs of the taxpayer.
- New and existing tax administration staff are subject to formal course and on-the-job training on procedures (e.g., for visits), communication techniques, and managing conflict. The curriculum and course content are updated regularly.
- Information, support, and education are provided across all tax administration functions (e.g., registration, filing, payment, etc.). These are detailed and are updated regularly based on taxpayer feedback. Taxpayer services are tailored by taxpayer segment (individual / business, large / small, etc.) and by type of tax.
- Taxpayer services use multiple channels (telephone, web, paper) and vehicles (FAQs, instructional brochures, expert technicians responding to complex questions, and generalists for other questions).

- As a result of a robust tax IT system, taxpayer service personnel have ready access to appropriate information to properly address taxpayer concerns.
- Taxpayers can interact with the administration's data base to file returns, make payments, secure account information, and quickly secure answers to tax questions via self-assessment tools.
- The tax administration has achieved its overall objective of educating the taxpayer, developing effective laws, processes, and procedures, and making access to appropriate information so easy that taxpayers have minimal or no need to contact the tax administration in order to comply with tax filing and payment responsibilities.

Conclusion

The historical account on the development of theory, models/theoretical frameworks, and practices on e-Government goes back to late 1990s. Post 1980 marks a major movement in public management as a result of the critics on the traditional public administration for its inefficiency. This had paved the way for NPM that emphasis on improved public service delivery and functional responsiveness with a business oriented approach to government, a move from the central theme of Weberian concept of 'physical' office to 'virtual' office through the enabling role of ICT.

In today's information age, ICT offers a great opportunity to break out of the silo environment of public administration as it can play critical role to narrow physical factor of distance and time; reducing administrative burden; reducing redundancy and out datedness of data; and in changing the traditional organizational structure with fewer middle managers and for higher level tasks to be done by lower-level staffs through the use of powerful database software. The wider application and benefits of e-commerce and e-business models in the private sector motivated for governments to embark on e-Government.

e-Government is not a one-time effort. It requires passing through various stages before a public organization reaches to the maturity level. Scholars and practitioners suggest various models of e-Government maturity level. This study primarily uses the UN Online Service Development model but also adapts other models to come up with a theoretical framework used in assessment of ERCA's stage of web presence. Public agencies can have a quick progression towards the higher maturity level of e-Government if there is a temporal fit of one or more dimensions of an organization, i.e. process, structure, people, and technology. As Heeks (2002) designated it, there has to be an optimal match between design and reality for an e-Government initiative to be called a success. Heeks Design Reality Gap model, but enriched by related model, is used to access the level of readiness for e-Government is used. The other success factor for e-Government effectiveness is continual measuring and evaluation of e-Government initiative/plan. Building on various works on measuring and assessment tools, the study develops a tool to assess ERCA's web functionality assessment (Appendix 4.4).

Chapter IV – Results and Discussion

Results of the study on the research questions are discussed and summarized in three main sections. The first part presents findings on the national policy and legal frameworks there by seeking answer to the research question on policy and legal framework readiness for effective e-Government. ICT is the backbone of e-Government. The second part presents about the ICT infrastructure development as a source of both challenge and prospect. The last section discuss about the major part of the study on ERCA's stage of e-Government, its implementation status, and e-Service experience of Large Taxpayers, and how much the web functionality of ERCA is comparable to peer African countries (benchmarking against good performing African selected countries).

4.1 Policy and Legal Framework for ICT and e-Government in Ethiopia

National policy and strategy documents are very instrumental in setting government strategic priorities, regulating actions, and coordinating of plans. Effort was made to study on the various legal and policy frameworks that have been enacted with the purpose to see how much e-Government have been given the legal and policy recognition, national guidance, and required support. In the following sections, presentation is made on the National ICT Policy and Strategy of Ethiopia, the GTP, the e-Government strategic plan, and the National Information Security Policy. In the second section, the legal framework is assessed as to its readiness to address electronic transactions and cybercrimes.

4.1.1. Policy Frameworks for e-Government

4.1.1.1 The National ICT Policy of Ethiopia

The national ICT policy of Ethiopia was prepared in 2009 with a vision "Every Ethiopian life is ICT assisted" and a mission statement "[t]o develop, deploy and use information and communication technology to improve the livelihood of every Ethiopian, and optimize its contribution to the development of the country".

The focus of the policy revolves around six thematic areas that are considered to be strategic for the success of ICT development, among which is ICT for governance (e-Government).

The government of Ethiopia has been in a series of civil service reform programs that aims efficiency and effectiveness in the delivery of government services. The ICT for governance pillar envisages for ICT to modernize and streamline public sector management, in order to achieve an efficient and effective delivery of public services, through the implementation and utilization of e-Government systems.

4.1.1.2 The Growth and Transformation Plan (GTP)

The GTP envisioned for the ICT infrastructure to play a pivotal role in providing higher qualities of information and communication services. In addition, ensuring a secured IT system is also set as a high strategic direction of the GTP. The GTP has also identified major areas of focus in ICT development. These include (p 75) upgrading existing network to accommodate the latest information technology, improving network quality, building the human resource capacity of the telecom sector, and expansion of the service across the country at affordable/reasonable price

4.1.1.3 Ethiopian e-Government Strategy and Implementation Plan

The Ethiopian Information and Communication Technology Development Agency (EICTD) has undertaken a number of e-Government initiatives to improve the internal efficiencies within government organizations and to improve access to government services for the general public. EICTD realizes the need to integrate these initiatives to provide a strategic direction for e-Government implementation in the country.

In 2010, Ministry of Communication & IT (MoCIT) engaged PricewaterhouseCoopers Pvt. Ltd. for designing the National e-Government strategy and implementation plan for the Government of Ethiopia (GoE). With this context, the e-Government strategy for Ethiopia has been designed focusing on facilitating effective delivery of government services to customers (residents, businesses and visitors). The vision of the e-Government strategy has four key expected impacts: bring the Government closer to the people, effective governance, improved service delivery, and finally to bring socio-economic growth.

The strategy envisages implementation of 219 e-services comprising of 79 informational and 140 transactional services over a five year period. The implementation is proposed to be done through 12 priority projects among which is e-Tax. Seven informational and six transactional (total of 13 e-service initiatives) were planned in relation to e-Tax. The lists of these 13 e Service plans are presented below:

Informational Services	Transactional Services
1- View pending messages	1- Online application of registration as tax payer
2- View registration data	2- Online filing of tax return (land tax, rental housing, turnover tax, TV tax, VAT, and excise tax)
3- View field assessments	3- File a declaration
4- View list of declarations not filed	4- Tax clearance certificate
5- List previous tax returns	5- TIN number registration
6- Show filed declarations	6- Application for a tax holiday
7- Budgetary information dissemination	

Source: e-Government Strategy and Implementation Plan of Ethiopia

The e-Tax project was expected to achieve such outcomes as efficient collection of tax revenue, simplification of tax administration, control over compliance, timely tracking of tax liabilities, and improved used of taxpayer data for tax assessment.

During the interview with ERCA Large Taxpayer Office (LTO), this national strategic direction was raised and asked how much ERCA is cascading it in its strategic and/or annual plan. The response got was that this document is new to the respondent (Senior Officer for Customers Teaching and Support Unit). The cascading is rather coming primarily from the LTO Balanced Score Card than the national e-Government strategic document.

MoCIT claims that it has the mandate of leading, coordinating, monitoring and controlling all government ICT activities including the e-Government; and it is supporting various government organs for availing electronic service to citizens and businesses. However, practices are not witnessing that when coming to oversight on the e-Government initiatives by ERCA. This can be

witnessed from the fact that (Addis Fortune, 2013) by the time MoCIT concluded an agreement with Africom Technologies Plc and e-Systems Africa to build over 200 e-service portals, ERCA had already signed a contract with CRC Sogema and completed the e-Tax project for operation.

In MoCIT's official magazine (# 4, 2014), the 2006 E.C. performance report of the ministry was presented in various areas, among which e-service initiatives were included. The report discussed that in 2006 E.C, out of 219 e-services planned, it has achieved to complete website development, 88 transactional services for 17 government bureaus and 85 informational services for 8 government bureaus. Among these government bureaus, however, ERCA is not listed, can be checked from the official e-Service portal of Ethiopia www.e-services.gov.et. This also shows that even though planned initially, ERCA is running its e-Government initiatives outside the e-Government strategic framework. But a quick review of the e-Services design layout and content of Ministry of Agriculture, Ministry of Foreign Affairs, and Ministry of Trade, the researcher thinks it was somehow a missed opportunity for ERCA website not to be in the e-Government implementation plan as it would have been benefited from the more professionally well-developed web sites from Africom Technologies Plc and e-Systems Africa. A good number of the comments discussed under section 4.4 are well considered at the above listed Minster's websites.

4.1.2. Legal Frameworks

The National ICT policy of Ethiopia generally recognizes that the existing legal framework which has been operational in the country cannot cope with the challenges of the fast developing national and global ICT sector. Considering the risk in security involved in the cyber space, the policy requires the implementation of the necessary quality standards and the creation of a safe and secure environment. It call calls upon the need for safeguarding national electronic communication system; the need for enhancing user confidence and trust in electronic communication systems, the need to prevent, detect and respond to cyber-crimes are among the major objectives of ICT security concerns of the country.

4.1.2.1 The FDRE Criminal Code 2004

An inventory of cyber related legislations in Ethiopia was made based on an interview with INSA's Legal Directorate and also a publication of secondary source from the head of the Directorate, Halefom Hailu (2015:17), on state of cybercrime governance in Ethiopia accounts the recent history of the enactment of cybercrime law as follows:

> It came to the attention of the Ethiopian parliament for the first time in 2004 where the Penal Code 1957 was revised. Therefore the first legislative word in Ethiopia on cybercrime was the Criminal Code of the Federal Democratic Republic of Ethiopia 2004 […], which criminalizes four malicious cyber conducts such as: unauthorized access, causing damage to data, disrupting the use of computer services and misuse of computer devices. These provisions are incorporated in the Criminal Code under the chapter titled "crimes against rights in property". That means the Criminal Code treats cybercrimes as property crimes. But now the technological developments have gone way far beyond what the Criminal Code could have envisaged at the time of its enactment. There is no doubt, therefore, that the Criminal Code was not enacted taking in to account the current cybercrime threats. At this time, cybercrimes can be perpetrated against any legally protected interest be it property, moral, liberty, security, and so on.

Despite the introduction of cybercrime provisions in the Criminal Code, Halefom (2015:18) also discussed two major constraints in the law enforcement, which he describe it as factors that worse enforcing anti-cybercrime laws to be ineffective. These are:

1. Practical constraints that hinder the investigation of cybercrimes and prosecution of offenders due to the fact that the Criminal Procedure Code Proclamation of the 1961 is suitable only for traditional offenses and not for cybercrime. The incorporation of the cybercrimes in the criminal code without amending its corresponding procedural aspect makes the investigation and prosecution of cybercrimes ineffective.
2. The law enforcements in Ethiopia are not yet equipped with resource and expertise necessary for the investigation of cybercrimes and prosecution of offenders. The law enforcement in Ethiopia is not operating effectively in the cyberspace. As a result, most cybercrime incidents are not reported and those reported incidents are either gone off-track to traditional crimes or closed for lack of evidence.

4.1.2.2 National Payment System Proclamation 2011

Financial institutions in Ethiopia were long been limited only to financial transactions depending on paper based payments. Electronic fund transfer is a recent phenomenon to the country. Not all the banks started to introduce electronic payment systems during the enactment of the law.

The National Payment System Proclamation No.718/2011was enacted with the objective to provide rules on establishment, governance, operation, regulation and oversight of the national payment system, which another important enabler of e-Government next to ICT, so as to ensure its safety, security and efficiency

As organizations web presence is evolving to higher stages, transactional data are generated as part of the e-Service process. Unless legal recognition and protection is correspondingly served to these electronic data, validity of e-Government becomes endangered.

Article 23 provides a solution to this concern by giving recognition to the validity of electronic data as evidence of transaction carried out and also as court evidence. It states that:

i. Information as to any transfer of funds through a system which is contained in any document, computer print-out, hard copy, microfilm, floppy or hard disc or any other electronic media or form shall be admissible in any court as evidence of the transfer concerned.
ii. Photographic images such as film, microfilm, microfiche or computer images of original documents such as cheques, securities, certificate of deposits, account ledgers, government securities or other payment instruments shall be admissible as prima facie evidence of the matters or transactions of the original instrument.
iii. Payment instructions, messages and funds transfers that are initiated, processed or executed through electronic means including electronic signatures shall be admissible as prima facie evidence of the matters or transactions carried out.

Halefom (2015:20), however, criticize that the law has not fully address cybercrime issues. He argued that the law does not address the cyber security issues inherent to the electronic financial system. Only article 35 of the law deals with unlawful acts and criminalizes forgery and fraud related activities specifically related with forgery of and fraud with *payment instrument*. The

wordings of article 35 also seem to deal with conventional financial related forgery and fraud crimes. Therefore, this proclamation is insufficient to address the whole range of cybercrime activities emerging in the financial area.

4.1.2.3 The Draft Cybercrime Law

An interview with INSA and review of the publication by Halfom confirm that INSA has drafted the cybercrime law of Ethiopia and is currently under consideration by the public and it is expected to be approved by the parliament.

In his publication on review of the draft cybercrime law, Halefom presented the major considerations and changes from the draft cybercrime law as follows:

> The draft cybercrime law recognizes, in its preamble, that the use of ICTs is vulnerable to various cybercrimes and other security threats that can impede the overall development of the country and endanger individual rights. It also takes cognizance of the fact that the laws presently in force in the country are not tune with the technological changes and are not sufficient to prevent, control, investigate and prosecute cybercrimes. Accordingly, the draft cybercrime law has repealed the cybercrime related provisions of the Criminal Code which are relating to computer crimes.

The knowledge, attitude, and practice towards cybercrime is also an area that needs more awareness by the business community. The general understanding on the risk of cybercrime is found to be very low (see table 2 below).

Table 2: Large Taxpayers Understanding on Risk of Cybercrime

Question	Response	Percentage
How do rate the threat of cybercrime in Ethiopia	Low Risk	86%
Have your organization been under attack by cybercrime?	No	100%
The solution for cybercrime is more technical than legal prosecution and legislation	Yes	89%

Even, there was a response that sates the low risk of cybercrime is due to the fact that the internet connection is too slow and discouraging cybercriminals. With such less recognition to the risk of cybercrime, companies might also not tend to report suspects to the appropriate legal body than forwarding it to internal or external ICT technical supports.

4.1.2.4 Lack of Legislation on e-Tax

A study on the country legal documents around tax and also the interview conducted with ERCA LTO reveals that the recent effort by ERCA to enforce e-Tax has no legal background. Section Four of the Income Tax Proclamation No 286/2002 discusses about the need for declaration and prescribed forms. Article 66 and 67 requires the need for declaration of income in a form prescribed by the Tax Authority. This form has been a paper based form that has been in use by ERCA over a decade. Since e-Tax is a recent effort by ERCA starting 2010/2011, electronic form of declaration has not been given legal recognition, while VAT (Proclamation 285/2002, Regulation No 79/2002),

use of Sales Register Machine (Regulation No 139/2007), Higher Education cost sharing (Regulation No 91/2003) are given legal recognition.

Even though ERCA has informed its Large Taxpayers that starting from September 2014 it will not accept any form of paper based declaration, as the LTOs Senior Officer interviewed put it, it is not in a position to finally enforce it fully as there is no legislation to that end.

4.2 ICT Sector Development for e-Government

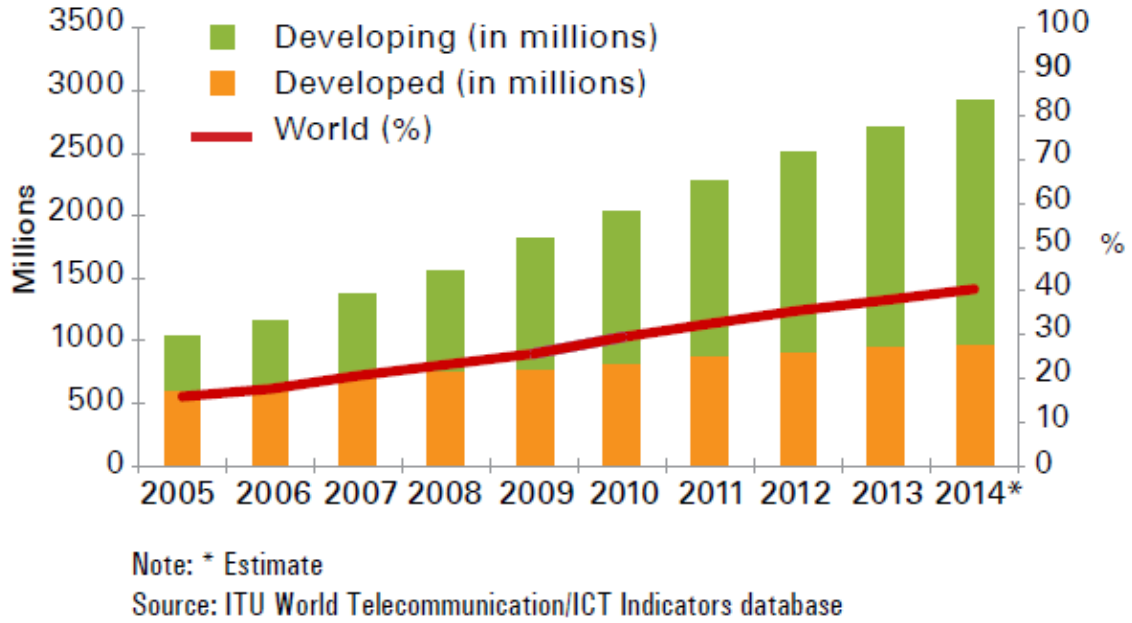
4.2.1 The Global Opportunity and Prospect from ICT Development

As explained in the literature review, the 21st century is characterized as an information age where the life and business of every citizen is highly affected by every dynamic ICT innovations, among which is the ICT back bone development in network and internet. And also e-Government without ICT infrastructure development is almost a dream that does not come true.

According to ITU report (the World in 2014), almost 3 billion people — 40% of the world's population— are using the internet. Close to one out of three people in the developing countries are online. In developing countries, the number of Internet users will have doubled in 5 years, from 974 million in 2009 to 1.9 billion in 2014.

The pervasive nature of the internet at household level has also an amazing prospect for going online. While the house hold internet access is approaching saturation in developed countries, the developing countries are growing threefold as high as those in the developed countries. Household Internet access in Africa continues to grow at double-digit rates (at 18% in 2014, more than twice the growth of the world average).

Figure 5: Global Trend in Internet Users



Note: * Estimate
Source: ITU World Telecommunication/ICT Indicators database

The other outbreak in telecommunication access is coming from mobile phones. The number of mobile-cellular subscriptions worldwide is approaching the number of people on earth. Mobile cellular subscriptions will reach almost 7 billion by end 2014, corresponding to a penetration rate of 96%. The number of mobile-broadband subscriptions reaches 2.3 billion, with 55% of them in developing countries. Mobile broadband is growing fastest in developing countries, where 2013/2014 growth rates are expected to be twice as high as in developed countries (26% compared with 11.5%). Mobile-broadband penetration in Africa reaches close to 20% in 2014, up from 2% in 2010. Africa and Asia and the Pacific, where penetration will reach 69% and 89%, respectively, by end 2014, are the regions with the strongest mobile-cellular growth (and the lowest penetration rate.

4.2.2 The Telecom Sector Development and its Impact on e-Government

All these global trends tell us where the world is heading to the move towards digitalization, going online, and integration towards a cyberspace. Ethiopia is also part of this global phenomenon, not necessary by choice but for the mere fact that globalization and/or digitalization is the order of the day. In light of this, effort was made to know where Ethiopia stands in terms of such telecommunication development and how much is the telecom sector favoring or challenging e-Government.

The GTP highly applauds the role of the telecom sector for its multiplier effect on the country's economy and the vital role it plays in accelerating economic growth by enhancing efficiency. The following is an extract from the GTP 2012/2013 annual progress report that witnesses the growth in internet access and mobile telecommunications (p 53):

But still as to where it should be, Ethiopia is lagging behind in ICT penetration rates. As per the data from the 2014 *Measuring the Information Society (MIS)* report by ITU (p 58), Ethiopia is categorized as one of the Least Connected Country (LCC). The major reason being under this category is the extreme low level of ICT access and usage. The report characterizes LCCs as countries with very limited international internet bandwidth, scare internet access to more advanced broadband, and few people use the Internet.

Table 3: Trend in Access to Internet and Mobile Telecommunication in Ethiopia

Indicators	2009/10 (Base Year)	2010/11	2011/12	2012/13	2013/14
	Actual	Actual	Actual	Actual	Plan
Mobile subscribers (in million)	6.25	10.5	17.26	23.76	40
Internet & data subscribers (in million)	0.1817	0.129	0.221	4.43	3.69
Capacity of international link (GB/s)	3.255	5.425	6.5	8.686	20

Source: Ministry of ICT & Ethio Telecom

The UN e-Government survey for 2014 does also confirms Ethiopia's level of telecom infrastructure weakness. As one indicator of e-Government measurement, other two include online service and human development indexes, the telecommunication infrastructure index (TII) of the UN measures its member country's level of telecommunication infrastructure using an arithmetic average composite of five indicators: estimated internet users per 100 inhabitants, number of main fixed telephone lines per 100 inhabitants, number of mobile subscribers per 100 inhabitants, number

of wireless broadband subscriptions per 100 inhabitants and number of fixed broadband subscriptions per 100 inhabitants (with the International Telecommunication Union (ITU) being the primary source of data in each case).

Table 4 is extract from the UN report that depicts this with a comparison to other neighboring countries.

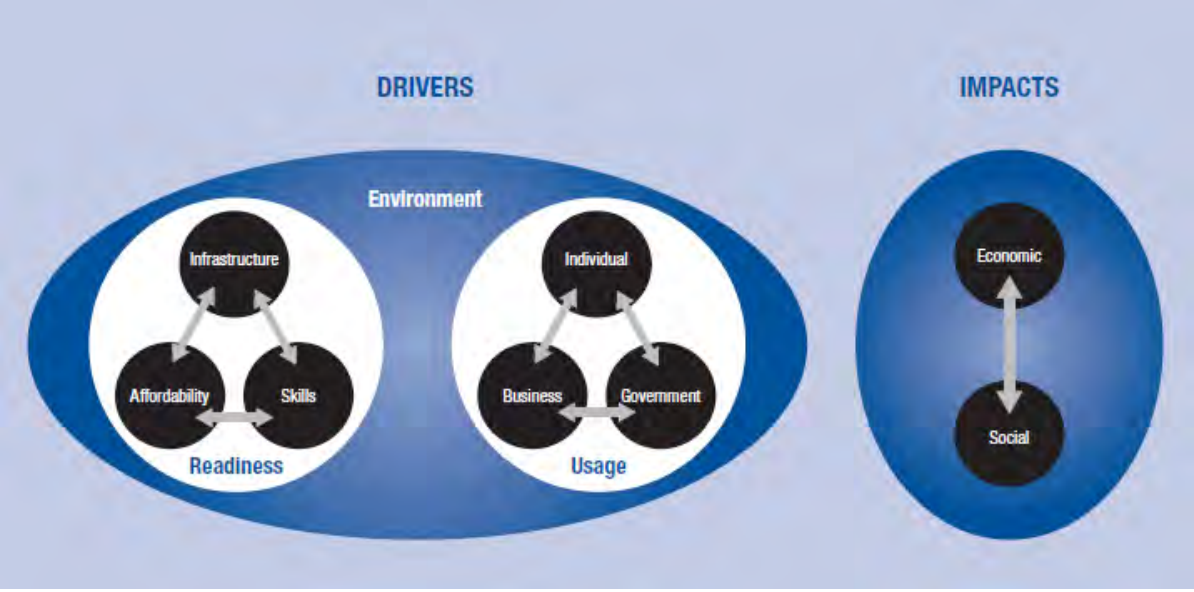
Table 4: Telecommunication Infrastructure Status of Ethiopia with Neighboring Countries

Country	Percentage of Individuals using internet	Fixed telephone subscriptions per 100 inhabitants	Mobile-cellular telephone subscriptions per 100 inhabitants	Fixed (wired)-broadband subscriptions per 100 inhabitants	Wireless broadband subscriptions per 100 inhabitants
Ethiopia	1.48	0.87	22.37	0.04	0.42
Djbouti	8.27	2.09	24.31	1.85	0.00
Kenya	32.10	0.58	71.17	0.10	2.22
Rwanda	8.02	0.39	49.67	0.03	3.22
Sudan	21.00	1.14	74.36	0.07	20.52

Source: extracted from UN 2014 e-Government Survey

Another source of data for the ICT infrastructure development of Ethiopia could be the *Global Information Technology Report 2014* by the World Economic Forum. The report accesses country's Networked Readiness Index (NRI) based on its NRI framework (figure 6).

Figure 6: NRI Framework of World Economic Forum



Based on these indices, Ethiopia is ranked 130 out of 148 countries, a slide from 2013 rank of 128. Below is also NRI map, which could also be a good indication to compare Ethiopia's status in its neighboring African countries.

The detail NRI result for Ethiopia is attached under Appendix 1 for further information.

The national ICT Policy and Strategy document of FDRE did also categorized the ICT development as found in its early stage of development that it listed out to be evidenced from:

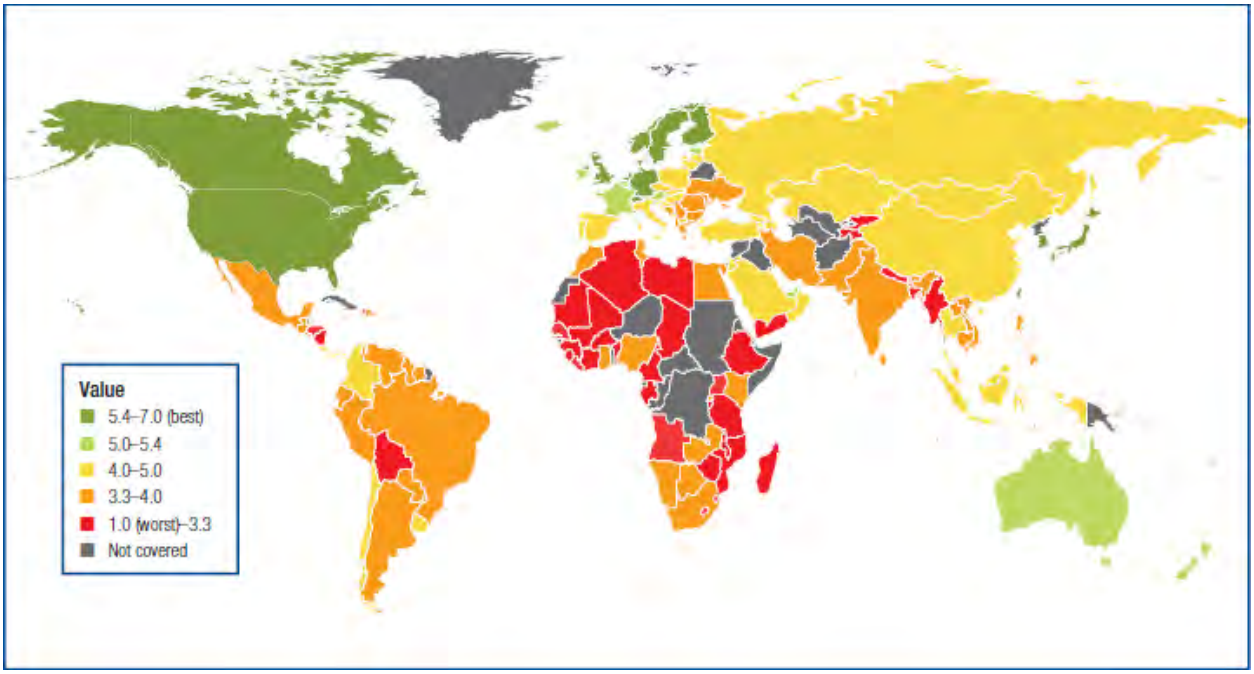
1. The absence of appropriate legal and regulatory frameworks
2. The limitations in telecommunications infrastructure and low level of internet services penetration.
3. Lack of organized data and information resources, and poor accessibility to those that exist.
4. Lack of skilled human resources coupled with low ICT literacy.

The GTP Annual Progress Report (2012/2013) does also come to term with this report as it recognizes the need for improvement in the telecom sector (p 53).

…, poor service and network quality continues to be a major challenge of the sector. To address the challenges, long and short term strategies are designed. The long term strategy that gives a lasting solution to poor network services is the expansion of telecom network capacities… Yet the problem is persisting and hence accelerating the execution of the telecom expansion program is very critical. The preparation of Telecom Expansion Program (TEP) was completed. This program will drastically increase network capacity and improve network quality of services in addition to increasing the number of telephone subscribers.

This bottleneck from connectivity is also a constraining factor that Large Taxpayer complaining for not fully entertaining the newly introduced e-Tax/e-Filing services. All most all of the respondents from the Large Taxpayer Department complain about Ethio Telecom's poor internet connectivity service for hampering the e-Filing service of ERCA (see section 4.4.6 for further discussion on this).

Figure 7: Networked Readiness Index Map



Source: World Economic Form Global ICT Report 2014

Despite all these challenges, Ethio Telecom is still investing more and more for enhanced connectivity. According to MCIT official website, the government has continued to invest in the

communications infrastructure to meet the growing demand and to accommodate the push factor from the global technological outbreaks. The second phase of a vendor credit project between the Ethio Telecom and two Chinese companies - Huawei Technologies and Zhongxing Telecom Corporation (ZTE) in the amount of US$1.6 billion from the Chinese Export and Import Bank was approved in 2013. This follows the completion of a first round of vendor credit in the amount of US$1.5 billion that was signed in 2007. The first round project, which was implemented by ZTE, has seen the rollout of 10,000 km fiber across the country and the expansion of mobile transmission network to a capacity of over 30 million subscribers and a CDMA wireless network covering rural towns. The second loan is expected to increase wireless telecom coverage from 64% to 90%, the number of mobile subscribers from 27.5% to 45% and the number of Internet users to about 20%.

Recently (December 2014), Ethio Telecom has also signed a framework agreement on 2G/3G mobile communication equipment and related services - such as design, planning, deployment, tuning, and optimization - with Ericson. The agreement, remained anonymous as to its price, with Ericsson will be used for the procurement of Ericsson products and services and aims to transform the current network and add additional capacity to meet the country's need to bring connectivity to more than 60 million subscribers nationwide.

All this shows the commitment by the Ethiopian government to seek permanent solution to the sector, which exhibits a prospect on enhanced connectivity for better e-Government.

4.3. ERCA's Trend in Tax Revenue and its Tradeoff with e-Government

Among the fiscal policy of the GTP (page 32) is to strengthen domestic revenue generation capacity. The government envisaged to accelerate the pace of implementation of a tax reform program by strengthening capacity of the tax collection agencies. As a result of this measure, coupling with other measures too, the GTP envisioned by the end of the GTP period for the share of the total domestic revenue to GDP to reach to 17.1%.

In terms of achievement of this forecast, the Annual Progress Report on the GTP for 2012/2013 reports the following (p 9):

> The Ethiopian tax reform has introduced successful tax collection and administration systems. …Tax revenue as a percentage of GDP was 11.7 percent in 2010/11and 11.6 percent in 2011/12. The tax to GDP ratio has further increased to 12.5 percent in 2012/13. Even though nominal tax revenue has been increasing rapidly, the growth rate was not proportionate to the rapid expansion of the size of the economy. In order to attain the GTP target of 15-17 percent of tax to GDP ratio by 2014/15, it is required to strengthen the tax collection and administration systems, expand public education and participation, strengthen enforcement and build the capacity of the taxation institutions.

The GTP report (MoFED, 2012/2013) further detailed out the major components of the tax reform into four major strategies (p12) among which is strengthening modern tax information system. A further review of the GTP report prevails that the following were claimed to be achieved at ERCA (p 13-15) due to the reform on modern tax information system, which are found to be basic elements of e-Government inputs:

1. **Strengthening Institutional Capacity**
   In an endeavor to build the capacity of its employees and increase their efficiency, the authority had identified training needs and conducted short and long term trainings for 2,696 staffs and mangers with the help of experienced training institution. It was expected that these training and education would strengthen the implementation and execution capacity of the authority and thereby contribute to the quality of service delivery and customers' satisfaction.

2. **Strengthening Modern Tax Information System**
   This has the objective of establishing improved efficiency, supply and usage of tax administration information system by using computerized database. The system was reported to provide reliable and fast flow of information within and outside the authority, fast service delivery, controls tax evasion, create a dependable database, and help for efficient and effective tax collection.

3. **Improving tax information administration**
   a. **Strengthening Taxpayer Identification Number with biometric (Biometric TIN):**
      An automated TIN system has been developed, deployed and supported by biometric finger print system at a national level. From the commencement of the project in 2008/09 till 2012/13 fiscal year, a total of 2,264,750 finger prints were collected which is 141.3 percent of the plan of 1.6 million finger prints information.

   b. **Expanding sales register machine delivery and usage:**
      Since the beginning of the project in 2007/08 to 2012/13, at national level 66,250 taxpayers have been using 72,969 sales register machines.

   c. **Increasing delivery of information through technology - *Standard Integrated Government Tax Administration System (SIGTAS) E-Filing Deployment:***
      In 2012/13, training was given to 816 taxpayers and among these 634 taxpayers has fulfilled the requirements and has started to declare with e-filling system.

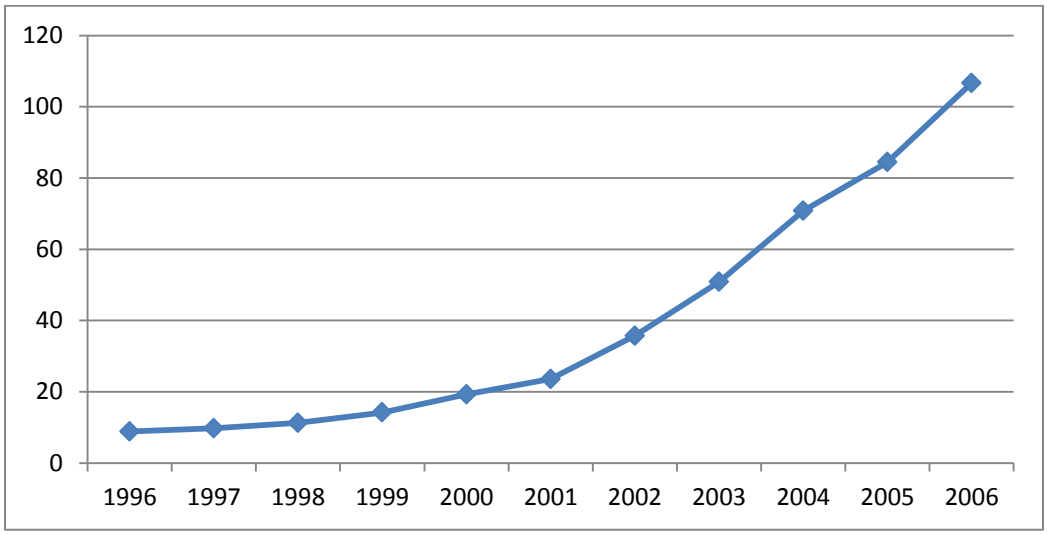
   d. ***SIGTAS regional deployment:*** To establish efficient tax administration and information system in all tax types, SIGTAS has been implemented fully at the federal level. In implementing the project, attitudinal and skill problems have been observed as major challenges for not using the system at full scale.

4. **Interfacing with Third Parties for Data Exchange:**
   With the aim of establishing collaboration with third parties to exchange data among government institution, a network communication was established and data exchange has been started with MoFED, Road Transport Authority, Ethio Telecom, National Bank of Ethiopia, Ethiopian Airlines and Customs of Djibouti.

Despite the claim on reform on modern tax information system and its result in increasing the tax revenue, the study found out evidences that signify the need for the reform to further go a long way or at least it doesn't constitute the right attributes of a transformational reform. This is evidenced from ERCA's last decade tax revenue trend and OFAG's 2006 E.C. performance audit discussed below.

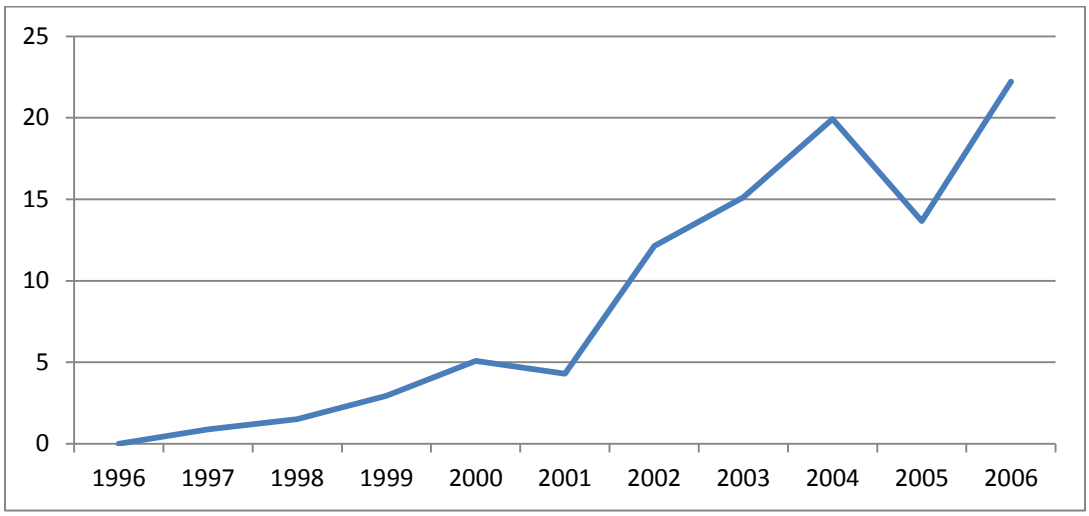
A report on revenue trend over the last decade shows that the tax revenue is in a continuous nominal growth (Figure 8) but with unstable/unpredictable patterns (see Figure 9), which empirical studies/literatures assert not the characteristics of a successful transformational reform. If introduced comprehensively (which the researcher believes to show the unavailability of a holistic e-Government strategic plan at ERCA LTO), results of a successful tax collection and administration system should have brought stability (upward change) and predictability in performance.

Figure 8: Revenue Trend of ERCA from 1996 E.C. to 2006 E.C.



Source: Compiled from ERCA *Gebli Lelimat*, Number 67

Figure 9: Trend on Revenue Growth from 1996 E.C. to 2006 E.C.



Source: Compiled from ERCA *Gebli Lelimat*, Number 67

The 2005/2006 EFY audit report by the Office of Federal Auditors General (OFAG) on ERCA (published on April 2014) can also be citied here to supplement the above argument. The report pointed out a number of weaknesses in the above claimed successful reforms on the tax administration system. The following are major findings selected, as having direct relation with the

study, from the Performance Audit on the tax information system and administration of ERCA (P 79 to 90).

1. **Report on lack of data integration among tax information systems**
    - ERCA has introduced the use of information technologies in order to manage its subsidiary offices/tax center and provide efficient services. The major systems introduced are SIGTAS, Automated System for Customs Data Management (ASYCUDA), and the use of sales register machines. However, ERCA has not given sufficient commitment to capitalize on these investments as there are instances of lack of proper integration of data from all these systems.
    - SIGTAS record management module is not fully utilized as a result of which there are backlogs at archives not timely and fully accounted into SIGTAS.
2. **Report on inconsistency of data among agencies/departments**
    - While it is required that the data maintained at SIGTAS for taxpayers should always be similar with the data maintained at the taxpayers branch office, there were discrepancies witnessed. For example, in the audit review made at five tax centers/branch offices, the number of taxpayers in the five centers was found to be 21,595 while the central SIGTAS database system was showing records of 29,792.
3. **Report on central database to not integrating all purchase and sales data**
    - There is a requirement for all purchases and sales data collected from tax payers and third parties to centrally maintain in a comprehensive database/mega database. However, during the reporting period, it was found out that this information for taxpayers are not complete, not timely collected, and systematically organized to be used for decision making, policy analysis, and other services.
    - The SIGTAS is not timely updated for data on tax arears, penalties, taxpayers complaints and decision made, tax holiday durations, and current addresses.
4. **Report on lack of availability of policy and strategy on tax information system**
    - ERCA is required to develop and have policy and strategic plan that guides the overall tax data collection, organizations, and administration. However, during the audit period, it was found out that it lacks this important document as well as supplementary guidelines that streamline the overall holistic tax administration system.
5. **Report on lack of use of sales register machine by all eligible taxpayers**
    - One of the major data sources for SIGTAS is sales register machine. According to Counsel of Ministers Regulation number 139/1999, those taxpayers that meet the proclamation requirement are expected to use sales register machine. However, of the total taxpayers register at SIGTAS (29,792) who are included in the sample audit (among which Large Taxpayers were included), 17,702 (59.4%) were found to be not using sales register machine.
6. **Report on lack of sales register machines data transmission to central database**

- Starting from the first year of introduction of sales register machines, total of 82,141 sales register machines were sold out to taxpayers. Out of these 89% (72,964) put on operation. However, only 12% (8,755) of the sales register machines were capable of transmitting data to the central database. The rest 64,209 sales register machines were reported to be dump terminals, even though configured to communicate to the central database. Even, there were 5,888 sales register machines that were not configured to connect to the central database.
- The major factors for this failure was reported to include the problem with General Packet Radio Service (GPRS) network, which is supposed to automate the data transmission from sales register machines to the central server at ERCA. The GPRS network was reported to be not working 40% of the time in Addis Ababa, even though frequent effort was made to resolve the problem with Ethio Telecom.

7. **Report on overall tax assessment and data collection, and information/knowledge generation process**
    - There is no interoperability among the different tax systems. The various introduced information technology investments discussed above were not completely configured to interact and feed each other. Moreover, there is no data quality assurance procedure among and at each system.
    - The collection, organization, analysis, and dissemination of data from the non-integrated systems is only made at the head quarter of ERCA. ERCA branch offices are not in a position to do such value adding analysis and controlling from their respective systems. Moreover, information is also provided to branch offices/tax centers only upon request.

Moreover, the result of the survey on Large Taxpayers service experience on ERCA website and e-Tax (see sections 4.4 below) further support this OFAG's findings as there are a number of instances on design (what it intends to bring about) and reality (what actual it is doing) gap on the tax reform.

4.4 ERCA's Web Presence: Status, Challenges, and Prospects

The World Bank in its 11th series of report on *Doing Business 2014* compares business regulations for domestic firms in 189 economies. The report presents quantitative indicators on 11 areas of business regulation, among which the ease of paying tax is one major indicator.

Doing Business records the taxes and mandatory contributions that a standard medium-size firm must pay in a given year and measures the administrative burden of paying taxes and contributions. It does so using 3 indicators: number of payments, time, and total tax rate. The number of payments indicates the frequency with which the company has to file and pay different types of taxes and contributions, adjusted for the manner in which those filings and payments are made. The time indicator captures the number of hours it takes to prepare, file and pay 3 major types of taxes: profit taxes, consumption taxes (VAT), and labor (income) taxes and mandatory contributions (such as pension).

According to the report, Sub-Saharan economies face particularly difficult challenges with implementing electronic systems for filing and paying taxes. It also characterized these economies

as part of the world where citizens face limited broadband access, power shortages, slow network speeds and system failures.

The report also pointed out that electronic tax systems are becoming popular in the economies of Kenya, Rwanda, South Africa, and Uganda. Table 5 below summarizes the Taxpaying measurement for Ethiopia as compared to these countries.

Table 5: Ease of Tax Paying in Sub-Saharan selected countries

Country	Ranking	Payments (Numbers per year)	Time (Hours/Year)
Ethiopia	109	30	306
Kenya	166	41	308
Rwanda	22	17	113
South Africa	24	7	200
Mauritius	13	8	152

Source: The World Bank Doing Business 2014

As ERCA was primary focus of such a study, an inference from this proxy indicator on the online service delivery status of ERCA is that it is in premature stage. Still, the need for manual reporting and appearing to a tax office is unavoidable. Same is also learnt from the survey results discussed subsequent sections.

The study also uses additional methodologies to have further insight on the implementation status of online service delivery at ERCA through its official website. These include experts'/professionals assessment of ERCAs web site for sound web functionality, survey on large taxpayers on their service experience, and benchmarking of ERCA with revenue authorities from those countries referenced in *Doing Business 2014* as best or promising performers.

4.4.1. Experts view on ERCA Website

A web functionality assessment check list (Appendix 4.4) is provided to two professional that have previous experience in website developments. Summary of the result of the feedbacks from the professionals is presented in table 6 below.

Table 6: ERCA Website Functionality Assessment by Experts/Professionals

Assessment Area	Indicators of Standard Web Functionality	Observational Feedback
1- Design and Layout	Design aesthetics with intuitive menu system, appealing graphics, use of colors, multimedia and other features, etc.	Good color combination, with interactive design but the website has two languages which makes the user confused.
	Ease of navigation through proper menu system, site maps, table of content, alphabetic index, what is new features, etc.	Moderate interactive menu combination. But it has poor search engine optimization.

	Availability of additional features for people with special needs (disability access)	The website does not include any of new features for special needs
	Availability of users online help, online trainings, online feedback, FAQs, etc.	The site has a forum capability and also FAQ which helps the users to easily understand the common questions.
	Interoperability-availability of important links within (departments) and outside (other related ministries)	There is no link to get related office websites
	Accessibility of e-Service on multiple channels (digital TVs, mobile phones, IVRs, call center supports, etc.)	The desktop and mobile version of the site is the same, which is not recommended at all. The company have to setup a responsive web device (RWD) used to adjust the layout of the web page based on the size of the users viewing area.
	Integration of web analytic tools (number of visits, pages viewed, pop- up surveys, no of downloads, etc.)	The analytic tool displayed on the home page is completely wrong. Its works by refresh time not by users Media Access Control (MAC) address. The analytic tool like google analytics gives a detail and proper information about the user trends and the visitor counter.
	Integration of other efficiency enhancing mechanisms (online interaction, error prevention, faster recovery time, session backups)	The site refresh time is a bit slow; there are instances of broken links.
2- Customization	Ability of website to uniquely tailor view based on user registration (users segmentation)	There is no feature related to the different view by type of users
	Ability of website to dynamically recognize user groups and display specialized content	No functionality at all
3- Content	Types, level, and number of services available through a website	The content of the site organized well, but the web page uses two different languages on the home page. The organization has to setup English and Amharic pages separately, so that users can get full information based on their native language. The search functionality works on both languages which is good.
	Committing of necessary resources (time, money, R&D, M&E, dedicated e-Service sponsor, etc.) for the website to remain dynamic/fresh through all times.	The website have a fresh contents. But it would have been further good if the website can include RSS feeds functionality which can help the site to integrate with other related office websites and displays a fresh content automatically from the web based on a specific customization
	Availability of two way communication through hot link addresses, feedback forms, provision for electronic submission of downloadable materials, etc.	There is good feedback forum, helps the users to interact. But there is not restriction on informal/unethical words. It is recommended that there have to be a way to restrict users when they use informal words

		(F words)
	The content is written plainly and in a language which diverse users with educational and knowledge background can easily understand	In some pages the site uses some informal words on the feedback tab, (e.g Please don't ask Questions here **bcz** there …) which have to be corrected. As I state above the website have to setup a separate pages for Amharic and English
	Clear indication when the website is created/published, dates of last update, names of person or agency responsible for content	The contents don't have a clear indication when the contents are created and updated. Rather they put the category name on the top which is unnecessary.
4- Transparency and Accountability	Credibility of website through use of international naming conventions for addresses or the URL (e.g. '.gov.et')	The URL is perfect, and easy to remember
	Increase in users trust through statement on disclaimers, privacy policies, terms and conditions, copyright information, etc.	The web site is more focused to give information and promote the organization. One can see only the copy right information.
	Ease of determining authority responsible for the website and its content;	There is no specified responsible person for the website content.
	Availability of a communication mechanism to contact responsible officials via e-Mail, telephone, mailing address, fax, etc.	I can see only the developer link which is linked for email and completely unprofessional way putting a personal email account and the subject of email.
5-Web Visibility	Early appearance of a website through various search engines (for example searching of the head work 'ERCA' and its through Google, MSN and Yahoo and if it appeared within first 10 hits of the results	It appears on the top 10 list of all the search engines.
6-Internet Connectivity Speed	Measurement of download time, speed of data transfer using specialized tools/testing software	Load time: 5.22s to load 1.6 MB
7-Other features that need to be assessed as deemed by the expert	Search engine optimization tool helps the site to be visible on the search engines and easy access for the users.	Mobile version of the site has to be developed. Moreover, ERCA is planning to get everything online in the future; therefore website has to be attractive, easy to use, professional and secured.

4.4.2. The Researcher's Additional Assessment on ERAC Website

The researcher has also reviewed ERCA website to enumerate the type and number of online services, users, availability of support, etc., so that it can be compared to the result of the above feedback and benchmarking with the selected Sub-Saharan countries. Here below are the major findings.

I. Online Survey and Number of Visitors

ERCA website has a place for viewers of the website to vote on selected web assessments. The areas include: interactivness of website, content of website, and arrangement of documents at ERCA website. Here below is result of the survey (captured on February 10, 2015).

Areas of Survey	Excellent	Very Good	Goods	Needs Improvement	Number of Respondents
Interactivness	54	26	19	66	165
Web Content	1	3	1	2	8
Arrangement of documents	2	1	1	8	12

Comparing the number of taxpayers in the country (more than 22 thousand), the level of vote can be used as a proxy indicator for low level of use of ERCA website by its customer.

II. Use of online feedbacks

The website has the feature of feedback to encourage a two way communication. By February 10, 2015, there were only 21 chats out of which 12 were requests for explanation or response from ERCA. But only 1 response made observed from ERCA Web Admin. Both the frequency figures on the use of feedback and the response level from ERCA are very low.

The interview with the Senior Officer for Customer Education and Support at LTO has also revealed that there is no purposeful effort made to get customers feedback than depending primarily on phone calls and office visits by Large Taxpayers for lodging complains, request for clarifications, request for support.

III. Level of use of online forums

Even though the online forum feature was created with the starting of ERCA website, use of the option by ERCA customers has only age of not more than two months, of course with instances of only two topics posted with no reply from the forum groups! This shows lack of awareness or low level of use of ERCA website as an online support.

IV. The usefulness of FAQs

The FAQ has brief explanation on such topics as Authorized Economic Operator (AEO), Motor Vehicle Importation, Ten Points to remember about VAT, Employment Income Tax in Ethiopia, Custom Examination of Goods in Ethiopia, and Other General Information on HS and Import of Goods.

Frequently asked questions (FAQ) or Questions and Answers (Q&A), are listed questions and answers, all supposed to be commonly asked in some context and pertaining to a particular topic and tend to recur. However, the FAQ's of ERCA tends to be either not common concern or not recurrent ones to its customers. There are a number of FAQs more valuable to the tax payer to benefit from.

V. News Updates

The news posted on the website are so crude to give precise information. For example the following news was captured on February 6, 2015 *"July and August revenues pass targets- …the tax revenue growth of July and August emanated from Inland Revenue, taxes of foreign trade, and net profit from sells of National lottery. This growth of revenue is believed to indicate the improvement of the tax payers' awareness of the essence of tax and their compliance."* It doesn't tell about what the

targets were, what the actual accomplishments are, no data on type of revenue, etc. There is also no consistency in the news language as some news is translated to English while most are only in Amharic.

VI. Data for Research and Developments (R&D)

The documentation section of the web site has a link to R&D, which the researcher was very eager to visit to get important data on related studies. However, the link takes you only to one posted study on tax abiding. The website is very much poor on availing tax and customs reports and statistics. Especially for academicians and other researchers, the website provides almost no data to study on! This is the case while the GTP report for 2012/2013 claims that ERCA modern tax information system is helping to provide reliable and fast flow of information.

VII. Availability of Online Services

The only online real/transactional e-Service provided via ERCA website are e-Filing and purchase declaration; even still there is option through which these services can be accessed without a need to go to ERCA website, i.e. through Large Taxpayers dedicated IP address or through www.etax.gov.et.

The purchase declaration system enables companies to declare the purchases they made from vendors. However, as per the interview with the Senior Officer for Customers Education and Support as well as the result of the questionnaire from Large Taxpayers, this service is not available to Large Taxpayers.

Most of the other online services at ERCA website tend to be more informational. These include a

- A listing of applicable proclamations, provisions, and directives made in PDF forms.
- A listing of articles and documents (e.g. *Gebli Lelimat)* are time to time posted, but with very few hits (number of viewers). The maximum hit observed was 561.
- Declaration forms are also available for downloads

VIII. Statement on disclaimers/privacy policies/terms and conditions, etc.

There is no statement on disclaimers, privacy policies, terms and conditions, copyright information, etc., posted in the website.

IX. Menu Organization and Ease of Navigation

The main menu is organization in the conventional way to include Home, Bid Info, About Us, Vacancy, Services, Contact Us, News, FAQs, Feedback, Contact Us, and Forums. But seeing the logical order, it is not either in alphabetic order or frequently required hits/views.

In terms of content, most of them are either static (About Us, Contact Us, FAQs) or empty (Contact Us Brach Office, Bid Info and Vacancy). While there are a number of bids and vacancies ERCA posted in newspapers and notices boards, it is surprising to see none at its website. At least such instances could be an ‘un-intended’ push factors for more visits to see other ERCA online services.

The logical categorization of available online service is also very week. Primarily, there is no user categorization by type of taxpayers. Second, the available legislation and forms are not carefully

categorized. For example under declaration form, you can get national policy of Ethiopia, which is a bit surprising. When getting into the 'Domestic Tax', which is not informative enough whether it is a service or a reference document, you end up getting domestic tax directives, surprisingly also including a manual for SIGTAS (which of course is not available for download) under e-Tax sub classification.

X. Customer Segmentation

It can be reasonably commented that ERCA's website targets the general taxpayers of the country. No effort or understanding is made to target the Large Taxpayer (or even other taxpaying groups), unless it is argued that it is only a recent initiative to provide separate service to Large Taxpayers and e-Tax is claimed to be primarily for Large Taxpayers. With the decision to open new office to Large Taxpayers, there should have been a corresponding segmentation in the website too.

XI. Multimedia

There is a link to ERCA's radio and TV programs (*Gebi Lelimat*), but the link takes you to achieve of only three radio programs (which includes a 2004 EC new year program!) and only 1 TV program archive. The only area that is found to contain more information organized well, in relative to the TV and radio program, is the link to the monthly newsletter publication (*Gebi Lelimat),* which still lacks consistency in uploading all series and also late in timely uploading monthly publications (last series posted on the website is for *Tikemte* while we are in *Yekatit*).

There is also additional services to follow ERCA through social medias (follow us via Facebook and Twitter), which are found to be more attractive and detail in providing news.

4.4.3. Benchmarking of ERCA Website with Selected African Countries

Websites of revenue authorities that were reported to be performing well in ease of paying taxes through online services in the *Doing Business 2014* report were visited in order to use them as a benchmark to measure where ERCA stands in web presence. The assessment is made based on selected web functionality measures that are used in the experts' view of ERCA website. These are: design and layout, customization, content, and transparency and accountability. Selected countries used in the benchmarking are Kenya, South Africa, and Mauritius.

Refer Appendix 3 for the observational finding on these countries official websites.

The result of the comparison generally tells how much ERCA has a long was to go for its eService to be termed responsive to Large Taxpayers. The major areas that ERCA is weak at and to learn from are the following.

I. Web Content

ERCA is providing only limited online services, while those Inland Revenue Authorities are becoming more and more dependent transactional e-Services, while still their informational content is well developed. With ERCA, however, more emphasis is found to be given for informational services, still with limitations on consistency, timeliness and comprehensiveness.

According to Addis Fortune (2013), the e-Tax system costs ERCA USD 90,000. It was started in 2009; however, still what is operational is only e-Filing, of course with its drawbacks discussed at sections 4.4.4 to 4.4.6. More and more transactional services can be benchmarked so that the real essence of e-Service is progressed to higher maturity level.

II. Use of Smartphones

There is a success story from the South African revenue services in the use of smart phone as a delivery channel for e-Service. With the high increasing penetration rate of mobile phones and the introduction of 3G/4G/LTE technologies in Ethiopia, which provides both an opportunity and bright prospect to even further well expanded (both technologically and in scope), ERCA can also capitalize on availing its e-Service over smartphones. Especially with the risk of technological obsolescence of personal computer (desktop computers and laptops) and the increased involvement of the private sector in international markets resulting in frequent travels abroad, availability of ERCA's services 24/7 will be a new demand area the need a solution through use of smartphone.

III. Fiscal Transparency

One media through which public agencies are open to its constituents is provision of information on their performance via websites. On this measurement, while the countries under study have the experience of posting online their strategic plan, annual plan, performance reports, statistical reports, ERCA is found to be not transparent in information provision, this is while one of the objective of ERCA modern tax information system is fast flow of information.

IV. Client Segmentation

The move to a separate office for Large Taxpayers by ERCA is not further followed by a virtual interface office, which is a common practice in the websites of revenue authorities of Kenya, Mauritius, and South Africa. In this countries, through this virtual office, Large Taxpayers are provided with such specialized services as assigning primary point of contact (called Client Account Management or Online Relationship Manager) to handle all their cases, providing specific services that is unique to their compliance behavior, provide fast feedbacks and information using registered email accounts, etc.

V. Online Supports Mechanisms

Remote support to their customers by the revenue authorities is an area well developed. There are numerous mediums for remote support the websites of the revenue authorities pack into their e-Service. These are found to include such online support mechanisms: as dedicated email for help desk supports, assigning of specific customer relationship manager, timely updated online guidelines/reference documents, online videos on trainings, timely updated FAQs (based on resolved frequent challenges), link to multimedia to contact the revenue authorities (Facebook, Twitter, Hotlines, etc.). However, the opportunity to use ERCA website for customers' online support is weakly utilized. In the digital technological era where doing surgery from remote part of the world is possible, providing remote support within a national boundary should have not been a problem to ERCA's customers.

For example, in order to handle the training requests from Large Taxpayers flexibly, as around 16,000 Medium Taxpayers are also in a move to e–Tax training (Addis Fortune, 2013), and in order

to save cost of running training centers, the opportunity on e-Trainings technologies, with also online certifications, can be considered as an alternative solution. Especially, this is better to be managed by private sectors, through Private Public Partnership (PPP), that have long experience in managing online trainings, online examinations, and online certifications, such are CISCO and Microsoft certifications.

VI. Link to related offices and useful sites

Lack of a link to stakeholders that have a working relationship with ERCA or that have a regulatory or supportive or supervising role is another area missing from ERCA website. A link to the national portal for e-Services managed by MoCIT at ERCA website could also be a good example as Large Taxpayers are highly in need of those additional services.

As domestic tax is also the major source of income for the GTP implementation, citizens are also interested to know how much their money is contributing towards changing lives. A link to such reports, mostly found in MoFED website, should also be considered, and of curse also posted in ERCA website as news feeds.

VII. e-Payment

There are two possibilities for this that can be learnt from the e-Services of revenue authorities of Kenya, Mauritius, and South Africa. The first option is for e-Tax to generate e-Slips for various obligations against which taxpayers can make payment at banks, then also for those banks to reconcile this e-Slips with ERCA's database. The second option is an electronic option by which taxpayers authorize for ERCA to send a payment request to the taxpayer's bank with a Payment Reference Number (PRN) and amount to be paid. The taxpayer is then required to conclude the ePayment via internet banking or electronic fund transfer (EFT).

VIII. Transparency and Accountability

In order to increase users trust in the official website, those countries' revenue authorities has a link to the statement on disclaimers or privacy policies or terms and conditions or copyright information, etc. These statements clearly state what governs the overall use of their website.

The introduction of a Taxpayers Chart or Service Level Agreement could also be learnt to help in enhancing transparency and accountability. Standards on service levels with duties and responsibilities from both parties, i.e. ERCA and Large Taxpayers, can clearly spells out accountability when expected services are breached.

4.4.4. Large Taxpayers view on ERAC Web Presence

Large Taxpayers of ERCA were also surveyed to study on their level of satisfaction on the online services of ERCA via its website.

For the question on "how do you rate the overall significance of ERCA's website as a source of e-Service for your day to day business?" the rating of Large Taxpayers on ERCA's website signifies the need for ERCA to strongly push on its online service. Table 7 presents this response rate.

Table 7: Overall significance of ERCA website to Large Taxpayers

	Percentage	Aggregate
Insignificant	9%	

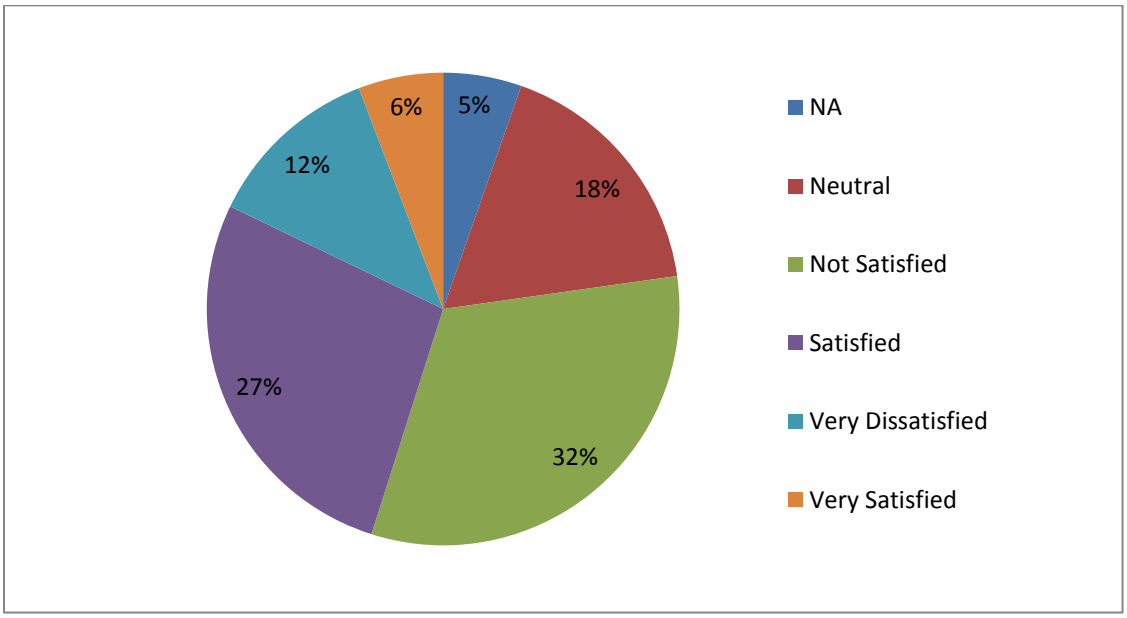
Less significant	43%	52%
Significant	43%	
High significance	5%	48%

A 52% aggregate response of low satisfaction is huge concern as this signifies more and more of ERCA customers are not ready to go online to. ERCA need to investigate more on why taxpayers are not frequently using its website, what is preventing them from using it as a primary source of information.
A further detail assessment on the web responsiveness of ERCA, measured using nine indicators is also presented in the pie chart below.

The indicators include such dimension on web content of ERCA to measure how much Large Taxpayers are satisfied with: provision of timely information/updates, ease of the design feature for navigation/intuitiveness, use of feedback for e-Service improvement, feeling secured while giving or using information from the website, availability of applicable tax reporting forms for downloads, website connectivity speed, compatibility of website for use over mobile phone.

The aggregate of being not satisfied is 64%. A lot is also expected for ERCA to bring more respondents at least to the satisfied groups.

Figure 10: Composite Aggregate Result on Web Responsiveness to Large Taxpayers



Online services where ERCA should feel at ease for providing acceptable level of satisfaction and take precaution for high level of dissatisfaction are found to be the following:

High satisfaction levels (at least satisfied):	
Availability of forms and legislations for downloading for enhanced tax compliance	72%
Feeling of security to provide information online	70%
High dissatisfaction levels (at least dissatisfied):	
Providing timely updates, information, notices on the	72%

website	
Lack of request for feedbacks for improvements	68%
Slow connection/upload/download speed of website	74%

4.4.5 Design and Functionality of e-Tax

In his official interview with a local newspaper, Head of LTO explained the need for giving close attention to Large Taxpayers explains that "similar tax rules apply to them [large taxpayers] as anybody else. The change is only in the quick attention and assistance given to large taxpayers." (Addis Fortune, 2013).

The entry point into the large taxpayer category started with companies whose annual sales turnover was greater than birr 15 million. As per this definition, there were only about 800 large taxpayers out of the total registered of more than 20 thousand taxpayers. During the initial state of the opening of the office, these 4% to 5% large payers contributed 70% of the total tax revenue in 2010/11, which was 49.5 billion birr. But the contribution was reduced in 2013 to contribute up to 40% (around 40 billion birr), for which clear explanation was not possible to get.

Starting July 2013, the bar for large taxpayers was raised from 15 million birr to 27 million birr. According to Ato Sultan Birehanu, Customer Service Directorate (*Gebi Lelimat*, # 57), the revision was made based on a study on two years average annual sales turnover and additional study on specific economic sectors. Companies engaged in high scale mining, petroleum exploration, banking and insurance are included in the large taxpayer category irrespective of their annual sales turnover. Grade 1 contractors are also in this category, which only includes private limited and share companies. Three star hotels were automatically classified as large taxpayers, but now only those earning above the 27 million are considered. With this revision, the number of large taxpayers is raised to 1005.

The move to new office by large taxpayers for improved service is also coupled with the introduction of electronic tax (e-Tax). E-Tax is an online/web based service that helps large taxpayers to report their tax obligation related services without a need for physical appearance at ERCA branch offices. According to Ato Birhanu, Head of LTO Customers Education and Support Team Coordinator interview with ERCA's official monthly newsletter (*Gebi Lelimat* #47), e-Tax has the capacity to provide internet/online services via ERCA website or a dedicated website: www.etax.gov.et . If used at full capability, e-Tax is expected to provide the following services:

- Online tax registration (e-Registration)
- Online monthly and annual tax declaration (e-Filing)
- Online possibility to effect payment through an option called Bank Interface
- Online tax clearance and tax refund request service (Online e-Service)
- Online correspondence that help tax payers to request questions and clarification from ERCA

As part of rolling out eTax, LTO trains all staff on the new system and established a training center to provide trainings/refresher trainings on a permanent basis. As the system is solely dependent on TIN, huge push was also made for all taxpayers to get their TIN. Finally, as the system is dependent

on high processing capacity computers and access to internet, orientation and support was provided to large taxpayers to have these technological inputs.

Large tax payers are required to take training at ERCA training center before using e-Tax. According to the interview with Ashenafi Melaku, Senior Officer for Customers Education and Support, there was an initial plan to provide training to 870 large taxpayers out of which 757 were trained. Since there has also been a challenge on well understanding of the system, staff turnovers, and new entrants to the category, in 2006 E.C., additional training was organized and provided to 170 trainees from large taxpayers. However, there is no readily available data that disaggregate the 170 by type of trainees so that it is readily known how many of the large taxpayers, excluding the re-trained, have been trained and using the service.

The e-Tax system gives access only to authorized users. It was not possible for the researcher to have access to see its basic functionalities. Based on the interview with the office responsible to provide this training and the e-Tax user's manual, effort was made to examine e-Tax design functionalities.

I. General System Functionality:

e-Tax is a large public application designed to work with the Standard Integrated Government Tax Administration System (SIGTAS). It is a product that allows taxpayers to file electronically and to see and print their declarations on line.

For security reasons, the e-Tax database is separate from SIGTAS database. An e-Tax user does not have a direct access to SIGTAS database but declaration changes are done in SIGTAS and are automatically reflected in e-Tax. A communication mechanism between the two applications allows data to flow from one database to the other.

Tax officers may have different access to the application, however most are functional, depending on their roles, namely:

- Taxpayer Registration
- Tax Officer Registration
- Customer Service
- Tax Clearance Certificate (TCC) Request Manager
- Refund Request Manager

II. Use of e-Tax by Taxpayers

Following a successful logging in to e-Tax, the taxpayer has access to the following menu:

- Home - this page contains a summary of all activity types that a taxpayer can do as a user of e-Tax application.

- Taxpayer Services - a click on the 'Taxpayer Services' menu takes a user to available services in the form of sub-menu: Tax Declaration, Tax Account, Potential Refunds, Refunds, and Clearance Request List
- Message Centre - a click on this menu displays the Manage Messages page
- Validity Checks - a click on the Taxpayer Services menu displays the following sub-menu:

- TIN Validation - a click on this sub-menu opens the Validate TIN page (default page of this sub-menu)
- Clearance Validation - a click on this sub-menu opens the Validate Tax Clearance page

From these menu options, a taxpayer may be granted one or a few particular roles, namely:

1. View Only (default role): allows the taxpayer to only see his information in E-Tax without being able to submit or modify any information;
2. Declaration role: allows the taxpayer to return, submit his returns and modify certain contact information;
3. TIN Validation role: allows the taxpayer to validate other taxpayers' TIN;
4. Tax Clearance Validation role: allows the taxpayer to validate tax clearance certificates;
5. Upload Supporting Document Files role: allows the taxpayer to upload the withholding details, facilitating tax compliance.

About the Tax Declarations Page

The taxpayer uses the Tax Declarations page to manage all his tax declarations. A status mechanism allows him to view the progress of his filing.

The possible tax types included in e-Tax are:

- Schedule A: Pay as you earn (PAYE), i.e. Employment Income Tax
- Schedule C: Normal (Business Income Tax)
- Schedule D: Gain on Share
- Schedule D: Dividends
- Value Added Tax (VAT)
- Withholding Tax on Payment (WoP)

About the Taxpayer's Tax Accounts Page

The e-Tax provides the taxpayers with the ability to view transactions that have taken place in each of their tax accounts. A transaction can be an assessment, a payment, a refund or any other SIGTAS transaction type. This feature allows the taxpayer to track his various tax accounts, see the assessments being done, reassessments (if any), the payments he made and the overall position of his tax accounts.

Request for Clearance Certificate

This option provides the taxpayers with the ability to make on-line requests for Tax Clearance Certificates to the Tax Administration and to receive the Tax Clearance Certificates electronically without going to the tax center.

Registering Refund Request
The e-Tax application provides the taxpayers with the ability to make on-line requests for Refunds to the Tax Administration and to electronically follow up the refund status without going to the tax center.

About Taxpayer Information Page
The Taxpayer Information page allows the taxpayer to view basic enrolment information and to update/change certain fields. These fields include:

- Taxpayer Details: taxpayers name, TIN, Tax center of registration, correspondence language, SIGTAS correspondence (whether it is only electronic or both electronic and paper), phone numbers, email address.
- Addresses: both main and correspondence addresses
- Contact Information

About Taxpayer Message Center
The Manage Messages page allows the taxpayer to view or delete the received messages and to receive SIGTAS generated documents. Each SIGTAS-generated document is added individually in the inbox without a specific request from the taxpayer via E-Tax.

Clicking on the message will open the document in a PDF report instead of the normal message box to ensure the appropriate security for official documents. As such, the taxpayer will not be able to easily modify the document contents. The other advantage is to ensure that the letter layout of the Tax Administration is respected. The taxpayer will be able to print the document and pay against it, if the document is a payment document.

E Tax has also "Write Message" page that allows the taxpayer to send a new message or to reply to an existing received message. When the taxpayer sends a message, it is always directed to the Tax Centre of Registration of the TIN. The reason is that the Customer Officer at the tax center has been identified as the responsible for responding and managing the relation with the taxpayer.

About the File Uploading Feature
e-Tax offers to the taxpayers the capability of entering withholdings details (VAT, Pension, PAYE and WoP). e-Tax allows the taxpayers to upload a standard CSV file. CSV files are very simple file for which it is difficult to insert viruses or malwares.

The CSV file data is uploaded to e-Tax and inserted in the normal manual data entry records. Following a successful upload, the taxpayer will be able to open the manual data entry screen to review and validate the uploaded data. The data will be committed only after the taxpayer submitted their records, and transferred to SIGTAS as done for the manually entered data.

4.4.6 Large Taxpayers Service Experience on e-Tax

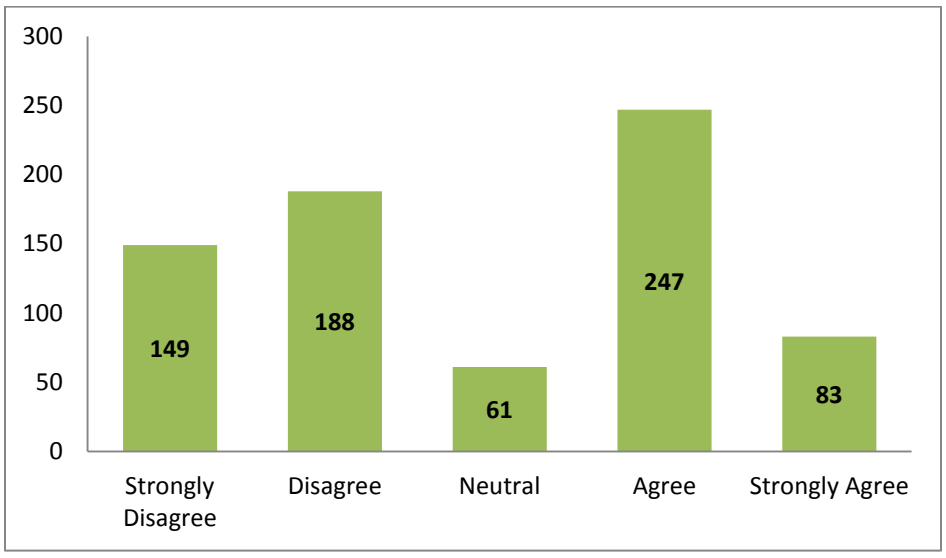
In order to examine the design (system functionality) reality (practices) gap, survey questionnaires were distributed to ERCA Large Taxpayers. Result of the survey from the 56 respondents is discussed in this section.

Generally, almost all of the respondents appreciate the e-Tax initiative as it brings a major change on the traditional paper based filing system. There is high appreciation on the usefulness of all the started e-Tax services. The responses got for question on the benefit that e-Filing, i.e. it is one of the major functionality of e-Tax, brings to their business reveals the following:

i. e-Filing saves a lot of time and cost (transportation cost) as the need for going to ERCA office is reduced.
ii. e-Filing helps to avoid the emotional stress especially coming from the long queues that was experienced at month ends for manual declaration.
iii. e-Filing reduces the number of paper works as tax return filing is mostly automated.
iv. e-Filing helps for timely recording of tax liabilities throughout the month. It helps to avoid backlogs accumulated towards the end of a month, which used to be a reason for late filing and penalty.
v. e-Filing helps to get tax credits and tax refunds any time.
vi. e-Filing automatically access genuine TIN numbers of businesses organizations with whom we deal with in purchase of goods and services. This helps to avoid requests for correction of TINs at time of refund requests or it avoids a request for correction or clarification for wrong TINs.
vii. e-Filing enhances confidentiality of business records. Access is only limited to the tax payer and only few Tax Officers at ERCA.
viii. e-Filing avoids computational error as it can do all tax calculations in the system, we are only required to provide the transaction amounts/salary for the e-Tax to base its computation.

However, it is found out that the composite aggregate level of agreement on the responsiveness of e-Tax to the Large Taxpayers day to day business is only 50%. There are a number of areas that need to be addressed for improved contribution of e-Tax to reduce the tax reporting and compliance burden.

Table 8: Overall significant of e-Tax to Large Taxpayers



The poor performance areas of e-Tax that ERCA need to give close attention, with percentage of responses, are presented below.

Assessment Area	Level of Agreement/ Satisfaction	Other Remark from interview with Large Taxpayers Customer Support and previous sections discussions
Fast connection to ERCA server and data transmission/uploading speed	14%	It was also noted by the Senior Officer for Customers Education and Support Team that the existing capacity of ERCA server to handle all those huge online demands from e-File website visits, and other online tax systems (SIGTAs) is very limited. One of the reasons for the slowdown in accessing, uploading, and transmission of e-Filing returns is ERCA's low server capacity.
Integration of e-Tax with other ERCA systems (e.g. Sales Register Machine)	25%	As presented at the report from OFAG at page 2.3, there is no interoperability of systems to avoid redundancy of data and/or to reduce tax reporting burden especially on VAT and purchase declaration.
Close and fast technical support on e-Tax	43%	It was learnt from the interview with the Senior Officer for Customers Education and Support that this challenge is coming from both sides: ERCA and Large Taxpayers. At both entities, there is frequent turnover of staffs as a result of which there is shortage and/or lack of trained personnel to provide support and to run the e-Filing. Moreover, with ERCA, most of the challenges could be technical that calls upon additional support from the main MIS Directorate, which is outside the LTO. This has constrained the LTO department not to provide support as fast as possible. A structural change that avails additional IT personnel at LTO could help to solve such instances.
Integration of sufficient online supports to e-Tax	9%	The e-Tax Manual has only the nature of providing guidelines on normal procedures. The *Manage Message* is also not functioning fully. Therefore, the only option for Large Taxpayers to get support upon encountering problems is either to call LTO or physically go to report the case. Even if successful in getting someone through phone, the quality of advice might be also not correct to solve problem at hand.
e-Tax supported with e-Payment	0%	Even though the system is planned to have this functionality, no service has yet started.
General internet connectivity and power interruption	27%	The service quality of Ethio Telecom is a major bottleneck for inefficient operation of e-Tax.

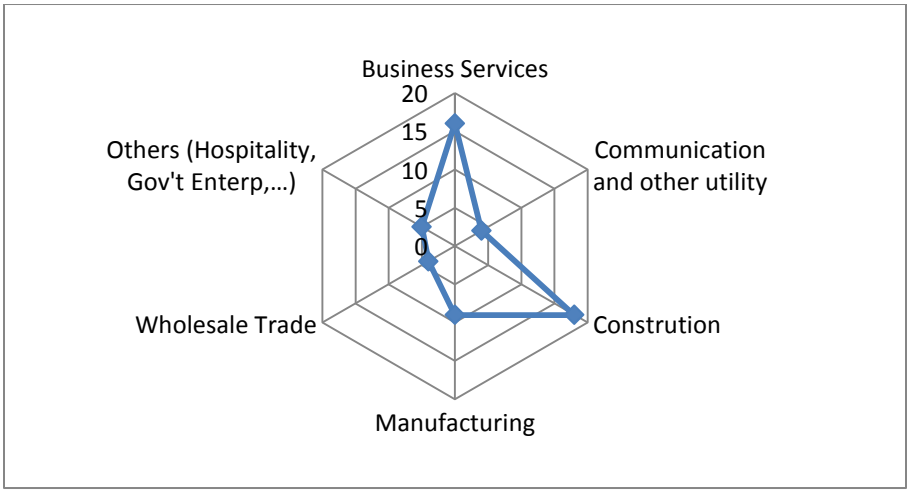
Further analysis was made to see if the lack of satisfaction on internet connectivity might have something to do with the type of connectivity device a taxpayer subscribed with Ethio Telecom. However, the result shows that 66% percent of the respondents found to be using Broad Band and 29% using EV DO, which are the recommended device by ERCA too. This shows that the subscription types could not be a cause for the slow connection experienced.

Are challenges experienced by the taxpayers has nature of concentration around specific industry? To examine this, the result of the responses are scattered around industry types.

This shows that, at least, there is not reasonable assurance to suggest that the low service level

satisfaction is around specific industry or due to the fact that the majority of the data is coming from non-representative sector.

Figure 11: Distribution of Large Taxpayers by Industry



Finally, for optimally benefit from e-Tax, the respondents has forwarded the following suggestions:

1. The majority of the recommendations revolve around a quick solution on internet connectivity. Almost all respondents complain both on frequency of internet downtimes and slow connection and processing speed. Unless e-Filing is supported with consistent and fast connection speed, they are forced to delay their tax return and sometimes the need for going back to the old manual system. ERCA should do something in consultation with Ethio Telecom.
2. ERCA need to improve on its support mechanism by enhancing the online support capability of the system, increasing its customer support staffs (so that not be affected by staff turnovers), assigned dedicated desk representative to email or calls all times. Some of the comments forwarded could tell about this in short: "we need to reduce the number of times we call to ERCA to get technical support", "we need more online guidelines", "the message center should be fully functional for enhanced support".
3. In order to reduce the downtime and slow or no response experienced when trying to connect to e-Tax, ERCA should also improve its Server capacity. As new capacity and state of the art demanding services are introduced, the capacity of its Server should be reassessed. Otherwise, the return on investment, both by ERCA and taxpayers, will be very minimal.
4. Payment is still made manually at ERCA office. The e-Filing should be very soon supported with e-Payment mechanism.
5. In order to address frequent staff turnovers, ERCA should have routine training calendar so that waiting time to get training to our new staffs is reduced/avoided.
6. ERCA should consider the possibility of outsourcing some of the areas that it is not good at or can benefit from a comparative advantage, for example, provision of technical support on e-Filing, provision of training on e-Filing.
7. ERCA should work further for the e-Tax be implemented in its entirety. The e-registration, e-clearance, and e-Payment modules should also be rolled out.

Chapter V Summary, Conclusion, and Recommendation

5.1. Summary

Summary on findings are presented in this section under Heek's design-reality gap model dimensions.

I. Information (Database/website Development)

a. ERCA is strongly building on data integration to a central database for its various e-Services. These include Sales Register Machines, SIGTAS and ASYCUDA. ERCA is also modernizing its tax information system to provide reliable and fast flowing information. But the central database lacks proper integration to one comprehensive/mega database.
b. ERCA is at its emerging stage on web presence. Its e-Services are more of informational (still with limitations on timeliness and comprehensiveness) than transactional. There is also a lot to learn from peer African revenue authorities from the study of the benchmarking of this study.
c. One of the expected outputs of the national e-Government strategy is one entry point (portal) to various online government services. ERCA's e-Government initiatives fall into this domain, but not yet made part of the www.eservices.gov.et.

II. Technological Infrastructure

a. Use of ICT in government offices is significantly increasing. It was observed during the interview with LTO that almost all staffs are doing their jobs with the help of computer, with email configurations, LAN facilities, etc.
b. ERCA server is not a high end computing machine. There are complaints from Large Taxpayers for the server inefficiency in uploading/ downloading times, non-responsive times (the need to sign in a couple of times times), and disconnections. This is also further debilitated by low international bandwidth availability and less advanced broadband internet access. All these are causing for Large Taxpayers not optimally benefit from e-Tax functionalities.
c. The Telecom sector development is not comparably growing with quality as the increase in the number of subscribers. The country is still under the category of least connected countries (LCC). All measurements by international categorize the telecom sector development readiness for e-Government as not up to the required standard. The GTP Annual Progress Report (2012/2013) does also confirm same and calls upon the need for accelerating the execution of the telecom expansion program, which can be witnessed from the continued large investment by Ethiopian government in the sector.

III. Processes-Interoperability

a. SIGTAS has functional limitations, both human and technical, that is hampering the overall tax information system process management. The major drawbacks with the system is found to include: lack of consistency in integration of all data coming from ERCA systems, lack of use of sales register machine by all eligible registered tax payers, inconsistency in sales registers machines updating to central database/SIGTAS, and the low emphasis given to knowledge management.
b. The result of the assessment on the web functionality of ERCA by experts and benchmarking of ERCA with other peer African revenue authorities prevails that ERCA's e-Service is in it premature stage. There are unexplored areas that ERCA

should take experience from those African countries under the study. These include: a move towards a true full package e-Services with menu of more transactional services and timely informational services; growing e-Services delivery modes with the opportunities coming from smartphone; working towards improved fiscal; supplementing its separate office opening for Large Taxpayers with virtual office segmentation (more specialized services for Large Taxpayers); exploring and benefiting from a more boosted online support mechanisms; exploring the possibilities for PPP for comparative advantage; introduction of e-Payment; introduction of Taxpayers Charter/Service Level Agreement for enhanced transparency and accountability on e-Services.

c. In terms of process re-engineering with the opening and introduction of e-Tax, there was no revision made on the existing work flows that was established under the BPR done way before. As a result there were complaints from staffs on assignment of new tasks from e-Tax that does not consider their task on their Job Description, which even sometimes has repercussion on customers satisfaction as the employee may give priority to other tasks for which he/she is more accountable.

IV. Objectives and Values-Legal and Policy Frameworks

a. The national ICT policy of Ethiopia provides strategic guide on six important pillars among which is ICT for Governance (e-Government) that aims efficiency and effectiveness in the delivery of government services. This policy is also supported with the e-Government Strategy and Implementation Plan. However, it is found out that ERCA is managing its e-Government initiatives independent of MoCIT, which result in the non-integration of ERCA e-Services with the national e-Service portal.

b. The FDRE Criminal Code 2004 is the only active legal document that manages cybercrime, the major risk on e-Government, governance in Ethiopia. The code has limitation on timeliness as it was not enacted taking into account current cybercrime threats. Moreover, there is a gap in capacity as the law enforcement bodies are not yet equipped with required resources and expertise for investigation of cybercrimes and prosecution of offenders.

c. The National Payment System Proclamation No 718/2011 recognizes the validity of electronic data (including digital signatures) as evidence of transaction carried out and as court evidence. This is one frontier of opportunity for ERCA to integrate e-Payment with e-Tax.

d. Even though e-Tax is in good operation, its introduction was not based on appropriate legislation. Existing enforcement by ERCA that denies Large Taxpayers paper based filing is administrative than legal decision.

V. Staffing (Human Capital)

a. ERCA is getting skilled manpower through the country's overall education system that gives more attention to ICT curriculums at all levels of studies. Moreover, staffs are continually provided on job trainings to always update them with new systems.

b. But staff turnovers, both at ERCA and Large Taxpayers, is one source of challenge that necessitates frequent trainings.

VI. Management System and Structure

a. As discussed above in the information and process dimensions, the level of integration of ERCA tax systems, tax centers/branch offices, databases towards a

holistic e-Government is weak. The extent of back office integration is also an area that needs further improvement as there are still stand alone manual procedures.

b. Virtual Customers' Segmentation-the move towards separate office (LTOs) is not followed up a virtual interface that best suits the new functionality requirements. Large Taxpayers are not provided with specialized, close, and fast online services in accordance with their tax compliance and strategic nature. The use of online relationship managers who dedicatedly manage Large Taxpayers all affairs is not well introduced.
c. Private Public Partnership (PPP) - there is a need for ERCA to get into partnership to leverage on the strengths and resources of the private sector for such possible partnership on trainings, customers supports (the technical aspects), and e-Payment with banks.
d. Monitoring and feedback systems - there is no proper monitoring and evaluation mechanism for the overall e-Service provision. There is not baseline benchmark upon which progresses are tracked. The online feedback alternatives are not well utilized. The Customers Education and Support Team of the LTO do not also conduct customers' satisfaction surveys from time to time. The only forums available are the LTO organizing review meetings, suggestion books/registers, and physical appearance to office or phone calls for complaints. Still, there is no mechanism learnt as to how feedbacks from these forums are transformed into action items that create accountability and ensure proper closure of complaints.

VII. Other Resources

a. There is a high recognition from the government for transforming the tax information system and budget allocation was not raised as a challenge. There is a great opportunity and also future prospect for the e-Government initiative to benefit more and more from the continued investment by the Ethiopian government on the Telecom Sector for enhancing connectivity.

5.2. Conclusions

I. Legal and Policy Framework

Even though there exists important policy frameworks, in terms of how much e-Government initiatives benefit from strategic outcomes from these frameworks, it is debatable that needs further research. The high level casual argument is that if there is good performance in implementation of the policy frameworks, the challenges on the ICT sector development would have not been bottlenecks to the e-Government initiatives by ERCA.

As the e-Government Strategic document envisages, ERCA's e-Tax initiatives is not accorded at least performance compliance check. Either the e-Government Strategy requires a revision to exclude ERCA or there has to be a check and balance mechanism that ensures quality of e-Service for the achievement of the e-government strategy. The argument especially makes more meaningful knowing the level of satisfaction of Large Taxpayers on ERCA e-Government and also the result of experts' assessment and benchmarking of ERCA website with other African revenue authorities.

With regard to the legal framework, there is low level of awareness among Large Taxpayers on risk of cybercrime and the overall legal system is also not ready to comprehensively manage cybercrimes. The draft cybercrime law is expected to address the existing limitation on the criminal code and the cyber security issues inherent to the electronic financial management system.

There is also a need for introduction of legislation for the overall oversight and regulation of e-Tax so that ERCA enforces e-Tax with a legal ground, as it is doing same with VAT, Sales Register Machines, and Higher Education Cost Share legislations.

II. ICT Sector Development

Ethiopian government is keeping on investing in the telecom sector as it has a multiplier effect on the country's economy and plays vital role in accelerating economic growth by enhancing efficiency. ERCA is also investing in its plan for reforming its tax information system, and also is requiring the private sector to have the required technologies to get its e-Services. However, the return on all these investments is not paying. As the GTP Annual Progress Report (2012/2013) also confirms, there is poor service and network quality that need very critical solution.

III. Absence of Holistic Approach to e-Government

Existing initiatives that ERCA is undertaking in automating its tax information system for e-Services are more of piecemeal moves than an integrated holistic approach that enable interoperability among its departments and branches/centers.

IV. ERCA Web Presence

ERCA website can be classified primarily under emerging information stage with also some features from upper end stages. The websites is primarily providing information in a passive way that does not include real provision of transactional services. There is a need for commitment and further investment for ERCA to grow its web presence into higher maturity level.

In terms of stage on e-Filing, it is in an early stage of Maturity Level 2. There is a recognition by ERCA that it is worth investing capital and personnel in taxpayer services, strategic focus on Large Taxpayers, staff development and training, information sharing on hard copies and over the website, improving relationship with Large Taxpayers, senior management becomes anxious and wants quick results, and availability of limited modern technology and equipment to enable access to information to assist in resolving taxpayer concerns. But ERCA lacks the important attributes from this stage: coordination between functional areas in an effort to enhance the level of service provided.

There are also attributes of Maturity Level 1 that is dragging back ERCA's e-Filing service: limitation of support to a single or few channels (usually a visit or call to the tax office) and provided only when the taxpayer visits the office.

V. ERCA Tax Information Administration Reform

ERCA is in massive investment on modernizing its tax system. Considering the number of users and tax centers throughout the country and the technological requirement that highly depend on telecommunication, the commitment to carry on its service under challenging environment is worth recognition. Especially, in a country where there are very few number of registered taxpayers as a result of lack of awareness on the duty to pay tax (primarily passed from the previous regime), mobilizing resource to win taxpayers willingness and moving them towards a new cyberspace is admirable.

But in the effort made to harmonize the different systems to feed each other and the move towards integration to a comprehensive database, there is major improvements remained to be done. The culture of value adding on data (data conversion into information) and also using these data to

create knowledge (the move from information to knowledge management) is also an area ERCA need to develop on. The report by OFAG is expected to be under close follow-up for corrective actions to address these and other related issued.

VI. ERCA e-Tax

E-filing is helping Large Taxpayers, with still its challenges, in reducing the administrative tax burden and compliance requirement. Large Taxpayers are benefiting from savings on their time, energy, cost wasted in higher paper works, low prone to error from manual computation, need to travel ERCA office for tax filing, bearing the stress on month end long queues. But solutions are required for the challenges the system has especially in slow server capacity of ERCA, poor/no internet connection, limited support mechanisms, and the need to pay with the old system (no e-Payment mechanism).

VII. ERCA Monitoring and Evaluation (M&E) System

ERCA is not using baseline indicators from which it can measure performance of its online support towards the goal of providing quick attention and assistance to Large Taxpayers. There is no M&E system for setting indicators, periodically measuring performance indicators/milestones, provide timely corrections/system improvement for deviations from expectations (design reality gap).

Customers of ERCA are not also provided with service standards based on which they can complain for non-delivery of standard service, it is based more on "take it or leave it". The use of Taxpayers Charter or Service Level Agreements as tools for transparency and accountability are new or not given much attention.

VIII. Transformation of Processes, not Translating of Processes

As the National ICT Policy of Ethiopia envisages for e-Government, there are still areas that are only focusing on translating existing processes/service, with still existing problems. For example e-Tax was introduced without a revisit to existing business process, which is a result of a BPR done way before. The more static nature of the website of ERCA does also has something to do with not undertaking meaningful business case study but rather going online to put on the website what is found in hard copies. Lack of rolling out e-Tax to its fullest capacity is also limiting the e-Service to be more of translating existing paper based declaration forms into electronic forms. Generally, there is no maximum effort evidenced to show commitment by ERCA to strongly go for transformation of processes through e-Government, going up in the maturity level of web presence.

IX. The prospect in the future

So far is so good, of course with its challenges and expected improvements suggested in the next section. But what does the future holds to build on started initiatives?

There is a wider recognition and further commitment from various stakeholders to further develop e-Government.

i. Primarily, the Government of Ethiopia is still pushing hard to set higher target for domestic tax revenue to achieve the goal of the Tax to GTP ration and to finance its mega projects. This in turn is expected to provide opportunity for more budgets to further tax information system administration transformations. Moreover, since failure on tax revenue target has a major repercussion on planned developments and/or mega projects financing, there will strong follow up and continued support on e-Services by ERCA.
ii. The continued investment on the Telecom sector to bring solution to existing bottle necks and also to introduce new technologies is expected to continue. Such solution is expected to

improve e-Government service provision, thereby increasing satisfaction level of Large Taxpayers.

iii. The high recognition of e-Tax by Large Taxpayers has also an opportunity for e-Government to grow more. Existing benefits as well as expected continued request for additional services, such as e-Payment, can sustain the demand for e-Service/e-Government, thereby giving ERCA a motivating factor opt for more and more internet online services.

iv. The move towards Core Banking and internet banking systems has a prospect for e-payment to be integrated with e-Tax easily.

5.3. Recommendations

The following are suggestions the study forwards for the e-Government initiatives of ERCA to further strengthened.

I. ERCA should promulgate proclamation or directive, as found to be appropriate, on e-Tax and/or Taxpayers Charter so that Taxpayers are entitled for the full capabilities of the system, regulate comprehensiveness and data quality, substantiate its denial of manual/paper based services, service standards are met, etc.

II. ERCA should re-assess its technological capability, especially hardware/server, so that it replaces the right infrastructure that can it can efficiently accommodate the ever increasing large number of taxpayers going online, handle mega databases with multiple data sources, effectively manage risk of cybercrimes, build interoperability on it, etc.

III. Interoperability among its departments and systems has to be worked out so that joined-up services and joined-up data are rolled out. Otherwise its objective on reliable and fast flow of information within and outside the authority, fast service delivery, and control of tax evasion will be difficult to achieve. It is only when this is materialized that ERCA will be in a true strategic position to oversight the overall tax information administration.

IV. As the country's Climate Resilience Greener Economy (CRGE) policy requires, ERCA should observe its corporate social responsibility by going online that has an effect on reducing thousands and millions of expenditures on papers used for manual processes, which has an effect on deforestations. It is high time to move from paper based to web based services.

V. The effort exerted on e-Tax should also be there to bring its other service provisions at its website to a higher maturity level. The design and functionality of ERCA website needs a revisit, based on at least the benchmarking results discussed in this study. It will be only by then that timely information is provided over its website, large numbers of taxpayers prefer its website as primary source of information, virtual offices with relationship managers can handle the day to day affairs of Large Taxpayers, multi-channel delivery of services is possible, the true transactional services flourishes, etc. There has to be a major transformational change to its web presence, than simple translation of existing paper based services for online informational services.

VI. ERCA should consider the outsourcing of some of its e-Services to the private sector. The possibilities of PPP in areas of e-learnings and online helpdesks, but with the basic protection against breach of confidentiality or access to SIGTAS data. Especially, with the large number of new enrollments to e-Tax, such standardized e-trainings and certifications gives ERCA a comparable advantage over running its own training center and ensuring its customers satisfaction. This will ensure one of the principles of e-Government: "no wrong door" to access service.

VII. The issue of internet connectivity, even though becoming a national concern getting attention of higher officials, should still needs continued effort for long lasting solution. In addition, alternative plans such as the technological solutions from replicators that help to work offline when there is poor or no connection and able to synchronize with ERCA server immediately when getting connection could be given a taught. This could at least save time wasted by Large Taxpayers waiting for good connection. Moreover, the possibility of using tax agents who could have strong infrastructure and can handle e-filing dedicatedly could be considered. As one of the major challenge of ERCA server could come when a large number of taxpayers are trying to access around similar times, such tax agents with a couple of skilled trained data encoders could somehow minimize the high number of similar access time of the server.

VIII. As the capability is already there, the e-Tax should start supporting e-Payment. As the banking sector has already in the business of internet banking and electronic fund transfer (EFT), this should not take long time to start.

IX. With the high penetration rate on use of mobile phones and high investment on latest technologies by Ethio Telecom, ERCA should pace up to benefit from the opportunity to open additional service outlet through smartphones. As the country is opening up it market through FDI and import/export trade, those taxpayers that are in constant move around the world need to benefit from 24/7 online service from ERCA. This is also what the Ethiopian government promises at its e-Government Plan, i.e. availability of e-Service in multi-channel that include mobile devices.

X. ERCA should consider the integration of a feature or tools on its website so that persons with special needs (disability) can access its service.

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Appendix 1 e-Government Portal Effectiveness Attribues

1. Front-End Attributes

Front-end design and development attributes are those that are visible on the client-side of a system. There are four key front end attributes as crucial inputs towards portal effectiveness.

1.1 Service Delivery

Service delivery refers to the process of offering government services through e-government portals. Adoption of a portal by citizen/customers is directly related to the availability and accessibility of various services offered on the e-government portal.

Availability

Availability refers to the types, levels, and number of services offered via an e-government portal. Availability of a threshold minimum number of services is important for take-up of e-government portals as stakeholders may not find the portal effective if important services are not available on the portal.

Accessibility

Accessibility refers to the ease of attaining information and services offered through an e-government portal. Accessibility can take the forms of channels of accessibility, disability access, and foreign language accessibility. Accessibility of government services through multiple channels (such as digital TVs, personal digital assistants (PDAs), and mobile phones) enables wider reach and increased take-up of an e-government portal. Disability access features offered through an e-government portal not only ensures increased take-up of the portal, but also makes the portal a more universal media. Accessibility of services offered through an e-government portal in foreign languages extends wider reach and more take-up of the portal.

1.2 *Customer Orientation*

Customer orientation is a key imperative for attracting more citizens/customers to an e-government portal and improving service quality. Better segmentation and improved customer support enables portal managers to improve the portal take-up by making it more citizen/customer-centric.

1.3 *Usability*

Usability refers to the degree of ease and feasibility with which citizens/customers are able to use an e-government portal. Key considerations that enhance the usability of an e-government portal are efficiency and layout/design. An e-government portal is termed efficient if customers/citizens/government employees feel that their output and job performance increases by using the portal. Symmetrical organization of the content, links and navigational features, along with use of better aesthetics improve the layout and design of an e-government portal.

1.4 *Trustworthiness*

Trustworthiness is the perception of confidence in an e-government portal's reliability and integrity. While citizens' reluctance to use e-government portals is a major challenge in their adoption, citizen trust is an important catalyst of e-government adoption. Recommended ways of increase trustworthiness in e-government portals are accountability, transparency, security, and privacy.

Accountability is the relationship between an e-government portal and citizens/customers in which the portal is held to account for its performance by the citizens/customers. Transparency refers to the organization of information on the e-government portal that reveals the depth of access it allows, the depths of knowledge about processes it is willing to reveal, and the level of attention to citizen response it provides. Security has been defined as the protection against threats such as a situation, condition, or incident with the potential to cause economic hardship to data or network resources in the form of destruction, non-protection, modification, denial of services, fraud, mismanagement and abuse. Citizens/customers are always concerned about privacy issues such as disclosure and misuse of personal

information. If the citizens/customers are sure that their personal and financial information is kept private and cannot be used without their authorization, their confidence in the portal's reliability and integrity increases and trust is generated.

2. Back-End Attributes

The back-end design and development attributes of an e-government portal are those that are not generally visible on the client-side of the system. These attributes include implementation approach, governance, IT architecture, and content strategy.

2.1 Implementation Approach

Implementation approach refers to the process through which an e-government portal is built and implemented. An e-government implementation project requires project management and continuous improvement for enhancing portal effectiveness.

2.2 Governance

Governance is key factor which is required to provide a framework for decision rights and accountabilities to encourage desirable behavior in the use of an e-government portal. It includes the use of institutional structures of authority and collaboration for allocating resources and controlling activities of an e-government portal project.

2.3 IT Architecture

IT architecture refers to the underlying technological architecture of an e-government portal. An e-government portal must be capable of providing access to all government back-end services from all delivery channels, structured to accommodate different back-office requirements, scalable to accommodate growing and changing requirements of technology, equipped to handle digital authorization, and capable of handling unpredictable volumes of traffic.

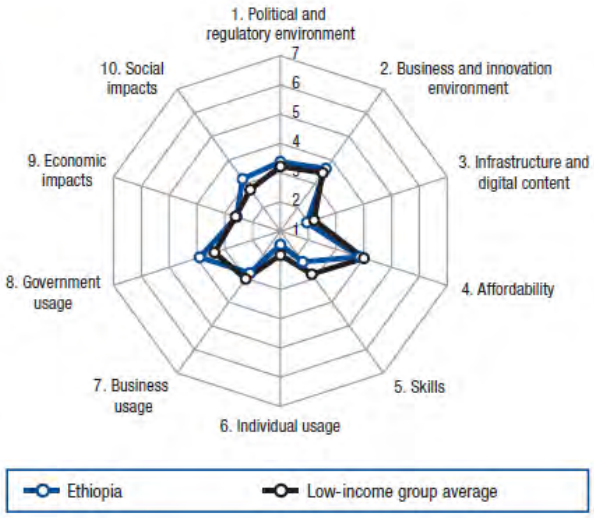
2.4 Content Strategy

Content strategy is a key back-end attribute that dictates what content is published and how it is published on an e-government portal. It is considered one of the most important design attributes of an e-government portal.

Appendix 2: Detail NRI Result of Ethiopia

Ethiopia

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	**130**	**2.9**
Networked Readiness Index 2013 (out of 144)	128	2.9
A. Environment subindex	**112**	**3.5**
1st pillar: Political and regulatory environment	102	3.4
2nd pillar: Business and innovation environment	120	3.6
B. Readiness subindex	**135**	**2.7**
3rd pillar: Infrastructure and digital content	135	1.9
4th pillar: Affordability	115	3.9
5th pillar: Skills	140	2.3
C. Usage subindex	**130**	**2.7**
6th pillar: Individual usage	146	1.5
7th pillar: Business usage	141	2.8
8th pillar: Government usage	83	3.9
D. Impact subindex	**112**	**2.9**
9th pillar: Economic impacts	128	2.6
10th pillar: Social impacts	103	3.2



The Networked Readiness Index in detail

	INDICATOR	RANK/148	VALUE
	1st pillar: Political and regulatory environment		
1.01	Effectiveness of law-making bodies*	94	3.3
1.02	Laws relating to ICTs*	130	2.8
1.03	Judicial independence*	112	2.9
1.04	Efficiency of legal system in settling disputes*	81	3.6
1.05	Efficiency of legal system in challenging regs*	116	2.9
1.06	Intellectual property protection*	85	3.5
1.07	Software piracy rate, % software installed	n/a	n/a
1.08	No. procedures to enforce a contract	78	38
1.09	No. days to enforce a contract	71	530
	2nd pillar: Business and innovation environment		
2.01	Availability of latest technologies*	126	3.9
2.02	Venture capital availability*	114	2.1
2.03	Total tax rate, % profits	54	33.4
2.04	No. days to start a business	76	15
2.05	No. procedures to start a business	107	9
2.06	Intensity of local competition*	133	4.0
2.07	Tertiary education gross enrollment rate, %	126	8.2
2.08	Quality of management schools*	118	3.5
2.09	Gov't procurement of advanced tech*	61	3.6

	INDICATOR	RANK/148	VALUE
	6th pillar: Individual usage		
6.01	Mobile phone subscriptions/100 pop.	147	22.4
6.02	Individuals using Internet, %	144	1.5
6.03	Households w/ personal computer, %	143	2.1
6.04	Households w/ Internet access, %	141	1.9
6.05	Fixed broadband Internet subs./100 pop.	143	0.0
6.06	Mobile broadband subscriptions/100 pop.	107	4.4
6.07	Use of virtual social networks*	144	3.9
	7th pillar: Business usage		
7.01	Firm-level technology absorption*	131	3.8
7.02	Capacity for innovation*	141	2.6
7.03	PCT patents, applications/million pop.	121	0.0
7.04	Business-to-business Internet use*	141	3.5
7.05	Business-to-consumer Internet use*	146	2.7
7.06	Extent of staff training*	123	3.3
	8th pillar: Government usage		
8.01	Importance of ICTs to gov't vision*	72	3.9
8.02	Government Online Service Index, 0–1 (best)	76	0.47
8.03	Gov't success in ICT promotion*	97	4.0

Appendix 2: Detail NRI Result of Ethiopia

	3rd pillar: Infrastructure and digital content		
3.01	Electricity production, kWh/capita	141	57.7
3.02	Mobile network coverage, % pop.	130	73.0
3.03	Int'l Internet bandwidth, kb/s per user	115	4.8
3.04	Secure Internet servers/million pop.	145	0.2
3.05	Accessibility of digital content*	142	3.1

	4th pillar: Affordability		
4.01	Mobile cellular tariffs, PPP $/min.	28	0.11
4.02	Fixed broadband Internet tariffs, PPP $/month	114	55.23
4.03	Internet & telephony competition, 0–2 (best)	144	0.00

	5th pillar: Skills		
5.01	Quality of educational system*	108	3.1
5.02	Quality of math & science education*	109	3.4
5.03	Secondary education gross enrollment rate, %	134	37.2
5.04	Adult literacy rate, %	144	39.0

	9th pillar: Economic impacts		
9.01	Impact of ICTs on new services & products*	132	3.4
9.02	ICT PCT patents, applications/million pop.	93	0.0
9.03	Impact of ICTs on new organizational models*	130	3.3
9.04	Knowledge-intensive jobs, % workforce	91	15.9

	10th pillar: Social impacts		
10.01	Impact of ICTs on access to basic services*	132	3.2
10.02	Internet access in schools*	124	2.8
10.03	ICT use & gov't efficiency*	92	3.8
10.04	E-Participation Index, 0–1 (best)	44	0.34

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Appendix 3

1- Review on Kenya Revenue Authority (KRA) Website: www.revenue.go.ke

Review Area	Indicators of Standard Web Functionality	
1- Design and Layout	Design aesthetics with intuitive menu system, multimedia and other features.	The website is ease to use with simple graphics, options of multimedia (through Facebook, YouTube, interactive call centers, instant responses, etc.) and intutive menu. The menu layout by taxpayer category and the online quicklinks makes the decision to move to where one want to do easy.
	Ease of navigation through proper menu system, site maps, table of content, alphabetic index, what is new features, etc.	The website is well equipped with strong navigation options. Especially, it has an online FAQ for various categories of services for online help through alphabetic index, advanced search, ask a question, list of the top ten questions, online support news and archives, etc.
	Availability of additional features for people with special needs (disability access)	Not found
	Availability of users online help, online trainings, online feedback, FAQs, etc.	There are a lot of online support mechanisms that include FAQs, E-Learning, email feedbacks, link to Facebook and Twitter. Even the FAQ feature nurtured more than 1,000 FAQs for various service categories with more than half a million viewers!
	Availability of important links within (departments) and outside (other related ministries)	The website has important links not only to related ministries but also to such important online resources such as Constitution of Kenya, OECD, Africa Tax Administration Forum, World bank , IMF e Library, COMESA, World Customs Organization, the national government portal, East Africa countries revenue authorities (excluding Ethiopia), South Africa Revenue Services, etc.
	Accessibility of e-Service on multiple channels (mobile phones, IVRs, call center supports, etc.)	No evidence observed as to the capbability of service provision over smartphones.
	Integration of web analytic tools (number of visits, pages viewed, pop- up surveys, no of downloads, etc.)	Such statistics are not observed except at the online FAQ section.
2- Customization	Ability of website to uniquely tailor view based on user registration (users segmentation)	Major services are divided into Domestic Taxes Department (including small and medium taxpayers), Customs Service Department and Large Taxpayers Department.
		Each department has its own interactive menu with available eServices in drop down menus.

Review Area	Indicators of Standard Web Functionality	
	Ability of website to dynamically recognize user groups and display specialized content	Primarily, the website has a segmentation of user groups dedicated to separate menus/links. Moreover, the online services also ask for login credential, which is assumed that it validates users according to taxpayer group.
3- Content	Types, level, and number of services available through a website	The major eServices provided, but not limited to, include: File Tax Return, Import Declaration Application, Manifest Lodgment, Goods Declaration, PIN Checker, Tax Compliance Checker (TCC), Excisable Goods Management System.
		The Integrated Tax Management System (iTax) portal is additional feature for such online services on eRegistration, eReturn, and ePayment.
		The iTax service has e-Payment functionality allowing Taxpayers or Agents to generate the E-Slips for various obligations against which they can make payment at bank (either by physically appearaning at the bank or through electronic wire transfer).
		Required forms and guidelines for various taxes and customs are readily available for downloads with PDF forms.
		Important dates within tax year are also provided so that taxpayers could note as reminder.
		The website content is also empowered by notices and publications on various legislations, reports, news, brouchers, etc. that are very important to the tax payer.
		As required by public information act and for researchers use, one can also easily get the corporate plan and financial statement of the revenue authority.
		Approved eDevice/Fiscal Electronic Device suppliers can also be found from the website.
		Additional specific Services for Large Taxpayers:
		Have separate news feeds on top weekly awardees, quarterly communication, etc.
		Have separate technical online desk to provide information on legal notices, circulars, etc.
		Assigned with online Relationship Manager to contact for any of their support requirement.

Review Area	Indicators of Standard Web Functionality	
4- Transparency and Accountability	Credibility of website through use of international naming conventions for addresses or the URL (e.g. '.gov.et')	Yes, www.kra.go.ke
	Increase in users trust through statement on disclaimers, privacy policies, terms and conditions, copyright information, etc.	There is a website policy and disclaimer statement that clearly state: the information provided through the website should not constitute tax-advisor client relationship; KRA disclaims all liability for the information stored or obtained through the website; KRA does not take responsibility for third parties in the manner in which they present KRA's website; by using KRA website, visitors are deemed to signify acceptance of this policy. The website is also copyright protected and ISO certified.
	Ease of determining authority responsible for the website and its content;	Generally, KRA is stated as the authority for the website and its content. At the online FAQ link, there is an option to contact to the webmaster that is anonymously presented to be the primary contact as responsible official.
	Availability of a communication mechanism to contact responsible officials via e-Mail, telephone, mailing address, fax, etc.	There are a number of two way communication options. These include contact through call centers, Facebook, the possibility to reach out to your relationship manager (for Large Taxpayers), complaints and info center (including hotline), staff email addresses.

Appendix 3

2- Mauritius Revenue Authority (MRA) Website: www.mra.mu

Assessment Area	Indicators of Standard Web Functionality	Findings
1- Design and Layout	Design aesthetics with intuitive menu system, multimedia and other features.	The design of the website looks somehow created by beginner website developernot attractive enough as compared to Kenya and South Afrca websties. However, it is well supported with intuitive design, ease to understand where to go as it has a front page that classifies taxpayers and their related services into individuals/employees, employers, Business and Corporations, and Customs.
		The main menu help to easily know what a viewer can quickly do: get information about the authority, go to eServices/electronic filing, download forms, get answer to questions through FAQs, get legislations or contact to the authority.
		The website has also the link to a follow us on Twitter and also a link to the Authorities TV on YouTube.
	Ease of navigation through proper menu system, site maps, table of content, alphabetic index, what is new features, etc.	In addition to proper menu systems, the good feature of the website as to navigability is that most of the services and information are condensed in the home page. This helps very much not to follow links after links to get where one wants.
		The website has a Quick Link option for user to directly go to what they want as the Quick Link box contains frequently required services.
		The home page also lists latest news, even with the most news provided with a blinking reminder "New".
	Availability of additional features for people with special needs (disability access)	Not found
	Availability of users online help, online trainings, online feedback, FAQs, etc.	The FAQs menu hosts a number of categories of services for recurrent questions on online and tax advisory services. A total of more than 170 topics were oberved posted in the website.
	Availability of important links within (departments) and outside (other related ministries)	No observed
	Accessibility of e-Service on multiple channels (mobile phones, IVRs, call center supports, etc.)	No evidence observed as to the capbability of service provision over smartphones.

Assessment Area	Indicators of Standard Web Functionality	Findings
	Integration of web analytic tools (number of visits, pages viewed, pop- up surveys, no of downloads, etc.)	Not clearly observed
2- Customization	Ability of website to uniquely tailor view based on user registration (users segmentation)	eServices are categorized under Individuals/Employees, Employers, Business and Corporate, and Custom.
		Each customer group has a link to online service and documents that are unique to its expectations.
	Ability of website to dynamically recognize user groups and display specialized content	Primarily, the website has a segmentation of user groups dedicated to separate menus/links. Moreover, the online services also ask for login credential, which is assumed that it validates users according to taxpayer group.
3- Content	Types, level, and number of services available through a website	Possible eServices listed in the website include: individual return, quarterly VAT return, TDS remittance voucher, Pay As You Earn (PAYE) remittance voucher, company and trust return, application for Tax Application Number (TAN), return of employees, annual TDS return.
		Taxpayers can effect electronic payment (ePayment) through approved banks.
		Required forms and guidelines for various taxes and customs are readily available for downloads with PDF forms.
		Important tax dates for 2015 are already made available in PDF form.
		The website content is also empowered by notices and publications on various legislations, reports, news, brouchers, etc. Moreover, tax payers can apply to the revenu authority mailing list registration so that they can periodically get these information through emails.
		The medial center of the menu has the option to get access to annual reports of every year (except the last report available is for 2012). One can also has access to the revenue authorities corporate plans.
		The media center does also host a number of publications that are very useful for taxpayers. These include: income tax guides (8), Incentive Schemes, VAT guides (9), Customs Guide (2), and
		The Downloads feature gives the option to taxpayers to get softcopy of various tax declaration forms.
		Additional specific Services for Large Taxpayers:

Assessment Area	Indicators of Standard Web Functionality	Findings
		There is no separate services provided to large taxpayers observed
4- Transparency and Accountability	Credibility of website through use of international naming conventions for addresses or the URL (e.g. '.gov.et')	No, www.mra.ma
	Increase in users trust through statement on disclaimers, privacy policies, terms and conditions, copyright information, etc.	The website has a brief legal disclaimer statement that declared to govern the use of the website. It includes such declaration as: all Data and Information published on the site by the authority are intended for general information purposes only; the authority make no representations or warranties of any kind about the completeness, accuracy, adequacy and/or reliability with respect to the website or the information contained on the website; that the content remains the property of the authority; all information contained on the website does not bind the authority and the authority shall not be liable for any loss and/or damage whatsoever.
		The website also provide a security statement on how to get secured service from the official website. For this it encourages: for taxpayers to always access electronic services from the authorities official website only; not to forget to login every time to get a specific service; to manage their password by frequently changing it; to avoid using electronic services in public computers; to make sure that a valid digital certificate is issued in the website of the authority.
		The website posted Taxpayers Charter, Standard Operating Procedures, and Corporate Ethics that are found to further increase transparency and accountability.
	Ease of determining authority responsible for the website and its content;	The Disclaimer specifies that Mauritius Revenue Authority is responsible for the content, changes/updates and security for its websites.
	Availability of a communication mechanism to contact responsible officials via e-Mail, telephone, mailing address, fax, etc.	For tax administration, the "Contact Us" menu provides the phone and fax number of the Tax Services unit.
		Moreover, a listing of higher officials (Directors) names, telephone, and email is also provided as additional contact lists.
		The hotline number of the authrority is provided.

Appendix 3

3- South Africa Revenue Services (SARS) Weibsite: www.sars.gov.za

Review Area	Indicators of Standard Web Functionality	Findings
1- Design and Layout	Design aesthetics with intuitive menu system, multimedia and other features.	The website is made very intuitive through a very good user categorization. One can easily go to its tax category and get available services to accomplish a task on hand What to do requests are also well supported with multimedia such as YouTube, Facebook, and RSS news feeds.
		The website's aesthetics is further increased by use of pictures that tell story about tax services. It is also very attractive with less color contrast.
	Ease of navigation through proper menu system, site maps, table of content, alphabetic index, what is new features, etc.	In addition to ease of navigation using the intuitive menu systems, the website is well equipped with a strong Site Map that lists out all of SARS eServices in detail. It presents all of SARS eServices in logical categories that can be used as a powerful search engine.
		The Site Map is categorized in alphabetic orders that further enhances ease of navigation.
		The website has a 'Useful Tools' option to easily find/navigate to forms, publications, FAQs, to find branches/mobile units, and to report scam.
		The front page of the website has also a "What is New" news feature that taxpayers can easily navigate to latest news.
	Availability of additional features for people with special needs (disability access)	Not found
	Availability of users online help, online trainings, online feedback, FAQs, etc.	At all of the client segmentations, the website is well equipped with online supports in the form of FAQs, downloadable PDFs, and video (through YouTube). You can see the important hyperlinks for "Find a Form, Find FAQ, Find Publication" in most areas of the website that makes users intuitive support much easier.
		Moreover, the Glossary of the website give additional service for viewers to have a basic definition of terms/words used in the website.
	Availability of important links within (departments) and outside (other related ministries)	The International Relations (IR) Division of the South African Revenue Service (SARS) is responsible for improving relations through contact with international tax and customs authorities. But there is no readily available links to these tax and customs authorities seen from the website. However, one can see links to such other offices such as Office of National Treasury, Tax Ombud, Davis Tax Committee,
	Accessibility of e-Service on multiple channels (mobile phones, IVRs, call center supports, etc.)	SARS has an application which allows taxpayers to register for eFiling; submit a return and reset passwords all via smartphone. They can also view their notice of assessment; view Income Tax Statement of Account (ITSA); use tax calculator; and request a correction over their smartphone.

Review Area	Indicators of Standard Web Functionality	Findings
	Integration of web analytic tools (number of visits, pages viewed, pop- up surveys, no of downloads, etc.)	Not clearly observed
2- Customization	Ability of website to uniquely tailor view based on user registration (users segmentation)	The website has a clients segmentation feature by which viewers are classified under: Individuals, Businesses and Employers, Tax Practitioners, and Customs and Excise. The menu for each client segment has specific services and information tailor made to it.
		The Businesses and Employers clients are further segmented into Embassies, Labor Brokers, Large Business Centers, Small Businesses, Tax Exempt Organizations, Trusts, and Venture Capital Companies. Each of these sub businesses has its own eServices options.
	Ability of website to dynamically recognize user groups and display specialized content	The website has also login options for all taxpayers. Based on login credential, specific tailor made views are pop upped.
3- Content	Types, level, and number of services available through a website	SARS has an online eFiling system that is providing a large range of eServices. Existing services observed include: Pay-As-You-Earn (PAYE), Value Added Tax (VAT), Personal Income Tax, Trusts, Change of Personal Details, Request for Tax Clearance Certificate (TCC), Request for Tax Directive, Stamp Duty, Tax Practitioner Registration, VAT Vendor Search, Customs payments, Tax Calculators.
		The eFiling system dose also have the option to make ePayment through a feature call credit push, an electronic option by which taxpayers authorize for SARS to send a payment request to the taxpayer's bank with a Payment Reference Number (PRN) and amount to be paid. The taxpayer is then required to conclude the ePayment via internet banking.
		There is also additional option for taxpayers to make payment via Electronic Fund Transfer (EFT) with banks that support such a system.
		Required forms and guidelines for various taxes and customs are also readily available for downloads with PDF forms.
		Beginning 2015, already around 50 important date information are posted, which shows how SARS is quick in updating the site.
		One can easily get information on legislations, news, notices, publications, reports, etc., through out various navigation tools described above.

Review Area	Indicators of Standard Web Functionality	Findings
		SARS Commissioner's annual report is posted to inform parliament, stakeholders and the community about SARS performance in administering the taxation system and customs. The report includes SARS Annual Report, Presentation to the Standing Committee on Finance, Progress on Strategic Plan, Annual Performance Plan.
		SARS, with National Treasury, publish and post tax statistics annually. These aggregated statistics are compiled from SARS's registers of taxpayers and from tax returns.
		The report presents annual performance results on a fiscal year: revenue collected, composition of main source of main tax revenues, payment channels (for example 72.5% of 2013/2014 tax revenue is collected through eFiling), statistics on cost of revenue collection.
		SARS also every month provide information on trade (export and import) statistics. For example, the trade statistics for December was published in January 30. It provides such important information on trade deficit/surplus by month, trade highlight by world zone, trade highlight by export/import categories.
		SARS commented that the statistics are finding wide use within government, business, academia and non-governmental organizations.
		The home page of the website has a link to 'Useful Tools' that helps to find any required forms. The SARS eFiling separate website (http://www.sarsefiling.co.za/) has also a full feature that help taxpayers to get applicable forms and guidelines.
		Especially, through the Site Map feature, one can enjoy from the depth of the website in terms of legislations, forms, draft laws, tax statistics, tariff amendments, rule amendments, training programs, information on eService per a given client segmentation, etc.
		Additional specific Services for Large Taxpayers - called Large Business Centers (LBC) by SARS:
		Provides separate publication and forms applicable to LBCs.
		Separate Taxpayers Interface Office (TIO) is established with a mandate to provide a differentiated service to LBC taxpayers, which is tailor made to their needs and compliance behaviors. TIO is responsible for the coordination and facilitation of all interactions between taxpayers and LBC and is the primary point of contact for taxpayers.

Review Area	Indicators of Standard Web Functionality	Findings
		A Specialists Support is assigned to LBCs with a mandate to act as expert advisors or in-house counsel.
		Each tax payer is assigned with Client Account Management (CAM). CAM performs taxpayer registration/de-registration, management of taxpayers files at SARS system, accessing of tax returns, account management and reconciliation, and debt collection.
4- Transparency and Accountability	Credibility of website through use of international naming conventions for addresses or the URL (e.g. '.gov.et')	Yes, www.sars.gov.za
	Increase in users trust through statement on disclaimers, privacy policies, terms and conditions, copyright information, etc.	The website has a Terms and Conditions (T&C's) that binds and enforces against all viewers of the website. It includes such provisions as: definition and interpretation of terms, unallowable use of information for commercial purposes, intellectual property of the website by SARS, SARS reserved right for change and amendment of its website, SARS responsibility to protect privacy (private information), SARS responsibility to secure the content of the website, SARS's disclaimer and limitation of liability for dames or loss resulting from the website.
	Ease of determining authority responsible for the website and its content;	The T&C's specifies that SARS is responsible for the content, changes/updates and security for its websites.
	Availability of a communication mechanism to contact responsible officials via e-Mail, telephone, mailing address, fax, etc.	The "Contact Us" menu of the website takes viewers to an option to use various contact mechanisms and FAQs. Generally, it is observed that taxpayers can contact SARS via email, fax, telephone, Facebook, postal address, or physically.
		For taxpayers complaints, SARS has a Service Monitoring Office (SSMO), independent office from branch offices. SSMO is mandated to assist taxpayers who are having difficulty in resolving problems of a procedural nature with SARS. Tax payers are provided the address to lodge complaints to SSMO.
		Taxpayers are also provided with the option and the address to reach out Tax Ombud.
		The SARS eFiling website provides the option to reach out to SARS for required support, feedback, complaints, etc.
		Viewers are also encourage to forward feedback on SARS website through a website feedback option.
		Even the website has a consultation forum for draft laws for the public to provide its feedback

Appendix 4.1

Interview Questions for ERCA Large Taxpayers Office

1. Policy Framework:
    a. Do you have e-Government strategic document/action plan?
    b. How much is the e-Government Strategic Plan cascaded to your organization strategic framework?
2. Interoperability:
    a. Intranet-how much is the back office systems coordinate and share information (multi-level information exchange)?
    b. How many of ERCA's office are integrated and using one central database? Are lower level data maintained at local structures continually feeding to one central database?
    c. How is the VAT register machines integrated to the main system?
    d. What efforts are made to reduce data redundancy by various offices and various systems (VAT Register Machine, e-Filing, Withholding Tax reporting, etc.)?
3. Knowledge Management:
    a. What does the value chain process involve (i.e. data to information to knowledge management to decision support system)?
    b. How much is it available or used in problem solving and decision making? Can you tell me some examples?
4. Infrastructure:
    a. Do you believe that ERCA is sufficiently equipped with the required technologies (hardware and software) to sufficiently handle its e-Government/e-Service endeavor?
    b. If not what are the major weaknesses areas that are constraining ERCA's e service delivery?
    c. How much is ERCA influenced by such challenges from telecommunication, power supply, and budget allocation?
5. Human Capital:
    a. Is the department well-staffed with required personnel?
    b. How frequent are staffs provided the necessary trainings to effectively handle their job?
6. Business process re-engineering:
    a. What were the major reforms made before going live for online service? Are existing processes well redesigned for the online service delivery?
7. Monitoring and Evaluation:
    a. What is the mechanism by which your online service performance level is continually assessed? Do you have key base line and performance indicators?
    b. How is users' needs continually assessed and addressed for the effectiveness of your website?
8. E filing:
    a. How many/percentage of the tax registered is using e filing?
    b. What are the major challenges so far?
    c. Is there an effort to start e-tax payment system with banks?
    d. Does the system also work with Mobiles (M Declaration)?
9. Business Case for e-Government:
    a. How do you relate the contribution of e-Service to:
        - Increased control on tax evasion?
        - Increased customers' satisfaction?

Appendix 4.2

Interview Questions for MoCIT e-Government Directorate

1. What is the mechanism by which MoCIT is monitoring and evaluating e-Government Implementation Plan?
2. What are the supports MoCIT is providing to ERCA in order to achieve the e-Tax plan?
3. How much is MoCIT involved in the e-Services investments of ERCA?
4. How is the implementation of e-Tax informational and transactional services progressing?
5. What is the plan for the integration of ERCA's online services to the national government portal?

Appendix 4.3

ERCA's e-Service Satisfaction Survey on Large Taxpayers

Name: _____ (Optional) Organization: _____ (Optional)

Section 1: Rating on e-service via ERCA Office website (www.erca.gov.et)

1.1 How frequent are you visiting ERCA website? Please check (√) on the appropriate rate based on your experience with ERCA.

a) Never b) One in a month c) Bi weekly d) Weekly e) Daily
Others (please specify): _____

N.B. If 'Never' or very rarely, please go to section 2.

1.2 How do you rate the responsiveness of the web site to your needs? Please check (√) on the appropriate rate based on your experience with ERCA.

1-Very Dissatisfied	2-Not Satisfied	3-Neutral	4-Satisfied	5-Very Satisfied

Code	Assessment Area	1	2	3	4	5
1.2.a	Providing timely information/updates on proclamations/regulations/directives, new procedures/processes, etc.					
1.2.b	Providing timely information/updates on notices (for example non-working days, change of procedures/process, change of location)					
1.2.c	I feel ease to use the website due to its design features (i.e. aesthetically appealing, text size is readable on various screen resolutions, color schemes are not disturbing)					
1.2.d	I am requested for feedbacks for improvement of the e-Service					
1.2.e	The website is user friendly for ease of navigation (i.e. ease of locating what I need, availability of search engines, availability of links, helps, online training/FAQs, site maps, etc.)					
1.2.f	I feel secured when giving or using information via the website					
1.2.g	All required forms for tax law compliances are available for downloading					
1.2.h	The website loads/connects quickly with fast access time (including downloading of forms, opening of links)					
1.2.i	The website is also designed for compatibility with my mobile phone					

1.3 Generally, how do you rate the overall significance of ERCA's website as a source of on line e-Service for your day to day business?

a) Insignificant b) Less significant c) Significant d) High significant

Section 2 Assessment on e-filing System

2.1 How long have you been using e filing? Please check (√) on the appropriate rate based on your experience with ERCA.

a-Less than a year b-1 to 3 years c-More than 3 years

2.2 How do you rate the responsiveness of e filing to your business needs? Please check (√) on the appropriate rate based on your experience with ERCA.

1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree

Code	Assessment Area	1	2	3	4	5
2.2.a	One can easily subscribe and install the system/application					
2.2.b	The e filing is fast enough in connecting and transmission of data					
2.2.c	The e filing software/application is easy to use and/or to training new users					
2.2.d	The e filing software/application has the capability for import and export of data					
2.2.e	The e filing software/application has the capability to integrate with other systems, such as VAT register machine					
2.2.f	The e filing software/application is providing some basic information about my business (I can get some information about my organization)					
2.2.g	The e filing software/application is comprehensive to handle all my tax filing requirement by government (income tax, VAT, withholding tax, stamp duty, etc.)					
2.2.h	ERCA is providing me close and fast technical support for e filing effective functioning					
2.2.i	Sufficient on line support features are also integrated in the e filing application					
2.2.j	The e filing system is helping me in reducing administrative paper work burden required by ERCA (i.e. the frequency of going to ERCA office for paper based reporting is decreasing)					
2.2.k	I feel secured with the privacy and security features of e filing as there is strong authentication in the e file system (i.e. use of login password and other layered authentication requests)					
2.2.l	The e filing is also very well supported with e payment supplementary system					
2.2.m	The system is not majorly constrained by internet connectivity and power cuts/interruption					
2.2.n	Generally, there is adequate preparedness by ERCA (organizationally, legally, and technologically) to provide the e filling system effectively					

2.3 Cyber Security Law:

2.3.1 In your opinion, how do you rate the threat of cyber-crime/internet crime (the use of computer and internet in the commissioning of a crime such as attaching computer hardware and software, financial crimes, illegal access, causing damage to data) in Ethiopia?

a-Very high risk b-High risk c-Low risk d-Very High Risk

2.3.2 Have your organization been under attack by cyber-crime in the last few years?

Yes_____ No _____

2.3.3 Do you agree with the argument that "the solution for cyber-crime is more technical than legal prosecution and legislation"?

Yes_____ No _____

2.3.4 Do you think Ethiopia has the required cyber-crime law to protect emerging e-Services?

Yes_____ No _____

2.4 From the e filing system, what feature/functionality/service do you get as most relevant and/or important to your business (major strength of the system)? Why?

_____
_____
_____
_____
_____

2.5 From the e filing system, what feature/functionality/service do you get as most irrelevant and/or less important to your business (major weakness of the system)? Why?

_____
_____
_____
_____
_____

2.6 Generally, how do you rate the impact of e filling system on your business in terms of cost saving and increased compliance to tax law?

a) Insignificant b) Less significant c) Significant d) High significant

3. Comments

3.1 What other comments would you like to provide ERCA for its e-Service improvement?

3.1.a. To improve its on line e-Service via its official website:

_____
_____
_____
_____

3.1.b. To improve its e filing system:

_____
_____
_____
_____

4. General Information: please select the appropriate answer applicable to your organization

4.1 Type of Industry	a. Manufacturing b. Construction c. Wholesale Trade d. Business Service e. Communication and other utility **f.** Other (please specify):

4.2 Type of Business/Ownership	a. Private Limited Company (PLC) b. Share Company (S.C.) c. Public Enterprise d. Other (please specify):
4.3. Year of Experience in Ethiopia	a. Less than 3 years b. 3 to 6 years c. 6 to 10 years d. More than 10 years
4.4 Number of employees	a. Less than 15 employees b. 15 to 30 employees c. 30 to 60 employees d. More than 60 employees
4.5. Number of branches/offices in Ethiopia	a. Less than 5 branch offices b. 5 to 10 branch offices c. More than 10 branch offices
4.6 Type of Internet Connectivity Service used	a. VSat b. Broad Band c. EV DO d. CDMA 1x e. Dial Up f. Other (please specify):

You are done, thank you very much!

Appendix 4.4

ERCA Website Functionality Observation Checklist for Heuristic (Experts Analysis)

Section A: Web Functionality Assessment

Assessment Area	Indicators of Standard Web Functionality	Finding
1- Design and Layout	Design aesthetics with intuitive menu system, appealing graphics, use of colors, multimedia and other features, etc.	
	Ease of navigation through proper menu system, site maps, table of content, alphabetic index, what is new features, etc.	
	Availability of additional features for people with special needs (disability access)	
	Availability of users on line help, online trainings, on line feedback, FAQs, etc.	
	Interoperability-availability of important links within (departments) and outside (other related ministries)	
	Accessibility of e-Service on multiple channels (digital TVs, mobile phones, IVRs, call center supports, etc.)	
	Integration of web analytic tools (number of visits, pages viewed, pop- up surveys, no of downloads, etc.)	
	Integration of other efficiency enhancing mechanisms (online interaction, error prevention, faster recovery time, session backups)	
2- Customization	Ability of website to uniquely tailor view based on user registration (users segmentation)	
	Ability of website to dynamically recognize user groups and display specialized content	
3- Content	Types, level, and number of services available through a website	
	Committing of necessary resources (time, money, R&D, M&E, dedicated e-Service sponsor, etc.) for the website to remain dynamic/fresh through all times.	
	Availability of two way communication through hot link addresses, feedback forms, provision for electronic submission of downloadable materials, etc.	
	The content is written plainly and in a language which diverse users with educational and knowledge background can easily understand	
	Clear indication when the website is created/published, dates of last update, names of person or agency responsible for	

	content	
4- Transparency and Accountability	Credibility of website through use of international naming conventions for addresses or the URL (e.g. '.gov.et')	
	Increase in users trust through statement on disclaimers, privacy policies, terms and conditions, copyright information, etc.	
	Ease of determining authority responsible for the website and its content;	
	Availability of a communication mechanism to contact responsible officials via e-Mail, telephone, mailing address, fax, etc.	
5-Web Visibility	Early appearance of a website through various search engines (for example searching of the head work 'ERCA' and its through Google, MSN and Yahoo and if it appeared within first 10 hits of the results	
6-Internet Connectivity Speed	Measurement of download time, speed of data transfer using specialized tools/testing software	
7-Other features that need to be assessed as deemed by the expert		

Section 2: Summary and Recommendation:

2.1 Based on the above assessment results, how do you classify the maturity level of ERCA website?

a. Emerging-Informational
b. Enhanced-Interaction
c. Transactional
d. Connected

2.2. What do you recommend ERCA for the enhanced maturity of the web site?

Appendix 4.5

Interview Questions/Questionnaire on e-Government Legal Frameworks Readiness

Name: _____
(Optional)
Organization: _____
(Optional)

1. Generally, what is your comment on the relevance of integration of ICT with business undertakings for modernizing the tax administration in Ethiopia?
2. How much is **existing legislations** ready/responsive to cyber based business relationships?
    a. Does electronic commerce, as compared to paper based commerce, have nurtured ground in Ethiopia Commercial Code? Why or why not?
    b. Are digital exchanges of information/data, electronic form of data, electronic transaction, electronic/digital signature, electronic archiving, etc. have legal recognition? Where (which code/article)
    c. Does the legislation have provisions to accept evidences coming from e-Service printouts as valid/legal documents?
    d. Are security and privacy protections well addressed in the legislatives?
3. What do you think are the gaps in this laws that is not ready or does not have adequate coverage to handle disputes out of e-Service transactions/undertakings?
4. How do you rate the readiness among legal professionals in terms of trainings or other capacity building mechanisms to have enhanced understanding on cyber law?
5. What is your recommendation for the legal framework to come to par with the fast growing use of ICT on business relationships?
    a. What effort is being done to address these gaps (i.e. new legislations in progress)?

Declaration of Originality

I hereby certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

I declare that this is a true copy of my thesis, including any final revisions, as approved by my thesis committee and the Graduate Studies office.

Samuel Eshetu Tadesse

Signed: _____ On: _____/____/_____ Place_____

Dr. Jemal Abagissa

Signed: _____ On: _____/____/_____ Place_____