



Addis Ababa University
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School of Electrical and Computer Engineering
Telecommunication Engineering Graduate Programme

**E-service Impact Assessment Framework: Case of Digital Government of
Ethiopia (E-IAF: CDGE)**

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ABSTRACT

Computer applications known as "E-services" are developed to offer effective access to services electronically. The Ethiopian government provides a variety of government services to its people. These different services are some fully automated, some partially automated, and others manual. Because of public dissatisfaction with government services, the government works to support those services through ICT to reduce the amount of time citizens spend finding out about them and to make them easily accessible everywhere, at any time. At a certain point, all those manual and partially automated services will become E-services, and they will offer a large number of benefits to their users, such as removing time and location barriers and reducing costs.

For the past five years, MiNT has been implementing E-services in Ethiopia. The issue is that there is no mechanism to assess the outcomes of E-services and their impact on the country's economy, politics, and social life. The objective of this study is to prepare an impact assessment methodology and create an adapted E-Service Impact Assessment Framework.

The methodology for this study uses statistical techniques to evaluate and analyze quantitative data.

Towards the Development of a Citizen Centric Framework for Evaluating the Impact of E-Government: A Case Study of Developing Countries analysis of the E-government evaluation framework from among those various studies chosen for the adaptation of the E-Service Impact Assessment Framework in the Ethiopian context . Because it emphasizes the citizen's point of view and was created in the context of developing countries.

However, towards the Development of a Citizen-Centric Framework for Evaluating the Impact of E-Government: A Case Study of Developing Countries model does not fit the Ethiopian scenario or context, such as the governmental, technological, and social readiness of the country.

By identifying the additional characteristics required to assess the impact of E-services introduced during the past five years in Ethiopia, the researcher put a lot of effort into creating an E-service impact assessment framework. Weighing the importance of each additional attribute in the Ethiopian context's framework for assessing E-services and finally prepare E-service Impact Assessment Framework in the case of Digital Government of Ethiopia.

Keywords: Automated, Manual, Partially Automated, Portal, Transactional, Digital Literacy

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

1.1.1: The Concept of E-services

To improve public service delivery and make it more reliable and accessible, the Ethiopian government is actively implementing a digital and electronic service portal. E-services are interactive, Internet-based customer services driven by the customer and integrated with related organizations; they also offer services through the Internet to bring governmental services together and fulfill the needs of the people to create real-time transactions. The three main components of E-services are the service provider, the service receiver, and the channels through which the service is delivered (i.e., technology) [1]. ICT is an essential apparatus for the electronic government of nations across the globe. To that end, the government has launched several initiatives to make ICT a major tool for development agendas. One of those initiatives is the development of E-. Ethiopia's government is gradually working towards an E-government goal of using IT to enable government service delivery services. The Ethiopian Governmental Electronics Service Portal designed to provide businesses, governments, and non-governmental organizations, as well as residents and noncitizens, with electronic public services [2]. The goal of E-service is to improve customer service by providing users with quick services, wide area coverage, and cost-effective and efficient service. Achieving the goal of E-services means offering speedy, efficient, flexible services offered any time (24/7), anywhere (accessed from any location), and going paperless (which has a lower environmental impact than traditional services). For the user, E-service quality is a crucial concern.

The concept of service quality discussed in this study is a comparison between the expectations and performance of E-services delivered to the user. To do this, the government respects privacy rights and protects personal data by securing sensitive information. The government is aware of its responsibility to maintain the privacy of all individuals and the security of sensitive information. It will not be accessible to the public unless individuals, businesses, governments, and non-governmental organizations all grant permission [3].

1.1.2: What is framework?

The framework is a physical or conceptual structure. Serves as a foundation to extend the structure into something useful and designed to support or guide the development of anything [4]. The framework is in place to make sure that government services satisfy both stated goals and public demands. The suggested framework sought to provide management guidance so they could better fulfill the quality objectives of E-services and reassure the public about the caliber of service offered by public institutions.

An assessment is a process of analyzing how effectively a service satisfies user satisfaction and the goals of the service provider by identifying its strengths and weaknesses, as well as gaps in the service it provides to the public.

An assessment framework provides a structured conceptual map of the service given to the public and details how the achievement of the outcomes measured. The assessment framework for E-services designed to provide guidance that is more comprehensive

1.1.3: Back Ground of MinT to deliver E-services

The Ethiopian government is creating the Digital Ethiopia 2025 strategy to give businesses, entrepreneurs, and the government access to digital tools and possibilities while also benefiting society, and E-services, or computer programs that allow for efficient access to services electronically, are currently being developed [5]. By providing a platform or portal and a basic instrument for online transaction services, MinT will implement this strategy to establish a communication channel to increase the accessibility of government services and attempt to increase customer satisfaction. Through the implementation of this portal, governmental organizations aim to reduce barriers to access by offering consumers electronic public services while respecting privacy and respecting individuals' personal information.

A list of 25 government organizations that provide 331 distinct online services provided on this portal. An organization chosen by the user among those providing services to present a list of the public services it provides. By choosing from the list, the user will receive available services. Frequently, more customers are having access, more people are visiting the E-services portal, and more client applications processed [3]. This demonstrates how more people are becoming familiar with utilizing the Ethiopian Government E-Service Portal. Still, despite the huge benefits,

E- Services face many obstacles and challenges that restrict people from using them, such as a lack of user awareness, a lack of faith in the portal, inadequate infrastructure in remote areas, and no legal framework for measuring the performance of the services. There have been many changes introduced by the introduction of information technology; some people lack basic digital literacy, yet some officials and residents are still resistant to change and have opposing opinions on Eservices.

MinT seeks to provide faster communication by using the internet and phones, which decrease the duration of time needed for communication, aims to provide paperless communication, and removes in-person user presence from governmental entities. Simultaneously, the government is making an effort to build a secure and reliable national data center to preserve all of the information about the service and its customers.

E-services are ICT-based services that are more efficient at delivering services to citizens in a transparent, cost-effective, and timely manner than manual services. [9]

Using the Ethiopian government portal, the Ethiopian government has provided E-services to individuals, non-citizens, businesses, and governmental and nongovernmental organizations over the past five years. However, its effect on society, on the country's economy, and politics not evaluated.

Various studies about the impact assessment of E-services in various countries carried out globally since the implementation of E-services. This study select Ibrahim Otieno and Eligah Omwenga analysis of the E-government evaluation framework study because it focuses on the citizen's perspective.

The problem of the study is the model does not fit the Ethiopian scenario or context such as governmental, Technological, and Social readiness of the country. This thesis will adapted Ibrahim Otieno and Eligah Omwenga analysis of the E-government evaluation framework, include the Ethiopian context, and develop a homegrown impact assessment framework in the case of the digital government of Ethiopia.

1.2: Statement of the problem

E-services are ICT-based services that are more efficient at delivering services to citizens in a transparent, cost-effective, and timely manner than manual services [6].

Using the Ethiopian government portal, the Ethiopian government has provided E-services to individuals, non-citizens, businesses, and governmental and nongovernmental organizations over the past five years. However, its effect on society, on the country's economy, and politics not evaluated.

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With an emphasis on public value, Figure 1.1 describes some of the concepts set forward by the Ibrahim Otieno and Elijah Omwenga frameworks.

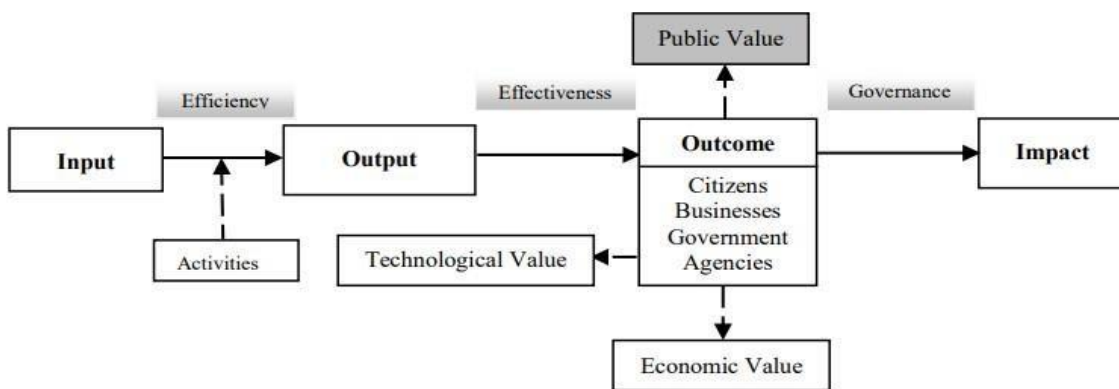


Figure 1.1 Basic frameworks for E-government Impact evaluation [7]

1.3: Research Question

The preceding section discussed the issues addressed in this thesis, which led to the presentation of the research question. These are the major research questions that this study will address:

1. What are the necessary additional attributes to assess the impact of E-service in the case of Digital government of Ethiopia?
2. What is the impact of each additional attribute in prioritized order in the Ethiopian context?

This study assesses the significance of the suggested attributes by first formulating hypotheses for them and then finally validating those using data analysis.

1.4: Objective

1.4.1: General Objective

The main objective of this thesis is to prepare an E-service Impact Assessment Framework (E-IAF: CDGE) for assessing the Impact of E-service on the Ethiopian context.

1.4.2: Specific Objective

To fulfill the study's main objective, the recognized specific objectives listed below

1. Identify additional necessary attributes for assessing the impact of E-service in the Ethiopia context.
2. Those additional attributes ranked in order of highest priority based and how they affect the Proposed E-service Impact Assessment Framework (E-IAF: CDGE).

1.5: Scope

It is impossible to investigate every component of E-services within the boundaries of a single study. As a result, we have restricted the areas we should concentrate on at once. The study's focus is on Ethiopian Government E-services. Therefore, it is limited to evaluate government-to-customer services. Data gathered through questioners with customers, customer service experts, ICT Experts, and managements from service provider governmental organizations. The major purpose of the title is to examine the influence that E-services have had -on federal government services given across Ethiopia, except ERCA; those services offered in those two cities, administrative and Ethiopian E-commerce services, are not included in this evaluation report.

1.6: Limitations

Every research work has some limitations, thus it is essential to discuss these set of results in the proper context. The following list includes a few limitations: Time limits and security concerns prevent surveys, data collection, information gathering, and access to the effects of E-service out of Addis Ababa, which are the limitations of the thesis. The main goal of the title is to evaluate the impact that E-services were having on the federal government services provided throughout Ethiopia, excluding ERCA, those provided by Addis Ababa and Dire Dawa cities' Administrations and Ethiopia's E-commerce services.

1.7: Application of study

In addition to create a framework for evaluating service quality, customer happiness, efficiency, and fulfillment, this study aims to examine the impact of the previous five years' supply of E-services provided to Ethiopian citizens on transaction services.

The various stages of the study process resulted in the creation of a systematic strategy for evaluating the effect of E-services and increasing people's trust in E-services [8] . Such a goal would apply to all Eservices, which are still in their infancy and lack a proper impact assessment framework. Several areas remain unexplored, and the proposed framework will fill the gap in E-services, where MiNT now lacks an E-service impact assessment framework.

CHAPTER TWO: LITERATURE REVIEW

2.1: Introduction

This section's goal is to examine various E-service impact assessment frameworks, analyze the frameworks and literature related to the stated research topics, and then, following a critical review of the literature, conclude with a presentation of the E-service impact assessment framework in the context of Ethiopia.

“Electronic services,” [1] also known as “E-services,” are a collective term for ICT-provided services that relate to a coordinated effort to address the needs of individuals while improving satisfaction and engagement. E-services will help society, businesses, and governments. Because technology is now widely used for all services, E-services such as E-commerce, E-learning, E-health, E-banking, and so on are becoming increasingly important. These services, termed “M-services,” “E-commerce,” “E-learning,” “E-health,” “E-banking,” “E-agriculture,” and so on, have become more vital than before.

Impact assessment is a fact-finding activity aimed at identifying and resolving the root causes of business changes before they occur. Impact assessment serves as an instrument for assessing the efficacy and impact of organizational goals the assessment of impact related to the Organizations goal. Impact assessment is always concerned with change and the processes that lead to that change impact evaluation and the development no one guidance on impact evaluation. In addition to the fact that E-services introduced an assessment of their impact is necessary and numerous studies conducted.

As E-government and E-service have become crucial to development, it is important to comprehend the numerous frameworks available in the literature for assessing a country's e-government at different stages, from E-readiness through the fulfillment of end benefits. Hence, Sudesh Sheoran¹ and Sanket Vij examine the E-government literature with an emphasis on E-readiness, adoption, citizen involvement, and performance and quality evaluation frameworks [9]. The suggested framework argues that the perceived quality of E-government service is one of the most important factors for measuring the efficacy of E-government service. For obtaining enhanced E-services, quality attention is placed on ensuring that people use technology efficiently and effectively, since user happiness has a positive influence on e-government service quality and e-services' efficacy [8].

A framework seen as a strategy or structure with pertinent elements that will be the focus of the assessment. The assessment framework should give a defined focus for the evaluation and employ various methodologies, metrics, and research designs (both quantitative and qualitative). Different evaluation frameworks cater to various assessment requirements, with some focusing on certain phases of development, others on process steps or dimensions, and yet others on the cost and investment viewpoint [10].

Multiple surveys using a variety of methodologies, indices, and addressing a variety of viewpoints assess the development of e-government. In this document, an overview of evaluation frameworks for E-Government software projects provided. Analysis and comparison of all main evaluation methodologies, including those of the European Commission, the United Nations, and the World Bank, among others. Consequently, there will be a need to build a multifaceted e-government project evaluation framework capable of methodically analyzing and evaluating the efficiency and efficacy of these programs [11].

2.2: DeLone and McLean model

DeLone and McLean want to comprehend the impact of IS on the growth of E-commerce, one of the most technology-driven sectors of the modern economy. They describe E-commerce as "the use of the Internet to facilitate, execute, and process commercial transactions and generate new markets. The Information Systems DeLone and McLean Model (IS) In the IS literature, success is one of the most often quoted and used models. Typically, the model has been used primarily to explain IS performance at the individual level of analysis. It was applicable at the organizational level of analysis inside the E-commerce setting. The findings of DeLone and McLean's model support the use of the model to explain the aspects and linkages of Information Systems Success at the organizational level of study. The model's results have significant ramifications for the IS sector and the e-commerce ecosystem in particular. In their analysis, they conclude that the E-commerce environment is a unique context in which to examine DeLone and McLean's concept of IS Success since the system is crucial to the company and without it there would be no business-customer connection [12] .

The updated DeLone and McLean's success model shown in the figure below. Arrows are used to highlight how the success dimensions are thought to be associated with one another in a process-oriented way.

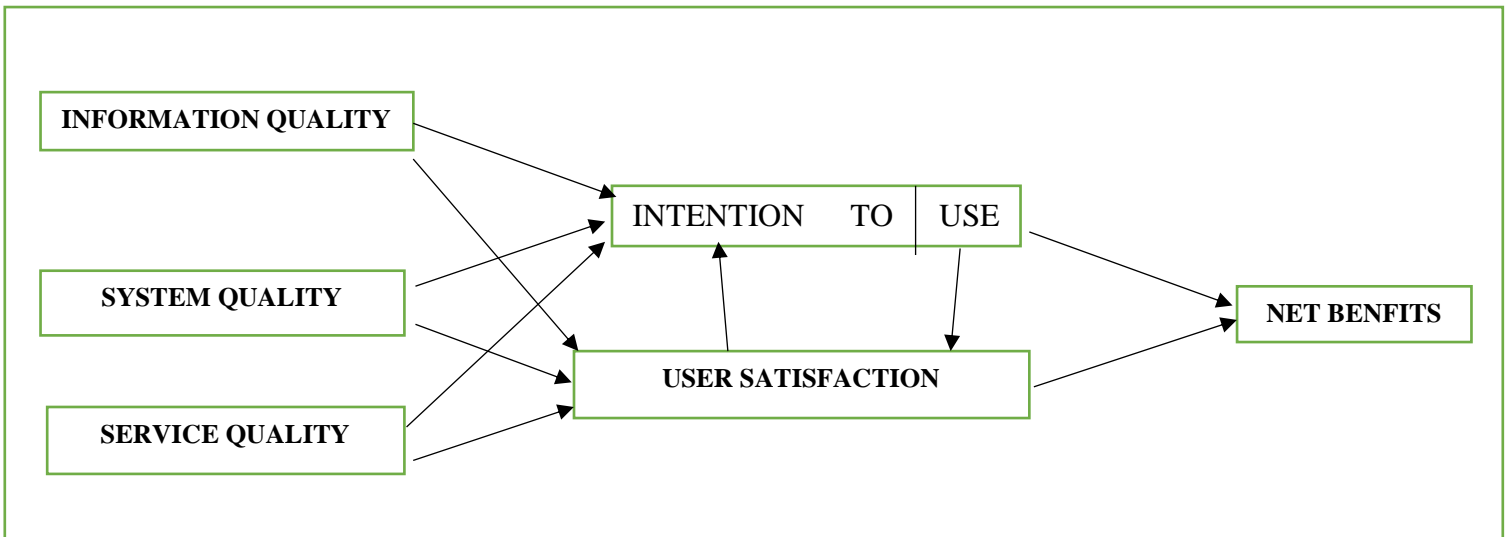


Figure 2.1: Update DeLone & McLean IS Model [13]

2.3. E-Government Services Effectiveness Evaluation Framework (E-GEEF)

The importance of building a well-founded e-government e-service effectiveness assessment framework that examines not only the e-government service efficacy, but also the e-government service quality standards and the people's perspective in the form of citizens' confidence in supplied e-services. Consequently, the purpose of this research was to build a framework (E-GEEF) for evaluating the efficacy of e-government services from the viewpoint of citizens (G2C). Present empirical study used DeLone and McLean's (2003) IS success model as a basic model that is upgradable and extensible; hence, new dimensions were integrated to establish a unique framework (E-GEEF) for assessing the efficacy of e-government service. The proposed framework identifies the number of measurement dimensions and objects linked with each dimension (E-GEEF). System quality, information quality, and service quality dimensions were taken from DeLone and McLean (2003) IS success model and "intention to use and user satisfaction" dimensions were re-specified in suggested framework (E-GEEF) as "citizens' use / usefulness" and "citizens' satisfaction" [9].

Following results and discussion by the researcher of the E-Government Services Effectiveness Evaluation Framework, Figure 2.2 displays the validated final E-GEEF Framework it include number of dimensions.

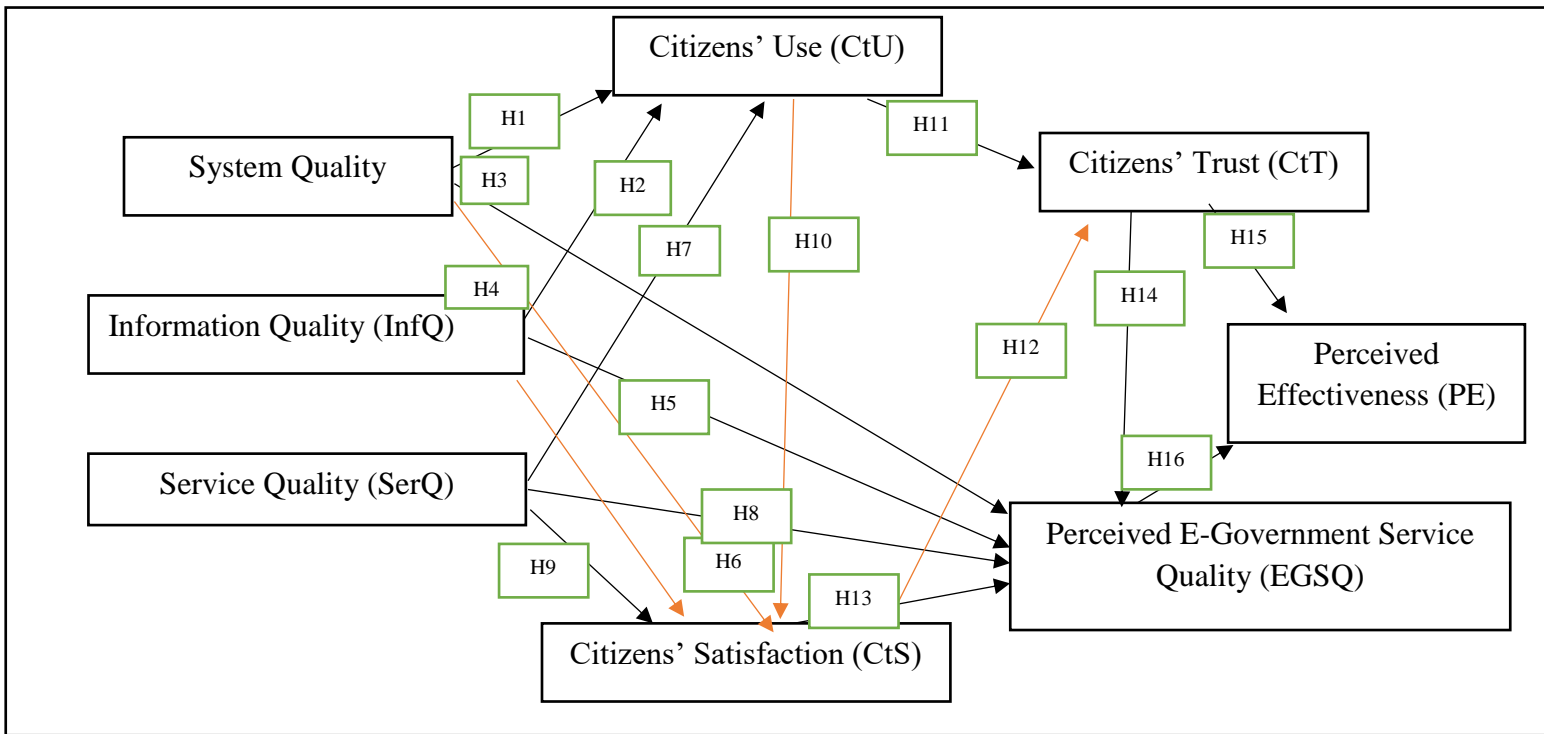


Figure 2.2: Framework E-GEEF Base Model: DeLone & McLean [8]

2.4 Ibrahim Otieno and Eligah Omwenga Framework

E-government focused with altering service delivery and the government's basic connection with people. Most governments have recognized the significance of ICT and are consequently transitioning from traditional service delivery methods to e-government. However, e-government encountered several implementation obstacles, especially in poor nations, which negatively affected their success rates. There have been very few studies undertaken in Kenya to determine the success elements and adoption of e-government from the citizen think tank. From a citizen-centric viewpoint, the purpose of this study was to identify the elements and obstacles that impede the effective implementation of e-government.

The input of the present framework has two attributes: government services and service delivery channels (technology). Government services provided by various government agencies. People can search for potential service providers by selecting a government service from the list [10]. By selecting a preferred service provider, the customer receives clear instructions on how to access the service. These government services provided to users over the Internet, and the networks must be expanded [11].

The result of the existing framework has one attribute: benefit of government services [14] [15].

Eservices are computer programs that provide efficient electronic access to services and create rapid interaction between citizens and government services to achieve a rapid flow of services from government to citizens [16] [17] [18] [19].

The outcome of the current framework consists of two attributes: the expansion of ICT infrastructure and the promotion of ICT literacy among citizens. The effects of the existing framework have five attributes: They are customer satisfaction, customer truth, and improved flow of government services from government to citizens, improving the economy and promoting transparency, and modernizing government service delivery.

The problem of this study is the model does not fit the Ethiopian scenario or context such as governmental, Technological, and Social readiness of the country.

The following Figure 2.3 shows Ibrahim Otieno and Eligah Omwenga analysis of the E-government evaluation framework six dimensions and attributes of each dimension, the Figure outlines some of the ideas put forth and the requisite attributes with a focus on public value.

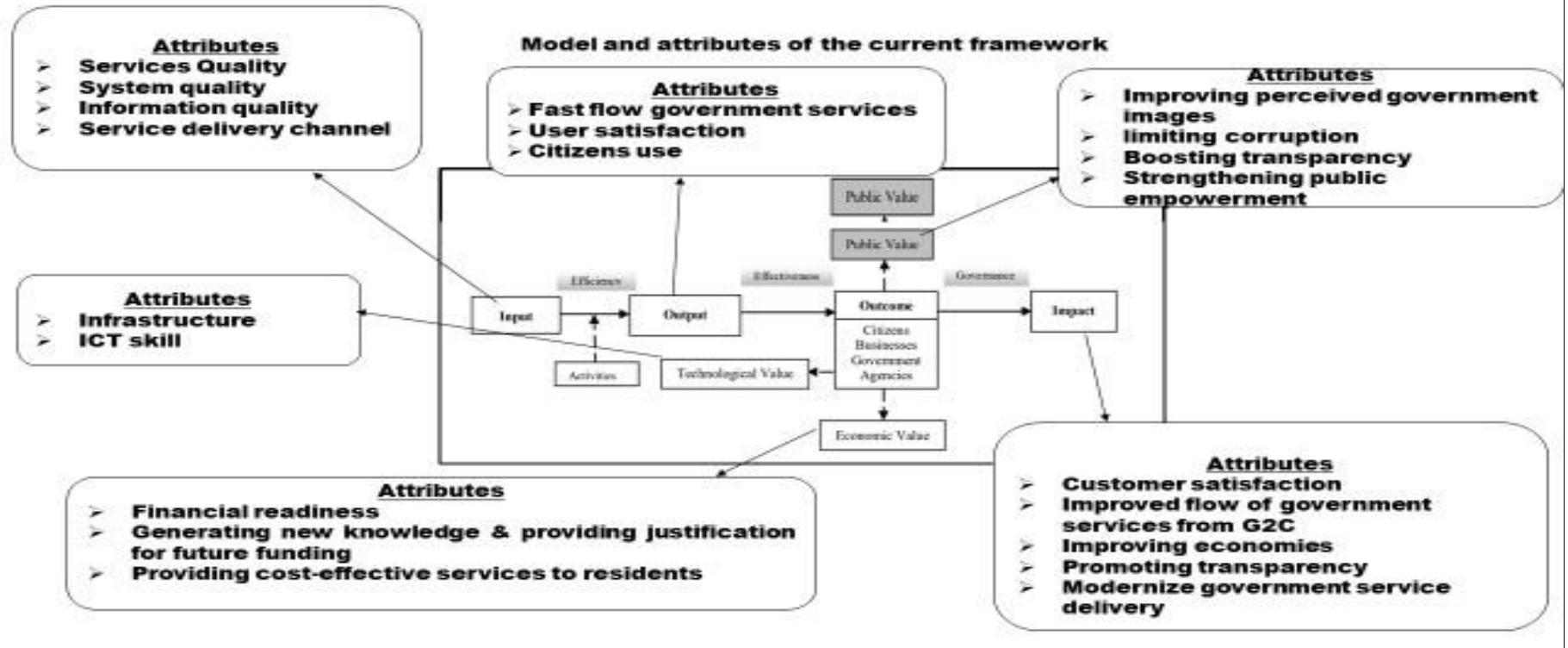


Figure 2.3: Dimensions and attributes of current framework [7]

CHAPTER THREE: RESEARCH METHODOLOGY

The goal of this chapter is to lay out and define the research methodology used for the proposed study. Using Analytical Research Method Various perspective of E-services and Various E-service framework is review from different literatures for the development of Draft framework Impact Assessment Digital Government of Ethiopia.

The research design, study population, study sampling, data collection methods, data processing techniques, and presentation methods all described in this chapter as well. This research led to modifications in the E-Service Impact Assessment Framework: Case of the Ethiopian Digital Government. Use an exploratory research methodology to adapt the framework for evaluating and analyzing E-government or E-services from the study of developing countries.

This thesis use quantitative approaches after it was determined what would addressed and what kinds of evaluation questions would need to be answer. To accept it and create a framework suitable for Ethiopia, the current eGEP framework must examined as a benchmark for the E-government and E-service model. To explore and evaluate the quality measurement and monitoring of E-services, including accessibility, dependability, security, system availability, etc., a conceptual framework develop in this study. Evaluating the factors affecting the E-Service Impact Assessment Framework: The Case of the Digital Government of Ethiopia (E-IAF: CDGE)

3.1: Research design

A study's conclusion reached through a logical chain of events known as research design, which links the empirical data to the original research questions [8]. As "the fundamental framework for the project's execution," research design described.

3.1.1 Descriptive research design

The objective of descriptive research design is to define a phenomena as "what exists" in terms of variables or the research topic and the connection between variables. Hair et al. (2003) and Blaikie (2007). This research employs a quantitative approach, and statistical tools used to evaluate and interpret quantitative data. Used for quantitative data collecting and analysis, the survey technique.

3.2: Explanatory research

It aims to clarify how the variables' cause and effect relationships work. It is a kind of investigation between two unrelated things. This would happen if one of the independent attributes changed and this caused changes in the dependent attributes as well. In this study, the data gathered summarized using quantitative and statistical methods.

3.3 Research strategy

The most crucial decision that researchers must make in order to conduct their research is the choice of approach. According to Blaikie (2007), this refers to the logic or reasoning of inquiry utilized to address the study questions. Blaikie (2007) categorizes deductive and inductive research strategies. Based on philosophical argumentation. Inductive reasoning, which generates theory from the observation of empirical reality, thought to be more exploratory in nature. According to Collis and Hussey (2009), Blaikie (2007), and Remenyi et al. (1998), connected to qualitative research. The most crucial decision that researchers must make in order to conduct their research is the choice of approach. This speaks of the logic or line of thinking applied to the study topics. The logical process, which moves from broad concepts to specific conclusions, can be seen in the figure below. Specifically, from theory to results of the analysis

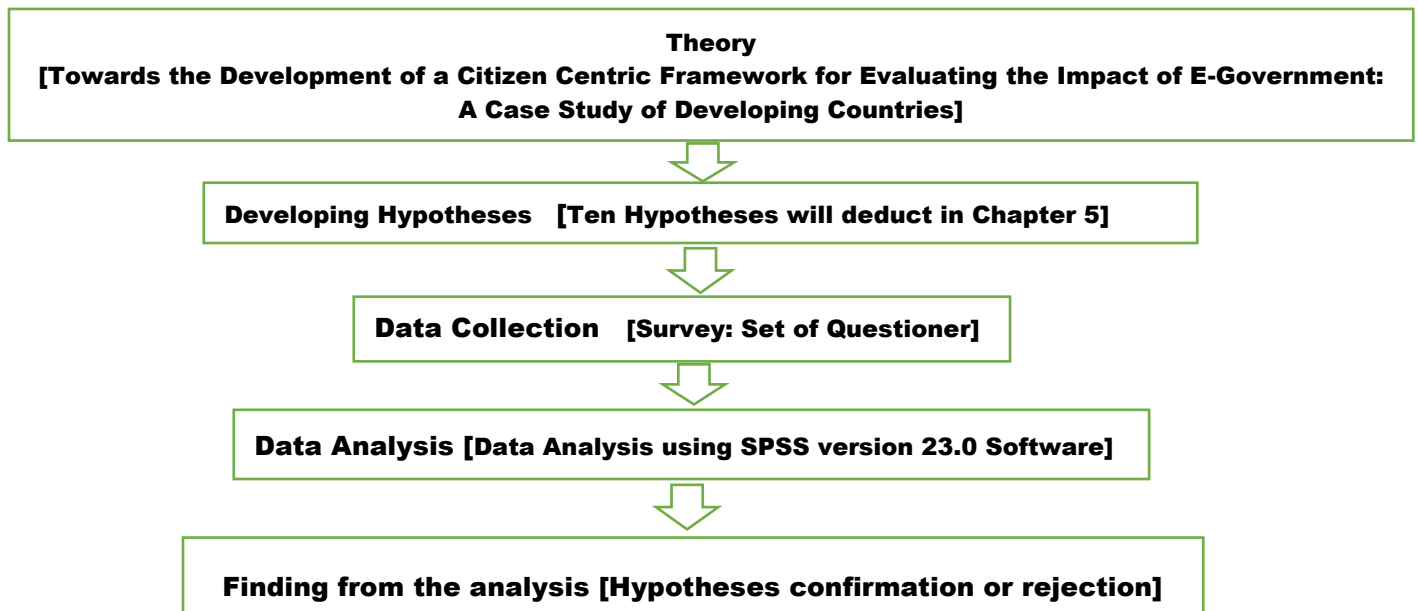


Figure 4.2 Deductive Reasoning Approach [8]

CHAPTER FOUR: THE PROPOSED (E-IAF: CDGE) FRAMEWORK DEVELOPMENT

4.1: Background and Framework (E-IAF: CDGE)

E-service provides government with an opportunity to provide information and offer better services to the citizens. Several frameworks established to assess the impact of E-services based on various viewpoints and factors that are relevant to their implementation. This study's goal is to establish a framework (E-IAF: CDGE) for evaluating the effects of E-services in the context of Ethiopia. The main objective of this study is to analyze what happens when E-services implemented in government services.

The government's ambition to enhance rapid, dependable government services for the citizens and have an impact on the country's economy, politics, and social life, changes in people's lives occur. A Citizen-Centric Model for Evaluating the Intermediate Impact of E-Government taken into account by Ibrahim Otieno and Elijah Omwenga's framework. Thus, using updates and adjustments to Ibrahim Otieno and Elijah Omwenga's framework in the context of Ethiopia, the current research based on a survey of the literature.

4.2: Analysis Ibrahim Otieno and Elijah Omwenga Framework

Even though E-government implemented, very little research done in the context of developing countries to benchmark and evaluate the impact of E-government on target populations. In developed countries, where the setting is distinct from that of developed countries, the majority of studies on the evaluation of e-government conducted.

Ibrahim Otieno and Elijah Omwenga's studies largely based on the supply side and few on the demand side with little focus on outcomes and impact. [26] Ibrahim Otieno and Elijah Omwenga's framework prepare by the adoption of a hybrid framework that amalgamates the frameworks developed by Bhatnagar, Singh, and Verdegem et al due to their contextual suitable citizen-centric approach.

The exploratory study and analysis of the available benchmarking and E-government evaluating frameworks with the aim of contextualizing and making recommendation .researcher perform analysis foundation for the further research in the development of an appropriate framework using the proposed approach. [27]

The Ibrahim Otieno and Elijah Omwenga has adopted the evaluation model of DeLone and McLean (Information Systems success model) for assessing success in E-government projects and defined an evaluation framework for measuring the success of G2C Information Systems from the citizen's perspective. The researcher update Delone and Mclean IS success model, Delone and McLean's evaluation model has a six-key dimension approach (information quality, system quality, service quality, use, and user Satisfaction, and perceived net benefit), focused on the demand side or customer side. The key concept is measuring government success in terms of customer satisfaction. [26]

4.3: Proposed Framework

"Additional attributes to measure the impact of E-service and the impact of each additional attribute in prioritized order in the Ethiopian context" [28] is the title of the research problem in the introduction chapter. Numerous problems and questions have emerged after reading numerous publications and research papers. "What framework would be the most effective for analyzing the impact of E-services in the context of Ethiopia's digital government?" is the main research question. [29]

For answering the above research question, we need to identify additional attributes and measure the impact of additional attributes. Series Hypotheses required to develop from the research question and tested for the proposed research framework. In accordance with Ibrahim Otieno and Elijah Omwengas E-government Impact Evaluation Framework this study proposes E-Service Impact Assessment Framework – Case of Digital Government of Ethiopia (E-IAF:CDGE).

Model selection i.e. from different models, which one is the best model fit for the observed data is the necessary question answered. Technological, Organizational and Environmental Model is the best fit than the others. With this, the study aims to assess the practice of impact assessment and come up with an adapted framework. It will also evaluate how each E-service fits with the overall satisfaction of the people and government strategy.

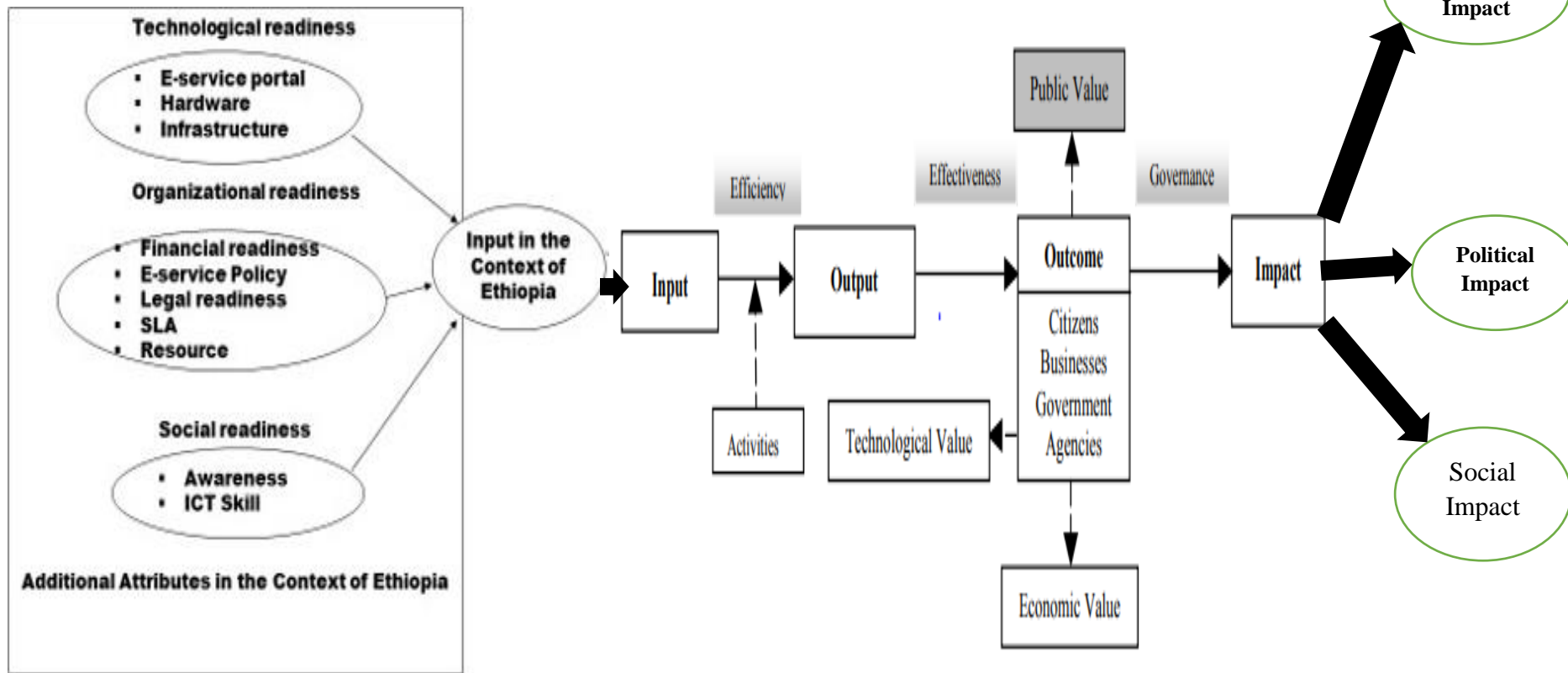


Figure 4.1: Added Attributes of the Proposed Framework and current framework

Hypotheses is of utmost importance as it related to prediction or postulate of a researcher. It can be tested and verified .The aim of forming hypotheses is to provide a direction for the research and establish relationship between variables. Finally, hypotheses helps in discussion of findings and conclusion of study [20].

- H₁ ----- E-service Portal is positively affect E-service.
- H₂ ----- Hardware is positively affect E-service.
- H₃ ----- Infrastructure is positively affect E-service.
- H₄ ----- Budget is positively related affect E-service.
- H₅ ----- Legal readiness is positively affect E-service.
- H₆ ----- Final readiness is positively affect E-service.
- H₇ ----- Resources is positively affect E-service.
- H₈ ----- SLA is positively affect E-service.
- H₉ ----- Awareness is positively affect E-service.
- H₁₀ ----- ICT Skills is positively affect E-service.

The next phase in analyzing data, interpreting data, and drawing conclusions comes after developing hypotheses: choosing a model. The question that needs to be addressed for the survey from many models is which model fits the observed data the best. The technological, organizational, and environmental model (TOE) is the one that works best for developing the suggested model and polling the respondents out of all the other models.

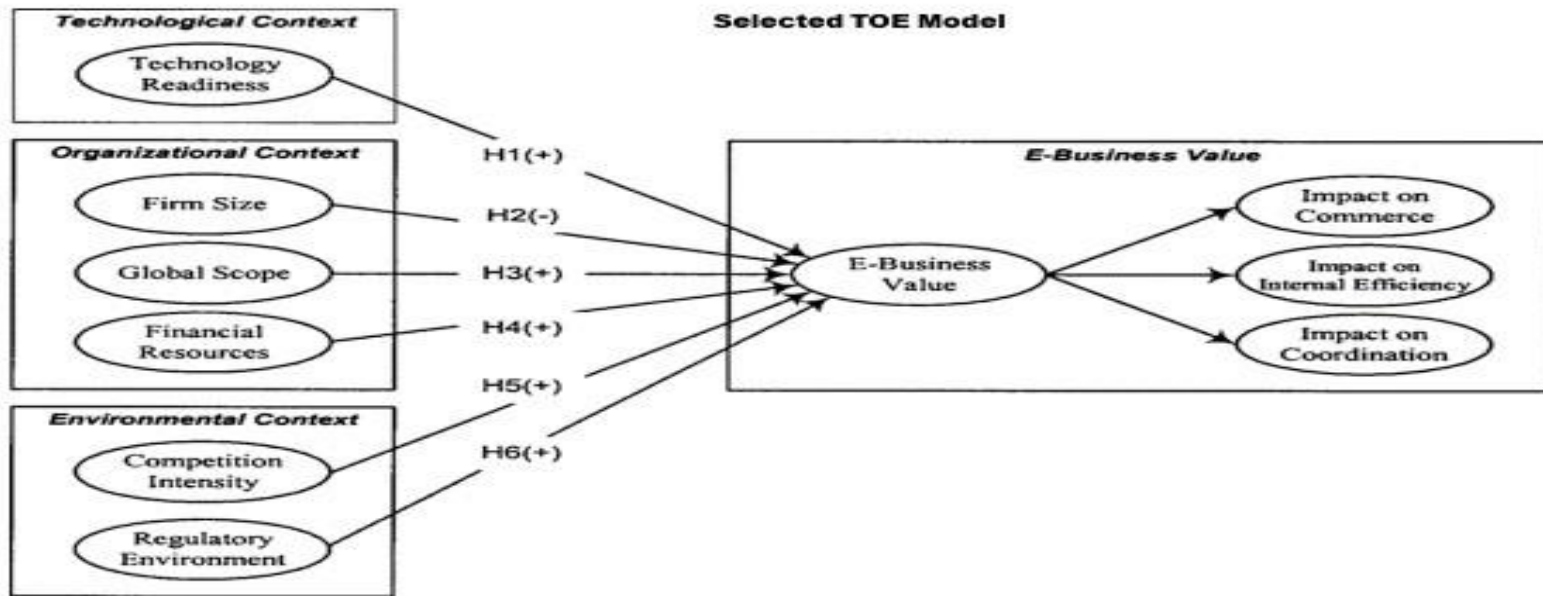


Figure 4.2: Selected TOE Model [21]

As we have shown, the TOE model is the model that is best suited to evaluate how E-services will affect the citizens' economies, politics, and social lives. By creating figure 5.3 below, this study looks for to evaluate the practice of affecting E-services and produce an adjusted E-service impact assessment in the situation of digital Government of Ethiopia.

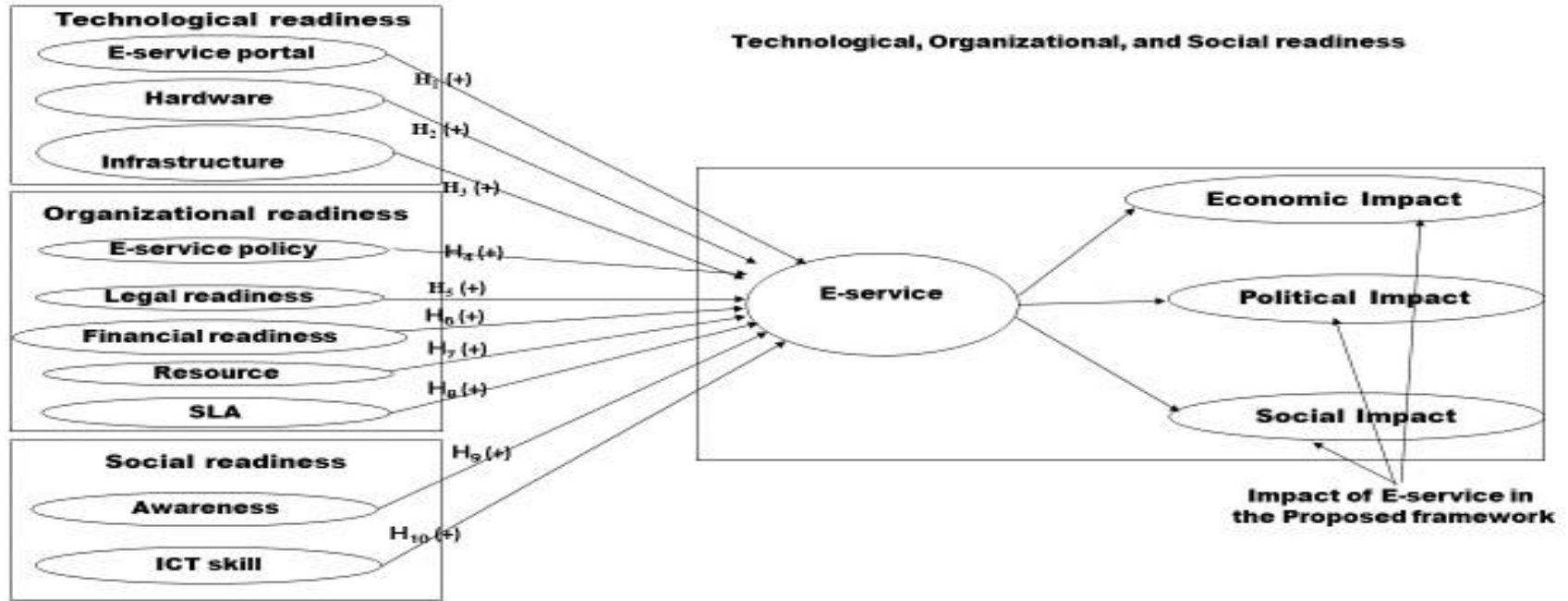


Figure 4.3: Technological, Organizational, and Social Readiness of the proposed framework

Questionnaires grounded on the TOE mode

This study employed a Likert scale to examine the data after choosing an appropriate model. A Likert scale is a rating scale that is applied as one of the most fundamental and widely used psychometric tools in research. It is used to measure views, attitudes, or behaviors. Following a statement or a question, there are five answer statements in succession. From 1 to 5, respectively, and from strongly disagree to strongly agree [21].

This study encounters several issues with the data collection process, such as respondents forgetting to submit some values or entries in certain parts. Such responses are often disregarded from the dataset as invalid. 30 questions, or 2.86% of the total data set, were eliminated. According to theory, a 10% reduction of the missing replies is sufficient for data validation (Hair et al., 2020). To make analysis easier, the acquired data were entered into the SPSS 23.0 software. The accuracy and bounds of the data were confirmed by validation and verification.

The following table 5.1 provides an explanation of each additional attribute that Ibrahim Otieno and Elijah had to add in order to assess the impact of e-services in the context of Ethiopia's digital government and creates an E-service Impact Assessment Framework (E-IAF: CDGE) for doing so. All of those descriptions are supported by literature and references, which are used to cite supporting documentation for the descriptions.

Description of the proposed frameworks (E-IAF: CDGE)

No	Input	Attributes	Explanation of attributes	References
1	Organizational readiness	Legal strategy	UNICITRAL and AU have enacted model laws that govern e-commerce and in the Ethiopian case MCIT draft laws of to govern e-transaction is prepared	The necessary devices to use and deploys E-service
		Financial readiness	It is an approximation of revenue and expenses over a specified future period of time	Yang et al., (2015); Kumar et al., (2017)
		SLA	The degree to which up-to-date, current, and unambiguous services are available to the citizens	Yang et al., (2015); Kumar et al., (2017)
		E-service policy	The goal of the E-service policy is to promote Ethiopia from an agriculture-based economy and society to a predominantly knowledge- and information-based economy and society	http://www.witfor.org/2007/www.witfor2007.org/aboutethiopia/ict-in-ethiopia/ethiopian-ict-policy.html
		Resources	The necessary devices to use and deploys Eservice	Roadmap for E-government in the Developing World
2	Technological readiness	E-service portal	The Ethiopian Government Electronic Services Portal has been developed to provide electronic public services to citizens, non-citizens businesses, and governmental & non-governmental organizations	https://www.eservices.gov.et

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		Hardware	Refers to the external and internal devices and equipment that unable to perform Eservice	https://www.techtarget.com/searchnetworking/definition/hardware
		Infrastructure	Necessary for the deployment of Eservices, providing rele vant and high-quality data from systems	https://www.investopedia.com/terms/i/infrastructure.asp
3	Social readiness	Awareness	E-services provided to citizen through Internet facility Public can have awareness regarding E-Services, awareness of E- services, Satisfaction level of the Public regarding E-services	Public Awareness and Usages of E-Services Dr.R.Sriandal Esak kirani, V. Chitra
		ICT Skill	Instruction provided for enhancing an individual's ability to use computers for learning and functioning	Batini, (2009)

Table 4.1: Identification and Explanation of added attributes in the Ethiopian context

CHAPTER FIVE: COLLECTION, ANALYSIS AND FINDINGS

In Chapter six of this study, the measures to take in order to produce outcomes that address the stated problem and are consistent with the study's aim described. Explain the viability of the proposed framework (EIAF: CDGE Framework) and how it may be used to assess the overall economic, political, and social impacts of e-services on the nation. Quantitative data produced by the study using questionnaires. Questions with Likert-scale replies calculated by assigning values in numbers to enable quantitative analysis. Following that, the data assessed using SPSS version 23.0 software.

5.1 About E-service portal

The Ethiopian Governmental Electronic service portal developed to provide electronic public services to citizens, non-citizens, business and governmental & non-governmental organizations. E-service portal lists public services provided by various government organizations. Categorizes the various public services into topics and sub-topics for ease of locating a particular service, and lists government organizations that provide various public service [22]. List of governmental organisations offering E-services to citizens on the E-service portal is shown in table 5.1 below according to May 2023 G.C.

No	Agency	Authority	Board	Commission	Institute	Ministry	Service
1	2	3	1	2	1	10	2

Table 5.1: Governmental organizations Service provider list until May 04/ 2023 G.C [22]

5.2 Survey Questioner design

The Public Servants Social Security Agency, the Ethiopian Coffee and Tea Authority, the Ethiopian Investment Commission, and the Ethiopian Management Institute were the five government organisations selected for participation in the survey. The survey questions created in a Google form for the Ministry of Innovation and Technology respondent. 160 participants from the chosen government organisations served as the survey's responders. The survey questionnaire provided to them in paper form

No	Service provider list	Governmental organizations
1	public servants social security Agency	Agency
2	Ethiopian Coffee and Tea Authority	Authority
3	Ethiopian Investment Commission	Commission
4	Ethiopian Management Institute	Institute
5	Ministry of Innovation and Technology	Ministry

Table 5.2: selected government organization's digital E- service providers

5.3. Analysis

5.3.1 Determination of sample size

It is not possible to investigate every member of a population due to time and other constraints, so a portion of the population chosen. The portion of the population that makes up the sample size in this situation to ensure a fair representation of the total population, a sampling formula used throughout the entire study. The data from the E-service portal until May 04, 2023 G.C. are displayed in table 5.3 below.

No	Available service Provider	Online government service	Processed customer Application	Registered customer
1	21	318	381,647+	175,438+

Table 5.3: E-service portal until May 04/2023 G.C [22]

$$S = \frac{(Z^2) * P (1-P) / e^2}{1 + (Z^2 * P (1-P)) / e^2 * N}$$

Where

- N=Population size
- e=Margin error=5%
- Z=Z-score (Confidential level =95%)=1.96
- P=Variance (Standard of deviation)=0.5
- S=Sample size
- $S = (1.96 * 1.96) * 0.5(1-0.5) / 0.05 * 0.05 / [1 + (1.96 * 1.96 * 0.5(1-0.5))] / 0.05 * 0.05 * 175,438$
- $S = 19.208 / 0.0046$
- S (approximately equal to) **4,297 participants**

Note

This was due to the too huge population The formula made the theoretically anticipated number of participants extremely large. There aren't any other options, though.

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Due to various restrictions, it is not possible, hence only 160 participants chosen. As a result, the sample consists of 80 customers, 40 customer service experts, 40 IT professionals, and 40 Administrators. In other words, 160 people took part in the questioning.

No	Types of participants	No of participants	No of participants in 5 organizations	Total questions
1	Customers	16	$16 \times 5 = 80$	$80 \times 10 = 800$
2	Customer service Experts	8	$8 \times 5 = 40$	$40 \times 10 = 400$
3	ICT Experts	8	$8 \times 5 = 40$	$40 \times 10 = 400$
4	Management	4	$4 \times 5 = 20$	$20 \times 10 = 200$
			160 participants	1,600 questions

Table 5.4: Sample Distribution Matrix

5.3.2 Respondent's Demographic Character

The characteristics of the study's respondents described statistically in this section. Gender, age, educational attainment, job history, and respondents' roles make up the demographic characteristics. Utilizing the demographic information from the questionnaire's initial page as well as the information gathered above from specific respondents, a descriptive statistical analysis conducted.

-

Variable	Classification	Frequency	Percentage
Gender	Male	98	61.2%
	Female	62	38.8%
	Cumulative	160	100%
Age of respondents	18-30	41	25.6%
	31-40	49	30.6%
	41-50	45	28.1%
	51-60	25	15.6%
	Cumulative	160	100%
Educational Level	BSC	119	74.4%
	MSC	41	25.6%
	Cumulative	160	100%
Work Experience	Below 5 Years	77	48%
	5-10 Years	48	30%
	11-15 Years	7	5%
	Above 15 Years	28	17%
	Cumulative	160	100%
Role of respondents	Customer	80	50%
	Customer service officer	40	25%
	IT Expert	20	12.5%
	Management	20	12.5%
	Cumulative	160	100%

Table 5.5: Demographic Information of the Respondents

The following step is to quantify the issue. Quantitative data is utilized to support this. To verify the framework, the primary component quantitative data analysis is now being done (E-IAF: CDGE). Through quantitative data analysis, several linkages that had been hypothesized were confirmed.

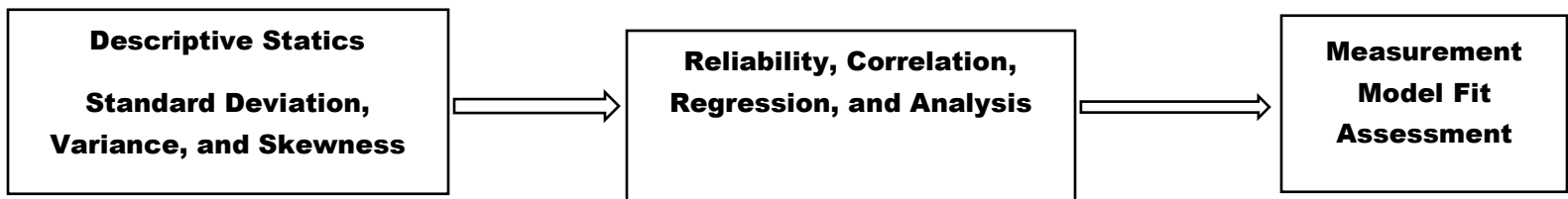


Figure 5.1: Schema of Quantitative data analysis [8]

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The tables below (5.6 and 5.7) demonstrate that the descriptive statistic's function is to summarize information from the existing and suggested frameworks. In order to summarize sort of data, the study often respond to three questions: Where is the distribution-taking place? What is the degree of value separation? What kind of distribution does it seem to be? These are referred to by the phrases center, spread, and form.

Descriptive statistics

Added Attribute in E-IAF: C DGE framework	N	Mean	Median	Mode	Standard Deviation	Variance	Skewness
E-service portal	160	4.69	3.06	5	0.549	0.302	-1.625
Hardware	160	3.06	3.00	3	0.818	0.670	-0.383
Infrastructure	160	3.18	3.00	3	0.760	0.577	-0.666
Legal Readiness	160	3.54	4.00	4	0.571	0.326	-0.765
Financial readiness	160	3.16	3.00	3	0.813	0.661	-0.721
Resource	160	3.36	3.00	3	0.566	0.321	-0.177
SLA	160	3.22	4.00	4	0.995	0.990	-0.996
Awareness	160	3.56	4.00	4	0.591	0.349	-0.962
ICT Skill	160	3.49	4.00	4	0.604	0.365	-0.733
E-service Policy	160	3.01	4.00	3	0.879	0.894	-0.998
Key					-2<SD<2 95%	V>=1 [Highly variance]	SK<-1 [Highly Skewed]
Source					Bradleyetal.,2016);Hair et al., (2019)	Bradleyet al.,2016);Hair et al.,(20 19)	https://www.ve dantu.com/

Table 5.6: Current Ibrahim Otieno and Elijah Omwengas E-government Impact Evaluation Framework

E-service Impact Assessment Framework: Case of Digital Government of Ethiopia

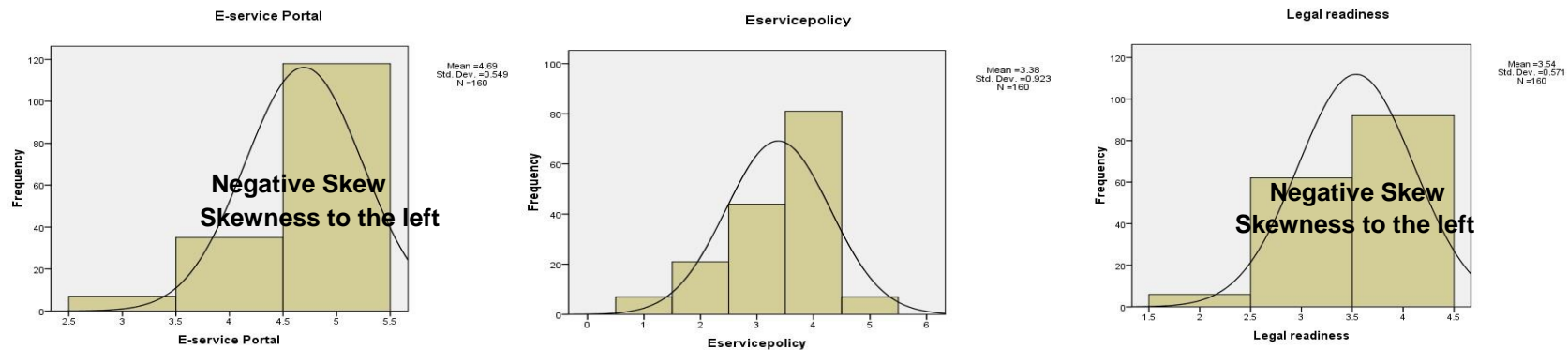
Added Attribute in E-IAF: C DGE framework	N	Mean	Median	Mode	Standard Deviation	Variance	Skewness
E-service portal	160	4.46	4.5	5	0.465	0.216	-0.509
Hardware	160	3.06	3.00	3	0.818	0.670	-0.383
Infrastructure	160	3.18	3.00	3	0.760	0.577	-0.660
Legal Readiness	160	3.54	4.00	4	0.571	0.661	-0.765
Financial readiness	160	3.40	3.00	3	0.813	0.326	-0.420
Resource	160	3.42	3.00	3	0.566	0.321	-0.432
SLA	160	3.48	4.00	4	0.995	0.349	-0.588
Awareness	160	3.56	4.00	4	0.591	0.365	-0.962
ICT Skill	160	3.49	4.00	4	0.604	0.990	-0.733
E-service Policy	160	3.58	4	4	0.815	0.251	-0.12
Key					-1<S.D<1 [68%]	V<1 [Low Variance]	-1<SK<-0.5 [Moderately Skewed]
Source					Bradley et al.,(2016);Hair et al., (2019)	Bradley et al., (2016); Hair et al., (2019)	https://www.vedantu.com/

Table 5.7: Proposed E-IAF: CDGE E-Service Impact Assessment Framework descriptive statistics

5.3.2 Histogram of data normality

Following a review of the data's distribution and dispersion, reliability, regression statistics, and then ordinal regression examined. The mentioned statistics provide assurance that the internal metrics produce accurate findings. They discuss issues relating to the validity of the approach used and the correctness of the data [23]. The distribution of the data makes it easier to quantify the quality of the data, and metrics of dispersion used to determine what considered "normal" for the data. Measures of dispersion used to describe how the data spread or changed around the center value. Histogram of data of the current Ibrahim Otieno and Elijah Omwenga's E-government framework.

The histogram of Current Ibrahim Otieno and Elijah Omwengas E-government Impact Evaluation Framework



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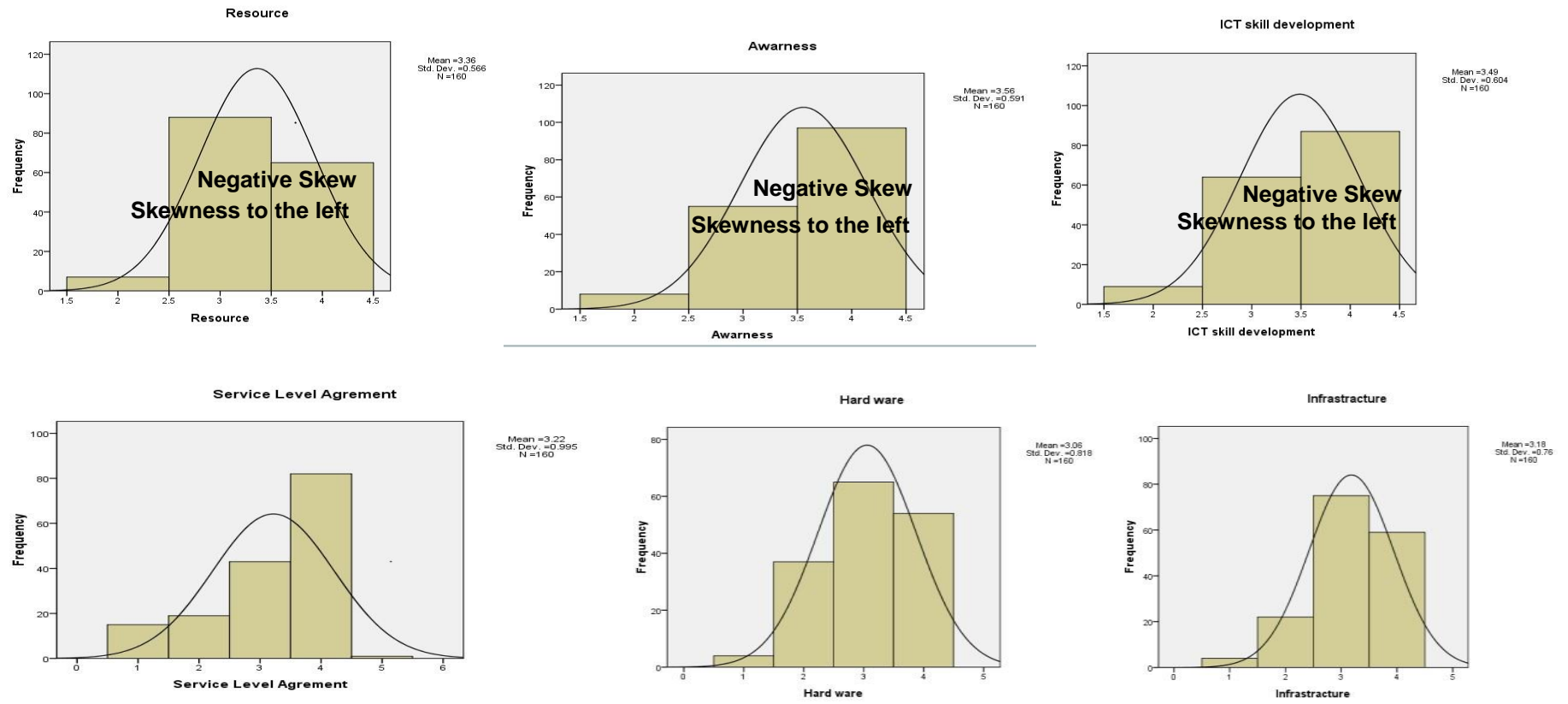
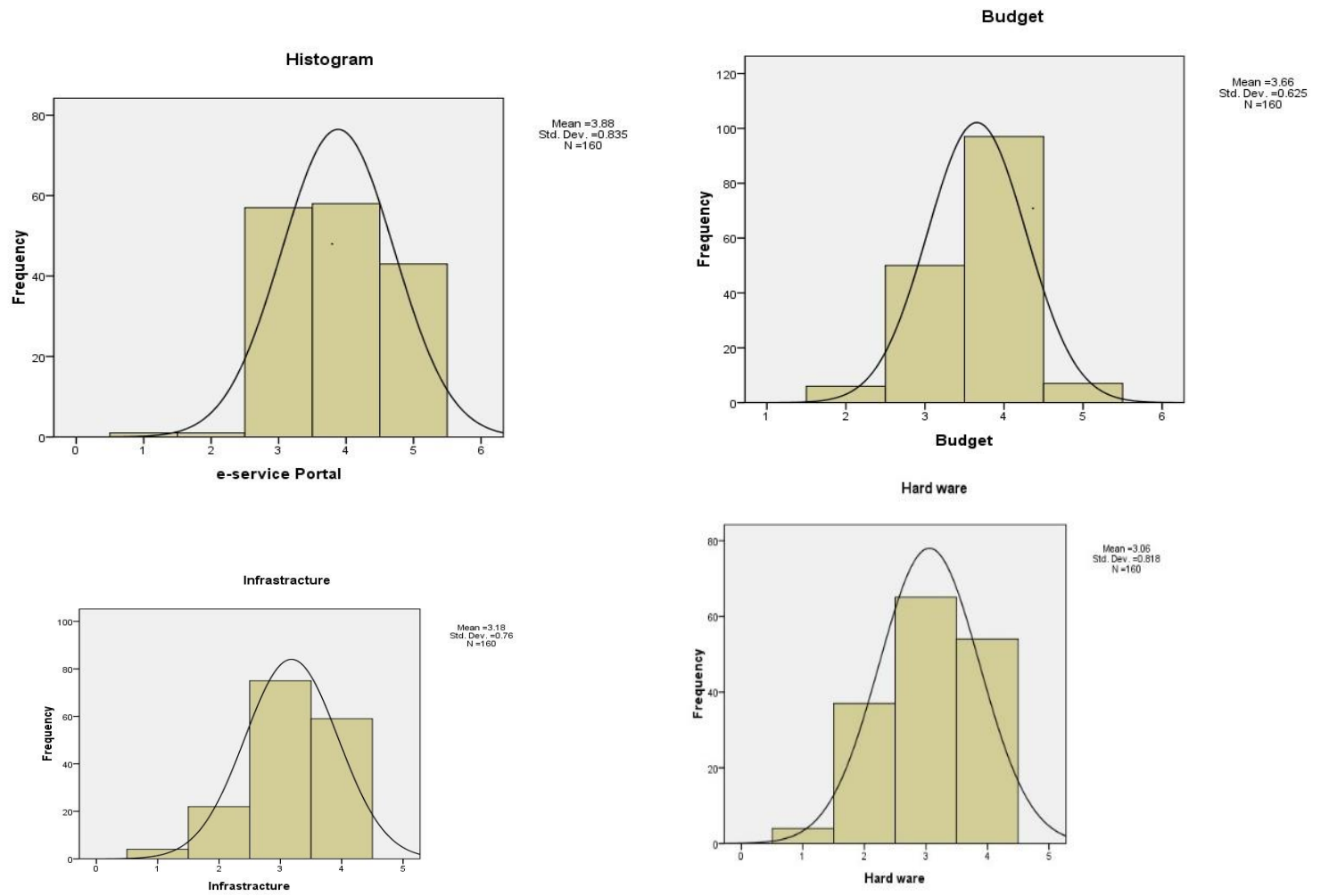


Figure 5.2: Histogram of data of the current Ibrahim Otieno and Elijah Omwenga's E-government

Histogram of data on the proposed E-service Impact Assessment Framework (E-IAF: CDGE)



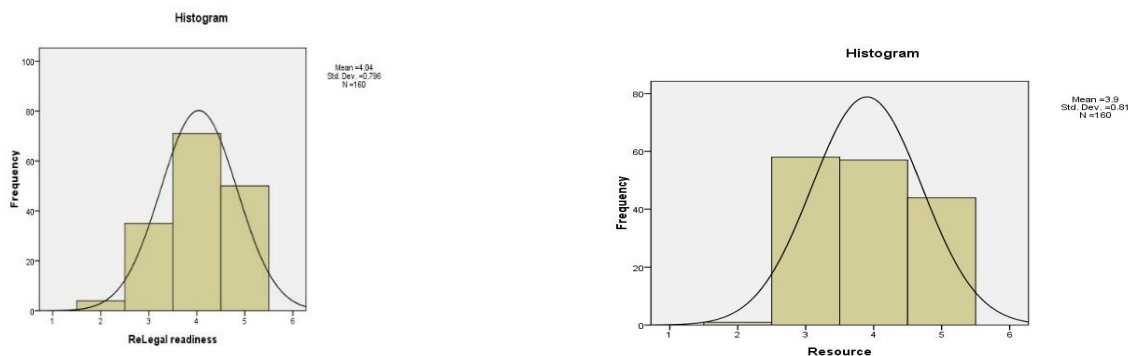


Figure 5.3: Histogram of data on the proposed framework

5.3.3 Reliability, Correlation, and Regression

The following tables (5.8, 5.9, and 5.10) in this area of the study look at how two quantitative attributes connect to one another as well as how dependent attributes influence independent attributes. Correlation and regression tests are the methods most frequently utilized to examine the relationship between two variables. Regression expresses the influence of dependent qualities on independent attributes, whereas correlation quantifies the strength of the linear relationship between a pair of variables.

	Current Framework	Proposed Framework
Reliability [Cronbach’s Alpha [α]	0.574	0.626
Ordinal regression [R^2]	0.945	0.991
	$0.5 \leq \alpha < 0.6$ [Poor reliable]	$R^2 > 0.4$ [Excellent reliable]
Source	Cortina, 2020 & Hair et al., 2019	Hair et al., 2019

Table 5.8: Reliability of the current Ibrahim Otieno and Elijah Omwenga's E-government and proposed E-IAF: CDGE framework

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Pearson Correlation of Current Ibrahim Otieno and Elijah Omwenga's E-government Impact Evaluation Framework

		E-service portal	Hardware	Infrastructure	Financial readiness	Legal readiness	Resource	Awareness	ICT Skill	SLA	E-service Policy
E-service portal	Pearson Correlation	1	0.215 ^{**}	-0.050 ^{**}	-0.649 ^{**}	0.354 ^{**}	0.447 ^{**}	0.465 ^{**}	0.324 ^{**}	0.088 ^{**}	0.17 ^{**}
Key $\alpha < 0.5$		Unacceptable		Source : Hox & Bechger, 2021; Hair et al, 2019; 20180) Kline,							

Table 5.9: Pearson Correlation of Current Ibrahim Otieno and Elijah Omwenga's E-government Impact Evaluation Framework

Pearson Correlation of the Proposed E-service Impact Assessment Framework (E-IAF: CDGE)

		E-service portal	Hardware	Infrastructure	Financial readiness	Legal readiness	Resource	Awareness	ICT Skill	SLA	E-service Policy
E-service portal	Pearson Correlation	1	0.554 ^{**}	0.524 ^{**}	0.505 ^{**}	0.582 ^{**}	0.487 ^{**}	0.465 ^{**}	0.455 ^{**}	0.579 ^{**}	0.785 ^{**}
Key $\pm 0.50 < C < \pm 1$		Strong Correlation		Source : Hox & Bechger, 2021; Hair et al, 2019; Kline, 2018)							

Table 5.10: Pearson Correlation of the Proposed E-service Impact Assessment Framework (E-IAF: CDGE)

Reliability Test in Ibrahim OTIENO, Elijah OMWENGA & Proposed (E-IAF: CDGE) Framework

No	Types of Comparison	Satirical Analysis	Types of framework	
			Current Framework	Proposed Framework
1	Dispersion of data	Standard Deviation	$2 < S.D < 2$	$1 < S.D < 1$
		Variance	Variance ≥ 1	Variance < 1
2	Distribution of data	Skewness to the left	Negative Skewed, Skewness to the left	No Skewness and normal Distribution
		Skewness to the right	----	-----
		Skewness	$0.5 < SK < 1$	$-1 < SK < -0.5$
3	Reliability Statistics	Reliability	0.574	0.945
4	Correlation Statistics	Correlation	$-0.88 < C < 0.649$	$0.455 < C < 0.583$
5	Ordinal regression	Regression	$0.626 = 62.6\%$	$0.991 = 99.1\%$

Table 5.11: Reliability Test in Ibrahim OTIENO, Elijah OMWENGA and Proposed (E-IAF: CDGE) Framework

The proposed framework's reliability for the impact examination of the E-service on the E-service portal can be demonstrated by the reliability test in the table 5.11, which also demonstrates the effectiveness of the proposed framework for impact assessment. The study demonstrates in the table 5.12 below how each variable influences the level of impact of each attribute based on the regression on the E-service provided to citizens. One of the study problems that is addressed here is the effect of each additional feature in the order of importance in the Ethiopian context.

Impact of added attributes in the proposed (E-IAF: CDGE) in Prioritize order

No	Added Attributes (in the Ethiopian context)	Regression R-Square (Negerlkerke)	Impact of Added Attributes (in %)	Impact Added (in Prioritized order)
1	E-service policy	0.962	96.2 %	1st
2	Awareness	0.954	95.4%	2nd
3	Legal readiness	0.952	95.2 %	3rd
4	Financial readiness	0.951	95.1%	4th
5	Resource	0.906	90.6 %	5th
6	Hardware	0.900	90 %	6th
7	Infrastructure	0.899	89.9%	7th
8	E-service portal	0.898	89.8%	8th
9	ICT Skill	0.842	84.2%	th9
10	SLA	0.798	79.8%	10th

Table 5.12: Impact of added attributes in the proposed (E-IAF: CDGE) in Prioritize order

To assess those two frameworks and to answer the study questions and prove the given hypotheses, the proposed and existing frameworks must be contrasted. In order to address the research questions and support the hypotheses, this comparison is a crucial step. The comparison between the Ibrahim Otieno and Elijah Omwengas frameworks and the E-IAF: CDGE framework is shown in table 5.13 below.

Based on this information we can conclude that the proposed framework is capable to answer the research questions.

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E-IAF: CDGE and Ibrahim Otieno and Elijah Omwengas framework Comparison

No	Type of Comparison	Type of Framework		Key	Source
		Proposed Ibrahim Otieno and Elijah Omwengas Evaluation Framework	E-Service Impact Assessment Framework (E-IAF: CDGE)		
1	Reliability	0.574 [Poor reliability]	0.945 [Excellent reliable]	0.9 ≤ α [Excellent reliable]	Cortina, 2020 Hair et al., 2019
				0.5 ≤ α ≤ 0.6 [Poor Reliable]	
2	Adjust goodness of fit	0.27–1.0 [Good fit of variables to the model]	0.001-0.002 [Excellent fit of variables to the model]	0.03 ≤ Goodness-of-fit ≤ 1 [Good fit of variables to the model]	Hair et al., 2019
				0.003 ≤ Goodness-of-fit ≤ 0.001 [Excellent fit of variables to the model]	
3	Risk of association between the attributes	2.78%-100% [High risk of association]	1%-2% [Negligible risk of association]	0.03% ≤ Risk of association ≤ 1% [High risk of association]	Hair et al., 2019
				0.003 ≤ Risk of association ≤ 0.001% [Negligible risk of association]	
4	Regression weight	0.626 [Good model fit]	0-0.991 [Excellent model fit]	0.2 < R ² < 0.4 [Good Model Fit]	Hair et al., 2019
				R ² > 0.4 [Excellent Model Fit]	

E-service Impact Assessment Framework: Case of Digital Government of Ethiopia

No	Type of Comparison	Type of Framework		Key	Source
		Proposed Ibrahim Otieno and Elijah Omwengas Evaluation Framework	E-Service Impact Assessment Framework (E-IAF: CDGE)		
5	Skewness	-0.996<Skewness<- 0.177 [Moderately skewed] , - 1.625 [highly skewed] and [Out of the range]	-0.962< Skewness < -0.383 [Moderately skewed]	-1<SK<-0.5 [Moderately Skewed]	https://www.vedantu.com/
				0.5<SK<1 [Moderately Skewed]	
6	Correlation	0.476<α<0.722 [Medium Correlation]	0.465<α<0.644 [Strong Correlation]	± 0.5<C<±1 [Strong Correlation]	Hox & Bechger, 2021; Hair et al, 2019; Kline,(2018)
				±0.30<C<±0.49 [Medium Correlation]	

Table 5.13: Comparison between E-IAF: CDGE and Ibrahim Otieno and Elijah Omwengas framework

The goal of this study is to evaluate how the Ethiopian economy, politics, and citizens' social lives would be impacted by E-service.

The study computes this using the following formula and the results are shown in the following table. Table 5.14

5

$$EI / PI / SI = \sum_{i=1}^5 [(n * Repr.) / 5] * 100$$

i=1

Where

n = Number of participants

Regr. = Regression weight

EI =Economic Impact, PI =Political Impact, SI =Social Impact

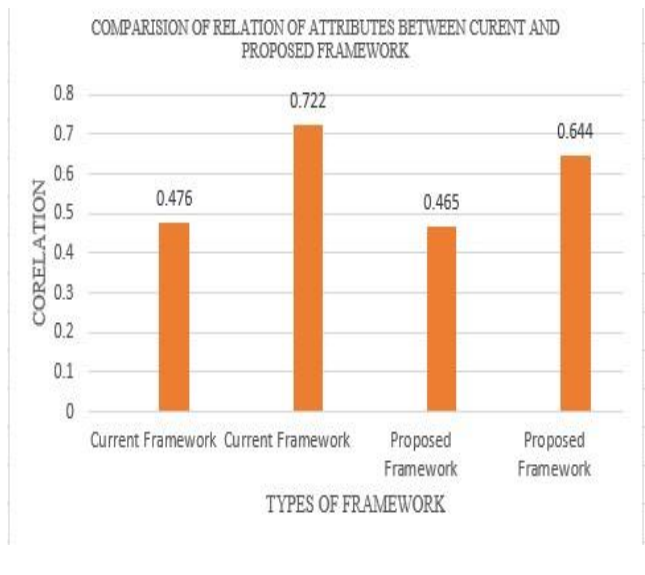
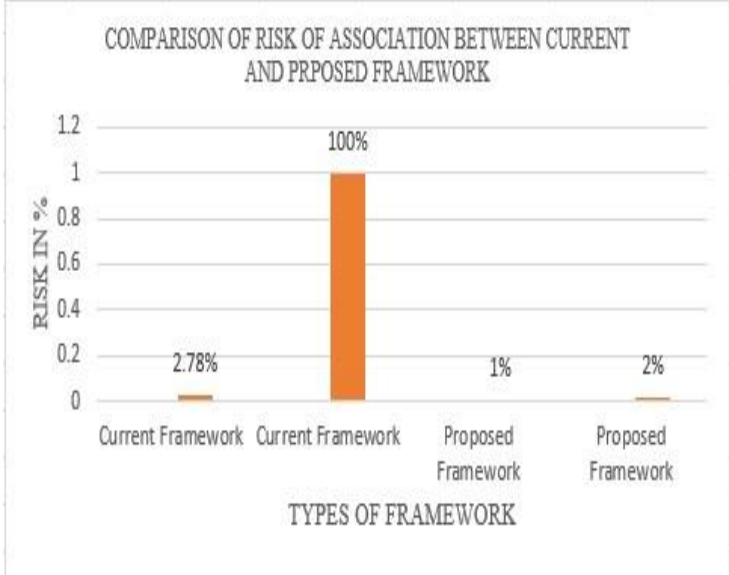
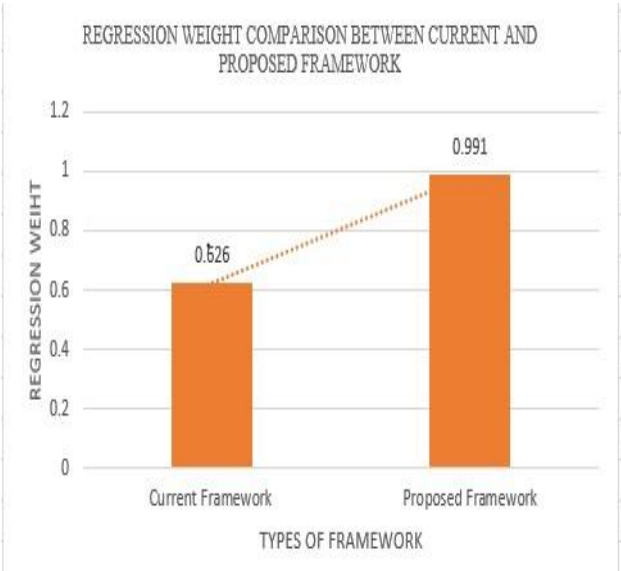
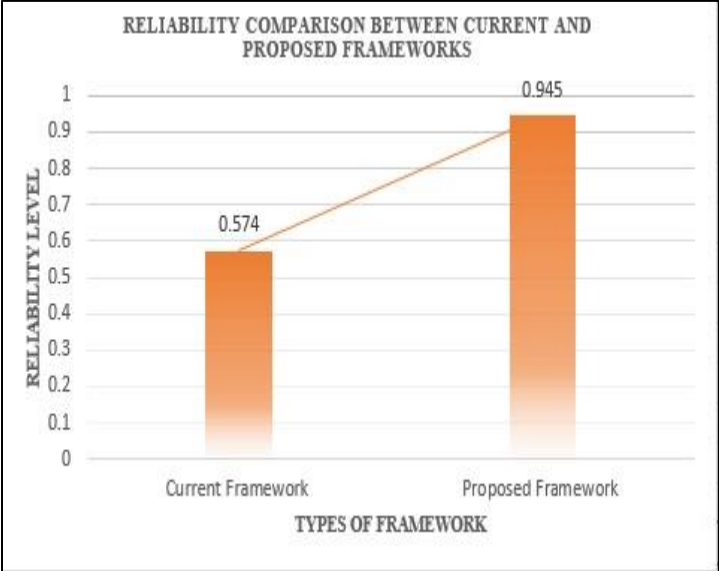
E-service Impact Assessment Framework: Case of Digital Government of Ethiopia

TOE Model	Attributes	Regression R-Square (Negerlkerke)																							
		Economic Impact [EI]						Political Impact[PI]						Social Impact[SI]											
		No of Participants answer(n)						No of Participants answer(n)						No of Participants answer(n)				EI = $\sum [(n \cdot \text{Regr.})/5] \cdot 100$ Where i={1,2,3,4,5}		PI = $\sum [(n \cdot \text{Regr.})/5] \cdot 100$ Where i={1,2,3,4,5}		PI = $\sum [(n \cdot \text{Regr.})/5] \cdot 100$ Where i={1,2,3,4,5}			
1	2	3	4	5	Total	1	2	3	4	5	Total	1	2	3	4	5	Total	1	2	3	4	5	Total	Where i={1,2,3,4,5}	
Technological readiness	E-Service Portal (H1)	1					160	93%	2	8	12	45	93	160	95.2%	2	4	19	38	97	160	97.5%			
	Hardware (H2)	2	4	15	47	92	160	89.7%	-	1	32	35	92	160	87.6%	2	2	29	46	89	160	83.7%			
	Infrastructure (H3)	-	2	8	57	93	160	91.6%	3	4	12	44	97	160	94.5%	1	-	15	41	103	160	95.2%			
	Budget (H4)	3	5	7	43	102	160	95.8%	1	2	6	44	107	160	97.1%	3	8	15	47	87	160	86.7%			
	Legal Readiness (H5)	3	8	24	35	90	160	87.9%	1	3	18	35	103	160	95.3%	1	1	11	43	108	160	96.3%			

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TOE Model	Attributes	Regression R-Square (Negerlkerke)																							
		Economic Impact [EI]						Political Impact[PI]						Social Impact[SI]											
Technological readiness	Financial Readiness (H6)	No of Participants answer(n)						EI = $\sum (n \cdot \text{Regr.})/5$ Where i = {1,2,3,4,5}	No of Participants answer(n)						PI = $\sum (n \cdot \text{Regr.})/5$ Where i = {1,2,3,4,5}	No of Participants answer(n)						PI = $\sum (n \cdot \text{Regr.})/5$ Where i = {1,2,3,4,5}			
		1	2	3	4	5	Total		1	2	3	4	5	Total		1	2	3	4	5	Total				
		Resource (H7)	SLA (H8)	Financial Readiness (H9)	Resource (H10)																				
		1	2	3	4	5	160	89.5%	3	4	22	14	117	160	98.4%	1	3	9	57	90	160	93%			
		2	3	14	31	110	160	97.4%	2	2	29	46	89	160	83.7%	1	2	4	55	106	160	94.3%			
		4	11	6	37	102	160	94.6%	3	8	24	35	90	160	91.9%	2	4	15	47	92	160	89.7%			
Social readiness	Financial Readiness (H9)	1	-	23	41	95	160	91.7%	2	8	12	45	93	160	95.2%	1	4	8	24	123	160	98.3%			
	Resource (H10)	3	2	16	41	98	160	92.5%	3	4	12	44	97	160	94.5%	3	5	7	43	102	160	95.8%			

Table 5.14: Impact of E-service on the Ethiopian Economy, politics and Social



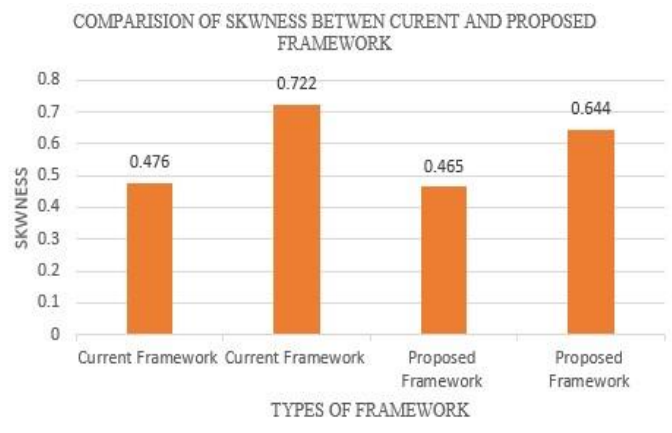


Figure 5.4: Comparison between E-IAF: CDGE and Ibrahim Otieno and Elijah Omwengas framework

5. 4 Achievements

Variance

- The variance must be less than one, In this study variance < 1 so the variance is Low
- All attributes of the proposed framework E-IAF: CDGE is less far from the mean and the Data have A Narrow Confidential Interval

Standard deviation (S.D)

- In this study, S.D lies between -1 and +1 -, which is 68%
- we conclude that all attributes in this study of the proposed framework E-IAF: CDGE are Not more Deviated towards the average

Reliability (α)

- α must be greater than 0.8, In this study $\alpha = 0.945$ It is an excellent and it is more reliable
- The proposed framework attributes of E-IAF: CDGE are reliable

Degree of Pearson correlation (C)

- C must be $\geq \pm 0.50$, In this study $\pm 0.50 < C < \pm 1$
- The Independent variable E-service portal is strongly correlated with the dependent Variable
- From this, we conclude that the proposed framework attributes of E-IAF: CDGE are Related to Each other

Skewness (SK)

- Skewness must be between $-0.5 < SK < 0.5$, In our case it is shown in Figure 9: The Measure of symmetry it is fairly symmetrical

Histogram

- Plotted in Figure 6.3, the degree of distortion from the symmetrical bell curve is normal Therefore, it is a normal distribution Goodness-of-fit
- Goodness-of-fit must be < 0.05 , In our case 0.01 and 0.02
- Each variable is associated with the model and also the significance level indicates a 1% In addition, 2% risk of concluding that an association between the variables exists
- We conclude that each attribute of the proposed framework of E-IAF: CDGE is associated With the proposed framework model with 1% and 2% risk

R-Square (Negerlkerke)

- R-Square < 0.2 , In our case R-Square = 0.991
- The model explains the data perfectly and also predicts the dependent variables perfectly

5.5 Discussion

As we have seen, in the proposed (E-IAF: CDGE) framework, the data distribution used to determine what is "normal" for the data and from the above-mentioned statistical findings is normal; however, in the current Ibrahim Otieno and Elijah Omwenga's E-government framework, it is abnormal and dispersed. In order to understand the connection that exists among a pair of variables, we also look at the relationship between the dependent and independent variables as well as the impact of the independent variable on the dependent variable. This leads us to the conclusion that the dependent and independent variables in the proposed framework are more interconnected than they are in the current Ibrahim Otieno and Elijah Omwenga E-government framework. This statistical data leads us to the conclusion that the proposed E-service Impact Assessment Framework is appropriate for the Ethiopian context.

5.6 Conclusion

As a result, we reach in the conclusion that the proposed E-IAF: CDGE framework evaluates E-services more effectively in the case of Ethiopia's Digital Government than the existing Ibrahim Otieno and Elijah Omwenga's E-government Impact Evaluation Framework.

7.4 Future work

The focus of this study is just on federal government services; regional government services are not included. In the near future, the government will attempt to broaden this service to include regional government services. As we know, the context of each region is distinct from the other, thus the vital attributes added are also diverse based on their context. By considering, this researched before E-services implemented in regional government services.

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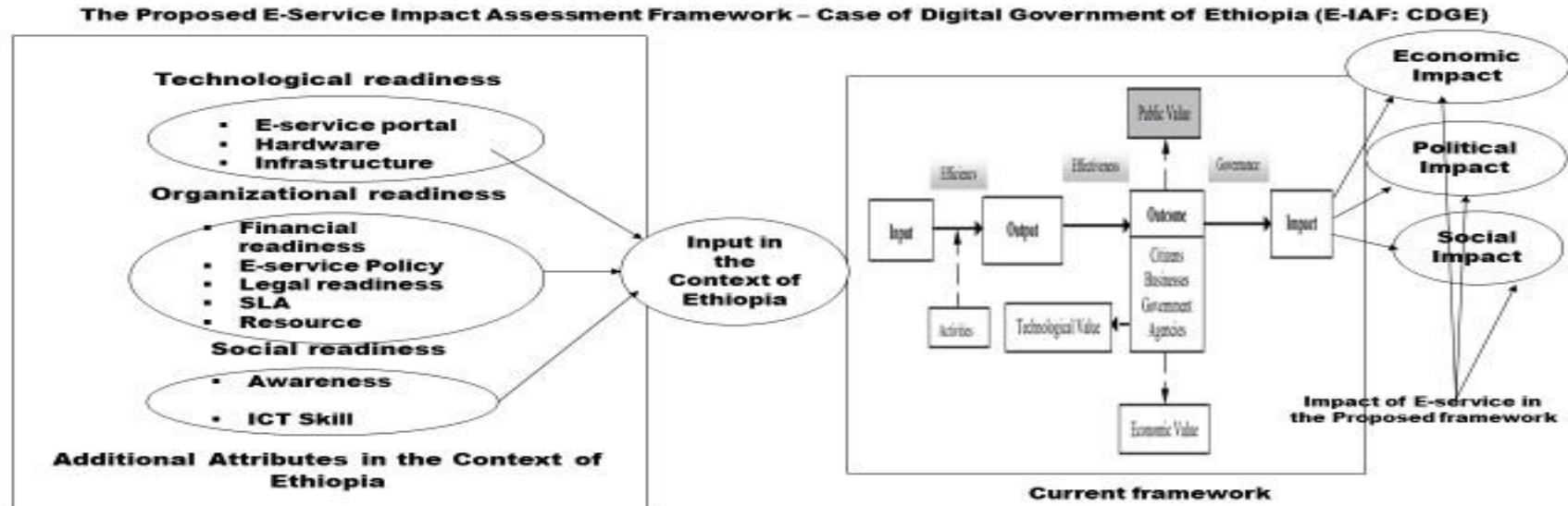


Figure 5.5: E-Service Impact Assessment Framework – Case of Digital Government of Ethiopia (E-IAF: CDGE)

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APPENDIX I: Personal data of the respondent

Dear Respondent:

To obtain a representative result, all your responses will be kept strictly confidential and only used for academic purposes. Thank you in advance for your kind cooperation and for dedicating your time.

The purpose of this questionnaire is to study deeply the impact assessment of E-service on the federal democratic republic of Ethiopia government over the last five years; deployed and implemented.

Therefore, I kindly request your cooperation in giving me the correct and complete information.

Best Regards,
Eshetu Tekle

APPENDIX II: Personal Data of the Respondents

1. Your Age

- A. 18-30 C. 41-50
B. 31-40 D. 51-60

2. Sex

- C. Male B. Female

3. Your work Experience in your organization

- A. Less than 5 year
C. 11-20 years
B. 5-10 year
D. greater than 21 years

4. Your level of Education

- A. Diploma
C. Master's Degree
B. Bachelor's Degree
D. Doctorate

5. Your role in the organization

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A. Top manager

C. Expert

B. Middle manager

D. IT Expert

E. Other Specify _____

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APPENDIX III: For customer service officers

The questionnaire based on the study's objective from the perspective of a customer service officer. The feedback scale arranged in the following order: Strongly agree, Agree, Uncertain, Disagree, and strongly disagree. Please enter (X) in the space provided.

No	Measurement of E-services	Feedback				
		Strongly Agree	Agree	Don't Know	Disagree	Strongly disagree
1	E-service in the Ethiopian governmental portal provide latest and satisfactory services for the citizens					
2	E-service is effective and fulfill the necessary requirements to get governmental services					
3	Service-level agreements between users and service provider will verify E-service reduces time, location barriers and lowering costs.					
4	The service provider monitor and evaluate E-service operation and its effectiveness					
5	E-services improve customer services and provide quick, cost-effective, and secure government services					
6	E-service exposes people to electronic information and educates them using advanced technology of ICT					
7	E-services are used to assist the government to design future economic and social plans					
8	Feedback mechanism system of E-service by which the citizens can provide is important					
9	E-services system improve the social aspect by strengthening relationships and trust between governments and their citizens					
10	Offered E-service system is easy to use but needs lots of technical understanding while using					

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APPENDIX IV: For
customers

The questionnaire based on the study's objective from the perspective of a customer. The feedback scale arranged in the following order: Strongly agree, Agree, Uncertain, Disagree, and strongly disagree. Please enter (X) in the space provided.

No	Measurement of E-services	Feedback				
		Strongly Agree	Agree	Don't Know	Disagree	Strongly disagree
1	You always use E-service on regular basis to get governmental services					
2	You have fully trust the service available through E-service system to get the government services					
3	The available internet speed supports quick and reliable to access E-service					
4	Customer can access E-service from any location and available at any time for use					
5	The Ethiopian governmental portal gives enough awareness to use E-service without any ambiguity					
6	E-service system works continuously without any interruption					
7	All necessary governmental services are included in E-service system					
8	There are enough help videos or steps and feedback mechanism available for using the E-service in the Ethiopian context					
9	Customer receive excellent quality of governmental services through E- service system					
10	You will experience a sense of confidentiality while using E-service in the Ethiopian governmental portal					

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APPENDIX V: For the ICT Expert

The questionnaire based on the study's objective from the perspective of the ICT Expert. The feedback scale arranged in the following order: Strongly agree, Agree, Uncertain, Disagree, and strongly disagree. Please enter (X) in the space provided.

No	Measurement of E-services	Feedback				
		Strongly Agree	Agree	Don't Know	Disagree	Strongly disagree
1	E-service offered in the Ethiopian governmental portal is risk-free in all aspects					
2	E-service in the Ethiopian governmental portal has required an improvement					
3	E-services serves as driving forces for the expansion of digital platforms and tools, across society					
4	E-service in the Ethiopian governmental portal is well organized and receive prompt response of any inquiry customer make					
5	There are monitoring and evaluation methods in E-service system effectively					
6	E-service enables the government to reach a larger customer base and provide more services					
7	While using E-service you can easily navigate from page to page					
8	There are some elements of the E-Service that must add, avoid, or modify in the Ethiopian context					
9	If any transaction goes wrong the Ethiopian governmental portal offers online support					
10	E-service reduces paperwork and saves time and money for the governmental organization as well as for the customers					

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APPENDIX VI: For the management

The questionnaire based on the study's objective from the perspective of the management. The feedback scale arranged in the following order: Strongly agree, Agree, Uncertain, Disagree, and strongly disagree. Please enter (X) in the space provided.

No	Measurement of E-services	Feedback				
		Strongly Agree	Agree	Don't Know	Disagree	Strongly disagree
1	E-services facilitate the reduction of corruption process and improve clarity by improving public services and providing reliable data to all citizens					
2	E-services will satisfy the transparency expectations of their citizens and make better and stronger relationships with the government and citizens for the development of democracy in the country					
3	The governmental can track and assess the return on investment and trade from E-service					
4	Cybercrime is a serious problem in the digital world; E-services enforce the government to work on it					
5	The development of E-services can be used as a platform by the government to announce policies and strategies for the citizens					
6	As a fast-growing economy and due to the rise of the internet and digitalization E-service is necessary for a country like Ethiopia					
7	To ensure long-term commitments of resources and expertise, E-service needs strong political leadership					
8	The maturity and development of E-services will result in remarkable economic development in Ethiopia					
9	Between users and your organization, a service-level agreement is essential					
10	E-service reduces paperwork and saves time and money for the governmental organization as well as for the customers					

