E-GOVERNMENT IN ETHIOPIA

A THESIS SUBMITTED TO THE GRADUATE SCHOOL OF APPLIED SCIENCES OF NEAR EAST UNIVERSITY

By

ALEM HABTEMARIAM BEZU

In Partial Fulfillment of the Requirements for the Degree of Master of Science in Information Systems Engineering

NICOSIA, 2019

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Approval of Director of Graduate School of Applied Sciences

Prof. Dr. Nadire CAVUS

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ACKNOWLEDGEMENTS

Firstly, I might want to offer my most profound appreciation and gratitude to my thesis supervisor Assist. Prof. Dr. Kaan Uyar for his excellent supervision, invaluable feedback and guidance and thanks to co-supervisor Assist. Prof. Dr. Erkut Inan Iseri for his generous time and kind support.

Most importantly, my boundless thanks and passionate love would be committed to my dearest family for those who helped to reach this level and specially to my wife and love of my life Mihret Kassaye for her love, patience, braveness and encouragement during my study, a great love to my blessing of God, my daughter Yohanna and Son Nathan, my gratefulness to my sister Tobista Lemma for her prayer and wisely advices, and my extended love to my mother Shitaye Hailemariam for your kindly word of blessing.

Lastly, I would like to extend my thanks to friends and family, Near East University and Betre Science scholarship program for the opportunity, and NEU Department of Information System Engineering.

To my mother, Shitaye Hailemariam Tufa…

ABSTRACT

Ethiopia had made enormous progress on socio – economic aspect to transform into middle level country from agriculture to industrial system and further to ICT based economy. Use of technology plays a very significant role to change the ongoing e-government system into the center of the life of society to create transparency and accountability. The work analyze e-government strategic plan that the country has been doing for a decade to reach the needed goal, analysis of services and UN e-government survey to know the progress of e-government in Ethiopia.

For this reason, the work discusses detail of current development and progress of e-government strategic program at country level and e-government factsheet services for citizen and business. Further analyzes UN e-government survey including EGDI, EPI, and analyzing EGDI of corresponding East African countries.

The work clearly designed to benefit researcher and different organs to know the country status in terms of ICT usage for the further study and planning, and gives the updated analysis of e-government in Ethiopia. This embraces constructive method that analyze e-government to conceive the progress of encountering e-government execution in Ethiopia and lastly it recommends further directions.

Keywords: Ethiopia; E-government; E-government services; ICT; EGDI; EPI

ÖZET

Etiyopya, tarımdan sanayi sistemine ve daha sonra BİT temelli ekonomiye orta seviyeli bir ülkeye dönüşmek için sosyoekonomik açıdan büyük ilerleme kaydetmiştir. Şeffaflık ve hesap verebilirlik oluşturmak için teknolojinin kullanımı, devam etmekte olan e-devlet sistemini toplumun yaşam merkezine dönüştürmede çok önemli bir rol oynamaktadır. Çalışma, ülkenin Etiyopya'daki e-devletin ilerlemesini bilmek için gereken hedefe ulaşmak için yaptığı on yıl boyunca gerçekleştirdiği e-devlet stratejik planını, hizmetlerin analizini ve BM e-devlet anketini analiz ediyor.

Bu nedenle, çalışma ülke düzeyinde e-devlet stratejik programının mevcut gelişimi ve ilerlemesi ile vatandaş ve iş dünyası için e-devlet bilgi formu hizmetlerinin detaylarını tartışmaktadır. EGDI, EPI dahil olmak üzere BM e-devlet anketini ve ilgili Doğu Afrika ülkelerinin EGDI'sini analiz ederek daha da analiz eder.

Çalışma ve planlama için BİT kullanımı açısından ülke durumunu tanıyan araştırmacı ve farklı organlara açıkça fayda sağlayacak şekilde tasarlanan çalışma Etiyopya'da e-devletin güncellenmiş analizini veriyor. Bu, Etiyopya'da e-devlet uygulamalarıyla karşılaşılmasının ilerlemesini algılamak için e-devleti analiz eden ve son olarak başka yönler öneren yapıcı bir yöntem içermektedir.

Anahtar Kelimeler: Etiyopya; E-devlet; E-devlet hizmetleri; BİT; EGDI; EPI

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LIST OF ABBREVIATIONS

ASPA:	American Society for Public Administration
B2B:	Business-to-Business
B2C:	Business-to-Customer
B2G:	Business-to-Government
EGDI:	E-government Development Index
GTP:	Growth and Transformation Plan
IBM:	International Business Machines
ICT:	Information Communication and Technology
HCI:	Human Capacity Index
MCIT:	Ministry of Communication and Information Technology
MInT:	Ministry of Innovation and Technology
NIFO:	National Interoperability Framework Observatory
OSI:	Online Service Index
SMART:	Simple Moral Accountable Responsive and Transparent
TII:	Telecommunication Infrastructure Index
UN:	United Nation
UNDPPE:	United Nation Development Program and Public Administration
UNDESA:	United Nations Department of Economic and Social Affairs
UNESCO:	United Nations Educational, Scientific and Cultural Organization
UNPAN:	United Nation Public Administration Network
USAID:	US Agency for International Development

CHAPTER 1
INTRODUCTION

The use of internet playing very significant role for global information exchange used in private and public, business and academic areas connected by different technological application. Since emergence of the Internet at the beginning by the Division of Defense of America as information transmission system, and internet turn in to one bit of mind blowing tool to everyone's living activity on world. Consequently the amount of internet users today approximately around 4,208,571,287 with a world population 7,634,748,428, considering African continent with the total user of internet is 464,923,169 with a population of 1,287,914,329. (Internet Usage Statistics , 2018).

Starting from 1990, ICT contributed a very significant part to accelerate and change the traditional government system more upgraded and to be automated. The use of ICT in public services especially in government administration area plays a very significant role to enhance the public services to reach its goal to serve the citizen in socio – economic development. Developed countries who applied e-government system using information technology skills are numerously benefited from the system to integrate citizen with administration. E-government implementations have come out quickly in the developing countries; this is because of empowering tool to elevate efficiency and increase transparency of organizations. The term e-government described as:

> "E-government is the use of Information and Communication Technologies to promote more efficient and effective government, and make it more accessible and accountable to the citizens."(UNESCO, e-government toolkit: p12)

Since 2001, United Nations (UN) has been publishing e-government survey. The survey is a global report which evaluates the e-government analysis progress of UN member states. The appraisal calculates e-government accomplishment of country associated to one another and the survey evaluate e-government adequacy in the conveyance of open administrations and indicates marking in advancement of e-government. These will support the United Nation agenda 2030 for sustainable development. (UNDESA, 2018).

The survey indicates the assessment of data and development of e-government based on three important points:

> "E-government Development Index (EGDI) which is a country ranking is measured such as online service index (OSI), Telecommunication Infrastructure Index (TII) and Human Capacity Index (HCI)" (UN e-government survey, 2018: page 198)

However, Ethiopia become one of the fastest economic growing countries in Africa and has showed enormous economic progress advancement over the decade with glaring future. Effective and strong administration is one of the key proverbs to get practical advancement and ICT are important tool to encounter better government goals. E-government improves the development, information transparency and social participation in Ethiopia to facilitate to transform everyday activities of government service and automate working processes. The fact that in Ethiopia there have been numerous project activities initiated to maintain sustainable development in growth and transformation plan (GTP), former Ministry of Information Technology (MICT) initiated and vision to support ICT to increase the good governance process. This lead to a five year strategy was formulated and conducted from 2011 – 2015, and MICT made an arrangement with external experts to support the development of Ethiopia action plan of e-government from 2016 - 2020 by carrying thought of last five years advancement of Projects and main focus areas. The work analyzes the strategic plan, services and UN e-government survey rankings of Ethiopia.

1.1 Historical View of Ethiopia

Details on genesis of peoples that shows habitants of highland Ethiopia were still a big issue of discussion for research and debate in the beginning of 1990s. Anthropologists believe that Great Rift Valley is the location of a great archeology discovery. Ethiopia is a wellspring of human development with fossil evidence which cover quite a bit of human history running from Chororapithecus Abyssinicus (twelve to seven million years prior), and one of the world's most famous discoveries found in Afar region called Lucy or Dinkinesh (3.2 million years ago), this shows there are various remarkable fossil sites in Ethiopia which are registered by UNESCO world Heritage sites. (Ministry of Foregn Affairs)

History of Ethiopia from its origination stated one of independent ancient African country as an empire under the Aksumite beginning of first century BC to present day. The modern Ethiopian reunification period started during the time at Emperor Tewodros but it became successful during reigh of Menelik II. And He defeated Italian invasion crucial war at Adwa 1896. And long term leader has King Haile Selassie and overthrown by Derg 1970 and military region came to power until 1991 overtaken by military action and this lead consequence of today's Federal Democratic Republic of Ethiopia. And Ethiopia becomes progressive economically and politically by reformist leader Dr. Abiy Ahmed. (Ethiopian History, 2019)

However, now Ethiopia is parliamentarian structure of government and new constitution adapted in 1995 bring in federal system of government with nine state government and two chartered cities and legislative authority of the government headed by prime minister which elected by the party in power and the president is head of the states elected by house of representative. The house of representative (547 members) and the federation (110 members), based on October 2018 reform made by current prime minister Dr. Abiy Ahmed made number of ministry offices into eighteen and reduced government agencies and commissions and this made a very significant change to country. (FDRE, 2019)

Therefore, according to above reform e-government project of Ethiopia lead by Ministry of Innovation and Technology that make one of vital government strategic plan to increase ICT based transparency and accountability as it's mentioned earlier.

1.2 Statement of the Problem

The work covers analyzes of e-government services and international rankings, the regional EGDI of correspondent neighboring countries and the progress of e-government strategic plan and initiatives in Ethiopia. Many e-government analysis have been done but it's important to note that the analysis e-government in this work never been done before in Ethiopia.

Based on the information issued on the current e-government strategic plan and initiative have significant of EGDI analysis in Ethiopia with direct influence in public administration especially in municipality area. This gives the government administration a greater

advantage increase the level of consideration to investigate and control information on e-government function.

This work reason out that the effectiveness of implementing e-government in Ethiopia has a promise to bring narrowing the relationship of government administration problem with related to the public services, this will improve public sector efficiency and reduce corruption and maximize accountability, transparency and responsiveness of the public sector. Based on this idea, the work investigates the present interaction of e-government system in administration at federal and agency level for the delivery of effective government services to help citizen for a better good. The need of knowing the status of e-government to measure the accountability and transparency using ICT in public service, this guiding notion aim to recognize e-government in Ethiopia is giving a proper service to citizen.

1.3 The Research Aim and Objective

E-government analysis has been studied by many researchers, but many of these studies focused on the analysis of e-government are far from the standards of expectation to adopt at local or state level. Furthermore, many studies concentrate on either implementation or adaptation, but, no research were noticed take solidarity view of e-government analysis for one country. The research studied is challenge and practice of e-government by Worku Tekolla (Worku Tekolla, 2009). But, this work will give a bedrock analysis for Ethiopian e-government progress based analyzing e-government services and international rankings of Ethiopia with neighboring countries to show the status and its anticipated analysis.

List of objectives are:

- To analyze current e-government initiatives and strategic plan of Ethiopia.
- To analyze international rankings of EGDI with each normalized score of TII, OSI and HCI.
- To analyze the e-government Ethiopia with the equivalent neighboring eastern African countries of EGDI to get the determined status.
- To Analyze the progress of e-participation index starting from 2001 up to 2018

- To analyze national e-government factsheet including: country profile, e-government services for citizens and businesses.
- To explain necessary recommendation idea based on the analysis.

1.4 Significance of the Research

The work benefits count of important areas like e-government initiation and e-government strategic plan of a government body. The work is to lay down the prototype that able to notify e-government application & implementation of the growing country like Ethiopia. In addition the work focus the deep understanding of e-government to recognize the gap between existing initiative by the government and what should be applied on the government system to create transparency and accountability.

The analysis of the work will benefit difference level of organizational needs and will assist the following groups:

- Policy makers: this work will help the government bodies to implement policy for e-government application.
- Civil Society: this work will benefit civil society representatives to get the current study about Ethiopian e-government.
- Decision makers: this work will be important ground for individual decision makers
- Government officials: this work will be big standing point of information for understanding and implementing e-government system.
- Academicians: this work will put a fundamental place of information for those who wants to study around the discipline of e-government.
- International Organization: the work will give update information for e-government survey and will be input for international institution.
- Stakeholders, private sectors, researchers and other practitioners.

This work builds up on the previous work in the different field graduate studies and strategic plan of ministry of information communication and technology which laid down the ground for e-government system in Ethiopia and shows what is done it before. it discusses the organizational status to implemented the e-government framework in Ethiopia and how government strategic plan and initiative contributing in development of the country and deeply analyze the Ethiopian EGDI, EPI and e-government factsheet services for citizen and business.

1.5 Scope of the Research

This work has the following scope:

- The work evaluates the current e-government initiative and government strategic plan in Ethiopia.
- The work analyzes e-government development index of Ethiopia and rankings to know the progress made at international level.
- The work analyzes the e-participation index of e-government starting from 2001-2018.
- The work will analyze the EGDI of with equivalent neighboring eastern African countries to get a proper status and progress.
- The work analyzes e-government country factsheet services for citizen and businesses.
- The technical design of e-government application or website system is not included in this thesis.

1.6 Outline of the work

The pattern and procedure utilized in this work pursued the method that has been portrayed earlier in methodology for conducting the work, chapter one describes introduction, in this chapter, contains introduction, problem of the statement, significance of the work and aim and objective and methodology of the work. Chapter two is literature survey describes theoretical and empirical literature of the work. Chapter three explains methodology of the

work, and chapter four gives Ethiopia e-government strategy. Chapter five gives analysis of the services and Chapter six gives analysis of the UN international ranking. Chapter seven gives the conclusions and recommendations. The outline of the work is given in the Figure 1.1.

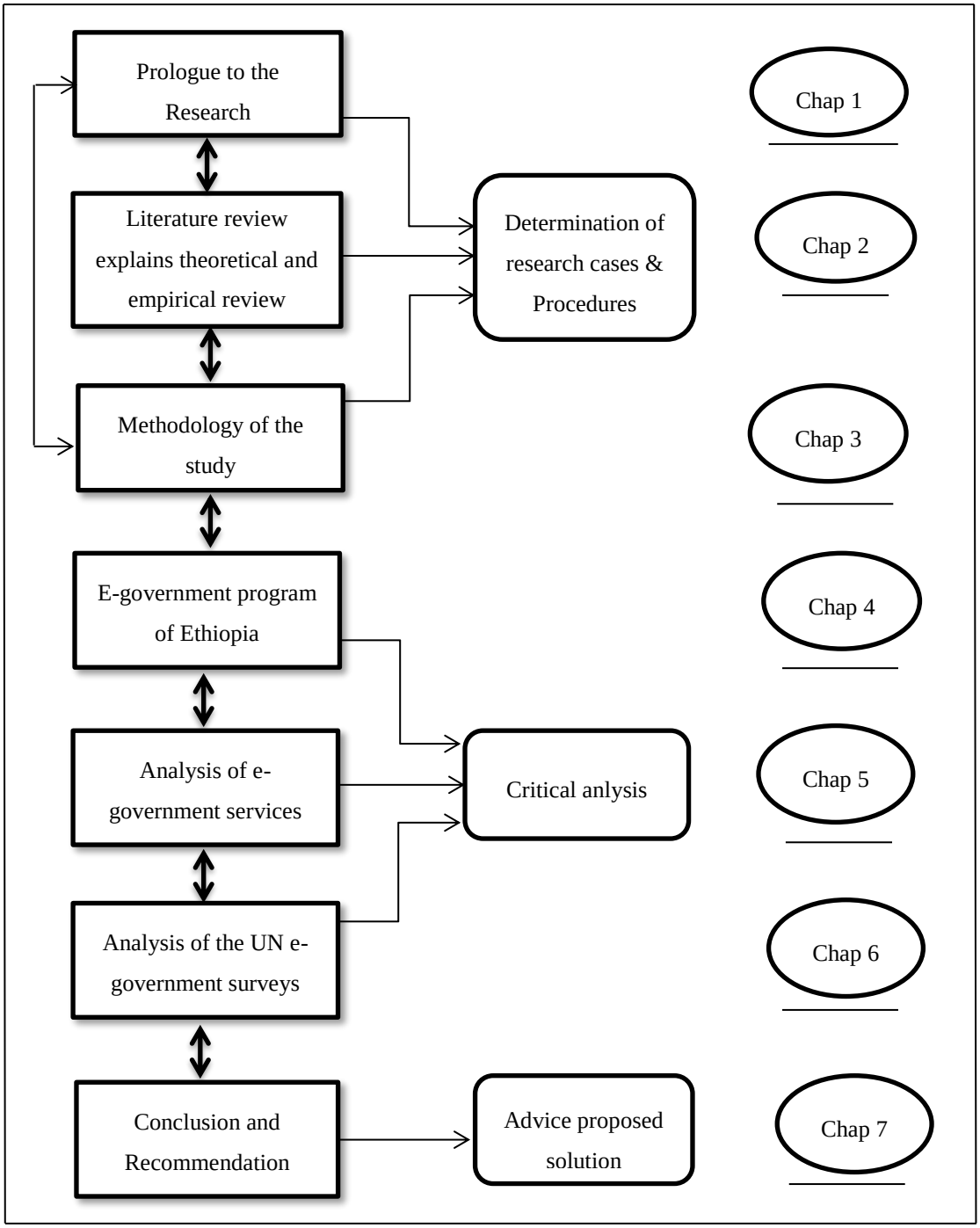

Figure 1.1: Work outline

CHAPTER 2
LITERATURE REVIEWS

2.1 Theoretical Literature

History of internet takes us back to 50 years since the emergence of internet when former department defense of United States of America (USA) successfully applied local area network to exchange information by computers between different locations during a cold war. These become long-distance communications network and the network came to be known as the ARPA Network (sciencenode, A brief history of the internet, 2017), however this lays a big foundation for origination of internet and become means of information communication transmission system. Since then the development lead today's big data recommendation system and cloud computing system. After the emergence of internet, different amount of information and communication technology operated system had increased. American public organization utilizing ICT applications to build productivity, responsibility, upgrade straightforwardness, increment income accumulation and encourage public sector reforms and this facilitate for the birth of e-government system in public administration. Today, every country in the world being benefited from the favorable by the development of internet and e-government and this become the basic topic for the public sectors to reform the programs in global arena. A few researchers emphasize that e-government usage is very feasible because of huge progressions in the media transmission division (Keng Siau, 2005)

2.1.1 Definitions of E-government

A word e-governance & e-government as expression utilized at different discussions. However, it works exactly for both to comprehend the fundamental qualification among them. Government is simply establishment, while administration is a more extensive idea depicting types of administering that are not really under the government control. In spite of the fact that there is no regularly acknowledged meaning of e-governance & e-government, in any case, this endeavor to determine the ambiguities and concoct clear and non-covering definitions. E-government emphasis is on voting public and partners outside

the association, regardless of the condition it's the administration or open division in the national, state, city, area or global dimensions. In other meaning, e-governance centers on the organization & the executives inside organization, regardless of no matter what open or personal, huge or little. The matrix 2x2 indicated on the table condenses the difference of e-governance & e-government.

Table 2.1: Customized E-Governance & E-Government: Meaning, Status and Framework of

the World

		Focus	
		Outside	**Inside**
Types of organization	Public sector such as Government Agency	e-government (External & Internal)	e-governance or Intranet
	Private Sector such as MNCs or SMEs	Inter Organization systems: like CRM systems (Extranet and Internet)	e-governance or Intranet

In view of this characterization, e-governance deals with inside centered use of information and web innovations to oversee hierarchical assets capital, human, material, machines and e-governance manages the online exercises of government representative's or employees. (Palvia, 2007)

E-Government defined as:

> "E-government can be referred to as the use and application of information technologies in public administration to streamline and integrate workflows and processes, to effectively manage data and information, enhance public service delivery, as well as expand communication channels for engagement and empowerment of people." (UN E-Gov Survey 2014: page 02)

> *"*E-government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.*"* (World Bank, 2015)

> "E-government is defined as utilizing the Internet and the world-wide-web for delivering government information and services to citizens." (UNPAN, 2012)

E-Government Development Index defined as:

> "EGDI used to measure the readiness and capacity of national institutions to use ICTs to deliver public services." (UNDESA, 2018: page 24)

> The E-Government Development Index presents the state of E-Government Development of the United Nations Member States. It's a composite measure of three important dimensions of e-government, namely: provision of online services, telecommunication connectivity and human capacity. (UN Survey 2018: page 199)

E-Participation Index defined as:

> "E-Participation is defined as the process of engaging citizens through ICTs in policy, decision making, and service design and delivery so as to make it participatory, inclusive, and deliberative." (UN e-gov survey 2013: page 189)

> "E-Participation index (EPI) is derived as a supplementary index to the UN E-Government Survey. It extends the dimension of the Survey by focusing on the use of online services to facilitate provision of information by governments to citizens ("e-information sharing"), interaction with stakeholders ("e-consultation"), and engagement in decision-making processes ("e-decision making")." (UN survey 2018: page 211)

2.1.2 Taxonomy of e-government interaction

Nevertheless the entire extent of e-government including a big figure and procedure, in that respect four fundamental sorts of connection that frame premise of e-government organization:

- *Government to Government*: (G2G) collaboration including distributing information and lead electronic data trade among different government offices and different elements. This trade can be both external and internal office at country level just trades among the country, common and lower levels.

- *Government to Citizen* (G2C*):* Collaboration involving systematic flow of information conveyance of administrations happens, satisfying the essential goal of e-government. Activities in this type of collaboration endeavor to make exchanges, for example, acquiring authentications, restoring licenses, settling tax obligations/charges and applying for government conspires less tedious and advantageous. Additionally contained the segment of contribution of citizen in procedures and approach planed by administration.

- *Government to Business* (G2B*)*: connection including enhanced & proficient acquisition of merchandise & help provided by administration to the business elements. It's likewise incorporates clearance to administration products to general population and it has possibility to decrease expenses by enhanced acquirement rehearses & expanded challenge. Additionally, such kind of connection includes the exchange and trade among administration and organizations with respect to licenses, tax assessment and approaches issued for different areas.

- *Government to Employee* G2E : collaboration covering business chances, work rules, rules and directions, advantages and structures of payment to the administration representatives, worker benefit plans & controls, government lodging and etc. (The United Nations Educational, 2005)

The next diagram indicates the different aspects of activity and the cooperation to every part:

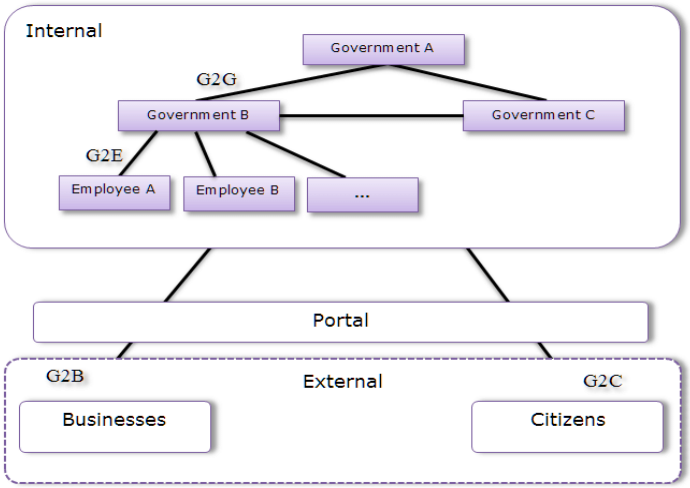

Figure 2.1: E-government connection aspects (Siau and Long, 2005)

2.1.3 Phases of e-government development

A. Gartner Study (4 parts of e-government)

To analyze advancement of e-government activities and to set up schedule to accomplish the proper dimensions of constituency assistance to Gartner study (2000) research titled "Gartner's Four Phases of e-government Model" characterizes into four e-government particular stages.

- Presence: This Phase is grouped by a basic data providing site of uninvolved sort, some of the time portrayed as "handout product," showing indistinguishable dimension of capacities from a paper leaflet.

- Interaction: The connection organizes offers basic communications among government and native (G2C), government to business (G2B), or government organization to government office (G2G). Collaboration organize sites give email contact and intelligent structures that create enlightening reactions.

- Transaction: The exchange arrange empowers exchanges, for example, paying for permit recharges online based, settling government obligations or expenses, or submitting offers for obtainment contracts.

- Transformation: The uppermost stage, most firmly lined up with the idea of administration, includes a reevaluation of how government capacities are imagined and sorted out. (Gartner, 2003)

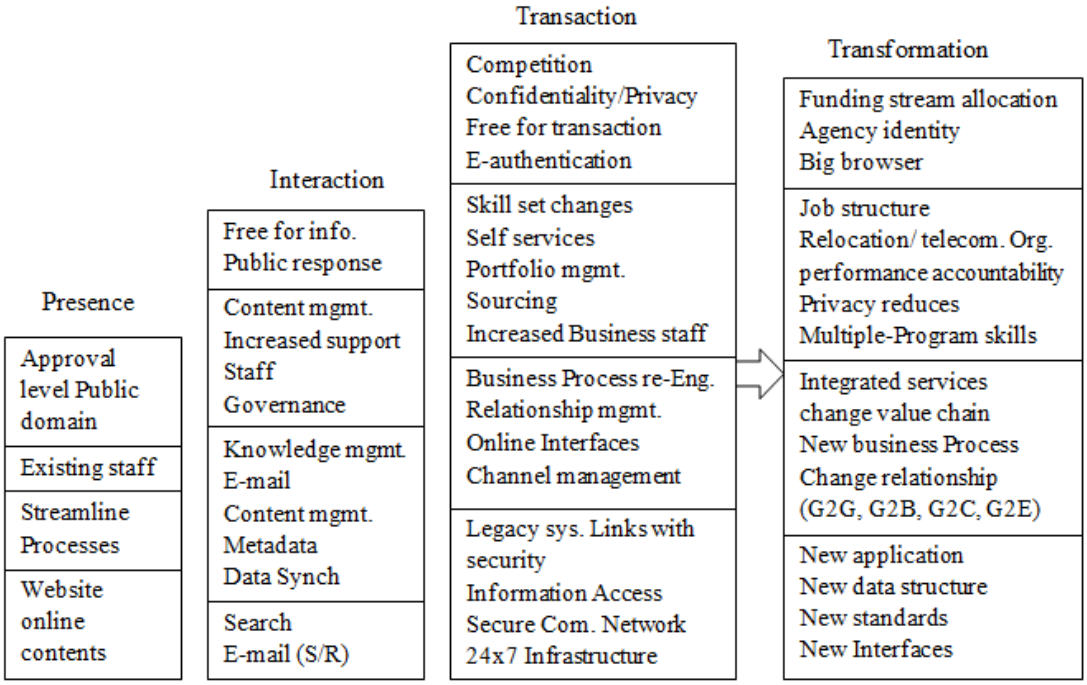

Figure 2.2: Customized from Phases of e-government by Gartner Research

B. UN / ASPA Study (5 Phases of e-government project)

UNDPE and Public Administration in 2001 analyze "Benchmarking E-government: A Global Perspective, Assessing the Progress of the UN Member States" distinguishes the five phases for evaluating e-government advancement. Research recognizes that arranges e-government as illustrative to government dimension of improvement dependent on substances and conveyance of administrations accessible by using authorized way online system.

- *Emerging*: Authorized online government access set up by a couple of autonomous authority sites. Data is constrained, fundamental and static.

- *Enhanced*: Government website increment; data turns out to be progressively unique. Substance and data is refreshed with more noteworthy consistency.

- *Interactive*: persons can download forms, email authorities, collaborate by web & create arrangements & application.

- *Transaction*: persons able to take charges for activities or lead monetary exchanges on the web.

- *Seamless*: Full incorporation of e-benefits crosswise over authoritative limits. All out mix of e-capacities and administrations crosswise over regulatory and departmental limits. (UNDPEPA, 2001)

C. Layne & Lee (4 phases e-governments pattern)

As indicated by open directors consider e-government and their associations Layne and Lee in 2001 issued four phase e-government advancement and recommends a 'phases of development' show for completely practical e-government.

- *Cataloguing*: In stage one of indexing; introductory endeavors of government states centered on setting up online access for the administration.

- *Transaction*: the exchange organizes e-government activities concentrate according to associate inner government framework to enable subjects and online interfaces to execute by electronic administration.

- *Integration*: mention about low level, state and governments associated for various capacities or administrations of government.

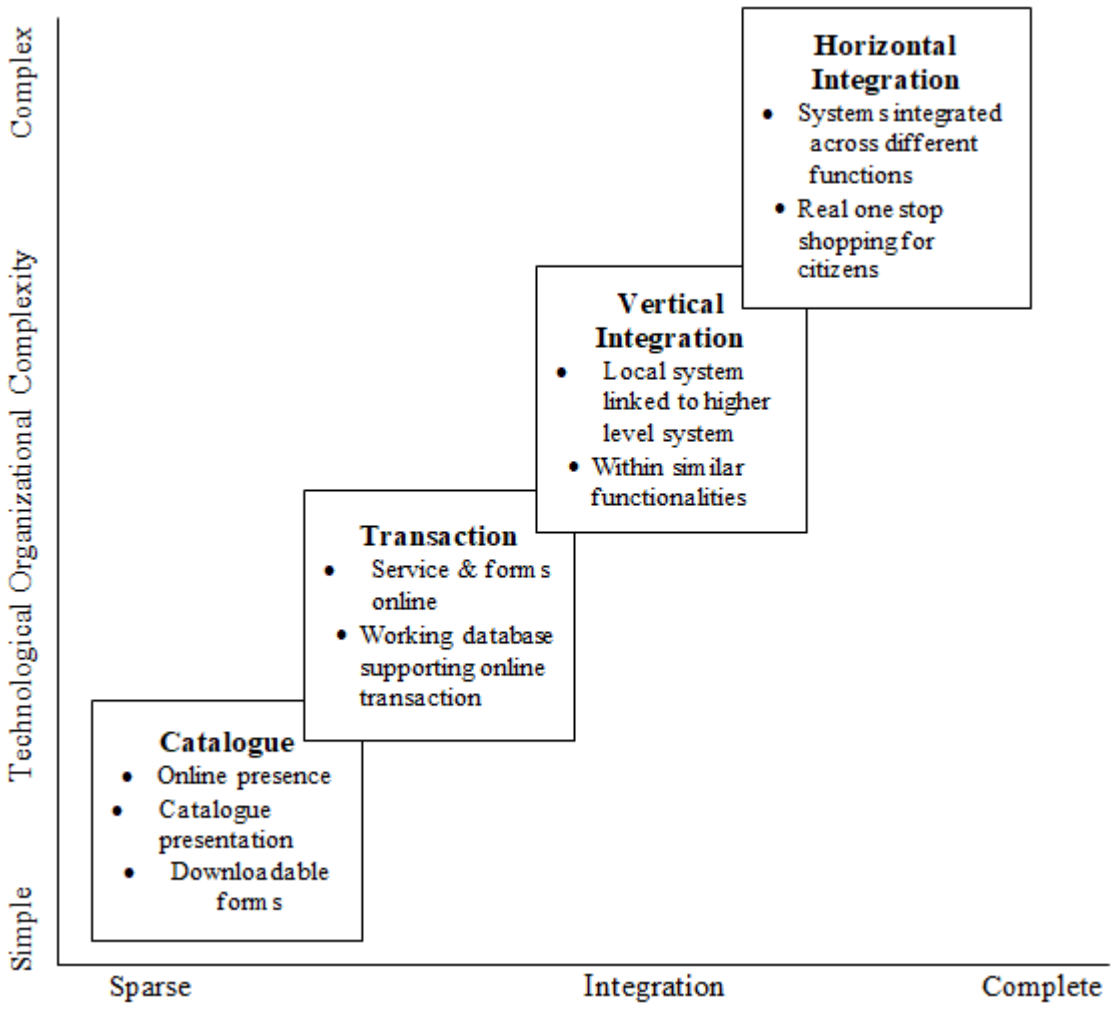

Figure 2.3: Customized from e-government model by Layne & Lee

- *Horizontal integration*: Even coordination is characterized as incorporation crosswise over various capacities and administrations. In characterizing the phases of e-Government advancement, the vertical mix crosswise over various dimensions inside comparable usefulness is set to go before the flat incorporation crosswise over various capacities. (Layne K. & Lee J., 2001)

D. Study of World Bank (the three e-government phases)

According to World Bank stated to help policymakers in formulating their own arrangements and activities, at 2000 Center for Democracy and Technology separates e-government procedure usage into 3 stages.

- *Publish*: websites publication try to scatter data of government & data aggregated through government and group of people as could reasonably be expected. In doing as such, distribute destinations fill in to main target.

- *Interact*: interface of e-government includes two direction correspondences, beginning to essential capacities such as email contact data for government authorities or criticism shapes that enable clients to submit remarks on authoritative or approach proposition.

- *Transact*: permitting citizens to acquire taxpayer driven organizations or execute business with the legislature on the web. An execute site offers an immediate connect to taxpayer driven organizations, accessible whenever. Execute locales can upgrade profitability in both people in general and private segment by making forms that need government support or endorsement less difficult, quicker, and less expensive. (CDT, Center for Democracy and Technolog, 2018)

E. IBM research four e-government stages

E-government change to adaptable, result centered associations that residents are figuring out how to expect, governments should create on interest capacities. On interest condition will require an open and adaptable foundation, new advancements, and suitable and focused on usage of reengineered forms. (IBM Business Consulting Services, 2003, p. 12)

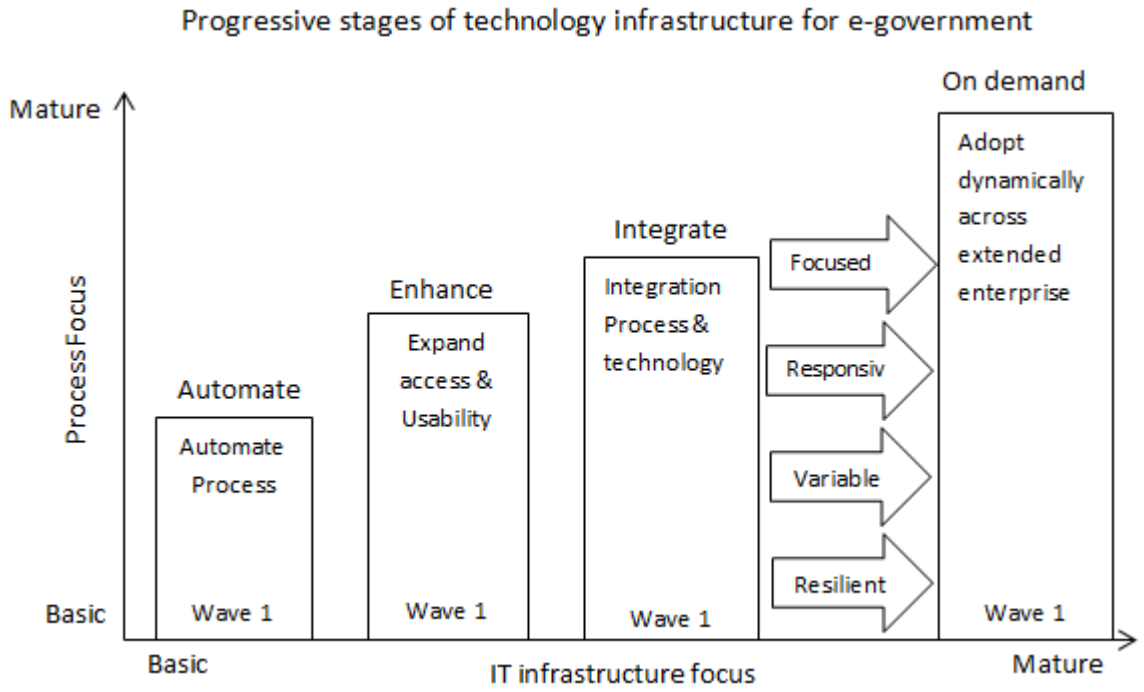

Figure 2.4: Commercial advisory Services of IBM, 2003, p. 12

As largely as expressed above, e-government progression can be seen as having four essential stages, each is portrayed by a typical arrangement of accomplishments and targets driven by comparative concerns and difficulties.

- *Automate*: first spotlight on natives and Web existence is generally clear.
- *Enhance*: Governments don't need to roll out numerous improvements to existing applications or approaches to achieve stage 2.
- *Integrate*: To advance toward stage 3 is progressively troublesome as it requires genuine arranging in change of business procedures and coordination.
- *On interest*: To advance to stage 4, which is a change that shows interest includes three ways: plan of action change, foundation change and social change.

From these investigations, plainly e-government includes various stages or periods of advancement and is anything but a one-advance procedure. (Asma Al-Hashmi, 2008), the table below will show the five interactions:

Table 2.2: The e-government phases in five interactions

Levels	IBM	World Bank	Layne & Lee	UN / ASPA	Gartner
Access	Automate Enhance	Publish	Cataloguing	Emerging Enhanced	Presence
Interact	Integrate	Interact		Interactive	Interaction
Transaction	On demand	Transact	Transaction	Transactional	Transaction
Integration			Vertical integration Horizontal integration	Seamless	Transformation

2.2 Empirical Literature

Agenda of e-government & its implementation in national administration area established to be global issue for many years. Nevertheless, numerous people disagree about e-government empirical implementation because e-government growth like a department not fully developed. E-government application and collaborative enterprise to make research must pass through several levels to produce documented information through website to make businesses and go further to accomplish procedure of structure to get some result and to gain the needed services to citizen. According to Gartner group on above table 3, it work out four phases of e-government display which gives service as guideline to place a

venture act of whole development of e-government action plan. The work does not propose all e-government should have to pass through the listed stages.

The Ministry of Communication and Information Technology (MCIT) of Ethiopia has a mission to create, convey and use ICT to improve the job of Ethiopians and advance its commitment for the advancement of the nation. The government has embraced various e-government activities to improve the interior efficiencies inside the administration associations and to improve the entrance services of government organizations for the overall population. Service of Communication and Information Technology understands the need to coordinate these activities to give a key course to e-government usage in the nation. It is in this setting the e-government methodology for Ethiopia has been planned, with an emphasis on encouraging successful government delivery of supported organizations to clients (occupants, organizations and guests).

The implementation of e-government strategy in Ethiopia that delivers of 219 e-services involving seventy seven (79) enlightening and one hundred thirty four (140) value-based administrations over a multiyear time frame. The execution is proposed to be done through twelve (12) need ventures and administration conveyance would be through four channels (Portal, Call focus, Mobile gadgets and Common administration focuses) and conveyance will be encouraged and reinforced through Six (6) center activities, including National Payment Gateway, Enterprise Architecture structure, Public Key Infrastructure, National Data Set, National Enterprise Service Bus and National incorporated Authentication Framework. (MICT, 2013)

Based on Ethiopia government strategy, every stage results of online availability and utilization of the ICTs in organization which works to give extra idea for major e-government areas such as government, democracy and business. However, many researcher argue that, the illustration trend of e-government research dealt to be shown, as the research indicate by the researchers, among the printed paper of 170 documents at three vital e-government meeting for discussion in the before fifteen years greater than half of them shows no expression of application in nature. According to Researcher (Ulrica Lofstedt, 2005), up to this days, research about e-government indicate its central point on international or local level without paying attention to its local context, the studies also

show about the research paid attention on provide side factors without the carefully thought of need of request. This restriction center of the studies thought to be another necessary explanation for the undergrowth of e-government field.

Based recent reform by the government e-government strategic plan become under Minister of Innovation and Technology, in this action plan, 6 vital programs, 39 across the nation plans, 40 ministry/ office level activities are recognized with the empowering condition, e-readiness & utilizing feature as well as MCIT's working framework. The earlier e-government strategic plan (2011 – 2015 e-government Strategy) has been planned for Ethiopia, along focal point on assisting to provide valuable contribution of organization to a client (visitors, residents and businesses). Many of initiatives and projects have been applied containing above 200 e-services consisting of LEHULU Common Service Centers, informational & business services, 19 Community Radio Stations, 147 Community ICT Centers, Government Call Center, Mobile Apps, Mobile Government Services and other services. (Ministry of Innocation). And currently according to ethio telecom (Ethio Telecom 2019), the telecom services has more than 41 million customers including mobile, Internet and fixed line customers.

The government is at present day operating e-government program at ministry level with vision 2020:

> "**R**ealize the economic growth of Ethiopia and provide **A**ffordable & quality services to all Stakeholders thereby **D**elivering effective, efficient and transparent governance, through **I**nnovation in everything we do, **C**reating a culture of entrepreneurship, Affecting the life of all Ethiopians and **L**everaging SMART government initiatives."(MINT, strategy: p34)

The works focuses on assessing the present condition of e-government initiatives in Ethiopia and analyze e-government services, the rankings and analyze the progress e-government improvement (EGDI) with neighboring countries. Moreover, the work used different e-government books, the literature review of previous thesis and UN e-government reports, different related journals, conference reports and various government websites from which this research is built.

2.2.1 Motivations of implementing e-government

The utilization of internet innovation to exchange the providing facts has significantly influenced the direction of information is disseminated, communicated and operated, websites in specifically are being thought as major accelerator by which institutions change large geographic and time consuming to more average, customized reaction to customer necessity. Governments over the world are identifying the power of internet and adopting what has been named e-government, the application of automated interconnected information exchanging system connecting government agencies and its stakeholders known as the public, business and government. The remarkable thing about e-government is the international implementation of the program over the Nations around the world from entrepreneur to socialist; developed to developing are folk out their wealth to produce e-government possibility and getting finance from international supporting organizations called US Agency for International Development (USAID) when the required materials are not available. (Kimberly, 2005)

Ethiopia initiated strategic plan that configuration keeping the accompanying core values of e-government

- E-government is focused in making a SMART (Simple Moral Accountable, Responsive and Transparent) Government.
- E-government advances reasons for e-resident and e-majority rule government.
- E-government isn't interpreting forms, anyway changing procedures.
- E-government requires capacity working inside the government.
- E-government points organized and coordinated government.
- E-government is native driven.
- E-government gives multi-channel conveyance of open administrations.
- E-government points in giving helpful access of data to all, and improving administration get to and conveyance.
- E-government empowers advancement and interest of all fragments of populace to receive rewards of IT and furthermore take part in the governance procedure and have the capacity to voice their sentiments all the more adequately. and

- E-government bolsters being developed and consideration of private sector in open administration conveyance. (MICT, 2013)

E-government is progressively worldwide situation that draw a highly useful attempt to success and has attracted attention of numerous government body including strategy creators, legislators and residents everywhere throughout the world. Distinctive governments have been impacted to do and continue creation of huge money related and administrative duties to start e-government; this is assurance tool to enhance providence that government gives to their citizens and businesses.

According to researchers (Simon et al., 2006), there are two levels of government structure that is organizational or national, all equal to necessary for effective e-government project, the empirical research constitute that there are numerous motivation or reason for e-government implementation at either level, these are economic, political, technological, managerial and social reason:

- Economical reason: this motivation involves cost reduction for the government itself and its citizen, according to report (NECCC, 2000) , and government organizations able to avoid up to 70% of expenses my making their works automated.

- Political reason: e-government is able to enlarge citizen participation in government decision making process (e-participation) and this helps to build reliability between government and citizen by increasing the involvement of citizen to help the government to build democratic election by enabling electronic voting.

- Technological reason: studies associated with technological motivation (on account of e-government) provide ICT gives latest chance for government to be progressively straightforward to people and business, providing means of entry to large information given to citizen by the government. This will increase opportunity for association and coordinated effort among additional government administration.

- Managerial reason: motivation about managerial helps to the government to administer their services to create accountability and trust, research associated with managerial reason is that impact e-government implementation for the purpose of realize and measurement of target management strategy and behavior with is seen as specifically change e-government implementation.

- Social reason: the use of e-government execution are connected to start to finish work giving by doing learning and e doing learning and training that are avail to citizen & giving citizen strengthening through access to data.

Regardless of the affirms for all motivational reasons of e-government establishment, as regard of enhancing government accomplishment and their working conveyance, a lot of research have contended that e-government not yet maintain its promise. Moreover, as stated by UN report of e-government survey (United Nation, 2018), the normal government development achieves a dimension of 58% highest ranking of the index score of governments, close to two-thirds of the United Nation Member State. Despite a number of understanding showed on e-government motivation, the implementation topic mentioned above are largely impacted by excess of its benefits.

2.2.2 Challenge of implementing e-government

E-government is vital to many important ICT implementations to assist and enhance level of living in the world. Furthermore, it provides an assessment tool to decide the country's growth program through the standard of application and full initiative to e-government development. For this reason, implementation of e-government program has turned into one of the key goals to motivate the functions and assistance in government organization. As stated by, a lot of governments are needed and looking forward to execute e - government initiatives that most convenient to their countries. In case of their need, there are many ideas in e-government implementation. Some models are developed to provide specific objectives, while others are built upon unlike benefits. Accordingly, the following are the things that caused many e-government implementation failures.

- *Adopting e-government strategy from developed country*, many e-government programs in developing countries are depends on the program that were

accomplished in the developed countries. As stated by (Y. Chen, 2006), even though it is easy to re-implement e-government depend on existing systems, this way of doing is not convenient since most of developing countries are not yet prepared to adopt this way.

- *Lack of understanding between design and implementation initiatives*, the e-government difficulty is getting poor in developing countries because of absence of harmonization between formulation and implementation strategies.

- *Physical existence of current and succeeding systems*, the shortage between the design of implementation program and the fact exist are the main distinction when e government programs are executed in developing countries. (J. Hwangand I.Syams uddi n, 2008)

- *The Gaps*, there are many gaps that indicate the failure of e-government systems between grown and growing countries in term of Information technological infrastructures, adaptions, and utilization, which finally getting bigger rather than smaller over recent years.

CHAPTER 3
METHODOLOGY

The work uses the following 3 steps to analyze the Ethiopia e-government:

1. Analysis of e-government strategy
2. Analysis of e-government services
3. Analysis of UN e-government surveys

This methodology will focus on basic principles of analysis for e-government and as outcome it will also uses different number of analysis verify the functional e-government is meet the needed requirement.

3.1 Analysis of E-government Strategy

The current progress of e-government Ethiopian initiatives & strategic plan will be analyzed. In this analysis, the work analyzes all the government strategic plan and initiatives on ICT infrastructure, government e-services and service channels.

3.2 Analysis of E-government Services

In this section the country profile, services e-government for citizen & business will be analyzed as in European Union (EU) e-government factsheets (2018). The categories of available services for citizen that will be analyzed are shown below:

A. Work & retirement
B. Travel
C. Vehicle
D. Resident formalities
E. Health
F. Family
G. Youth & education
H. Customers

The categories of available services for businesses that will be analyzed are shown below:

A. Start & grow
B. Staff
C. VAT & customs
D. Product requirements
E. Selling abroad
F. Environment
G. Public contracts

3.3 Analysis of UN E-government Surveys

Since 2001 UN publishing an international report evaluates the improvement e-government status and its part states that named as "UNITED NATIONS E-GOVERNMENT SURVEY". The Survey shows advancement of improvement e-government by means of the "E-Government Development Index" (EGDI). The EGDI is a composite record dependent on the three standardized indeces, "Telecommunications Infrastructure Index" (TII), "Online Service Index" (OSI) and "Human Capital Index" (HCI). EGDI calculated as in Figure 3.1.

E-government development index (EGDI) is calculated:

a) Scope and quality of online services, Online Service Index (OSI)

b) Development status of telecommunication Infrastructure, Telecommunication Infrastructure Index (TII)

c) Inherent human capital, Human Capital Index (HCI)

$$EGDI = \frac{1}{3}(OSI_{normalized} + TTI_{normalized} + HCI_{normalized})$$

Figure 3.1: EGDI value calculation

- "Telecommunication infrastructure index" (TII) & changes of its segments in each survey shown in Table 3.1.

Table 3.1: TII & changes of its segments

CN	2001	2003	2004	2005	2008	2010	2012	2014	2016	2018
1	Internet users	Internet users	Internet users	Internet users	Internet users	Internet users	Internet users	Internet users	Internet users	Internet users
2	Online population	Online population	Online population	Online population	Fixed-broadband subscriptions	Fixed-broadband subscriptions	Fixed-broadband subscriptions	Fixed-broadband subscriptions	Fixed-broadband subscriptions	Fixed-broadband subscriptions
3	PC users	PC users	PC users	PC users	PC users	PC users	Fixed Internet subscriptions	Wireless broadband subscriptions	Wireless broadband subscriptions	Active mobile-broadband subscriptions
4	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions
5	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions
6	Television sets	Television sets	Television sets	Television sets	-	-	-	-	-	-

NB: CN (Component No)

- The HCI and changes of its components given in Table 3.2.

Table 3.2: HCI and changes of its segments

Component No	Until 2014	After 2014
1	Adult literacy	Adult literacy
2	Gross enrolment ratio	Gross enrolment ratio
3	-	Expected years of schooling
4	-	Mean years of schooling

> "The Online Service Index (OSI) is a composite normalized score derived on the basis on an Online Service Questionnaires. The 2018 Online Service Questionnaire (OSQ) consists of a list of 140 questions."(UN e-government survey, 2018: p156)

- The surveys also give an E-participation index (EPI) using the normalization elements that are given in Figure 3.2.

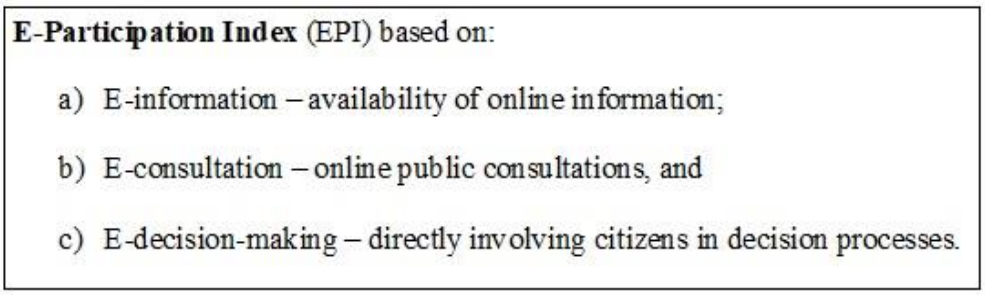

Figure 3.2: EPI customized from 2018 survey

This work uses the following approach to analyze the Ethiopia e-government based on UN e-government surveys between 2001 and 2018:

1. Analyze the survey reports to find Ethiopia OSI, HCI, TII and EGDI scores
2. Analyzing the EGDI of East African countries from 2001 to 2018 to get the progress of Ethiopian with equivalent corresponding countries.
3. Analyzing E-participation index (EPI) scores

The methodology describes detailed e-government analysis of Ethiopia and this includes 18 years of collected data from each year UN report, analysis of strategic plan and e-government services. Each section provides the characteristics to analyze the e-government progress and its development. This analysis will help to evaluate the e-government strategy and initiative is capable of doing what it was designed to do.

CHAPTER 4
E-GOVERNMENT PROGRAM OF ETHIOPIA

This chapter describes a detail of e-government project initiatives and available activities by the government. Part 4.1 discusses the government strategy and initiatives of e-government in detail; part 4.2 discusses the list of government project initiatives of e-government, part 4.3 delineate the infrastructure of e-government in Ethiopia and part 4.4 marks out the details of e-government service channels.

4.1 E-government Strategy and Initiation

Modern developments are changing from horticultural and economy of industry to ICT-based development. Such fast change has had remarkable influence on economic, political, cultural and social development across the globe. For such advancement and development, ICT is taken as both initiative and a key to driving and advancing many sectors in finance that supply to make to amazing, progressively created, and prosperous social orders. Africa is on a way of transformation in the direction of ICT based system, during any such remarkable change of a way, policy makers and leaders of a society are probably going to experience a change in outlook that contains building up their ability and providing instruments and bearing for tolerating relevant changes in mindset.

According to MInT (Ministry of Innovation and Technology), Ethiopia has shown massive economic growth throughout the decade with brilliant promise for what's to come. Proficient and powerful administration is one of the key drivers for maintainable financial advancement and ICT areas are important instrument to meet the good governance goals. Based on this idea in Ethiopia project of e-government has been structured with an emphasis to encourage successful conveyance of administration work to client (businesses, occupation and guests). The former concerned Ministry (MCIT) has supported a vision of ICT to improve the administration process of the nation to be a better place. Strategy of five year was planned and operated from 2011-2015 by contemplating the advancement of the most recent five year plan and key central point. A numerous initiatives and projects have been executed containing further 200 e-services consisting of 147 Community ICT

Centers, informational and transactional services, 19 Community Radio Stations, LEHULU Common Service Centers, , Government Call Center, Mobile Apps and other services, Mobile Government Services.

Now Ministry of Innovation & Technology operating with vision of e-government 2020:

> "To Realize the economic growth of Ethiopia and provide Affordable & quality services to all Stakeholders thereby Delivering effective, efficient and transparent governance, through Innovation in everything we do, creating a Culture of entrepreneurship, Affecting the life of all Ethiopians and Leveraging SMART government initiatives".

In this action plan, 6 vital programs, 39 across the nation plans, 40 ministry/ office level activities are recognized with the Empowering condition, e-readiness & utilizing feature as well as MCIT's working framework.

4.2 E-government Project Initiatives

- Community Radio & ICT Centers

MCIT has executed 253 community ICT centers, about 1000 rural ICT centers and 19 community radio stations in ICT for network improvement program while the usage of 16,000 country ICT focuses, 13 community radio stations and 50 community based ICT centers is in advancing. This is discussed below in (Ministry Innovation).

- Ethiopian National Datasets (ENDS)

The administration is currently actualizing a task to set up the innovation foundation and frameworks for ENDS as a typical asset for the legislature just as comparing organization framework for information the executives. This incorporates the creating and sending normal framework and devices, and creating and conveying office explicit foundation and apparatuses.

- Customer Service Center /LEHULU/

Basic on these centers which administer services like data scattering, acknowledgment of administration solicitations and conveyance of administrations is given to the clients at a solitary purpose of administration conveyance. LEHULU is one of such focuses which is at

present offering charging administrations to 4 government offices and is required to set out into conveying different G2C, G2B and chose B2C administrations. By and by, it is putting forth administrations of gathering month to month bills Telecom service, Electric service, water and related services, and gathers traffic punishment fines. At present, LEHULU is operating in a lot of offices in Addis Ababa, and regional offices Bahir Dar and Meqelle.

- E – Office

MCIT has just started the e-office arrangement pilot execution venture in 5 services: and Ministry of Communication and Information Technology itself, Trade Ministry, Finance and Economic Cooperation Ministry, Public Servant Social Security Agency, Construction Ministry. The venture includes the examination, plan, improvement, usage and rollout of the arrangement inside the above Ministries.

- Service/ Information Portals

More than data entries with 126 educational administrations and 164 electronic administrations have been produced for bureaucratic services/organizations and regional legislature of Addis Ababa which are accessible to the general population on www.eservices.gov.et and www.ethiopia.gov.et separately. The service/organization entrances and electronic administrations gateway have been moved up to incorporate exceptional data and administration exchanges.

- E - Procurement

The objective of this Initiative is to deploy a government-wide e-procurement platform, along with associated processes, governance and supervise of Government tendering and procurement to simplify planning, purchases requisition, bidding and contract management.

4.3 E-government Infrastructure

According to Ministry of Innovation & Technology the e-government infrastructure explained in detail as follows (Ministory Innovation ..):

- WoredaNet

It is a National Wide Area Network with purpose of supplying big transmission capacity availability among services and organizations for sharing information, voice and video correspondence all through the nation. WoredaNet a government network connecting most of the Woreda, territorial & government workplaces the nation over. WoredaNet is an earthly and satellite-based system planned with the essential goal to give ICT administrations, for example, videoconferencing, catalog, informing and Voice Over IP, and Internet availability to the Woreda level, Regional, and Federal government substances. More than 800 WOREDAs (is a District) and many regional and local government offices, and almost all federal ministries and agencies have already been linked with VSAT connectivity and terrestrial (VPN).

- AgriNet or EARINet

Ethiopian Agricultural Research Institutes Network (EARINet/AgriNet) is a national government activity and its fundamental goal was to build up a national rural Research Network to cultivate institutional coordinated effort and association among specialists, researchers, arrangement creators, expansion laborers and ranchers. EARINet is started to convey data the executives culture to Agricultural Ethiopian Institutes of Research (EARI) with the goal that farming researcher can do look into all the more successfully by having methodical access to investigate data accessible in Ethiopia and beyond.

- SchoolNet

The SchoolNet national ambition is gone for the arrangement & the utilization of ICTs to encourage education & learning process inside essential, auxiliary, specialized and professional schools. It aims to give, encourage web availability with sufficient data transmission to schools and other instructive establishments in order to give data and administrations to all partners in the Education segment effectively utilizing ICT, and empower all partners to give & take part to advancement of the Education area.

- EthERNet

EthERNet established in 2009 by Ethiopian government, Education Ministry to help the general population advanced education organizations. The main role is to fabricate steady, dependable, adaptable, secluded, and versatile system foundation the nation over and interface those advanced education organizations to the worldwide research network.

- Data Center

Data center of Ethiopia (ENDC) at national level, I was subjected to administration of MICT, expects to give dependable Infrastructure of ICT and storerooms to the whole of Government body & offices by facilitating needed equipment, programming & applications that brought together, secure condition, through fiber optics associating Regional Data Centers (RDC) and National Data Center. Major services provided by the National Data Center include facilities provisioning and management of:

- Web Hosting Services
- Government Mail Management System
- Domain Name Registration for gov.et
- Government wide Network connectivity (WoredaNet)
- Video Conferencing facilities

4.4 E-government Assistance Channels

According to MInT (Ministry of Innovation ...) of Ethiopia's e-government working and supporting channels to a service a citizen are discussed as follows:

- LEHULU Service of government Centers

Regular Service Centers focus on around where administrations comparative Information dissemination, getting of administration demands and conveyance of administrations is supplied to the clients at a one point of administration conveyance. LEHULU is administration stations which are at present offering charging administrations rather than 4 government bodies & that needed to enlarge and transfer different Government to G2B, G2C & B2C administrations. LEHULU providing administrations of gathering month to

month bills to Ethiopia electric utility bill, the Ethiopian Telecom bills and water and sewerage bill, and gather traffic punishment fin bill.

- eService Portals

Transactional eServices (eservices.gov.et)

The eService framework is intended to give a typical stage and conventional apparatuses for online value-based administrations. Using the system, government organizations render electronic service all through open administration.

Informational eServices (ethiopia.gov.et)

MCIT has executed enlightening entryways for around 34 services and organizations empowering around 126 educational administrations. Data Services incorporate those administrations that exclusively give data to clients and don't include handling of any exchanges or reports.

- Mobile Apps

MCIT has executed compact, dependable, versatile and simple to utilize taxpayer supported organizations through enlightening and value-based portable applications for government associations, which survey, recognize, computerize, and actualize taxpayer supported organizations utilizing advanced cells as an administration conveyance channel. In this light, the Ministry has executed 20 educational versatile applications and started the usage of 45 value-based and 60 enlightening portable applications. The 20 Apps actualized are created to chip away at IOS and Android stages and are accessible on the Ethiopian government App Store (www.apps.gov.et), Google Play and Apple App Store.

- 888 Government Contact Center

MCIT has encouraged the foundation of a Government call focus with a target of giving one-stop answer for all the client inquiries. Clients can call up the toll free number, 888, and find solutions to their inquiries identified with different government services and divisions.

CHAPTER 5
ANALYSIS OF E-GOVERNMENT SERVICES

5.1 Country Profile

Official Name: Federal Democratic Republic of Ethiopia

Region: Africa

Sub region: East Africa (Horn of Africa)

Population: **108,928,957** as Jan 14, 2019, based on the latest United Nations estimates

Population growth rate: 2.83% (2018 UN est.)

GDP: 80.56 USD billion

GDP per capital: 549.80 USD

GDP annual growth rate: 10.9% (2017 est.)

Inflation rate: 10.40% (2019)

Unemployment rate: 16.80%

General government gross dept (percent of GDP): 54.97%

Total land Area: 1.14 million Sq.km

Capital city: Addis Ababa

Official language: Amharic

Currency unit: Birr

5.2 E-government Services

5.2.1 E-government services for citizens

This part shows the information in a highlight of the main public services, which were designed to support a residents get things done, maintaining a strategic distance from immaterial burden as to moving, living, contemplating, working, shopping or voyaging abroad.

A. Work & retirement

A.1. Getting work out of a country, retiring abroad

Responsible: Ministry of Labour and Social Affairs of Ethiopia or FDRE private organization employees social security agency

Website: www.molsa.gov.et/ or www.poessa.gov.et/ or www.ethiojobs.net/

Description: the above links provides services for both job seeker and employers

A.2. Professional qualifications

Legal Information System

Responsibility: Federal government, Information Network Security Agency

Website: www.insa.gov.et/

Description: the data is available online

A.3. Taxes

Income taxes: notification assessment, declaration

Responsibility: Ministry of Ethiopian Revenues

Website: www.erca.gov.et/

Description: ERCA provides online tax administrative service for eTax and eSeveices

B. Travel

Important documents, Passenger right

B.1. Passport

Responsibility: Federal Government, Ethiopian Main Department for Immigration and

Nationality Affairs

Website: https://www.evisa.gov.et/

Description: forms to download on the main Department for Immigration and National Affairs portal. Because of security issues the biometric information, Identification must be given to the application upon his own visit to the significant nearby authority and embassy.

B.2. Charges and money

Excise duties, Tax and Vat refunds

Responsibility: Ministry of Revenues

Website: http://www.erca.gov.et/ or https://etax.revenue.gov.et/.

Description: Information available online submission of tax, Vat refunds and registration

C. Vehicle

C.1. Driving permit

Responsibility: Federal Government, Transport Ministry of Ethiopia

Website: http://www.transportauthority.gov.et

Description: ministry of Transport manages the driver's license and vehicle qualification

C.2. Insurance

Third Party Insurance & full Insurance

Responsibility: Ethiopian Insurance Cooperation

Website: https://eic-et.com/

Description: The EIC responsible of taking over all the assets and liabilities of the thirteen nationalized private insurance companies to organize the insurance service.

C.3. Registration

Registration of cars (imported cards, used and new)

Responsibility: Federal Government, Transport ministry of Ethiopia

Website: http://www.transportauthority.gov.et

Description: The new, used and imported cars are registered by ministry of Transport and Ethiopian revenue and custom authority.

D. Residence formalities

D.1. Formalities and documents

Responsibility: municipality (district administration)

Website: not available

Description: Each municipality has many districts responsible for their area.

D.2. Certificates (marriage, birth)

Responsibility: Federal Vital Events Registration Agency

Website: http://www.vera.gov.et/

Description: not available

D.3. Criminal Record Certificate

Responsibility: Ethiopian Federal Police Commission Forensic Investigation Department

Website: http://www.federalpolice.gov.et/

Description: Federal police forensic Investigation depart issues criminal record certification working with regional police commission.

D.4. Police declaration

Responsibility: Federal Police Commission of Ethiopia

Website: www.federalpolice.gov.et/

Description: Declaration regarding any case should be contacted the area police office in Person

D.5. Housing (environment, housing and building)

Responsibility: Federal / regional government (state) / municipality level

Website: http://www.fhc.gov.et/

Description: information available online

D.6. Passport

Responsibility: Central Government (Federal), Ethiopian Main Department for Immigration And Nationality Affairs

Website: https://www.evisa.gov.et/

Description: forms to download on the main Department for Immigration and National Affairs portal. Because of security issues the biometric information, identification must be given to the application upon his own visit.

E. Health

E.1. Unplanned healthcare & Planned

Responsibility: Ethiopian Public Health Institute

Website: http://www.ephi.gov.et/

Description: information is available online

E.2. Health services

Responsibility: Federal level, Ministry of Health

Website: www.moh.gov.et/

Description: Health relate activities are managed by Ministry of Health and services of hospitals and appointment are facilitated by nearby hospitals.

E.3. Costs of medicals (settlement or reimbursement)

Responsibility: Federal Government, Ethiopian Health Insurance Agency

Website: http://ehia.gov.et/

Description: More than 20 million are benefited from community based health insurance are regional level, information is available online for the current statistics.

F. Family

F.1. Certificates (marriage, birth)

Responsibility: The Federal Vital Events Registration Agency

Website: http://www.vera.gov.et/

Description: information not available online

F.2. Child health allowances

Responsibility: Ministry of Women and Children Affairs / Health Ministry

Website: www.mowca.gov.et/

Description: data not available online

G. Youth & education

G.1. Higher education enrolment/ University

Responsibility: Ministry of Science and Higher Education / Ministry of Education/ Ethiopian Education Assessment and Examination Agency

Website: www.moe.gov.et/ or www.moshe.gov.et/ or www.neaea.gov.et/

Description: all higher enrolments are facilitated by FDRE ministry of education and newly formed ministry office of science and Higher Education.

G.2. Public libraries

Responsibility: Municipality level, *Ethiopian National Archives & Library Agency*

Website: http://www.moct.gov.et/-2

Description: national archives & library information available online under ministry of tourism.

G.3. Culture support

Cinema Support Application Services

Responsibility: Culture and Tourism ministry of Ethiopia

Website: www.moct.gov.et/

Description: information available online

G.4. Researchers

Information & assistance to researchers, research funding support

Responsibility: Ministry of Health and Ministry of Agriculture

Website: www.ephi.gov.et/ or www.eiar.gov.et/ or https://alertethiopia.org

Description: the research facilitated in different area of national organizations like

Agriculture, Health and Science

H. Consumers

H.1. Protection for consumers

Responsibility: FDRE Trade Competition & Consumers Protection Authority

Website: http://www.tccpa.et/

Description: information available online

H.2. Telecommunication service comparison tool

Responsibility: Ethiopian Telecommunication Corporation (ETC)

Website: http://www.ethiotelecom.et/

Description: All telecom services are provided by Ethiopian Telecom Company

5.2.2 E-government service for businesses

The data in this section shows a highlight of the fundamental open services, were recognized by Federal Democratic Republic of Ethiopia intended to enable nationals to get things done in other Federal and regional countries.

A. Start & grow

A.1. New company registration

Responsibility: Ministry of Trade

Web: http://www.mot.gov.et/

Description: information available online

A.2. The business service portal

Responsibility: Ethiopian Electronic Services (eService)

Website: https://www.eservices.gov.et/

Description: the government Ethiopia electronic administrations has been created to give electronic open administrations to native, non-residents, organizations and non-government and government associations.

A.3. Intellectual property registration (Patents)

Responsibility: Ethiopian Intellectual Office of Property (EIPO)

Website: www.eipo.gov.et/

Description: EIPO launched an online trademark filling system and online statistics.

A.4. Annual auditor

Responsibility: Office of Federal Office General

Website: http://www.ofag.gov.et/

Description: Information available online.

B. Staff

B.1. Employee's social contribution

Responsibility: Agency of Ethiopian public servants social security

Website: http://www.psssa.gov.et/

Description: Information is available online.

B.2. Health and safety

Responsibility: Ethiopian Health Insurance agency

Website: http://ehia.gov.et/

Description: Health Insurance agency includes important data in regard to health fund identified with health at work and the safety.

C. VAT & Customs

C.1. VAT: notification, declaration

Responsibility: Ethiopian Ministry of Revenues

Website: http://www.erca.gov.et/ or https://etax.revenue.gov.et/

Description: Information is available online for notification and declaration of Tax.

C.2. Electronic payments

Responsibility: Ethiopian Ministry of Revenues

Website: https://etax.revenue.gov.et/

Description: Information is available online for electronic payment.

C.3. Reporting export/ imports

Responsibility: Revenues Ministry of Ethiopia

Website: www.erca.gov.et/

Description: Data is available online for custom declaration.

D. Product requirements

D.1. Testing, Inspection, Certification in Ethiopia

Responsibility: Ethiopian Conformity Assessment Enterprise

Website: http://www.eca-e.com/

Description: ECAE provides tasting and inspection of chemicals, electrical, mechanical, Microbiological, Radiation and Textile and leather.

E. Selling abroad

E.1. Import and export, electronic service delivery

Responsibility: Ethiopian Commodity Exchange and ministry of Revenue

Website: http://www.ecx.com.et/ and http://www.erca.gov.et/

Description: Information of all market data is available online commodity exchange.

F. Environment

F.1. Eco design and labels, energy labels

Responsibility: Environment, Forest & Climate Change Commission, Ethiopia

Website: http://mefcc.gov.et/

Description: information available online

G. Public contacts

G.1. Public procurement, tools & databases, rules & procedures,

Responsibility: Ethiopian public servants social security agency

Website: http://www.mofed.gov.et/

Description: information available online.

CHAPTER 6
ANALYSIS OF THE UN E-GOVERNMENT SURVEYS

In this chapter the Ethiopia e-government's evaluation results in UN E-Government Surveys between 2001 and 2018 given with East African countries comparison.

6.1 Telecommunication Infrastructure Index (TII)

Currently according to Ethio Telecom, telecommunication infrastructure of Ethiopia have grown into more than 41.1 million total customer including 39.54 million of mobile customer 426 thousand of Internet customer and 1.14 million of fixed line customers (Ethio Telecom 2019). The analysis of TII scores of Ethiopia are given in Table 6.1.

Table 6.1: TII scores of Ethiopia

Year	Ranking	Component						Ethiopia	Average	
		1	2	3	4	5	6		Africa	World
2001	-	0.01	0.2	0.1	0.37	0.03	5	0.2001	0.0185	0.1486
2003	58	0.742	0.2	1.5	5.5	0.7	6	0.003	0.0360	0.2290
2004	42	0.7	0.2	1.5	5.3	0.7	6.0	0.002	-	-
2005	58	0.100	0.020	0.200	0.630	0.140	0.5	0.0027	0.0367	0.190
2008	58	0.21	0.00	0.39	0.91	1.09	-	0.0040	-	-
2010	187	0.45	0.00	0.68	1.13	3.93	-	0.0024	0.0669	0.2352
2012		0.75	0.00	0.09	1.10	7.86	-	0.0093	0.1094	0.3245
2014		1.48	0.04	0.42	0.87	22.37	-	0.0266	0.1478	0.3850
2016		2.90	0.49	4.90	0.85	31.59	-	0.0495	0.1724	0.3711
2018		15.37	0.55	5.23	1.12	50.0		0.0976	0.234	0.4155

According to above analysis Ethiopian TII components and changed each year as follow:

- Total numbers of personal computer users are not used before 2010, because it's unavailability of information infrastructure in the report, it's no longer being an issue.
- Wireless broadband subscription need is significantly changed after 2012 due to late telecom infrastructure progress.
- Full information available after 2012 because, telecom infrastructure enormously progressed after 2012 in Ethiopia.

6.2 Analysis of Ethiopian Human Capital Index (HCI)

Ethiopia have made a progressive index results in terms of HCI, but some information have not available on before 2012 UN report, after 2014 full data's have recorded on the survey. Ethiopia The analysis of HCI scores of Ethiopia are given in Table 6.2.

Table 6.2: HCI scores of Ethiopia

Year	Ranking	Component				Ethiopia	Average	
		1	2	3	4		Africa	World
2001		25.97	32.78	-	-	0.321	0.1326	0.2109
2003		28.46	35.56	-	-	0.35	0.521	0.7127
2004		31.12	38.26	-	-	0.380	-	-
2005		33.6	40.34	-	-	0.3900	-	-
2008		35.9	42.077	-	-	0.3796	-	-
2010		35.90	49.02	-	-	0.4027	0.6177	0.8152
2012		29.82	55.25	-	-	0.2119	0.5034	0.6576
2014		39.00	57.43	9.08	2.20	0.2934	0.4492	0.6566
2016		49.09	43.07	6.60	2.41	0.2212	0.4355	0.6433
2018		49.1	54.59	8.44	2.6	0.3094	0.4602	0.4155

From above analysis of HCI made valuable progress after 2008, due to availability of information since 2014 the analysis of are HCI is available clearly to compare the progress.

6.3 Online Service Index (OSI)

The analysis of OSI scores of Ethiopia are given in Table 6.3.

Table 6.3: OSI scores of Ethiopia

Year	Ranking	Ethiopia	Average	
			Africa	World
2001	-	1.25	1.30	2.6
2003	165	0.031	0.137	0.3351
2004	170	0.027	-	-
2005	171	0.0154	-	-
2008	172	0.1739	-	-
2010	111	0.2000	0.1439	0.2738
2012	172	0.4706	0.2567	0.4328
2014	157	0.4567	0.2011	0.3919
2016	157	0.5290	0.2567	0.4623
2018	151	0.6319	0.3633	0.5691

6.4 Ethiopian E-government Development Index (EGDI)

Analysis of Ethiopia e-government readiness and Development index calculated the formula specified above at the methodology study including the results of OSI, TII and HCI to get the analysis EGDI shown in Table 6.4.

Table 6.4: EDGI scores of Ethiopia

Year	OSI	TII	HCI	EGDI	EGDI Level	EGDI World Rank	Change

2001	1.25	0.139	0.321	0.57	low	-	-
2003	0.031	0.003	0.35	0.128	low	165	-
2004	0.027	0.002	0.380	0.1365	low	170	-4
2005	0.0154	0.0027	0.3900	0.1360	low	171	-1
2008	0.1739	0.0040	0.3796	0.1857	low	172	-1
2010	0.0680	0.0073	0.1329	0.2033	low	172	0
2012	0.4706	0.0093	0.2119	0.2306	low	172	+2
2014	0.4567	0.0266	0.2934	0.2589	Middle	157	+15
2016	0.5290	0.0495	0.2212	0.2666	Middle	157	0
2018	0.6319	0.0976	0.3094	0.3463	Middle	151	6+

Note: Since 2014, UN e-government development readiness survey changed by group of countries by Percentage EGDI, EGDI Very high (> 0.75), EGDI High (0.5–0.75), EGDI Middle (0.25–0.5) , EGDI Low (< 0.25) (UN, 2018), and Ethiopia recoded a low EGDI since 2003 to 2012 and make a good progress after 2014 up to 2018 become middle level EGDI. The above analysis of statistical data also shown by Chart below:

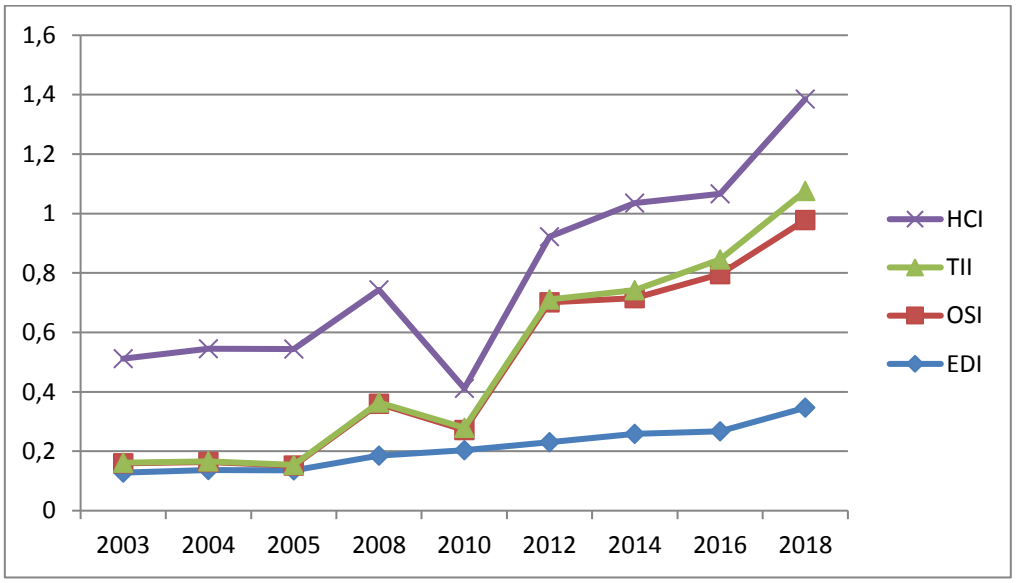

Figure 6.1: EGDI scores of Ethiopia

6.5 Analysis of Ethiopian E-Participation index (EPI)

At it's clearly mentioned on table below, EPI analysis result of Ethiopia have been clearly made progress at 2012 which ranked 19 after that there were big up and down in rankings.

Table 6.5: EPI scores of Ethiopia

Year	Rank	EPI	EPI level	E-Information Stage I	E-Consultation Stage II	E-Decision making Stage III	Total pts.
2003	35	0.034	low	2	0	0	2
2004	37	0.000	low	0	2	0	2
2005	44	0.000	low	1	1	0	2
2008	170	0.000	low	1	0	0	1
2010	135	0.0429	middle	2	0	1	3
2012	19	0.3421	middle	0	32	17	28
2014	122	0.2549	Middle	29.63	27.27	0.00	24.14
2016	91	0.4915	Middle	61.8%	47.4%	0.0%	50.0%
2018	101	0.573	High	80.00%	65.22%	27.27%	58.70%

Note: UN e-participation index (EPI) survey level by group of countries by Percentage EPI, Very high EPI (> 0.75), EPI High (0.5–0.75), EPI Middle (0.25–0.5), EPI Low (< 0.25) and the statistics of the EPI have shown in Figure 6.2.

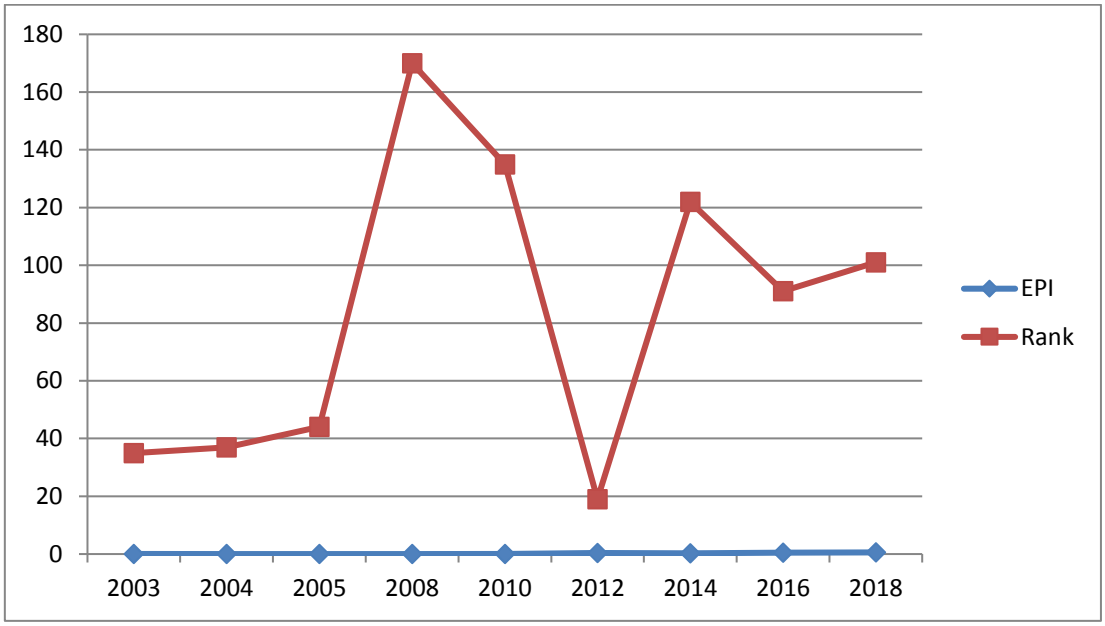

Figure 6.2: EPI scores of Ethiopia

6.6 Progress of EGDI and EPI in Ethiopia

Progress of ICT in UN E-government survey is discussed as follows:

- In 2018, Ethiopia becomes very effective in use of Water Point Mapping (WPM) through mobile data.
    - Middle level in EGDI,
    - County with High level in OSI score
    - High level EPI score (UN, 2018)
- In 2016, Ethiopia become one of five African countries that provide open standard datasets and making e-government development to create SMART (Simple, Moral, Accountable, Responsive and Transparent) government system.
    - One of countries in the EPI ranking that have advanced in excess of 25 positions

- High in OSI level
- Middle level in EGDI (United Nation D. o., 2016)

- In 2014, Ethiopia become one of 16 Least Developing countries (LLDCs) which from 172th to 157th in EGDI rankings.
  - Middle in EGDI and low level of Internet use (1.48% population are internet users)
  - One of the best performing LDCs becomes 72th global ranking in online service delivery than some of developed countries. (United Nation Department, 2014)
- In 2010, Ethiopian recorded the third highest online service score in the region.
  - Cyber Ethiopia initiative which convert Amharic language script become web-friendly. (United Nation Department of Economic, 2010)

6.7 Analysis of Eastern African E-government readiness index

In order to get a correct prepress in EGDI by comparing with a corresponding country to understand its status, some previous journals and papers compares EGDI annual result developed county with less developed countries, this could not give correct proportion of result. The comparisons of eastern African counties which have advanced toward of EGDI and ranking are shown in the Table 6.6.

Table 6.6: Comparison of East African country of EGDI

Country	E-government Development Index value										World E-government Development ranking								
	2001	2003	2004	2005	2008	2010	2012	2014	2016	2018	2003	2004	2005	2008	2010	2012	2014	2016	2018
Burundi		0.181	0.1557	0.1643	0.1788	0.2014	0.2288	<0.25	<0.25	0.2985	152	166	166	174	174	173	-	-	middle
Djibouti	1.35	0.179	0.1967	0.2381	0.2279	0.2059	0.2228	<0.25	<0.25	<0.25	153	153	149	157	170	176	-	-	low
Eritrea				0.1849	0.1965	0.1859	0.2043	<0.25	<0.25	<0.25			157	169	175	180	-	-	low
Ethiopia	0.57	0.128	0.1365	0.1360	0.1857	0.2033	0.2306	0.2589	0.2950	0.3463	166	170	171	172	172	172	-	157	middle
Kenya	0.90	0.299	0.2959	0.3298	0.3474	0.3338	0.4212	0.3805	0.4186	0.4541	118	126	122	122	124	119	119	199	middle
Madagasc	0.79	0.229	0.2214	0.2641	0.3065	0.2890	0.3054	0.2606	<0.25	0.2792	144	148	141	135	139	148	-	-	middle
Malawi	0.64	0.233	0.2697	0.2794	0.2878	0.2357	0.2740	<0.25	<0.25	0.2708	142	135	137	148	159	159	-	-	middle
Rwanda	-	0.244	0.2511	0.2530	0.2941	0.2749	0.3291	0.3589	0.3390	0.4590	138	140	143	141	148	140	125	138	middle
Somalia	-	0.049		-	-	-	0.064	<0.25	<0.25	<0.25	-	-	-	-	-	190	-	-	low
Sudan	-	0.206	0.2308	0.2370	-	-	-	0.2606	0.2593	<0.25	146	147	150	-	-	-	-	-	low
Uganda	0.46	0.296	0.329	0.3081	0.3133	0.2812	0.3185	0.2593	0.3599	04055	119	114	125	133	142	143	-	-	middle
Tanzania	0.83	0.253	0.283	0.3020	0.2929	0.2926	0.3311	0.2764	0.3533	0.3929	135	131	127	143	137	139	146	-	middle
Zambia	0.75	0.276			0.2266	02810	0.2910	<0.25	0.3507	0.4111	-	-	-	158	143	154	-	-	middle
Zimbabwe	0.76	0.304	0.2833	0.3316	0.300	03230	0.3583	0.3585	0.3472	0.3692	116	130	120	137	129	133	126	-	middle
Sub-region average	0.84	0.246	0.252	0.2836	0.2879	0.2782	0.3011	0.2661	0.2882	0.3423									
World Average	-	0.402	0.413	0.4267	0.4514	0.4406	0.4882	0.4712	0.4922	0.5491									

According to above analysis shown in the Table 6.6:

- Ethiopia scores are better than some of selected East Africa countries and made a good progress continually in terms of EGDI.
- Ethiopia scores are better than some east Africa in terms of ranking and index such as Burundi, Djibouti, Eritrea, Rwanda, Sudan, and Zambia.
- Ethiopia scores are lower than neighboring countries such as Kenya, Uganda and Tanzania, progress of these countries in EGDI will be a good example to reach the expected goal.

CHAPTER 7
CONCLUSION & RECOMMENDATIONS

7.1 Conclusion

This work isn't the only research that tends to the issue of e-government execution and acceptance of citizen of e-government support at organizations of citizen wise in Ethiopia. The researcher likewise asserts that the study ponder the first to overview a huge extent of analysis based on UN report and gives a best knowledge any single nation inside the whole country. In this case, it tends to be presumed that the research gives more understanding in the field of acceptance of e-government by citizen its applications and administrations, affirmed the effect of a portion of the striking variables distinguished the surviving writing on e-government execution from an Ethiopian national setting.

But the ongoing endeavor of Ethiopian government is giving across the nation e-government foundation through the Woredanet task and planning of ICT strategy and policy, and the research demonstrated that there's big gap on account of empowering citizens knowledge of availability of such project and even though big project initiation by government lead by MInT majority of citizen unaware of its benefits. But, due to availability of empowering conditions for instance, e-government strategy, Policy, and National Data Center, ICT Infrastructure, e-services, Government Portal and service channels are among the significant initiatives that could improve achieve the goal.

In addition to the EGDI improvement as nation is encountering, the particular EGDI and EPI profile concern could a superior possibility of retaining E-Government activities shows that the strategy is in progress. In regard to this, the research explicitly evaluated the chance of implementing e-government prioritize in more the capital city than at national level, this could be also the limitation to the project. In like manner, it is noticed that, in capital city availability of a better ICT telecom services, infrastructure and awareness of a better use of technology is superior to the national condition. What's more, on account of using internet and online accessibility are a more suitable in Addis Ababa that at national

or region areas. And with regard to the education level, residents of capital city more literate to with respect to others.

The progress of Ethiopia making with respect to e-government development shows that the county is moving to a better ICT based system formulation to the late government system in to create transparent and accountable system to a citizen. To reach this goal a lot of limitation should be considered that create a major drawback to the development, such as limitation of online transaction service, lack of updated information on the websites and lack new adaptation of ICT infrastructure to citizen, unavailability of competitive telecom services and transforming the citizens in education and lack of creating awareness of technology.

Besides the study addresses new innovation, the research exploration has additionally experienced a few limitations:

- Its limitation of time factor has been encountered to study the research, it would have been better if additional time was apportioned for the exact work, this would have increased the values of the research, the dimension of detail got especially from the analysis would have been more prominent.

- A few constraints were likewise looked amid analyzing study to find information online was difficult due to availability of data and offline websites (change of website addresses name) were not accessible.

- Lack of dedicated contact person from the ministerial office (MInt) to provide of information to give information, this is encountered due to reform made by the government to the offices.

- With respect to private IT companies, limitation of skilled IT professional and productive domestic IT solution companies are the major problem.

7.2 Recommendations

Research can generally develop further base on more effort & the character of this study displayed here not special. Nonetheless, there are a few things that identify with the study

which should be studied and investigated further. Additionally, number of recommendations that would be a guideline to additional research that could be set out upon, such as:

- This research gives a basic ground analysis to the existing e-government strategy that have been implemented by the government to show progress of the program in UN report perspective, and in order to reach the goal creating more social engagement and ICT awareness to the society should be encouraged.

- The government made national level program to reach its goal to create participation and accountability system to government services, in order to fulfill its goal to increasing online availability of information on government website are very essential, and implementer able to make transparent, user friendly, accessible and online services supplied to the citizen.

- In order to increase effective e-government establishment at national level, public trust and political commitment to needed to create sustainability of the project and this can improve governance and quality to citizen services.

- In order to exploit e-government at national level, long-term and clear strategy arrangement needed to build trough ministries and agencies, this would make empowering, comprehensive and compelling condition for the technology and the government should be careful making reform with such project when reshuffling the organization.

- Within this research the basic idea centered in the extent of analysis of e-government at national level based on UN report and preparing e-government of country's factsheet, furthermore, this study can use the research taking as prompt idea for further study to get it better, and this will give study more adaptation of e-government at national level.

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