

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

EXAMINING FACTORS INFLUENCING E-GOVERNMENT SUCCESS OUTCOMES FROM EMPLOYEES' PERSPECTIVE IN THE CASE OF MINISTER OF INNOVATION AND TECHNOLOGY

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SPECIALIZATION IN MANAGEMENT

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ADDIS ABABA, ETHIOPIA

DECLARATION

I fully acknowledge that the thesis "Examining factors influencing E-government success outcomes from employees' perspective in the case of Ministry of Innovation and Technology" has been carried out by me under the guidance and supervision of Dr. Zelalem Gebretsadik is my own work and has not been submitted for any other award degree in any university. It is only submitted to get the degree of master of business administration in management from Addis Ababa University Faculty of Business and Economics. In any part other's work get properly cited whenever their work is used.

Name	Signature	Date
Zelalem Zerihun		10/06/2026

CERTIFICATION

This is to certify that Zelalem Zerihun Asfaw has carried out this research work on the topic "*Examining factors influencing e-government success outcomes from the employee's perspective in the case of ministry of innovation and technology"*. under my supervision. This research is his original work and has been presented for a degree in any university and all sourced of material used for the study have been duly acknowledged. Thus, it is sufficient for submission to partially fulfill the requirements for the award of a Master of Science in Management.

Advisor: Zelalem G/tsadik (PhD)

Signature: 

Date: 23/06/2026

APPROVAL PAGE

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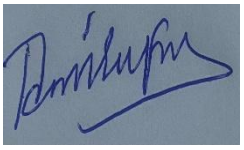
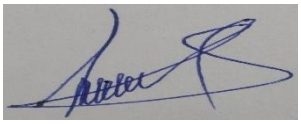
DEPARTMENT OF MANAGEMENT

Examining factors influencing e-government success outcomes from the employee's perspective in the case of ministry of innovation and technology

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Dedication And Acknowledgment

I want to dedicate this thesis to individuals who have been instrumental in my journey toward completing my MSc degree in master of Business Administration. Their unwavering support and belief in my abilities have been invaluable throughout these challenging yet rewarding journey.

First and foremost, I thank God for granting me the strength to finish this thesis. Next to that I want acknowledge my beloved mother and family whose endless love, sacrifices, encouragement and prayers have always makes me stronger and push me to my best version of myself. I don't have any word to express my love and respect.

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ABSTRACT

E-government has emerged as a prominent global trend, attracting the interest of policymakers, political leaders, and the general public alike. Because they see potential in it to make their country developed.

"The adoption and promotion of E-government have been a long-standing priority for national governments, largely because of its considerable benefits" (Nam, 2014). By digitizing administrative processes, traditional operations can be streamlined, reducing the costs and inefficiencies associated with manual procedures that takes long time to process. This transformation contributes to a more efficient, transparent, and citizen-centered administrative system (Doran et al., 2023).

This study tried to examine the relationship between citizen orientation, technology orientation, and E-government success in Ethiopia, focusing on the case of the Ministry of Innovation and Technology (MINT), the lead institution in implementing nationwide digital transformation initiatives such as e-ID, e-licensing, and online public services. Based on the previous proposed integrated conceptual framework, the study situates citizen orientation alongside technology orientation, while accounting for moderating factors such as the digital divide, shared understanding, and perceived privacy. Outcomes of E-government are assessed both intangible terms—cost efficiency, time savings, and operational effectiveness—and intangible terms—citizen trust, satisfaction, and empowerment through the mediating factor e-government.

The research adopted a quantitative approach, survey data from employees. The Quantitative data was analyzed through structural equation modeling (SEM) to test hypothesized relationships among citizen orientation, technology orientation, e-government, and with tangible and intangible outcomes respect to moderators.

Keywords: E-Government, Citizen Orientation, Technology Orientation, Ministry of Innovation and Technology (MINT)

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LIST OF ACRONYMS

MINT: - Ministry Of Innovation and Technology

E-Government: -Electronic Government

E-ID: -Electronic Identify Document

E-Licensing: -Electronic Licensing

SEM: -Structural Equation Modeling

ICT: - Information And Communication Technology

MCIT: -Ministry of Communication and Information Technology

PHD: -Doctor of Philosophy

MOST: -Major Authority of Science and Technology Minister

EGDI: -United Nations E-Government Development Index

E.G: -Example

IS: -Information System

G2C: -Government to Customer

G2B: -Government to Business

G2E: -Government to Employee

G2G: -Government to Government

IT: -Information Technology

TAM: - Technology Acceptance Model

PEOU: - Perceived Ease of Use

PU: - Perceived Usefulness

D&M: - Delone and Mclean

PLS: - Partial Least Square

SERVQUAL: -Service Quality

PLS: Partial Least Square

CHAPTER ONE

1.INTRODUCTION

1.1 Background of the Study

The widespread adoption of information and communication technology (ICT) has effectively reduced global barriers, making communication across sectors faster easier and more convenient. ICT makes it easy to individual to communicate across geographical boundaries at any time, by reducing barriers of distance and time. So, technology makes the gap between individuals, organizations very narrow in terms of time and space. Increasing the ICT technology can increase and enhance the effectiveness and the usage of communication with individual (Utami & Yuliana, 2017).

One of the basic communications using ICT is between the civilian and governmental agency. This evolution gave rise to the concept of e-government which is one component of ICT. Different scholars defined e-government differently which makes it dynamic concept (Relyea, 2002). In general E-government means using information communication technology to deliver governmental organization service and activity efficiently. As much as by increasing the technology infrastructure and service government organization can increase their transparency and accountability (Alshehri et al., 2012; Dawes, 2009).

Overtime e-government becomes one of the important things to make the country developed by facilitating the communication and the interaction of government with stake holder. Government gives priority in implementing and promoting e- government because of its effect in the country. Which include it decrease the cost to get the service from the client side, to deliver the service cost effective from government side and time efficiency from both sides (Nam, 2014; Jameel et al., 2019; Osei-Kojo, 2017; Munoz et al., 2018). Most scholars appreciate advancing of e-government can improve efficiency and functionality (Hung et al., 2006; Tonetto et al., 2023).

The steps to adapt the e- government research can be followed through several stages. First of all, the attentions should be raised for adapting the ICT by the government to support the communication between government and the civilian (Pérez-Morote et al., 2020). Secondly the government is going to check and find the right technology or way to deliver the service that the

organization gives to the public to automate routine administrative tasks financial transaction back-office operations processes (Dawes, 2008; Schelin, 2003; Wirtz & Daiser, 2018). consequently, thirdly using the technology that the government thinking to adapt for the service delivery and information sharing. (Doty & Erdelez, 2002; Halchin, 2004; Seifert & Relyea, 2004). In the fourth and fifth stages, research attention turned to technology adoption, citizen perceptions, and service quality, investigating factors influencing user adoption and satisfaction with E-government services (Gupta & Jana, 2003; Layne & Lee, 2001; Moon, 2002; West, 2004; Ebrahim & Irani, 2005; Sharif et al., 2010; Weerakkody et al., 2013; Papadomichelaki & Mentzas, 2011; Weerakkody et al., 2019).

E-government implementation in Ethiopia is relatively limited compared to the western and some other country. But currently it is in growing stage. The country and the government consider digitalization as a critical step to meet the goal the country set to achieve like modernization growth in terms of economy, political and other things and to improve the governance. Ethiopia government put clear strategy and policy to achieve digital Ethiopia 2030 plan to improve public service expanded digital infrastructure and inclusive access for citizens and business. The establishment of the ministry of innovation and technology (MINT) is the critical path for achieving digital 2030 which was initiated by Prime Minister Abiy Ahmed (PHD) as the government placed digital transformation at the center of its national development agenda

1.2 Background of the organization

The Ministry of Innovation and Technology is one of the government institutions in Ethiopia mandated to coordinate and lead the country's innovation and technological transformation. It was established under Proclamation No. 1097/2011 by the merging the former Ministry of Science and Technology (MOST) and the Ministry of Communication and Information Technology (MCIT) by initiation of Prime Minister Abiy Ahmed (PhD). The ministry coordinates five main institutions:

1. Ethiopian Radiation Protection Authority
2. Ethiopian Space Science and Technology Institute
3. Ethiopian Biotechnology Institute

4. Institute of Technology and Innovation
5. Geospatial Information Institute

The integration of MOST and MCIT aimed to consolidate their complementary objectives. MOST primarily focused on advancing the country's development through research and development programs, overseeing their approval, implementation, and progress. MCIT, on the other hand, was responsible for implementing policies related to communication and information technology. By merging the two ministries, MINT was created to enhance capacity for supporting economic development, strengthening the innovation and technology sector, and developing coherent policies and strategies to achieve these goals effectively (MINT website).

The ministry served as the research site for this study, and the employees are the targeted population for the data collection.

1.3 Statement of the Problem

Many governments across the world have adopted and implemented E-government system driven by its potential to deliver services, reduce the amount of money spent to get the service and also to enhance the communication between the government and citizens. (United Nations, 2012; Nograsˇek and Vintar, 2014). Countries with advanced economy like Estonia, Singapore and South Korea have the citizen's center digital governance.

In contrast, in many developing countries like Ethiopia the efficiency and the success of E-government is very limited and unevenly distributed. Ethiopia has been launching number of digitalization initiate under 2025 digital Ethiopia strategy including national digital id, online licensing, interoperable payment system and also national data exchange. while all the above things leave good mark to continue to the digital Ethiopia 2030 as a footstep.

However, despite having these initiatives citizen adoption and satisfaction with E-government service remain low throughout the country, mainly outside major urban cities like Addis Ababa

Existing studies on the implementation of e-government have primary focused on technological and infrastructure side by neglecting citizen orientation and citizen's needs (Weerakkody et al., 2019).

In addition to that there is lack of empirical studies that combines both citizen orientation and technology orientation and their combined effect on the success of e-government system implementation in the case of Ethiopia. Citizen orientation indicated that the perception, the readiness and the cultural implications of the citizens toward the e-government system. while technology orientation is that the technological readiness and managerial capability to implement the system. So, the interaction of the above two is very critical for the success or failure of e-government.

Addressing the above problem is very crucial for successful implementation of e-government. Because it is not only purchasing technological infrastructures rather it should be aligned with citizens' need, expectation and culture. Issues such as trust, privacy, inclusivity, and user satisfaction are rarely addressed in Ethiopian studies, leaving a critical gap in understanding how citizen orientation shapes the success of E-government initiatives. This could limit the effectiveness of the initiative Digital Ethiopia 2030 agenda

1.4 Research Question

The main research question that guided the researcher for the research were that

I. How citizen orientation and technology orientation influence e-government adaptation in Ethiopia?
II. How does e-government influence the tangible and intangible outcomes?
III. Does e-government mediate the relationship between citizen orientation and technology orientation with the tangible and intangible outcomes.
IV. Does digital divide negatively moderate the relationship between citizen orientation with e-government and technology orientation with e-government?
V. Does perceived privacy and shared understanding positively moderate the relationship between the e-government with tangible and intangible outcomes.

1.5 Objective of the research

The researcher formulated the following research objectives based on the statement of the problem and research gap.

1.5.1 General Objective

- To investigate how citizen orientation and technology orientation influence the success of E-government initiatives and how this success influence the tangible and intangible outcomes through e-government by considering the moderating roles of the digital divide, shared understanding, and perceived privacy in Ethiopia, with a focus on the Ministry of Innovation and Technology (MINT) employees.

1.5.2 Specific Objectives

I. To evaluate the effect of citizen orientation on e-government success.
II. To analyze the influence of technology orientation on the adoption and effectiveness of e-government success.
III. To assess how the moderator factor, digital Divide, influence the relationship between Citizen Orientation and E-government and also technology orientation with e-government.
IV. To evaluate how e-government affect the tangible outcomes like cost, time and efficiency.
V. To assess how e-government affect intangible outcomes like citizen satisfaction and trust in government.
VI. To examine the moderating role of shared understanding in the relationship between e-government and its outcomes.
VII. To evaluate the moderating effect of perceived privacy on the relationship between the e-government success and with the outcomes both Tangible and Intangible outcomes.
VIII. To examine the mediating role of e-government in the relationship between citizen and technology orientation and both tangible and intangible outcomes.

1.6 Significance of the study

Although this paper is for academic purpose, it can be used for other purpose too. Some of them are to: -

I. **Academicians**

This paper contributes to the existing knowledge on e-government and information system by examining the relationship between citizen, technology orientation, e-government with the tangible and intangible outcomes. It also includes the moderation effect of digital divide, shared understanding and perceived privacy. Future research who wants do on e-government and digital transformation can used it as a reference literature for their works.

II. **Policy makers**

The finding of this study can be used as an input for policy making and to plan strategies in designing and implementing governmental strategies and policies. Specifically, the study identifies important factors that influence successful e-government implementation which can support government institutions in designing policies and strategies that improve citizen engagement, technology adaptation and overall digital service effectiveness.

III. **International Institutions**

International organizations, research institutions and development agencies who are interested in digital governance can use the finding of this paper. Because it gives an image of current implementation of the country. And they can develop their own finding by taking it as a reference for their future work.

IV. **Ministry of Innovation and Technology**

As the lead organization for transforming Ethiopia to digitalized country, this paper gives a benefit by giving a better image how citizen orientation and technology orientation affect the implementation of e-government. And this helps to identify the critical areas to improve in the initiatives. The finding can support MNT in strengthening e-government implementation strategies and addressing challenges related to digital access, privacy concerns and stakeholder understanding.

1.7 Scope of the study

The study focused on assessing basic constructs from the conceptual framework citizen orientation and technology orientation on e-government success respect of the moderator factors digital divide, shared understanding, and perceived privacy. The research was delimited to employees who work in the ministry of innovation and technology working in different department. Employees were selected as respondents because they are directly involved in the planning, coordination, implementation and management of the digitalization process. Therefore, they have relevant knowledge and experience regarding organizational practices, technological capabilities and implementation challenges related to e-government.

Geographically, the study was only in to the headquarters of MINT in Addis Ababa, considering its central role in coordinating national digital transformation and e-government.

Thematically, even if it used other model to assess the e-government, the study concentrated on factors mainly derived from the Delone and McLean (2003) Information System Success Model, adapted to the E-government context.

Methodologically, the study adopted a quantitative research approach using a structured questionnaire to collect primary data from the employees of the MINT. Data analyzed using SMARTPLS to test the hypothesized relationships among the variables.

1.8 Limitation of the study

Although the study gives number of benefits for many stakeholders as mentioned in the significance of the study, it has some limitation that should be acknowledged.

First, the study was conducted only with in a single governmental firm, ministry of innovation and technology. So, the finding may only reflect specifically the organizational culture, practice and context. It may not work for other governmental institutions in Ethiopia.

Second the study used cross-sectional method, the data was only collected at one time in minster of innovation and technology. As result it may not show the changes in the perception of the employees.

Third, the research depended on self-reported data through questionnaires. The respondents may give biased answers for the proposed questions and may not reflected their actual perception of

the system and also there may be extreme answer that was filled with carelessness, that can affect the accuracy of the research finding.

Fourth, the collected data may subject to common biased because all the independent, dependent, moderating and mediating variables were collected from the same individuals. So, they may perceive the questions similarly. That may affect the outcome of the research

Fifth, the study focused on the employees' perception of e-government implementation. As a result, it may not represent the all the citizens. This means it doesn't used as representation of the e-government in Ethiopia

Sixth, the study only adopted quantitative research approach during the data analysis and it didn't include the qualitative method like interviewing. As result deeper insights may not have been captured.

Seventh, the sample size was only collected from 131 employees' and the resource limitedness may have affected the depth of the study and the result of the research.

Eighth, respondents who used the system rarely may respond to the indicators with limited experience and may cause response biased.

Finally, the research focused only on the perception of the respondent, it didn't examine the technical design aspect.

1.9 Organization of the Thesis

This thesis paper is organized into five chapters.

- **Chapter 1** - introduces the overall idea of the thesis and provides the foundation for the study. It includes the background, research problem, objectives, scope, significance and limitations
- **Chapter 2 -** briefly discusses the literature review, examining e-government, information system (IS) success models, and E-government success models.
- **Chapter 3** – states the research methodology, detailing the study design, data collection, and analysis procedures.
- **Chapter 4** - discusses the overall results of the data analysis along with their interpretation.

- **Chapter 5** – generalized the thesis result, offering key findings, conclusions, and recommendations.

The following diagram illustrates the overall structure of this thesis.

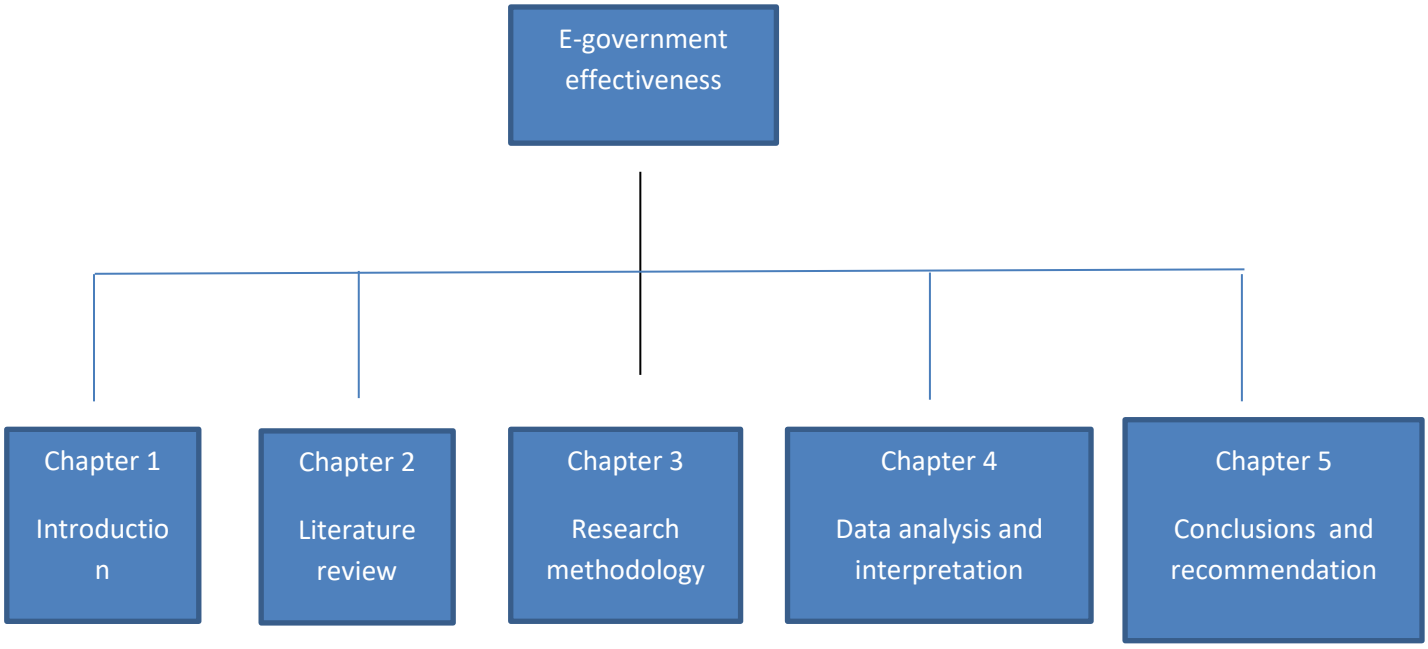


Figure 1: Organization of the Thesis

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Introduction

In this section, the chapter discussed both theory and previous research about e-government. First the chapter explain what a e-government means and its benefits for the individual and for the governmental organization. Then it discussed the information system (IS) and its model for measuring the success. Finally, a model that was used for measuring e-government effectiveness at MINT presented based on the previous literature review.

2.2 Overview of E-government

The concept of e-government doesn't have a universal accepted definition because governments adopt it based on their priorities, strategies and policy objectives. Therefore, scholars define e-government from different perspectives (Heeks & Bailur, 2007; Yildiz, 2007; Relyea, 2002; Evans & Yen, 2006).

From the technological perspective, e-government is viewed as the use of information and communication technologies to improve the delivery of governmental services. Scholars such as West (2004), Novakouski and Lewis (2012), Zhang and Hou (2011) emphasize the role of technological capability in enabling government to provide efficient and accessible services. Similarly, Almarabeh and Abuli (2010) and Odat (2012) highlight that adopting digital technologies can improve efficiency, accuracy and reduce operational cost.

A citizen centered perspective, e-government focuses on improving the interaction between citizens and government through digital platforms. Deloitte Research (2000) explains that e-government aims to improve citizens' experience with public services, while UNESCO highlights that information systems can enhance citizen participation and engagement with government institutions (Mollah et al., 2012).

From a transformational perspective, e-government is considered beyond the use of technology; it represents a change in the relationship between government, citizens, and organizations. Karokola et al. (2013) describe e-government as a system that transforms interactions with citizens and businesses to improve government service delivery. Similarly, the United Nations emphasizes that e-government strengthens governance practices and improves public service delivery (Alshomrani, 2012).

Therefore, e-government can be understood as a combination of technological capability, citizen orientation, and organizational transformation that enables governments to provide effective, efficient, and citizen-focused services.

2.3 Benefits of E-government

In recent years e-government is becoming very crucial in the current world especially in well developed country for enhancing the service of the government, for improving the efficiency in terms of time and cost and to create an opportunity for greater civilian in participation. Because of all the above uses and more E-government becomes very critical for both government and citizens. So, the main goal of E-government to improve the relationship between citizens and government.

The importance of the e-government that delivers to citizens, governments and also for country is many and diverse. (Elmorshidy, 2012; Alshehri & Drew, 2011; OECD, 2003; Mahmoud, 2010; Rokhman, 2011; Alghamdi et al., 2011; Novakouski & Lewis, 2012). These benefits include:

A. Best way for delivering service for stakeholders.
B. Decreases the cost of getting the services.
C. Increase the communication and the interaction between the government bodies and citizens.
D. Improve the efficiency of giving the service for the government.
E. Enhance the quality of service given in governmental firms.
F. Elevate transparency in government operations.
G. Decrease the opportunities for corruption.
H. Upgrade overall government management and decision-making.

I. Contributes to an improved quality of life for citizens.
J. Makes the bonding strong between the government and its citizens.

Source (Elmorshidy, 2012; Alshehri & Drew, 2011; OECD, 2003; Mahmoud, 2010; Rokhman, 2011; Alghamdi et al., 2011; Novakouski & Lewis, 2012)

2.4 Barriers to E-Government

Although E-government have number of important things for the country in terms of economic, social and political but it is not easy to practice in many countries especially in developing countries. There are number of obstacles and barriers.

Odat (2012) proposed general framework category for the main challenges that hinder the implementation of E-government initiatives in developing countries. These challenges include:

A. **Technological barrier** – challenges in terms of technological infrastructure like in hardware, software, internet that affect the implementation of E-government services.
B. **Managerial Issues** – issues related with the managerial capacity like leadership, strategic, planning, and administrative capacity to manage E-government projects.
C. **Digital Gap**– poor knowledge related to technology to implement and use digital platforms.
D. **Regulations** – lack of laws that support the implementation of e-government.
E. **Money** – financial requirement for implementing E-government because it requires large amount of money.

2.5 E-government Types

There are different types of e-government based on the way of using ICT to facilitate the communication between government and stakeholders. (Gant, 2008; Qaisar & Khan, 2010; Ouzbarkand et al., 2011; Odat, 2012; Fgee & Alkallas, 2013) identified some basic types of E-government.

A. Government-to-Citizen(G2C)

It is the first type of E-government which focus on delivering the service of the government for the citizen by using the digital platform.so the main aim is that to organize the service for the public.

B. Government-to-Business (G2B)

G2B is another type of e-government which focused on the business entity. this initiative uses technological infrastructure for making the interaction good between business firms and governmental organization

C. Government-to-Employee (G2E)

Government to Employee is a type of e-government. And it is a platform that focus on the communication between the government and the employee who works in that governmental organizational. It is important to improve internal administrative way for better management.

D. Government-to-Government (G2G)

This kind of e-government is between governmental body including national, regional and local agencies for the purpose of collaboration for implementing polices and strategy.

E-government affect every level of the government and prioritize the need of citizens (Pavlichev & Garson, 2004).it is considered as an important thing for improving service and the effectiveness of the service. To fully evaluate e-government performance, it is important to consider both internal perspectives (government processes) and external perspectives (societal outcomes) (Niven, 2003; Schedler et al., 2004).

The main focus of the MINT is that government to citizens for facilitating the service given for the citizens. the other focus is that government to business to reduce the bureaucracy and the corruption for example in the process of procuring and auction.

2.6 Phases of E-government development

To examine the development of the E-government initiative, Gartner (2000), state a framework to evaluate the e-government. these are

1. **Presence**

   The first phase for the e-government is the basic one, which is one way communication between the government and the citizens by websites. It is like a traditional brochure .it provides very limited communication.

2. **Interaction**

   At this stage the communication becomes two ways communication between the government and the stakeholders which includes the above e-government type like G2C, G2B and also G2G.it has interactive parts like email and some kind of form to submit.

3. **Transaction**

   The third phase of the e-government is transaction. It enables the online completion of the service and also the payment is using the platform. At this stage there is a higher level of communication

4. **Transformation**

   The e-government at this stage is fully aligned with the governance, try to organize and innovative government function (Gartner, 2003).

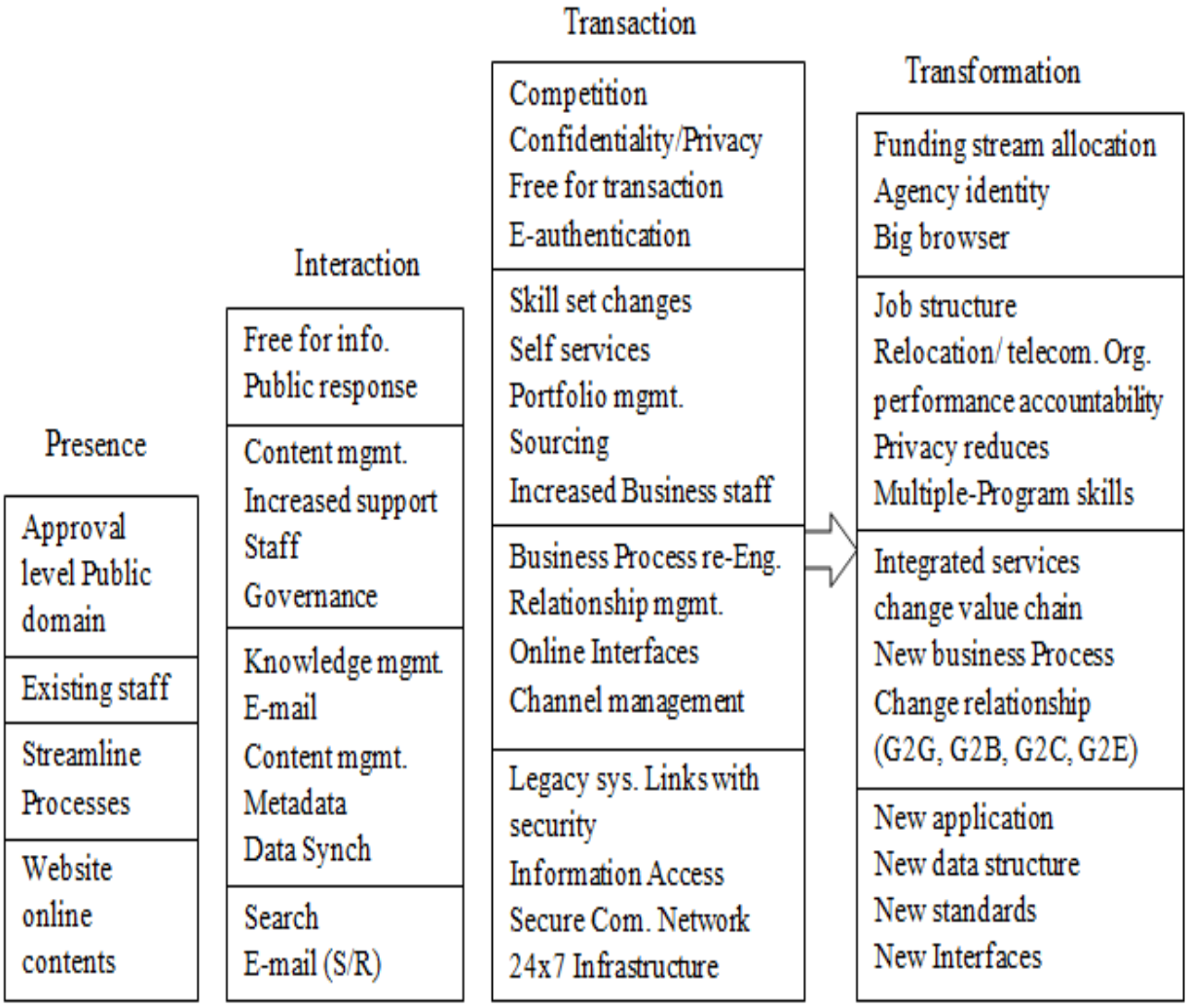


Figure 2: Phases of E-government

2.7 IS Success Measurement Models

Governmental organization and other firms are currently increasing the investment on information technology (IT) (Kanaracus, 2008).

Traditionally IS effectiveness is usually measured through the amount of money that is generated from using the platform or the amount of cost that we decrease by using the system. But this thing is considered insufficient for getting the full performance image (Rubin, 2004).

As Al-Sabawy (2003, 2013), the most challenging thing is that assessing IS success. He identifies four main methods to assess Information system (IS). These are:

1. **Technology Acceptance Model (TAM):** Examines factors that influence whether users adopt and utilize a system.
2. **User Satisfaction Approach:** Focuses on how satisfied users are with the system's performance and output.
3. **User Involvement Approach:** Considers the role of users in the system's development, implementation, and ongoing use.
4. **Delone and McLean Model:** Provides a holistic evaluation framework, including measures such as system quality, information quality, system use, user satisfaction, and the net benefits of the system.

2.7.1 Technology Acceptance Model (TAM)

Davis (1989) proposed this IS measuring model, technology acceptance model (TAM). It asserts that one individual behavioral intention to use a system is the main indicator for the platform. TAM becomes the most widely used for theoretical models to understand how and why users accept new information. (Lee et al., 2003).

According to TAM, behavioral intention is shaped by two core beliefs:

- **Perceived Usefulness (PU):** "the extent to which a user believes that employing a particular information system will improve his or her job performance "(Davis, 1989, p. 320).
- **Perceived Ease of Use (PEOU):** "the extent to which a user believes that using a system will require minimal effort" (Davis, 1989, p. 320).

A graphical representation of TAM is presented in fig 3 which highlights the central role of both perceived usefulness (PU) and perceived ease of use (PEOU) in measuring the digitalization process and adoption of the technology. The Technology Acceptance Model as adapted by Davis (1996, p. 20) illustrates these relationships.

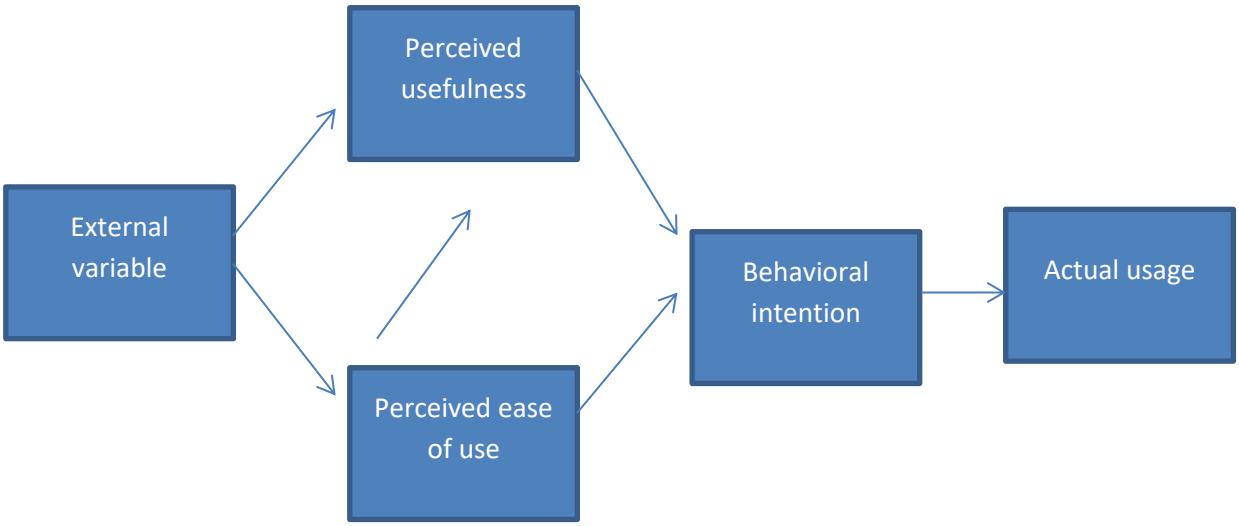


Figure 3: TAM Model

2.7.2 User Satisfaction Approach

Seddon and Kiew (1994) and Powers and Dickson (1973) stated that user satisfaction approach is the best way of measuring the success of Information system. And it has the ability to capture the overall impact of an information system. To measure whether the system meets its goal or not is looking the satisfaction of the users is the best way.

User satisfaction means the extent in which a stakeholder who use the system believe that the system will fulfil the need they want achieve (Ives et al., 1983). Also, Cyert and March (1963), also said if the system meets all the requirement of the users, their satisfaction with the platform is expected to increase. User satisfaction is the central construct for most assessment related with the information system.

2.7.3 User Involvement Approach

User's perspectives are very essential and critical in building some kind of information system. Doll & Torkzadeh, 1989). As Robey and Farrow (1982, p. 73), the importance of involving users gives the following benefits:

- a more accurate understanding of user information requirements,
- reductions in investments for system functionalities that users may not accept,
- stronger user acceptance and support for the system,
- enhanced user awareness and comprehension of system capabilities, and
- reinforcement of democratic participation within organizations.

User involvement is therefore considered to contribute to improved decision quality, enhanced user expertise, better identification of relevant information needs, and increased acceptance and commitment toward the implemented system (Doll & Torkzadeh, 1989).

The role of user involvement in IS success has attracted extensive scholarly attention, and research in this area generally falls into three main streams:

1. user involvement as a determinant of IS success,
2. user involvement in the development and design of information systems, and
3. user involvement in the adoption and use of electronic or digital applications of information systems.

2.7.4 Delone and McLean approach

In Delone and McLean ,1992 paper, they identified six variables or components of IS success: system quality, information quality, use, user satisfaction, individual impact, and organizational impact. However, these six variables are not independent success measures, but are interdependent variables. Figure 4 shows this original IS success model (Delone & McLean, 1992).

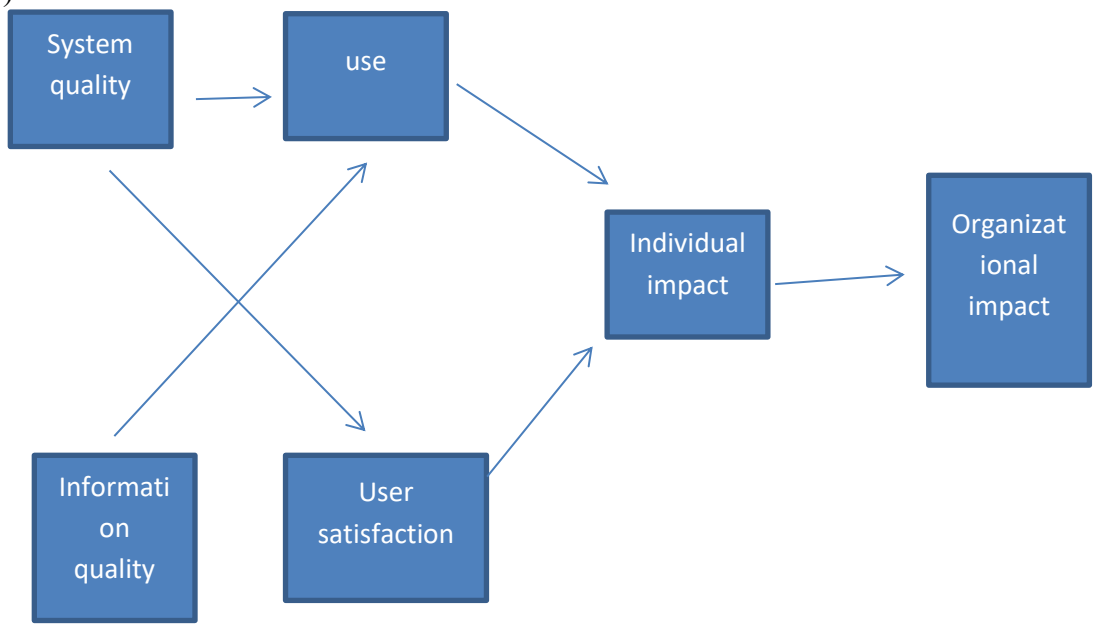


Figure 4: Delone and McLean approach

Researchers have argued that the service quality aspect should be incorporated into the Delone and McLean (D&M) IS success framework. One of the most influential contributions in this regard comes from the SERVQUAL instrument, originally developed within marketing research, which later became widely applied in the information systems field. “Instead of evaluating a single IT system, SERVQUAL assesses users’ expectations and perceptions of the overall IT service environment” (Pitt et al., 1995). Based on this, Pitt and colleagues proposed that service quality should be recognized as a distinct factor in measuring IS success. While some scholars questioned the necessity of adding this construct (Seddon, 1997), others supported the expansion (Jiang et al., 2002). After examining the debate, Delone and McLean (2003) revised their model to explicitly include service quality, noting that the evolving role of information systems required a broader understanding of system success.

Another major critique came from Seddon (1997), who contended that the original D&M model blended process and variance approaches, which could lead to conceptual ambiguity. He particularly argued that the construct of use was not clearly defined and suggested separating different interpretations of use and clarifying how it functions in the model. However, Delone and McLean (2003) maintained that integrating both perspectives provided richer analytical value. While Seddon’s revisions aimed to improve clarity, they also made the model more complex, which some argued reduced its simplicity and practicality.

Beyond these debates, “the D&M model has been adapted for assessing the success of specific types of systems, such as knowledge management systems” (Jennex & Olfman, 2002; Kulkarni et al., 2006; Wu & Wang, 2006) and e-commerce platforms (Molla & Licker, 2001; Delone & McLean, 2004; Zhu & Kraemer, 2005). Other scholars have also proposed broader conceptual adjustments to the model (Ballantine et al., 1996). Aware of these evolving discussions, “Delone and McLean revisited empirical research conducted since their original publication and issued updated versions of the model” (Delone & McLean, 2002, 2003).

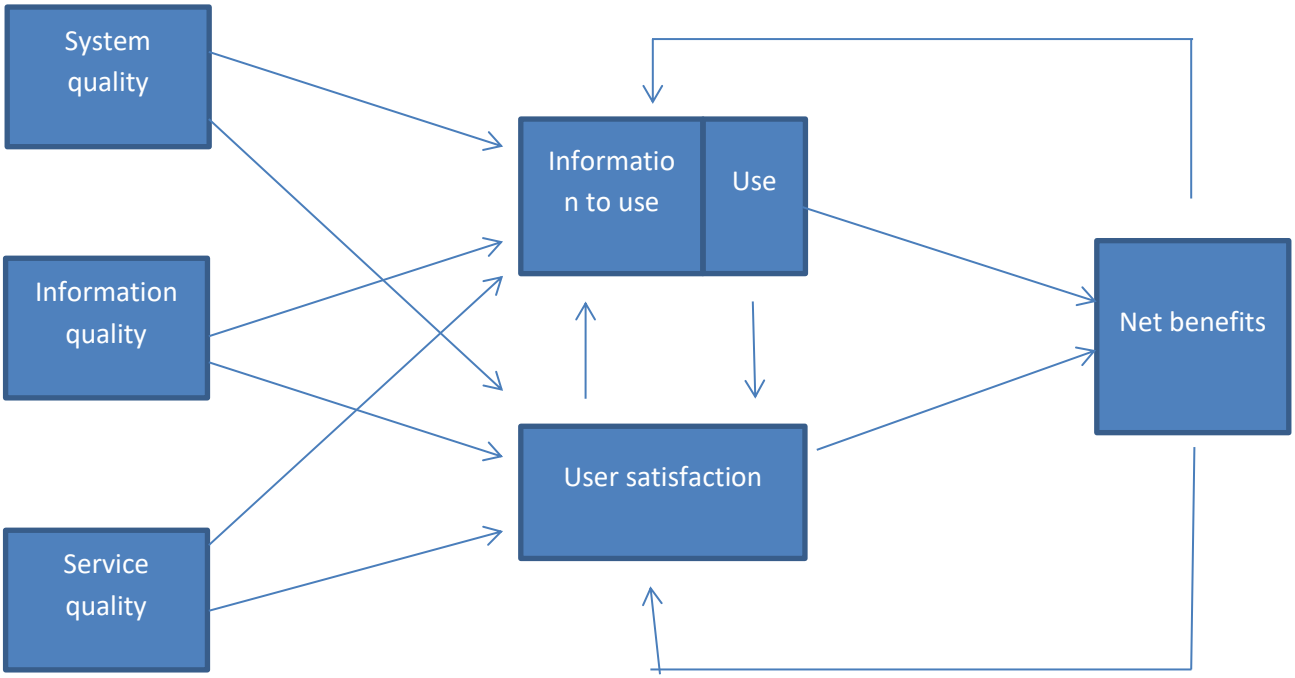


Figure 5: Updated Model of Delone and Mclean Approach

In the revised version of the IS success model, Delone and McLean incorporated the suggestion made by Pitt et al. (1995) to include service quality as a core construct. Another major adjustment responded to critiques concerning the scope of system impact. Scholars argued that information systems generate outcomes not only at the individual and organizational levels, but also at broader levels such as workgroups, industries, and society as a whole (Myers et al., 1997; Seddon et al., 1999). To capture these wider effects, Delone and McLean replaced the original dimensions of individual impact and organizational impact with a single construct termed net benefit, which allows the model to be applied flexibly depending on the researcher's level of analysis.

Additional studies in the updated model clarify more on the how the satisfaction of the user relates with the system use. As Delone and McLean system use comes before the satisfaction of users. And also, if the user gets higher satisfaction, its strength the intention to use of the system. This leads to the system usage.

The new and the updated version of Delone and McLean (D&M) can be taken as a foundation for measuring the success of information system. And most papers use it as their backbone for

their papers. Each of the element in the model can align with one or major constructs that are used to measure information system.

This framework identifies six basic dimensions:

- **System Quality:** it refers to the technical feature of the platform which includes how easy the system to use, how reliable the system is, how flexible is it, and the amount of time it takes to respond are the basic criteria that come under quality.
- **Information Quality:** this means the type of data that the system will generate some kind of reports. This kind of report should be accurate, relevant and up to date and the main one is it should be usable for decision making.
- **Service Quality:** it focusses on the support provided by its department or technical team for the users when they face some kind of ambiguity. “Service quality has been widely used in IS measurement” (Pittet al., 1995).
- **System Use:** Describes the way of using the system in practice including how often, how extensively and for what purposes it is used.
- **User Satisfaction:** Represents the users’ overall evaluation of the system and its outputs. This may include satisfaction with reports, websites, or support services.
- **Net Benefits:** The importance that the people, the organization and also the country get from using the platforms. It can improve productivity, communication, profitability, and decrease in cost and also for better decision.

2.8 Conceptual Framework

This conceptual framework was the base for this paper, and it was modified in some ways to make it applicable for the study. the source of the conceptual framework is (Malodia, Suresh, et al. "Future of e-Government: An integrated conceptual framework." Technological Forecasting and Social Change 173 (2021): 121102.)

The conceptual framework included citizen orientation and technology orientation as a main factor that defined the e-government system. Citizen orientation is that the way of understanding, readiness and perception of the citizen toward the e-government system. Technology orientation is the technological infrastructure for implementing the systema and the managerial capabilities to facilitate the system.

The framework further discussed the tangible and intangible outcomes as a result of e-government system. The tangible outcomes are cost advantage, time advantage and efficiency. The intangible ones are satisfaction and trust in government. In addition to that the e-government was proposed as a mediator between the citizen orientation and technology orientation and the two outcomes tangible and intangible.

The model also incorporated the moderating factor of digital divide between the citizen and technology orientation with e-government. Also, the shared understanding and perceived privacy between the e-government and the two outcomes.

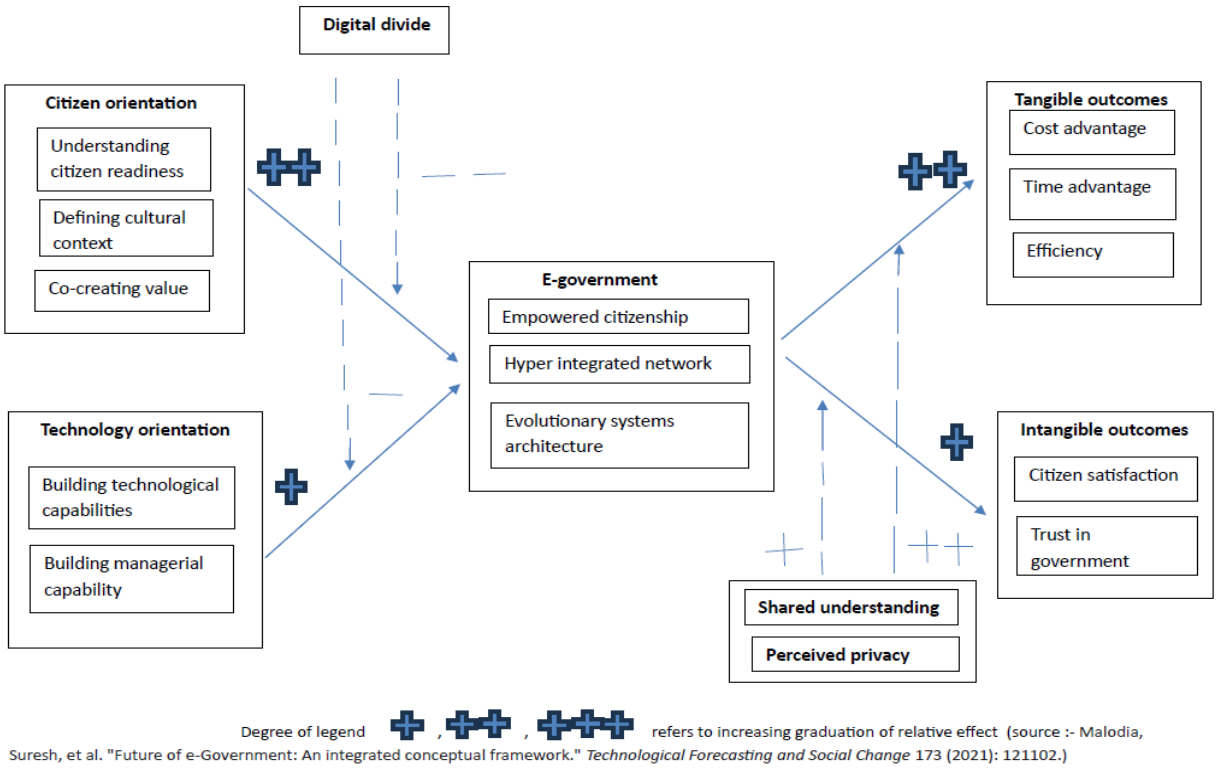


Figure 6: E-government Conceptual Framework

This paper was primarily employed and related with the updated Delone and McLean IS success model (2003), which is very comprehensive framework because it includes dimensions like system quality, service quality, use, user satisfaction and also net benefits. But not only Delone and McLean model also TAM which explains citizen's acceptance and use of the service through

the dimension of perceptions of usefulness and ease of use. In addition to the previous user satisfaction especially on the system of e-government while the user involvements approach goes with the co-creation and shared understanding. So, the above four model are the foundation of this study.

2.9 Empirical Study

The conceptual framework includes around 9 constructs. the independent variables are citizen orientation, technology orientation. The moderators are digital divide, shared understanding and perceived privacy. The dependent constructs are tangible outcomes, and intangible outcomes. Finally, the mediating factor is e-government. which is between the citizen and technology orientation with the outcomes the tangible and intangible one.

2.9.1 Independent Variables

2.9.1.1 Citizen Orientation

It is the degree of understanding and satisfying the requirements related with the system of e-government. As the definition of Dutil et al (2008) and King and Cotteril (2007) Governments are giving a great priority for their citizens need in terms of delivering services. The service of government will be improved if the government take his citizen as their customer and understand and fulfil their interest (Schachter, 1995). because organizational performance is directly related with adopting the customer orientation (Jaworski & Kohli, 1996; Kennedy, Wellman & Klement, 2003). So public organizations should focus on the citizens perspectives before doing planning and exercising E-government system in their country.

The term citizen orientation includes main three dimension which express the concept. These are understanding citizen readiness, defining cultural context and co-creating values.

Understanding citizen's readiness is the degree of understanding the existing system and the amount of preparation to use the e-government system. And also, the ability of using the system in the right way. So, assessing the level of readiness make the implementation of e-government very effective because the government will plan way of training the users and to prepare the right plan

The other dimension is that understanding the culture. Culture is the force that guide the societies to follow rules and regulations. So, defining cultural context understands and knowing the culture of the society is very crucial for the effectiveness of the system. because most of the society is governed by the rule of the culture. So, focusing on the culture significantly affects the system in a positive way

Co-creating value is the process of having a common understanding and intention to use the system for mutual benefits through continuous communication. It includes dimensions like connection, trust and also commitment. this can drastically improve the citizens orientation (Randall et al., 2011, Jaworski & Kohli, 2014)

2.9.1.2 Technology Orientation

Many information technology literatures define the word technology orientation as the ability to build new solution with the existing technology (Gatignon & Xuereb, 1997). It is obvious that technology orientation is the backbone for existence of the E-government system. that's why lot of governments are investing in the technological transformation (cordella & Iannacci, 2010). Under technology orientation there are three dimensions. these are building technological capabilities and managerial capabilities.

Building technological capabilities is investing in improving the knowledge to use the technological infrastructural.

Building managerial capability is empowering the capacity of the manager's with in the organizations by training and other methods. Management is very essential in mobilizing human and financial resources.

So, the above two basic criteria citizen orientation and technology orientations provide the best way for the success E-government system. But both of them affect the implementation in different way

2.9.2 Dependent variable

In this thesis the conceptual framework includes 2 outcomes which are the dependent variables this are tangible and intangible outcomes.

2.9.2.1 Tangible Outcomes: - is a type of outcome that can be measured and visible. And it includes the economic gains. It can be measured in terms of cost advantage, time advantage and efficiency

Cost advantage is the type measurement for tangible outcomes which means the ability to decrease the amount of expense for both the user and for the government by using the information technology. It can be achieved by reducing paper work, man power and also like procurement (karunasena et al (2011), Evans & yen (2006), Moon (2002)).

Time management is the ability to decrease the time that manual work consumes by using the information technology. That can be changed to exactly to the money because as we finish thins in time, we can do other work that makes us indirectly profitable in terms of economic.

Efficiency is the ability to finish the task in small cost and at lower time. And also, it can be expressed in terms of reducing the amount of wastage that the government and the individual while continuing delivering the previous services.

2.9.2.2 Intangible Outcomes: - is another type of outcomes that cannot be directly measured in terms money. It is non-physical. It is perception-based idea. Intangible outcomes can be expressed by citizen satisfaction and trust in government.

Citizen satisfaction is the level of meeting the expectation of the citizen with the existing information system.

And trust in government is the level of trust that citizens give to the governmental platforms and also on the government. it can also define as the perceived judgment of citizens about the transparency and accountability of the E-government delivery

2.9.3 Moderators

There are three moderating factors under the conceptual framework. This is digital divide, perceived privacy and shared understanding.

2.9.3.1 Digital Divide: - is the level of difference between the societies that use the E-government system in terms of different criteria like gap in terms of accessing technological infrastructure like laptops, mobile, informational literacy and skill between the citizens. This creates social and economic inequality among groups. (Dewan & Riggins, 2005; Zhao & Khan, 2013). Because it creates a great difference in the motivation to use the system between the citizens. So, it creates negative relationship with the success of the implementation.

2.9.3.2 Perceived Privacy: - is the level of confidence that the user of the information system thinks how much their data is confidential. Different literature suggests and indicates that keeping the privacy of the user really increase the trust of the users on the system.

2.9.3.3 Shared Understanding: -is having a common understanding of the ownership as individual and collective ownership of e-government and having a common interpretation of the project goal. And believing the outcome is for both partis for the citizens and also for the governmental organization.

2.9.4 Mediating Variable

The main mediating construct in the conceptual framework is that e-government. This includes empowered citizenship, hyper-integrated network and evolutionary systems architecture.

Empowered Citizenship is the process of including citizens in the process of decision-making during implementation of the system. (Box 1999, Flak & Rose 2005, Zimmerman 2000)

Hyper-Integrated network is the process of integrating different types of service of the government with in a single portal, which makes it easy to access and reduce the amount of time spend in the bureaucracy (Kim et al 2003, Mali & Gil-Garcia 2017, panetto & cecil 2013)

Evolutionary Systems Architecture is the way of designing and making the system modular and makes the system easy to upgrade and modify (West ,2004)

2.10 Relationship between the constructs

2.10.1 Citizen orientation -E-government success

Most of the studies in the field of information system focus and emphasize the importance of citizen orientation in the success of e-government. And from the conceptual framework citizen orientation is measured through understanding citizen's readiness, considering cultural context and encouraging participation in service design. So, the above dimensions measure the level of citizen orientation with in the e-government system. When governments focus and check what the citizens want, E-government systems deliver better result.

Many research papers support a positive relationship between citizen orientation and e-government success. As Schachte (1995) states citizen-customer model postulates the efficiency of the governmental service would be improved if the government thinks like the private organization which is the government treat the citizens as a customer and the government should perceive itself as a service provider. And literatures on organizational performance indicated adopting a customer centered system highly affects the performance of the organizations (Jaworski & Kohli, 1996; Kennedy, Wellman & Klement, 2003).

Lin & Germain (2003) also indicates citizen orientation has a relationship with the performance of the organization. So, this paper expected a positive relationship between the citizen orientation and e-government.

H1: Citizen Orientation has a positive relationship with e-government.

2.10.2 Technology orientation -E-government

Technology orientation is one of the basic and important components of the information system. And it is highly examined constructs from the conceptual framework. Technology orientation includes infrastructure, system reliability, integration and managerial ability. If institution has a better technological advancement, it will enhance user experience and system performance.

The success of e-government is not merely purchasing latest technology. A technology orientation is procuring and applying the modern technology with the help of the right policy and

strategy, giving trainings to the stakeholder to produce the competitive result (Cooper, 1994; Halac, 2015; Zhou, Yim & Tse, 2005).

As Cooper (1994), Halac (2015), Zhou, Yim & Tse, (2005) indicate there is a positive relationship between technology orientation and e-government success. so having best technological thing are essential to deliver efficient and reliable services, contribute to overall system success.

H2: Technology Orientation has a positively relationship with e-government.

2.10.3 E-government success- tangible outcomes

As Moore (1995) suggests that the government has the responsibility to deliver public services by improving resource effectively and should create values like cost advantage, time advantage and efficiency.

The relationship between the information system and tangible outcomes is defined by different papers and information system studies especially in the Delone and McLean IS success model. As Alford & O'Flynn (2009) discussed on their study e-government has a great potential to improve the effectiveness of the administration and deliver the cost advantage, time advantage and efficiency to the individuals and governmental agencies. And Karunasena et al. (2011); Evans & Yen, (2006); Moon (2002) e-government is expected to produce cost benefits by decreasing costs for administrative, for man power and for other operational cost.

H3: E-government has a positive relationship with tangible outcomes.

2.10.4 E-government success- intangible outcomes

The other main outcome of the E-government is intangible outcomes which are measured by citizen satisfaction and trust in government. Information system papers states if the system is reliable, transparent and easy to use, users become more satisfied and develop trust in the platform of e-government.

Alawneh et al. (2013) and Evans & Yen. (2006) argue that the successful implementation of e-government system can increase highly citizen satisfaction and encourage the citizen for future use by improving the trust to the system. So based on Alawneh et al, (2013) and Evans & Yen, (2006) there is a positive relationship between e-government success and intangible outcomes.

H4: E-government has a positive relationship with intangible outcomes.

2.10.5 Moderating effect of digital divide

The digital divide is very known factors which reduce the success of the e-government and its adoption because if there is information, skill and knowledge difference between the users it has a bad effect on the implementation and on the outcome of the E-government success.

Van Dijk (2006) defines digital divide as a vast topic that can involve motivation, physical, skill and usage access rather than explaining it simply accessing to technological infrastructure. And the above things create socioeconomical difference between the individuals. So, citizens who have a higher chance in digital access, skills in digital literacy are likely change citizen orientation and technology orientation into E-government Success.

Wang & Shih (2009) states digital divide moderates the relationship between the citizen orientation and e-government. The digital divide really affects the technological utilization that can turn to hinders the implementation of the e-government (Cuervo & Menendez ,2006).

So based on Wang & Shih (2009) and Cuervo & Menendez, (2006) the digital divide has a negative effect on the relationship between the orientations and E-government success This means if there is high difference in digital divide the E-government successes will becomes lower because it decreases the independent constructs.

H5: The digital divide negatively moderates the relationship between the citizen orientations, and e-government.

H6: The digital divide negatively moderates the relationship between the technology orientations, and e-government.

2.10.6 Moderating role of shared understanding

Shared understanding refers to the amount of communication and cooperation between stakeholders which is between the citizens and government. Most studies and paper states if there is better understanding, the success and implementation of e-government become effectively.

The main purpose of the e-government is that to make sure that the service given by the government well-coordinated and creating a shared understanding of e-government goals and objectives (Lam,2005). According to Lam (2005), if there is no shared understanding among the government organization regarding their roles and responsibility can cause confusion between the interdepartmental conflicts, weak ownership and reduced accountability. these cases undermine coordination and may create distrusts among end-users, therefore hindering the successful implementation of e-government implementation.

This moderator affects the relationship between the e-government and the two outcomes the tangible and intangible. So based on Lam (2005) shared understanding moderates the relationship between the two dependent outcomes and e-government.

H7: Shared understanding positively moderates the relationship between e-government and the tangible outcomes

H8: Shared understanding positively moderates the relationship between e-government and the intangible outcomes.

2.10.7 Moderating role of perceived privacy

Peoples should perceive the system is highly secure to use and to put their confidential information on it. this moderator is very critical for the success of e-government to achieve both the tangible and intangible outcomes.

According to Belanger and Carter (2008), citizens are influenced by the concern of the privacy and security to trust the service that is delivered by the governmental system. Also, Alawneh et al, (2013) states governmental service which are given by the digital system always involve

issues like security, trust, privacy and accessibility. So, when people think that the government keep their data and know their information is not given to other without their consent, they are more likely trust and use the e-government system repeatedly

Based on the theory of Belanger and Carter (2008) and Alawneh et al, (2013) Perceived privacy is a critical moderator factor in the conceptual framework because it really strength the relationship between the e-government success with the tangible and intangible outcomes.

H9: Perceived Privacy positively moderates the relationship between e-government and the tangible outcomes.

H10: Perceived Privacy positively moderates the relationship between e-government and the intangible outcomes.

2.10.8 Mediating role of E-government

According to the conceptual framework proposed by Melodia et al (2021), which is used in this study, states that the citizen and technology orientations influence the tangible and intangible outcomes through the e-government implementation.

The E-government construct in the conceptual frame act as the only mediating variable. it indicates how much does the independent variable affect and influence the dependent variables through e-government.

H11: E-government mediates the relationship between citizen orientation and tangible outcomes.

H12: E-government mediates the relationship between citizen orientation and intangible outcomes.

H13: E-government mediates the relationship between technology orientation and tangible outcomes.

H14: E-government mediates the relationship between technology orientation and intangible outcomes.

Table: 1 Hypothesis Summery

No.	Hypothesis	Expected result
H1	Citizen Orientation has a positive relationship with e-government.	Significant
H2	Technology Orientation has a positively relationship with e-government	Significant
H3	E-government has a positive relationship with tangible outcomes.	Significant
H4	E-government has a positive relationship with intangible outcomes.	Significant
H5	The digital divide negatively moderates the relationship between the citizen orientations, and e-government.	Significant
H6	The digital divide negatively moderates the relationship between the technology orientations, and e-government.	Significant
H7	Shared understanding positively moderates the relationship between e-government and the tangible outcomes	Significant
H8	Shared understanding positively moderates the relationship between e-government and the intangible outcomes	Significant
H9	Perceived Privacy positively moderates the relationship between e-government and the tangible outcomes.	Significant
H10	Perceived Privacy positively moderates the relationship between e-government and the intangible outcomes.	Significant
H11	E-government mediates the relationship between citizen orientation and tangible outcomes.	Significant
H12	E-government mediates the relationship between citizen orientation and intangible outcomes.	Significant
H13	E-government mediates the relationship between technology orientation and tangible outcomes.	Significant
H14	E-government mediates the relationship between technology orientation and intangible outcomes.	Significant

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter provided a comprehensive review of the literature on E-government and approaches to measuring information system success. This chapter outlines the methodology used to examine the factors influencing E-government success at the Ministry of Innovation and Technology (MINT) from the perspective of employees. Research methodology is a blueprint for achieving research objectives and adequately answering research questions. "A place where researchers examine the appropriateness of the data to be collected to address the intended problems" (Creswell & Creswell, 2018). The methodology is carefully aligned with the research objectives and is designed to ensure the validity, reliability, and rigor of the study's findings. It mainly focusses on the research design, population considered in the study, sampling strategy, data collection instruments, way of checking validity and reliability, data collection procedures, data analysis techniques, and lastly ethical consideration

3.2 Research Design

According to Kothari (2004), "A research design is the conceptual framework within which a study is conducted; it serves as a blueprint for the collection, measurement, and analysis of data."

This study adopted a quantitative research design to investigate the relationships among different constructs using numerical data. "The analysis focused on different statical techniques different ways of measurement to come to the conclusion ensuring objectives and precision in evaluating the research hypothesis" (J.F. et al., 2020).The study employed quantitative and cross-sectional survey approach because it is the best way for testing of hypothesis that derived from the conceptual framework and enabling statical generalization (Creswell, 2014).Also "Cross-sectional surveys, in which data are collected at a single point in time, are widely used in E-government studies due to their efficiency and practicality" (Wang & Liao, 2008).This type of approach allowed the researchers to examine the relationship among the variable of the interest with in a defined timeframe.

Also, deductive approach was adopted, beginning with hypotheses that were subsequently tested through data collection. Primary data were gathered using questionnaires adapted from previous studies to ensure relevance and validity.

3.3 Data Collection and Estimation Techniques

In this thesis paper the data that analyzed was collected using a structured questionnaire designed based on the construct from the proposed conceptual framework. The questionnaire had structured into two sections where the first section focuses on demographic information of respondents, and the second section consists of questions measuring the eight constructs of this study. A five-point Likert scale was used to measure responses for all structured item and constructs.

The questionnaires were mainly administrated through Google Forms and papers based on the interest of the respondent. And it was distributed randomly to managers, department heads, operational staff and other employees at the headquarter of ministry of innovation and technology (MINT).

3.4 Method of Data Analysis

The study applied partial least structured equation modeling (PLS_SEM) using SMARTPLS 4.4. It was the most appropriate way of doing analysis, because it doesn't need to have normal distribution, works well with small or medium sample size and also good for predictive research not only this it is easier for structure equation modeling (SEM).

During data analysis the data both the measurement (outer) model and the structural (inner) model were validated. The measurement model, which represented the relationship between observed and latent variables, was assessed through convergent validity using factor loadings, Cronbach's alpha, AVE, and composite reliability. Discriminant validity was evaluated using AVE, the Fornell-Larcker criterion, the HTMT matrix, and cross-loadings. Through this process, the modified items and constructs were validated, confirming the adequacy of the measurement model.

The structural model, representing relationships among independent, dependent, and mediating variables, was validated using the coefficient of determination (R^2), effect sizes(f^2), predictive relevance (Q^2), and the assessment of hypothesized direct and indirect relationships. Mediation effects were tested using the bootstrapping method with 5,000 resamples, which is now a built-in feature in Smart-PLS 4.4, allowing for robust estimation of indirect effects. Overall, the study's modified model was rigorously validated through both the measurement and structural models using Smart-PLS 4.4.

3.5 Data Treatment

Evaluating the measurement and the structural model was very important before in the research process before testing the proposed hypothesis. To does this there are number of available methods for checking. In this paper we employed the following methods.

One-dimensionality was assessed using Cronbach 's alpha coefficient. To determine whether all items come under the same variable. It assesses the internal consistency. A value of 0.7 or higher is normally acceptable.

Composite reliability (CR): was employed to check if the questions that measure one variable were consistent and reliable with each other. A score of 0.7 or above is taken as satisfactory.

Content validity: was checked by Expert whether the questionnaires cover all relevant aspect of the concept. The content validity of the constructs was evaluated during the exploratory study and pre-test.

Convergent validity was assessed by the average variance extracted (AVE). A value more than 0.5 indicates that the items of the construct are sufficiently correlated and represent the same concept.

Discriminant validity: It examines "Are the different constructs really different from each other ". It was measured by comparing the square root of AVE with the correlation and if the square root of AVE is bigger than correlation with the construct this means the variable is more related to its own items than to another variable.

Pearson's coefficient of determination (R^2): It tells us how much a variable is explained by other variable in the model .It means how independent variable explain the dependent variable. Higher R^2 values indicate better model fit.

Predictive relevance (Q^2): It measures how well the model can predict data it hasn't seen before or to the missing data. High Q^2 values signify strong predictive capability.

Effect size (f^2): It measures how much and independent variables contribute to explaining a dependent variable. It doesn't only show whether it is significant or not rather it shows the strength of the relationship. Larger f^2 values indicate stronger effects.

3.6 Population, Sample Size and Sampling Technique

According to Hair et al. (2010)," The target population is defined as a specific group of people or objects about which data can be collected or observations made to generate the necessary information". Similarly, Mugenda (2003) describes the target population as "the broader population to which the researcher intends to generalize the findings of the study."

The target population of this study consisted of employees who work in the Main office of Ministry of Innovation and Technology (MINT), the targeted population of the study was 380 permanent employees of MINT. So, the questionnaire was distributed randomly for the employees within the existing department to get different perspectives who have willingness to participate in the study.

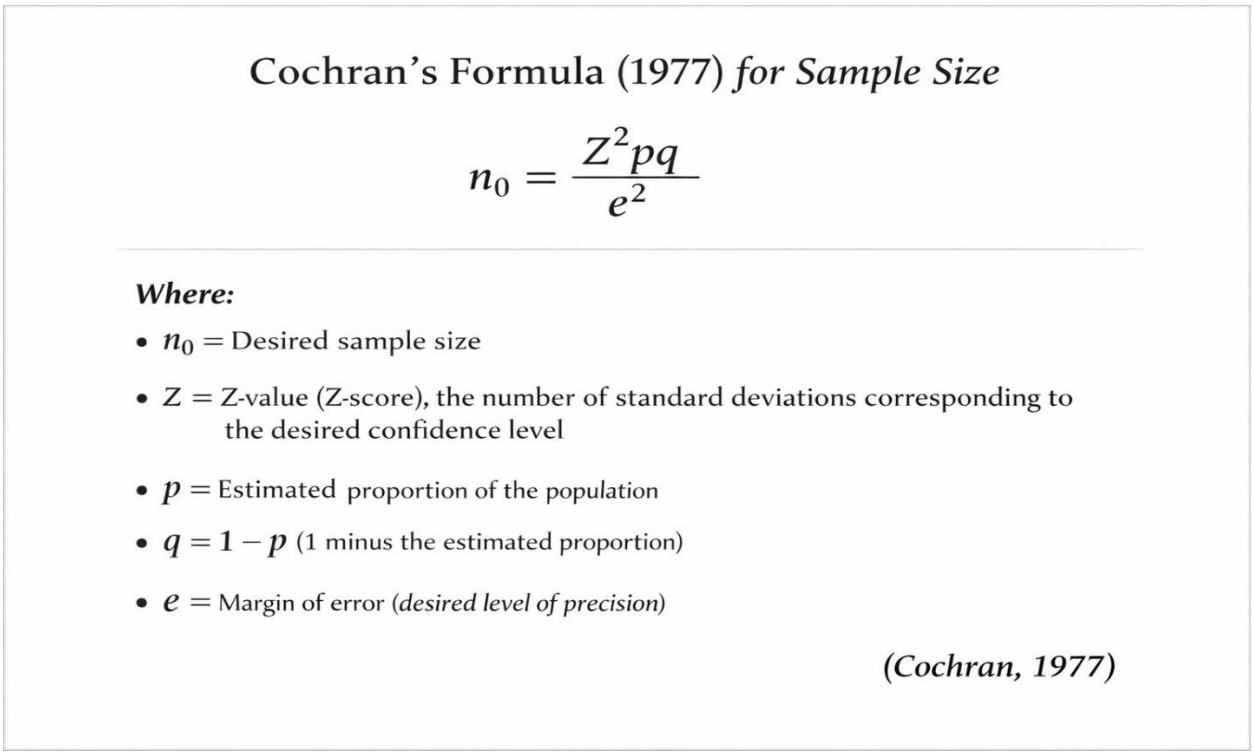


Figure 7: Cochran's Formula

The sample size that we got using Cochran's formula (1977) is 192 peoples for the population 380 people for the organization studies. But due to different reason to not to participate the amount of response gathered from the respondent is around 131.

3.7 Data Collection Instruments

Data will be collected using a structured questionnaire. A 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) will be used, as it is widely adopted in IS and E-government research to capture attitudes and perceptions (Parasuraman et al., 2005). The questionnaire includes items adapted from the concept of prior studies to ensure reliability and validity:

Table: 2 Data Collection Instrument

Construct	Dimension	Items	Source
Citizen Orientation	Understanding Citizens Readiness	CO1-CO4	Davis (1989,1993)
	Defining Cultural Context	CO5-CO7	Carter & Belanger (2005), Hofstede (1983)
	Co-creating Value	CO8-CO9	L. Vargo; Linders (2012)
Technological Orientation	Building Technological Capabilities	TO1-TO3	Delone & McLean (2003), Layne & Lee (2001), Papadomichelaki & Mentzas (2012)
	Building Managerial Capabilities	TO4-TO5	Tornatzky & Fleischer (1990), Molla & Licker (2005)
E-Government	Empowered Citizenship	EG1-EG2	Chan et al. (2025)
	Hyper Integrated Network	EG3-EG5	Chan et al. (2025), Layne & Lee (2001), Carter &Belanger (2005)
	Evolutionary System Architecture	EG6-EG7	Kwan (2006) and Gorla et al. (2010)
Tangible Outcomes	Cost Advantage	TAN1-TAN2	modified Armstrong et al. (2005), Delone and McLean (2003)
	Time Advantage	TAN3-TAN4	Stefanovic et al. (2016), Delone and McLean (2003), Davis (1989, 1993)
	Efficiency	TAN5-TAN6	Armstrong et al. (2005), Delone and McLean (2003), Davis (1989, 1993)
Intangible Outcomes	Citizen Satisfaction	INT1-INT2	Armstrong et al. (2005), Teo et al. (2008), Stefanovic et al. (2016)., Lin & Hsieh (2007)
	Trust in Government	INT3-INT 4	Teo et al. (2008), A. Alawneh et al.(2013)
Digital Divide	Digital Divide	DD1-DD3	Van Dijk (2006), Venkatesh et al. (2003)
Shared Understanding	Shared Understanding	SH1-SH3	Carter & Belanger (2005), Papadomichelaki & Mentzas (2012), A. Alawneh et al.(2013)
Perceived Privacy	Perceived Privacy	PP1-PP3	Papadomichelaki & Mentzas (2012), Chan et al. (2025), A. Alawneh et al.(2013)

Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome; DD: Digital Divide; SH: Shared Understanding; PP: Perceived Privacy

Table 1 : Data Collection Instrument

To be sure the contextual relevance, items were rephrased for MINT employees. And it also translated into Amharic version to make the respondent understand the questions effectively and

easily. The questionnaire was first distributed for 20 employees to assess the questionnaire clarity and reliability.

3.8 Ethical consideration

Ethical considerations were one of the basic components of the thesis paper. That gives some kind of confidence in terms of fair, respectful, honest and safe for participant which is guided by the ethical standards (Vanderstoep & Johnston, 2009). The standards governed both treatment of participants and the data collected during the study.

In this paper, every step that was done under this research was under ethical standards. Every response was obtained from volunteer employee confidentiality was maintained by anonymizing responses and excluding any personal identifiers. All data that was collected during the questionnaire was used only for academically.

The questionnaire was distributed only to voluntary participants and included a clear introduction and instructions regarding the purpose of the study. The researcher ensured privacy by avoiding personal questions, maintained anonymity to protect participants' identities, and upheld confidentiality by safeguarding all collected information.

3.9 Chapter Summary

This chapter described the methodology for assessing e-government success outcomes at MINT from employees' perspective. It outlined the research design, population and sampling, data collection instruments, validity and reliability measures, data collection procedures, data analysis techniques, and ethical considerations. The methodology ensured that the research findings will be both valid and reliable.

CHAPTER FOUR

4. DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The main aim of this chapter was to discuss the result of the data analysis of the research. The questionnaire was distributed using Google form and paper with five-point scale, ranging from 1=strongly disagree to 5 = strongly agree. Then the responses came with papers were feed to the Google form. The chapter included the way of data screening, descriptive analysis which is followed by the analysis of the structural equation model (SEM).

4.2 Data Screening

For this study, the electronic data from the Google form was downloaded from the Google form as Excel file and the level of agreement was coded on excel and uploaded on SMART-PLS software. Data collected through paper questionnaires were manually enter into Google form and cross check to minimize data entry errors. All the other thing was done automatically by the software.

There was no missing data from the respondents in Google form because the required feature was on and on the paper also it was checked during collecting the paper.

4.3 Descriptive Statistics

Descriptive statistics summarize and explain the data which was collected from the respondent in a simple and easy way to understand (Zikmund et al, 2009). The descriptive statistics were shown below in Table 3. The mean scores of the items in the questionnaire were more than 3 which indicated that the respondents were generally agreed with most of the statement. Also, most median value from descriptive table was above 4 that also show they were to ward agreement on the scale. It could be inferred from the data that the respondent had a positive attitude toward the citizen and technological orientation.

The standard deviation values ranged between the 0.713 and 1.284 which suggested that an acceptable level of variability in respondent's answers. And to access the normality of the collected data skew-ness and kurtosis was used. Most of the items showed acceptable distribution characteristics. The skewness value of most indicators was negative which told the

responses tend toward the higher values of the questionnaire. This means they generally agreed with proposed indicators. Most of the values under the kurtosis fall under normal range. But few indicators relatively higher than the threshold mainly CO1(5.831), TAN2(6.050) and TAN3(5.677). It means most of the respondent answers the indicators similarly than normally expected.

Table: 3 Descriptive Statistics

Name	Mean	Median	Scale min	Scale max	Observed min	Observed max	Standard deviation	Excess kurtosis	Skew-ness
CO1	4.145	4.000	1.000	5.000	1.000	5.000	0.839	5.831	-2.007
CO2	4.137	4.000	1.000	5.000	1.000	5.000	0.880	4.558	-1.836
CO3	4.214	4.000	1.000	5.000	1.000	5.000	0.829	5.074	-1.803
CO4	3.626	4.000	1.000	5.000	1.000	5.000	1.206	-0.356	-0.828
CO5	3.840	4.000	1.000	5.000	1.000	5.000	1.104	0.716	-1.123
CO6	3.878	4.000	1.000	5.000	1.000	5.000	1.004	1.256	-1.125
CO7	4.122	4.000	1.000	5.000	1.000	5.000	0.874	2.765	-1.422
C08	4.092	4.000	1.000	5.000	1.000	5.000	1.007	2.264	-1.501
CO9	3.794	4.000	1.000	5.000	1.000	5.000	1.151	0.352	-1.047
TO1	3.656	4.000	1.000	5.000	1.000	5.000	1.209	-0.571	-0.674
TO2	3.779	4.000	1.000	5.000	1.000	5.000	0.943	0.519	-0.811
TO3	3.435	4.000	1.000	5.000	1.000	5.000	1.140	-0.459	-0.667
TO4	3.710	4.000	1.000	5.000	1.000	5.000	0.992	0.530	-0.858
TO5	3.794	4.000	1.000	5.000	1.000	5.000	1.082	0.554	-1.042
EG1	3.870	4.000	1.000	5.000	1.000	5.000	0.999	0.697	-0.989
EG2	3.794	4.000	1.000	5.000	1.000	5.000	1.024	-0.000	-0.782
EG3	3.916	4.000	1.000	5.000	1.000	5.000	0.891	1.548	-1.076
EG4	3.893	4.000	1.000	5.000	1.000	5.000	0.990	0.210	-0.879
EG5	3.573	4.000	1.000	5.000	1.000	5.000	1.153	-0.556	-0.588
EG6	3.748	4.000	1.000	5.000	1.000	5.000	1.029	0.106	-0.795
TAN1	4.076	4.000	1.000	5.000	1.000	5.000	0.896	1.551	-1.181
TAN2	4.321	4.000	1.000	5.000	1.000	5.000	0.713	6.050	-1.713
TAN3	4.298	4.000	1.000	5.000	1.000	5.000	0.717	5.677	-1.646
TAN4	4.221	4.000	1.000	5.000	1.000	5.000	0.713	5.273	-1.505
TAN5	4.191	4.000	1.000	5.000	1.000	5.000	0.722	5.210	-1.540
TAN6	4.229	4.000	1.000	5.000	1.000	5.000	0.747	3.665	-1.293
INT1	3.794	4.000	1.000	5.000	1.000	5.000	1.096	-0.608	-0.671
INT2	3.710	4.000	1.000	5.000	1.000	5.000	1.088	-0.763	-0.516
INT3	3.924	4.000	1.000	5.000	1.000	5.000	0.954	1.018	-1.073
INT4	4.244	4.000	1.000	5.000	1.000	5.000	0.732	3.074	-1.247
DD1	3.580	4.000	1.000	5.000	1.000	5.000	1.284	-0.630	-0.728
DD2	3.733	4.000	1.000	5.000	1.000	5.000	1.171	0.039	-0.964
DD3	4.008	4.000	1.000	5.000	1.000	5.000	0.945	1.597	-1.278
SH1	3.878	4.000	1.000	5.000	1.000	5.000	0.973	0.637	-0.958
SH2	4.023	4.000	1.000	5.000	1.000	5.000	0.903	2.050	-1.302
SH3	3.794	4.000	1.000	5.000	1.000	5.000	1.032	-0.288	-0.715

PP1	3.588	4.000	1.000	5.000	1.000	5.000	1.069	-0.502	-0.554
PP2	3.725	4.000	1.000	5.000	1.000	5.000	1.112	0.054	-0.851
PP3	3.901	4.000	1.000	5.000	1.000	5.000	1.018	0.984	-1.117
EG7	3.908	4.000	1.000	5.000	1.000	5.000	1.007	0.760	-1.038

Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome; DD: Digital Divide; SH: Shared Understanding; PP: Perceived Privacy

Source SMARTPLS outcome

4.4 Respondent Demographics

The analysis includes the respondent gender, age, level of education, work experience, current role and usage.

4.4.1 Gender

As shown below in the figure 4.1 the majority (51.9%) of the respondent were females. So, the rest numbers of respondent which were male count (48.1%). The gap between the two genders was nearly equal.

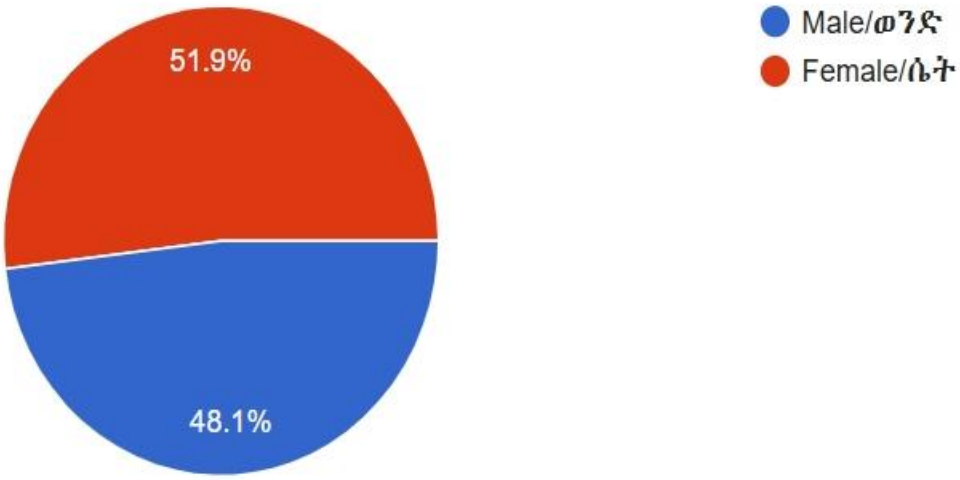


Figure 8: Gender Distribution

Source Google forms output

4.4.2 Age

As show in the figure 4.2 below, the majority of the respondents (52.7%) were the age 30-39 was almost double to the other ranges. The next higher number of respondent (25.2%) were between 40-49. the last two 13.7% and 8.4% were the age 20-29 and above 50 respectively.

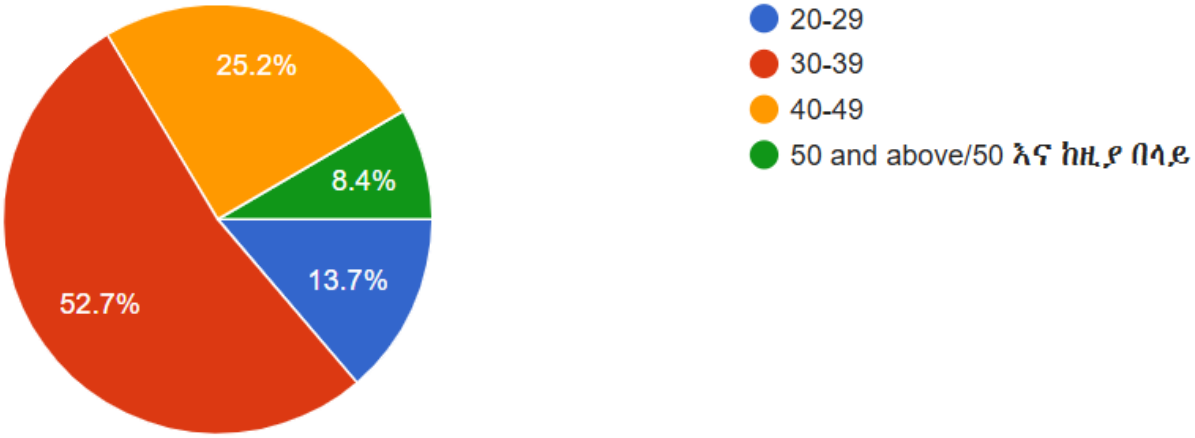


Figure 9: Age Distribution of Respondents

Source: Google Forms output

4.4.3 Educational Qualification

Most of the respondent who participated in the study had mostly Master's (45.8%) and Bachelor's Degree (42%). The diploma degree holders (11.5%) were the third most participate. only one person held PHD degree.

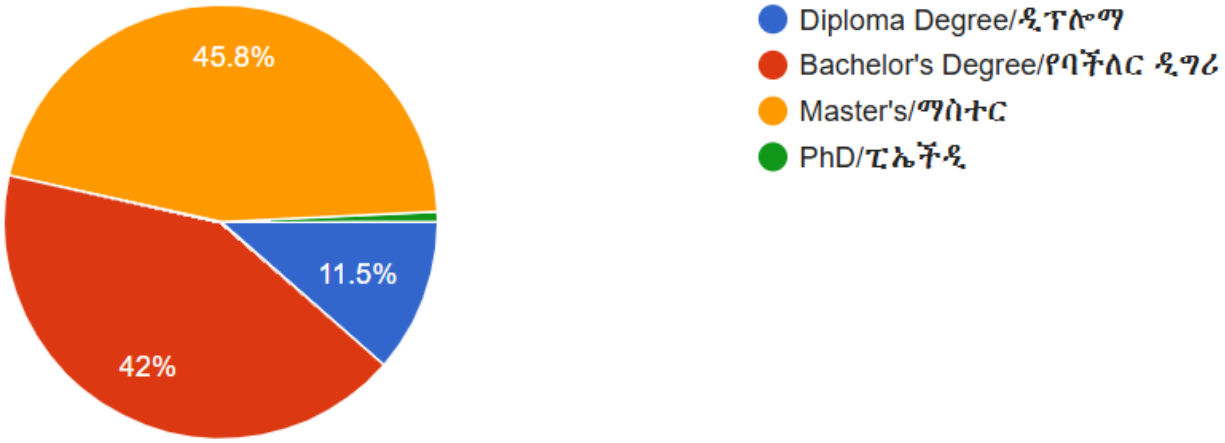


Figure 10: Education Distribution

Source Google forms output

4.4.4 Work Experience

Most participant who responded to the study works in MINT from 6-10 years which was more than half of the respondent around (52%). The next highest number was the respondent whose experience more than 10 years. Around one fifth of the respondent experience was less than 5 years.

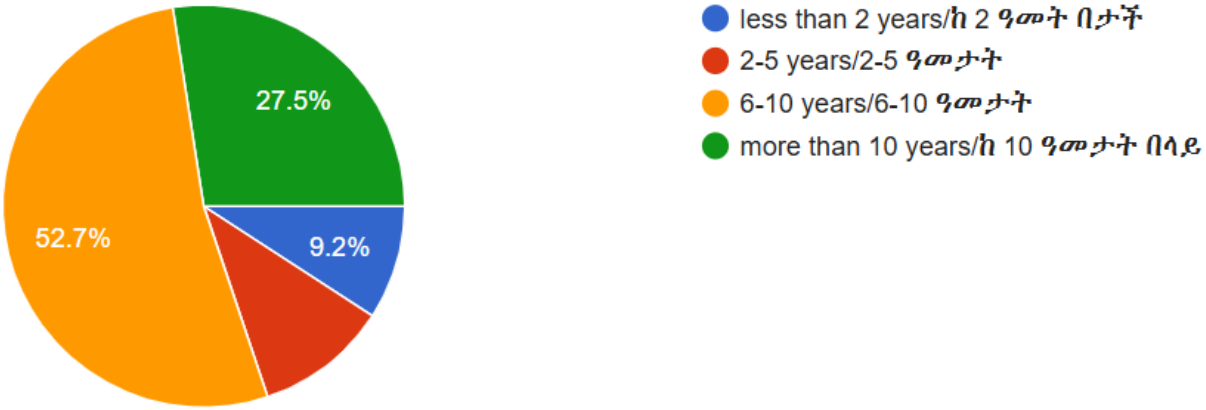


Figure 11: Experience Distribution

Source Google forms output

4.4.5 Current role

Around (42%) respondent worked as technical staff. the second highest respondent worked as administrative staff. 13% of the respondent was the individual who were in the managerial position. The rest comes from the other department. so different individuals from different department give their opinion which make the study stronger.

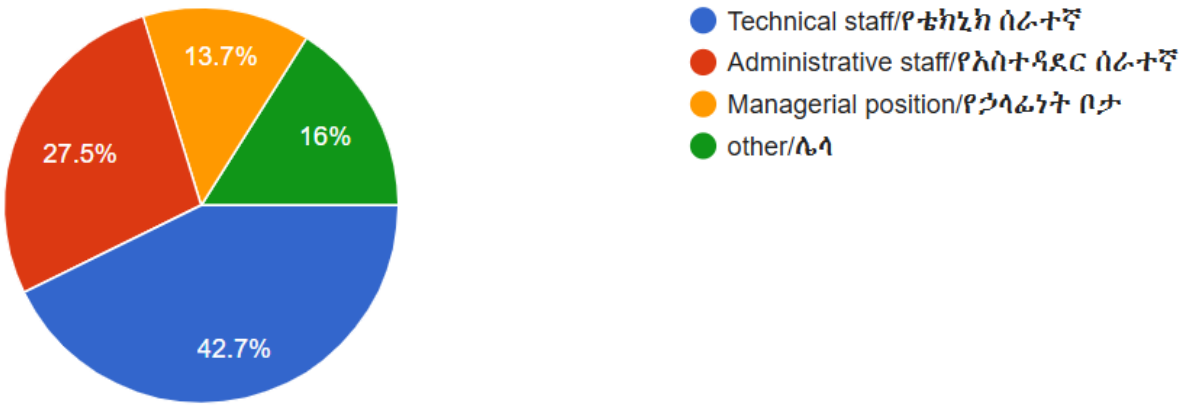


Figure 12: Role Distribution

Source Google forms output

4.4.6 Usage

Most of the individual who fill the questionnaire used the E-government system daily around 67% which is around two third of the sample population. Around 22.9 % use the E-government system rarely. the rest use it weekly 9.2% and only one person monthly.

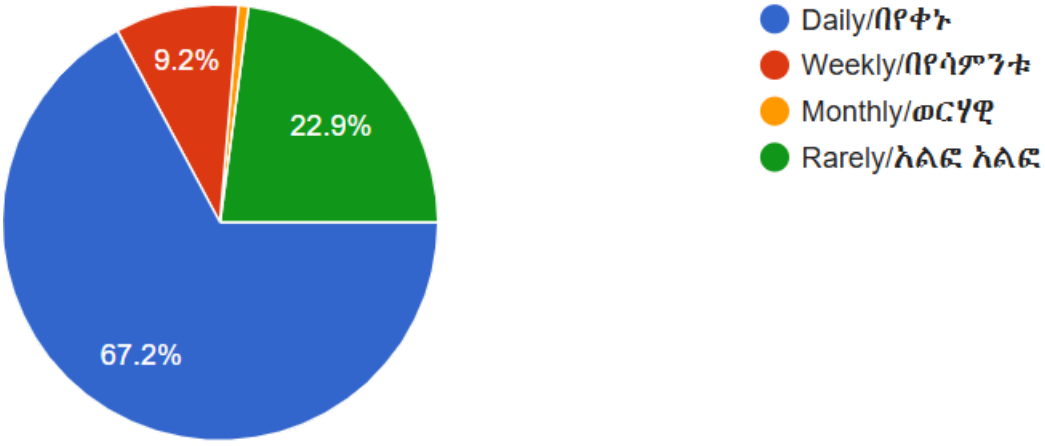


Figure 13: Usage Distribution

Source Google forms output

4.5 The Structural Equation Model (SEM)

As described in the previous chapter, chapter 3 of the paper, the type of the data analysis used in the study is Structural Equation modeling (SEM) technique. Due to PLS-SEM's non-parametric nature is not necessary need the assumption of normality and bigger sample size (Hair et al., 2011). This equation model has two basic components. These are measurement model and the structural model. the measurement model or sometimes called the outer model which shows how questionnaire items measure the existing constructs and also the reliability and the validity of the model. And the structural model or called inner model it explains and shows the relationship between the constructs of the model whether they are influenced with each other. (Hair, et al, 2019)

4.5.1 Testing the Measurement Model

The research model includes 8 constructs. There are 2 independent variables, 1 mediating variable, 2 dependent variables and 3 moderator variables. So, the constructs were measured using questionnaire that include around 40 questions which are adapted from previous papers and modified to make the questions fit with the model. There were also few questions which are generated from the theoretical concept from previous papers. Because the conceptual model was new, there is no many papers to refer for some variables.

The measurement model was assessed by using the outer loading alongside with Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and discriminant validity (Hair, et al, 2019).

4.5.1.1 Construct Reliability and Validity

The evaluation of internal consistency is the first step of the reflective model assessment. This is done by mainly Cronbach's alpha which estimates the reliability by correlating the manifest variable (Hair, et al, 2019). Cronbach's alpha is considered a traditional measure of the correlation between indicators of a construct. This measure is usually considered a conservative measure and assumes that all indicators contribute equally to a construct without considering their outer loadings. On the other hand, composite reliability is less restrictive and measures the correlation between indicators by considering the varying contribution each has based on the outer loading. Composite reliability can be assessed using both composite reliability (rho_a) and

Composite reliability (rho_c). Both are acceptable measures with the only difference being the measurement error considerations. rho_a accounts for measurement error hence provides a more precise estimate. The acceptable threshold for both Cronbach's alpha and composite reliability is a value that exceeds 0.7 indicating that the construct is reliably measured by the indicators.

As shown on table 4 all Cronbach alpha and composite reliability values were greater than 0.7 which was suggested threshold for better internal consistency reliability (Nunnally ,1978). These indicated that the questions used to measure the constructs are reliable and produce consistent results.

Another way of measuring internal consistency is by Average Variance Extracted (AVE) (Hair et al, 2019). And for constructs that have AVE values greater than 0.50 indicates that more than half of the variance of its indicators. So, all the constructs achieve that threshold.

Therefor All the values which were found in the table, Cronbach alpha, composite Reliability and AVE showed that the constructs in the model met the required reliability and validity criteria and they were ready for the structural model analysis.

Table: 4 Internal consistency Reliability and Convergent Validity Test Results

	Cronbach's alpha	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
Citizen Orientation	0.901	0.912	0.918	0.557
Digital Divide	0.847	0.862	0.908	0.768
E-government	0.921	0.922	0.937	0.679
Intangible outcome	0.860	0.889	0.906	0.709
Perceive privacy	0.875	0.877	0.923	0.800
Shared Understanding	0.877	0.879	0.924	0.803
Tangible Outcome	0.909	0.936	0.928	0.682
Technology	0.901	0.905	0.927	0.717

Orientation				

Source SMARTPLS 4 output

4.5.1.2 Discriminant Validity Analysis

Discriminant validity is the way of measuring the constructs or the variables are truly different one from another. (Hair et al, 2019). This suggests that the variable should not have a strong relationship (chin, 2009). That is each measured items loads more on its own constructs than it cross-loads on other constructs.

One way of measuring discriminant validity is Fornell-Lacker as Hair et al (2019). It is established by finding the square root of the Average Variance Extracted (AVE) of every construct is greater than its correlation with other variables.

Table 5 reported the discriminant validity result of the measurement model. The diagonal values in the table 4.3 showed that the square root of AVE for each construct while the rest was correlation with others.

As shown in the table 5 most of the variable fulfills the above criteria. Therefore, the report showd most constructs achieve the discriminant validity, that they were distinct from one another. But in the relation of TO with EG, they didn't fulfill it because 0.846<0.882 this means technology orientation (TO) and E-government (EG) may had discriminant validity problem

Table: 5 Fornell–Larcker Discriminant Validity Results

	CO	**DD**	**EG**	**INT**	**PP**	**SH**	**TAN**	**TO**
CO	0.746							
DD	0.571	0.876						
EG	0.717	0.683	0.824					
INT	0.662	0.731	0.811	0.842				
PP	0.601	0.618	0.742	0.726	0.895			

SH	0.602	0.665	0.693	0.717	0.645	0.896		
TAN	0.512	0.383	0.430	0.439	0.353	0.313	0.826	
TO	0.754	0.668	0.882	0.813	0.727	0.672	0.409	0.846

Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome; DD: Digital Divide; SH: Shared Understanding; PP: Perceived Privacy

Source SMARTPLS 4 output

The Hetrotrait-Monotrait ration (HTMT) is another method and recommended in place of the Formell-Larcker approach because it is more reliable than it (Henseler et al,2015). As some researchers question its effectiveness in identifying discriminant validity. the maximum threshold for the discriminant validity to be good is 0.90.

As the report was showed in table 6 most of the result met the criteria effectively because they were less than 0.9. However, the value of HTMT value between E-government and Technology orientation, intangible outcome and Technology orientation, and E-government and intangible outcome exceeded a little the normal value of the threshold which is 0.9. it indicated they've maybe a potential overlap among the constructs.

Despite the above concern, are only slightly more than threshold which may showed the conceptual relatedness among the constructs. And the constructs may be taken related by some of the respondents. In addition to that all other criteria showed acceptable result like internal consistency reliability, convergent validity and Formell-Larcker showed acceptable results for most of the variables. So, taking theoretical and empirical support and other measurement result. the variables were retained for the next analysis which is structural model.

Table: 6 HTMT Discriminant Validity Results

	CO	**DD**	**EG**	**INT**	**PP**	**SH**	**TAN**	**TO**	**DD x CO**	**DD x TO**	**SH x EG**	**PP x EG**
CO												
DD	0.647											
EG	0.756	0.770										
INT	0.728	0.860	0.902									
PP	0.643	0.713	0.824	0.818								

SH	0.650	0.773	0.768	0.821	0.734							
TAN	0.551	0.429	0.442	0.499	0.367	0.324						
TO	0.808	0.757	0.965	0.911	0.818	0.753	0.425					
DD x CO	0.636	0.431	0.382	0.422	0.324	0.336	0.465	0.396				
DD x TO	0.470	0.503	0.430	0.476	0.292	0.380	0.320	0.428	0.815			
SH x EG	0.468	0.379	0.455	0.478	0.329	0.500	0.330	0.437	0.661	0.703		
PP x EG	0.462	0.245	0.481	0.455	0.430	0.386	0.247	0.485	0.621	0.638	0.762	

Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome; DD: Digital Divide; SH: Shared Understanding; PP: Perceived Privacy

Source SMARTPLS 4 output

Another way of checking discriminant validity is by cross-loading assessment. Cross loading is the correlation of an indicator with all other constructs in the model in addition to its respective construct. A model shows strong discriminant validity when the indicator of the variable has highest loading with respect to itself than with others.

As shown below table 7 the loading of each indicators had the highest loading respect to their main construct than with other. This showed that the indicators are strongly related to their constructs hence the establishment of discriminant validity within the model. This result further supported the results obtained from the HTMT and Fornell-Larcker criterion tests.

Table: 7 Cross loading

	CO	**DD**	**EG**	**INT**	**PP**	**SH**	**TAN**	**TO**	**SH x EG**	**DD x TO**	**PP x EG**	**DD x CO**
C08	0.771	0.312	0.539	0.473	0.455	0.411	0.384	0.534	-0.376	-0.355	-0.476	-0.456
CO1	0.688	0.327	0.354	0.298	0.263	0.264	0.392	0.357	-0.323	-0.364	-0.290	-0.568
CO2	0.728	0.367	0.372	0.289	0.249	0.328	0.359	0.386	-0.318	-0.409	-0.309	-0.576
CO3	0.768	0.349	0.454	0.430	0.303	0.386	0.422	0.519	-0.381	-0.398	-0.333	-0.560
CO4	0.599	0.423	0.472	0.492	0.481	0.440	0.283	0.507	-0.192	-0.132	-0.133	-0.283
CO5	0.792	0.426	0.510	0.459	0.466	0.415	0.435	0.591	-0.237	-0.260	-0.245	-0.380
CO6	0.809	0.521	0.621	0.590	0.568	0.514	0.412	0.649	-0.321	-0.339	-0.364	-0.441

CO7	0.801	0.510	0.599	0.559	0.460	0.541	0.475	0.629	-0.371	-0.339	-0.334	-0.456
CO9	0.737	0.506	0.704	0.661	0.599	0.585	0.286	0.711	-0.466	-0.402	-0.454	-0.343
DD1	0.419	0.886	0.637	0.636	0.545	0.591	0.222	0.624	-0.295	-0.324	-0.191	-0.195
DD2	0.528	0.943	0.632	0.702	0.594	0.605	0.342	0.613	-0.316	-0.449	-0.215	-0.362
DD3	0.575	0.793	0.513	0.579	0.478	0.551	0.464	0.511	-0.303	-0.442	-0.184	-0.483
EG1	0.643	0.550	0.847	0.708	0.657	0.546	0.382	0.776	-0.342	-0.308	-0.446	-0.313
EG2	0.603	0.484	0.808	0.638	0.553	0.485	0.403	0.718	-0.276	-0.228	-0.336	-0.264
EG3	0.644	0.587	0.765	0.570	0.491	0.514	0.441	0.675	-0.354	-0.404	-0.315	-0.418
EG4	0.539	0.550	0.786	0.645	0.540	0.494	0.329	0.647	-0.344	-0.388	-0.324	-0.371
EG5	0.549	0.565	0.860	0.732	0.685	0.655	0.288	0.763	-0.341	-0.246	-0.351	-0.179
EG6	0.537	0.580	0.872	0.679	0.685	0.660	0.274	0.739	-0.402	-0.377	-0.416	-0.248
EG7	0.615	0.617	0.825	0.695	0.658	0.633	0.350	0.760	-0.456	-0.428	-0.471	-0.319
INT1	0.579	0.675	0.764	0.917	0.698	0.683	0.355	0.766	-0.347	-0.311	-0.343	-0.268
INT2	0.593	0.635	0.743	0.891	0.743	0.643	0.285	0.754	-0.306	-0.309	-0.343	-0.283
INT3	0.525	0.604	0.688	0.874	0.555	0.589	0.368	0.700	-0.428	-0.410	-0.397	-0.321
INT4	0.551	0.547	0.504	0.664	0.388	0.481	0.543	0.476	-0.405	-0.451	-0.333	-0.441
PP1	0.558	0.631	0.682	0.682	0.904	0.617	0.325	0.618	-0.313	-0.279	-0.317	-0.314
PP2	0.509	0.553	0.656	0.634	0.895	0.545	0.294	0.667	-0.219	-0.279	-0.331	-0.253
PP3	0.544	0.469	0.655	0.628	0.885	0.567	0.316	0.669	-0.294	-0.174	-0.432	-0.246
SH1	0.585	0.585	0.703	0.671	0.601	0.910	0.282	0.674	-0.451	-0.325	-0.357	-0.285
SH2	0.565	0.584	0.565	0.592	0.538	0.885	0.313	0.549	-0.444	-0.340	-0.354	-0.360
SH3	0.468	0.618	0.588	0.661	0.593	0.892	0.237	0.577	-0.364	-0.292	-0.258	-0.199
TAN1	0.464	0.414	0.448	0.437	0.425	0.387	0.757	0.421	-0.218	-0.142	-0.242	-0.281
TAN2	0.395	0.257	0.251	0.255	0.247	0.189	0.812	0.218	-0.237	-0.281	-0.163	-0.444
TAN3	0.289	0.252	0.222	0.240	0.169	0.152	0.813	0.182	-0.277	-0.273	-0.152	-0.335
TAN4	0.438	0.282	0.376	0.394	0.260	0.219	0.880	0.370	-0.282	-0.277	-0.208	-0.388
TAN5	0.449	0.309	0.347	0.353	0.251	0.207	0.833	0.348	-0.283	-0.302	-0.217	-0.430
TAN6	0.418	0.298	0.362	0.389	0.278	0.279	0.861	0.360	-0.265	-0.244	-0.181	-0.322
TO1	0.602	0.661	0.824	0.764	0.667	0.611	0.293	0.888	-0.310	-0.370	-0.337	-0.276
TO2	0.669	0.623	0.748	0.689	0.665	0.560	0.362	0.869	-0.390	-0.368	-0.437	-0.390
TO3	0.609	0.634	0.744	0.704	0.615	0.552	0.341	0.857	-0.306	-0.363	-0.346	-0.297
TO4	0.688	0.455	0.740	0.646	0.560	0.564	0.407	0.805	-0.378	-0.278	-0.407	-0.324
TO5	0.631	0.432	0.666	0.626	0.562	0.552	0.329	0.809	-0.371	-0.340	-0.423	-0.301
DD x CO	-0.586	-0.384	-0.364	-0.373	-0.304	-0.313	-0.437	-0.374	0.660	0.815	0.619	1.000
DD x	-	-	-	-	-	-	-	-	0.702	1.000	0.636	0.815

TO	0.445	0.457	0.411	0.424	0.274	0.356	0.296	0.407				
PP x EG	-0.450	-0.225	-0.463	-0.416	-0.401	-0.361	-0.243	-0.458	0.761	0.636	1.000	0.619
SH x EG	-0.453	-0.346	-0.436	-0.430	-0.309	-0.468	-0.313	-0.413	1.000	0.702	0.761	0.660

Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome; DD: Digital Divide; SH: Shared Understanding; PP: Perceived Privacy

Source SMARTPLS 4 output

4.5.2 Testing the structural model and the hypothesis

Multi-collinearity analysis (VIF) is the main criteria to check in structural model. And in this study the inner Variance Factor (VIF) was used. Each set of exogenous latent variables in the inner model was checked for potential collinearity problems to see if any variables should be eliminated, merged into one, or have a higher-order latent variable developed. According to most guidelines, VIF values should be below 5, which indicate the absence of multi-collinearity issues. The result in the Table 8 below shows the value of VIF. All the values were below 5 threshold that indicated there was no the concern of multi-collinearity. Although the interaction between Digital Divide and citizen orientation showed highest VIF but it was below the threshold. and it indicated that there was no multi-collinearity problem (J.F. Hair, C. Ringle, M. Sarstedt, 2011).

Table: 8 Multicollinearity Statistics (VIF)

	CO	**DD**	**EG**	**INT**	**PP**	**SH**	**TAN**	**TO**	**SH x EG**	**DD x TO**	**PP x EG**	**DD x CO**
CO			3.422									
DD			1.980									
EG				2.858			2.858					
INT												
PP				2.551			2.551					
SH				2.362			2.362					
TAN												
TO			3.119									
SH x EG				2.814			2.814					

DD x TO			3.551									
PP x EG				2.712			2.712					
DD x CO			4.159									

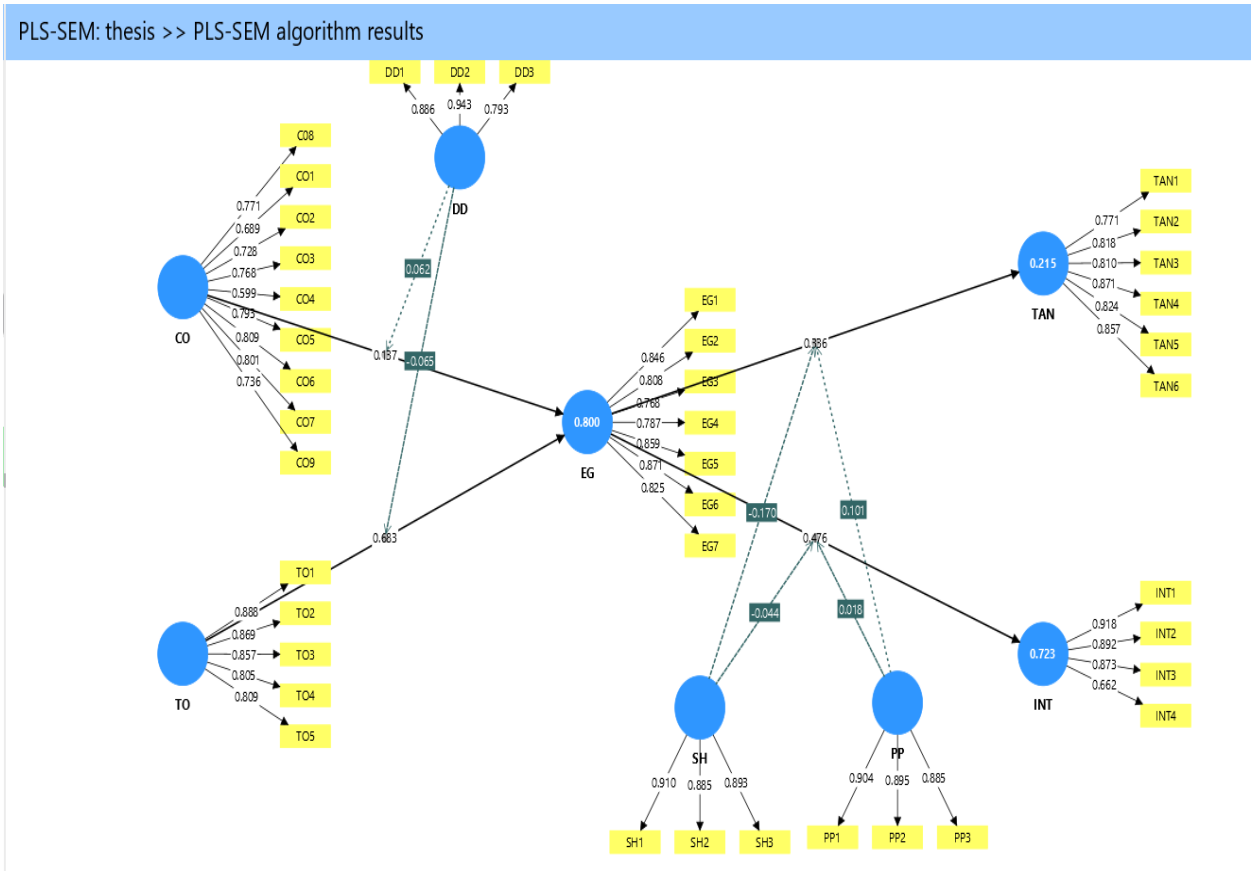
Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome; DD: Digital Divide; SH: Shared Understanding; PP: Perceived Privacy

Source SMARTPLS 4 output

After measuring and ensuring the validity the reliability and multicollinearity of the study's constructs, the next step was to examine the structural model to determine the relationship among the different latent constructs as well as the overall explanatory power of the model and test for the proposed hypothesis (Chin 2009, Wong 2013, Hier et al 2019)

The figure 14 below indicates the path coefficient that explains the strength of the relationship between the constructs and the amount of variance explained by the model (R^2).

As indicated in the figure 14 the model explained 80% of the E-government, 21.5 % of the tangible outcome and 72.3% of the intangible outcome. As Hair et al (2019) states for the item that has the value of R2 more than 75% can be taken as strong explanatory power, to be moderate it should be 50% to 74 % and for the weak it is below 25%. So, in this case the E-government and intangible outcome the model indicated a strong explanatory power. But the Tangible outcome it had relatively weak power.



Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome; DD: Digital Divide; SH: Shared Understanding; PP: Perceived Privacy

Figure 14: Structural Model

Source SMARTPLS 4 outcome

The report table 9 also showed **the coefficient of determination (R^2)** and the adjusted R^2 values for the dependent variables. it showed also 80% for E-government ,72.3% for the intangible outcome and lastly for tangible outcome 21.5%. This indicated that there may be additional variables that can determined the tangible outcomes.

*Table: 9 Coefficient of Determination (**R2**) for Dependent Variables*

	R-square	**Interpretation**

EG	**0.800**	**Strong**
INT	**0.723**	**Moderate to Strong**
TAN	**0.215**	**Weak**

Note: EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome;

Source SMARTPLS 4 output

Table 10 below showed the **effect size (f2)** values indicated how much the predicator contributes for the R^2 result of the three endogenous constructs. the construct Technology orientation had a great effect on the endogenous variable E-government with the value of 0.749. The next good contribution was by e-government to the Intangible outcome around 0.287. Citizen orientation on e-government with value 0.027, e-government on tangible outcome with value 0.050 and lastly shared understanding with e-government on the tangible outcome with 0.032 had small effect. The rest of relationship had insignificant effect on the endogenous constructs.

Table: 10 Effect size (F2)

	f-square	**Decision**
CO -> EG	0.027	Small effect
DD x CO -> EG	0.011	Insignificant effect
DD x TO -> EG	0.010	Insignificant effect
EG -> INT	0.287	Moderate effect
EG -> TAN	0.050	Small effect
PP x EG -> INT	0.001	Insignificant effect
PP x EG -> TAN	0.008	Insignificant effect
SH x EG -> INT	0.006	Insignificant effect
SH x EG -> TAN	0.032	Small effect
TO -> EG	0.749	High effect

Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome; DD: Digital Divide; SH: Shared Understanding; PP: Perceived Privacy

Source SMARTPLS 4 output

Note:

.02<$f2$<0.15=small effect size; .15< $f2$<0.35= medium effect size and $f2$>0.35 large effect size (Gefen et al., 2000; Henseler, et al, 2009, p.303; Chin, 1998, p.317)

The table 11 below reported that the predictive relevance (Q^2) from the blindfolding procedure in SMARTPLS 4. As shown in table 11, all the values obtained from the mediating and dependent variables were well above the value zero. Q^2 values greater than zero gives evidence that the observed values are well reconstructed and that the research model had sound predictive relevance (Hair et al, 2019)

Table: 11 Predictive Relevance

	Q²predict
EG	0.776
INT	0.709
TAN	0.027

EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome;

The next table 12 indicates that the result of the bootstrapping PLS algorithm of the SMARTPLS 4 .0 software which was used to determine the relationships amongst the proposed hypothesized constructs, to test the significance of the path coefficients, t-values and the p-values of the hypotheses. A complete partial least square bootstrapping procedure was performed using 5000 bootstrap subsamples with a confidence level of 95% as recommended by Hair et al, 2019.

Table: 12 Structural Model Hypothesis Testing

	Path Coefficient (β)	**Path coefficient strength**	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**	**Decision**
CO -> EG	**0.137**	**small**	**0.143**	**0.068**	**2.004**	**0.045**	**Supported**
DD x CO -> EG	**0.062**	**small**	**0.069**	**0.062**	**0.998**	**0.319**	**Unsupported**
TO -> EG	**0.683**	**Large**	**0.679**	**0.068**	**10.023**	**0.000**	**Supported**
DD x	**-0.065**	**Small**	**-0.063**	**0.062**	**1.046**	**0.296**	**Unsupported**

TO -> EG							
EG -> TAN	**0.336**	**Medium**	**0.363**	**0.144**	**2.332**	**0.020**	**Supported**
EG -> INT	**0.476**	**Medium**	**0.483**	**0.095**	**5.030**	**0.000**	**Supported**
PP x EG -> TAN	**0.101**	**small**	**0.103**	**0.143**	**0.707**	**0.479**	**Unsupported**
PP x EG -> INT	**0.018**	**Small**	**0.005**	**0.081**	**0.225**	**0.822**	**Unsupported**
SH x EG -> TAN	**-0.170**	**Small**	**-0.120**	**0.143**	**1.192**	**0.233**	**Unsupported**
SH x EG -> INT	**-0.044**	**Small**	**-0.033**	**0.073**	**0.595**	**0.552**	**Unsupported**

Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome; DD: Digital Divide; SH: Shared Understanding; PP: Perceived Privacy

Source SMARTPLS 4 outcome

4.5.2.1 Citizen Orientation versus E-government

Table: 13 Citizen orientation versus E-government

Hypothesis	Description	Path coefficient	P value	Conclusion
H1	Citizen orientation had a positive relationship with E-government.	**0.137**	**0.045**	Supported

As showed in the table 13 the research indicated citizen orientation had a positive effect on the e-government. As the result indicated the path coefficient and the p value were 0.137 and 0.045

respectively. And the hypothesis was supported because of the p value was less than 0.05. So, increasing the communication and the engagement of the citizen with the tasks can deliver a better result in the process of adapting the e-government system. Because it made the citizens highly confident about the system. This result also confirmed by the Lin & Germain (2003) as citizen orientation ensures improving the awareness of the system is very important and affect the performance of the organizational firms. And also, the success of the e-government implementation is depended on the willingness of the citizens to adapt E-government (Evans & Yen, 2006; Shareef et al., 2009). That is the reason why government agencies should focus on the citizen perception, participation and feedback on the system.

Even if the relationship was supported by the results the value of f^2 0.027 shows it really contribute to the E-government but its effect was less than other predicators. So, e-government systems that are citizen oriented enhanced the interaction and the use of the E-government (Welch et al., 2005). This result also confirmed by Schachte (1995).

4.5.2.2 Technology Orientation versus E-government

Table: 14 Technology orientation versus E-government

Hypothesis	Description	Path coefficient	P value	Conclusion
H2	Technology Orientation had a positively relationship with E-government	0.683	0.000	Supported

As show in the table 14 the research indicated Technology orientation had a positive effect on the e-government. As the result indicated the path coefficient and the p value are 0.683 and 0.000 respectively. And the hypothesis was supported because of the p value was less than 0.05. So, Technology is the backbone for any information system to be very good and have a great outcome. Increasing new and modern technology to the system, the system will be very effective in the process of adapting the E-government system. Because it made the citizens satisfied and to be confident on the system. That's why most government in the world is investing in technology

procurement (Cordella & lannacci, 2010). And also, managerial capability has a critical importance in the process of leveraging firm's resources and improves the performance of the organization (Castanias & Helfat, 2001; Thompson & Heron, 2005).

The relationship between technology orientation and E-government had the strongest f^2 value with 0.749. So, this was the main drive force to have a better e-government. Also, Cooper (1994), Halac (2015), Zhou, Yim & Tse, (2005) indicated there was a positive relationship between technology orientation and e-government success. So, having high technology capabilities and managerial capabilities the adoption of e-government will be high

4.5.2.3 E-government Versus Tangible Outcome

Table: 15 E-government versus Tangible outcome

Hypothesis	Description	Path coefficient	P value	Conclusion
H3	E-government had a positive relationship with tangible outcomes.	**0.336**	**0.020**	Supported

As show in the table 15 the study showed e-government had a positive effect on the Tangible outcome. As the result indicated the path coefficient and the p value are 0.336 and 0.020 respectively. And the hypothesis was supported because of the p value was less than 0.05. This means implementing the e-government system had really good outcome in terms of money for both the user also for the government. Because for the users it reduced the amount of money that they spend to get the service and also it decreases the money as it decreased highly the bureaucracy. For the government is similar manner it reduces cost on the paper and also for workforce. This report aligned with the e-government has a great potential to improve the effectiveness of the public administration and it delivers tangible outcomes like cost advantage, time advantage and also efficiency (Alford & O'Flynn, 2009).

Even if the relationship was supported by the results the value of f^2 was 0.050. Based on the respondent response it contributed to the e-government but in small amount relative to the others.

4.5.2.4 E-government Versus Intangible Outcome

Table: 16 E-government versus Intangible outcome

Hypothesis	Description	Path coefficient	P value	Conclusion
H4	E-government had a positive relationship with Intangible outcomes	**0.476**	**0.000**	Supported

As shown in table 16 E-government highly related with the intangible outcome. the result indicated that the path coefficient 0.476 and the p value 0.000. And the hypothesis was highly supported by the result. So, the respondent response indicated that they really believe that the E-government system delivers the intangible outcome like in terms of satisfaction and trust in the government. Getting the system from where ever they are at any time make the people very satisfied with the work. And absence of the human involvement it decreases real corruption and other unfavorable condition this makes the peoples trust the government. Although it is difficult to make interpretation the amount of trust and satisfaction into many it really improves the result of the institution

The e-government played very crucial effect on the intangible outcome because the f^2 value 0.287. Also, Evans & Yen, (2006) stated a well-designed and planned e-government system had the potential to improve using the system and make it is easy to communicate between the government and the citizens which leads to a greater citizen satisfaction. This result also aligned with the theory of Alawneh et al, (2013)

4.5.2.5 Digital Divide Moderation between the Citizen Orientation and E-Government

Table: 17 Digital Divide moderates the citizen orientation and E-government

Hypothesis	Description	Path coefficient	P value	Conclusion
H5	The digital divide negatively moderated the	**0.062**		

	relationship between the Citizen Orientations, and E-government		**0.319**	Not supported

The fifth hypothesis the table 17 reported that the digital divide moderated the relationship between the citizen orientation and e-government was not supported because the value of p was more than 0.05 which was 0.319.

The finding stated that the difference on the technological material difference, internet access and also digital literacy didn't create that much difference on the relationship between the citizen orientation and E-government.

Although the hypothesis was not supported by the data most literature highly justify the digital difference really affected the effectiveness in the adoption of e-government. As Wang & Shih (2009) digital divide moderate negatively the relationship between citizen orientation and e-government. Also, Van Dijk (2006) states similar result with this study.

4.5.2.6 Digital Divide Moderation between the Technology Orientation and E-Government

Table: 18 Digital Divide moderates the technology orientation and E-government

Hypothesis	Description	Path coefficient	P value	Conclusion
H6	The Digital Divide negatively moderated the relationship between the Technology Orientations, and E-government	**-0.065**	**0.296**	Not supported

The sixth hypothesis the table 18 reported that the digital divide moderated the relationship between the technological orientation and E-government was not supported because the value of p was more than 0.05 which was 0.29.

The finding stated that the difference on the technological material difference, internet access and also digital literacy didn't create that much difference on the relationship between the technology orientation and e-government. Like the effect of on the relationship between the citizen orientation and e-government.

Although the hypothesis was not supported by the data most literature highly justify the digital difference really affect the technological use which in turn affects the development and effectiveness of E-government (Cuervo & Menendez, 2006). The result of the study also aligned with the finding of Van Dijk (2006).

4.5.2.7 Shared Understanding Moderation between the E-Government and Tangible Outcome

Table: 19 Shared understanding moderates the E-government and Tangible outcomes

Hypothesis	Description	Path coefficient	P value	Conclusion
H7	Shared Understanding positively moderated the relationship between E-government and the Tangible outcomes	**-0.170**	**0.233**	Not supported

The seventh hypothesis the table 19 reported that the shared understanding moderates the relationship between the E-government and a tangible outcome was not supported because the value of p was more than 0.05 which was 0. **233**.

Although literatures stated that to have common understanding between stakeholders can improve the initiatives highly but under the collected data it doesn't indicates that. As Lam (2005) when firms lack shared understanding and clear communication, it hinders the successful implementation of E-government and limit the tangible outcomes of the system.

4.5.2.8 Shared Understanding Moderation between the E-Government and Intangible Outcome

Table: 20 Shared understanding moderates the E-government and Intangible outcomes

Hypothesis	Description	Path coefficient	P value	Conclusion
H8	Shared Understanding positively moderated the relationship between E-government and the Intangible outcomes	**-0.044**	**0.552**	Not supported

The eighth hypothesis the table 20 reported that the shared understanding moderates the relationship between the e-government and intangible outcomes was not supported because the value of p was more than 0.05 which was 0. **552**.

Even if many literatures also stated similarly that to have common understanding between stakeholder can moderates the effect between the e-government and the intangible outcome drastically Lam (2005). But under the collected data it didn't really indicates that.

4.5.2.9 Perceived Privacy Moderation between the E-Government and Tangible Outcome

Table: 21 Perceived Privacy moderates the E-government and Tangible outcomes

Hypothesis	Description	Path coefficient	P value	Conclusion
H9	Perceived Privacy positively moderated the relationship	**0.101**		

	between E-government and the tangible outcomes.		**0.479**	Not supported

The ninth hypothesis the table 21 indicated that the perceived privacy moderated the relationship between the E-government and a tangible outcome was not supported because the value of p was more than 0.05 which was 0. **479**.

Although The moderation effect of perceived privacy in the relationship between the e-government and tangible outcomes was small and negligible. The literatures had indicated that the user was usually concerned about the privacy of their sensitive information, which may limit their use of e-government services (Hiller & Belanger, 2001). This leads to the effect of e-government on tangible outcomes negligible. The above finding also opposed to the result of Alawneh et al, (2013)

4.5.2.10 Perceived Privacy Moderation between the E-Government and Intangible Outcome

Table: 22 perceived privacy moderates the E-government and tangible outcomes

Hypothesis	Description	Path coefficient	P value	Conclusion
H10	Perceived Privacy positively moderated the relationship between E-government and the intangible outcomes.	**0.018**	**0.822**	Not supported

The tenth hypothesis table 22 indicated that the perceived privacy moderated the relationship between the e-government and intangible outcomes was not supported because the value of p was more than 0.05 which was 0.**822**

Although Culnan & Armstrong, (1999) and Malhotra, Kim & Agarwal (2004) stated privacy protection influence trust-building significantly. And also, Alawneh et al, (2013) explain perceived privacy is a critical moderator factor because it really strength the relationship between the e-government success and intangible outcomes. The report on table 20 didn't indicate that.

4.6 Mediation Analysis Results

Meditation refers to checking how a third variable intervenes the relationship between two other main constructs (Hayes,2009). It checked the indirect effects between the variables. As Melodia et al (2021) proposed e-government really mediates technology orientation with the tangible and intangible but for citizen orientation the proposed hypothesis is not valid.

Table: 23 Mediation table

	Original sample (O)	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**	**Decision**
CO -> EG -> INT	0.065	0.071	0.039	1.687	0.092	Not supported
CO -> EG -> TAN	0.046	0.054	0.036	1.267	0.205	Not supported
TO -> EG -> INT	0.325	0.327	0.067	4.819	0.000	Supported
TO -> EG -> TAN	0.230	0.245	0.099	2.331	0.020	Supported

Note: CO: Citizen Orientation; TO: Technology Orientation; EG: E-government; TAN: Tangible Outcome; INT: Intangible Outcome;

Source SMARTPLS 4 output

As table 23 report indicate the following hypothesizes

H11: The mediation effect of e-government in the citizen orientation and tangible outcome was not supported

H12: The mediation effect of e-government citizen's orientation with intangible outcome was not supported.

Hypothesizes proposed between the Technology orientation and tangible outcome were supported because the p value is (0.020) because it is lower than 0.050. Also, the hypothesis that the E-government mediates between the Technology orientation and intangible outcome was supported because the p value is (0.000) this was acceptable because the p value is less than 0.05.

H13: The mediation effect of e-government in the Technology orientation and tangible outcome was supported

H14: The mediation effect of e-government Technology orientation with intangible outcome was supported.

Chapter five

5. Conclusion and Recommendation

5.1 Conclusion

This study examined the factors influencing e-government success at Ministry of Innovation and Technology in Ethiopia from employee's perspectives adapting a quantitative PLS-SEM approach. The main independent variables were the citizen's orientation and technology orientation with the e-government success serving as a mediating factor between the independent and the dependent variables which are tangible and intangible outcomes respect to the moderating factors. These were digital divide between the independent and E-government and the shared understanding and perceived privacy between the e-government and the two dependent variables.

The study indicated the relationship between citizen orientation and implementation of e-government (β = **0.137**, *p* = **0.045)** was significant which means as the government understand the readiness of the citizens, the organizations are able to design and implement well organized system that can fit the user of the system. And also knowing the cultural thing of the societies and creating similar value between the societies and the government also makes the designed system align with the society's norms and cultures which encourage the citizens participate highly in the process of implementing the e-government.

The most significant relation with in the research was technology orientation with e-government system (β = 0. 683, *p* = 0.000). It was the main backbone for the process of implementing the system with in the country because it the number one necessity to use the system, so as much as there is latest technology the engagement between the users and the system will be enhanced. The other main thing was that managerial readiness in the implementation of the system because managers are the one who lead the organization and prepare the roadmap for the adapting of system for the firms. Good managers was the critical component with in the implementation of the e-government system.

There was no doubt implementing e-government has both tangible and intangible outcomes. The finding also indicates that e-government with tangible outcomes (β = **0.336**, *p* = **0.020**) and also

e-government with intangible outcome (β = **0.476**, *p* = **0.000**). It will make both the users and the government save the amount of money they spend to get and to give the service for the societies respectively. Also, it really decreased the time spend on the service because it reduces the bureaucracy of the organizations. The importance of the government in terms of time and cost leads the stakeholder in the e-government makes efficient. If the system makes the user efficient in terms of time and money, there is no doubt that they will be satisfied with the existing system and make them believe in the government.

Even if lots of studies indicates the moderator like digital divide, shared understanding, and also perceived privacy had a great impact on the success of implementation of the e-government, this study doesn't get that, they didn't have any effect on the relationship between the proposed hypothesis. All of the three moderators' effect was negligible. Digital divide on the relation between citizen orientation and e-government (β = **0.062**, *p* = **0.319)** and on the relation with technology orientation and e-government (β = **-0.065**, *p* = **0.296)** was insignificant. Shared understanding on the relation between e-government and tangible outcome (β = **-0.170**, *p* = **0.233)** and on the relation with e-government and intangible outcomes (β = **-0.044**, *p* = **0.552)** was insignificant. Also, perceived privacy on the relationship between e-government and tangible outcome (β = **-0.101**, *p* = **0.479)** and on the relation with e-government and intangible outcomes (β = **0.018**, *p* = **0.822)** was insignificant

The mediation value of e-government between the citizen orientation and the tangible outcomes (β = 0.046, *p* = 0.205**)** and citizen orientation with intangible outcomes (β = 0.065, *p* = 0.092**)** was insignificant. And the mediation value of e-government between the technology orientation and the tangible outcomes (β = 0.230, *p* = 0.020**)** and technology orientation with intangible outcomes (β = 0.325, *p* = 0.000**)** was significant.

However, there are other factors that make e-government effective to be successful in the process of implementing e-government more than anything it is better to invest on technological facilities and managerial capabilities.

5.2 Recommendation

Based on the research findings, the researcher proposed the following recommendations for management of MINT, for other parties who participated in the implementation of e-government to focus on how citizens readiness, think, believe and the way they perceive the e-government. And on capacity-building programs to make the citizen able to use the system effectively to meet the desired outcomes both the tangible and intangible outcomes. Providing training and awareness program can really enhance the digital literacy, increase confidence on the system ability.

Second from the research reported the relationship between the technology orientations with e-government was more than any other relation in the conceptual framework. So Governmental firms should invest more money in acquiring modern technological infrastructure and continuous upgrade on their digital capabilities.

Third the finding indicated e-government contributes significantly to intangible outcome like for satisfaction and trust on government. Therefore, policy makers and other governmental organizations should focus on improving reliability, security and user friendliness of the e-government system to encourage greater public acceptance.

Finally, for future researches on this topic encouraged to examine additional factors that may influence e-government adoption. And also expanding the study in different sector, in different firms and also with more respondents. That can give more comprehensive understanding in digital transformation of Ethiopia.

5.3 Limitation and implication for further Research

Even if it delivered a great insight and a valuable contribution, this study has several limitations. The first and the main thing was that the participant of this study taken only from the Ministry of Innovation and Technology. It is better to take from different parts of society and institution.

The second limitation was the type of the methodology used for the study it was quantitative. So, including the qualitative approach make the study fulfill very much because there are things that may the respondent want to explain.

The other main limitation was that the amount of respondent in this study was very limited only around 131. This may not give the right picture because of small responses and increasing the amount of participant can enhance the result very much

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Appendix: Survey Questionnaire

Dear Sir/Madam,

Thank you for taking the time to be part of this study. We are Examining factors influencing e-government (online governmental services like online passport appointment, Fayda services) success from employees' perspective in the case of Ministry of innovation and technology (MINT).

Please note that your responses will remain confidential and will be used only for academic purposes. The questionnaire takes about 10-15 minutes to complete. There are no right or wrong answers — we are simply interested in your honest views.

We truly appreciate your contribution to this research

Part I, Demographics Information

1, Gender

A. Male
B. Female

2, Your age group:

A. 20-29

B. 30-39
C. 40-49
D. 50 and above

3, Educational Qualification

A. Diploma Degree
B. Bachelor's Degree
C. Master's
D. PhD

4, How long have you worked at Ministry of Innovation and technology?

A. less than 2 years
B. 2-5 years
C. 6-10 years
D. more than 10 years

5, Current role:

A. Technical staff
B. Administrative staff
C. Managerial position
D. Other

6, How often do you use E-government system?

A. Daily
B. Weekly
C. Monthly
D. Rarely

7, Your department _____

Part II

Please tick your level of agreement with each statement

1, Citizen orientation

	Items	Strongly Disagree	Disagree	Neutral	Agree	strongly Agree
1	CO1: I can easily become skillful at using E-government services /					
2	CO2: Learning to use E-government service is easy for me					
3	CO3: I find it easy to use the system					
4	CO4: Interacting with E-government requires a little mental effort for me					
5	CO5: E-government platforms are designed considering the needs of people like me.					
6	CO6: E-government services respect local culture and values					
7	CO7: Language used in E-government platforms is understandable to me					
8	CO8: I feel citizens are encouraged to participate in improving E-government services					
9	CO9: I believe that government communicates regularly with citizens through online platforms					

2, technology orientation

No	Items	Strongly Disagree	Disagree	Neutral	Agree	strongly Agree
1	TO1: In my opinion E-government system is reliable and function properly most of the time					
2	TO2: I think that E-government systems are regularly updated and improved					
3	TO3: E-government system is available and accessible whenever i need it					
4	TO4: I feel that Governmental agencies are committed to improving digital services					
5	TO5: I believe Governmental institutions adapt quickly to new technologies					

3, E-government

No	Items	Strongly Disagree	Disagree	Neutral	Agree	strongly Agree
1	EG1: The E-government portal provides me with useful feedback when I use it.					
2	EG2: The E-government system responds quickly to my requests.					
3	EG3: I think that the E-government system allows interaction between users and governmental agencies.					
4	EG4: I can access multiple government services through a single portal					
5	EG5: In my opinion government services are well integrated					
6	EG6: I think E-government portal is flexible; that is can accommodate changes					
7	EG7: The E-government system can handle increasing numbers of users and services effectively.					

4, Tangible outcomes

No	Items	Strongly Disagree	Disagree	Neutral	Agree	strongly Agree
1	TAN1: Using E-government system saves money for me					
2	TAN2: I believe Using E-government systems reduces paperwork and administrative costs/					
3	TAN3: I believe Using E-government system saves time.					
4	TAN4: E-government enables me to accomplish tasks more quickly.					
5	TAN5: Using E-government system improves efficiency in accessing services.					
6	TAN6: E-government increase my productivity					

5, Intangible outcomes

No	Items	Strongly Disagree	Disagree	Neutral	Agree	strongly Agree
1	INT1: I am satisfied by the E-government systems					
2	INT2: E-government services meet my expectation					
3	INT3: I trust the government provides reliable digital services					
4	INT4: - I expect my use of the E-government portal will increase in future.					

6, Digital Divide

No	Items	Strongly Disagree	Disagree	Neutral	Agree	strongly Agree
1	DD1: I have reliable internet access to use E-government system					
2	DD2: I have access to the required devices to use E-government services.					
3	DD3: I have the necessary digital skills to use online government services					

7, Shared Understanding

No	Items	Strongly Disagree	Disagree	Neutral	Agree	strongly Agree
1	SH1: I believe Government clearly explains how to use E-government services vie multiple formats (video, texts, images.					
2	SH2: Instructions on E-government platforms are easy to understand for me.					
3	SH3:-I receive enough information from the government about the benefits of the E-government portal.					

8, perceived privacy

No	Items	Strongly Disagree	Disagree	Neutral	Agree	strongly Agree
1	PP1: I think that my personal data is securely stored in the system.					
2	PP2: I believe my personal information is not used without my consent.					
3	PP3:-I feel that E-government portal shows attention for privacy of its users.					