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# Measuring Citizens' Acceptance and Usage of E-Government Services: Applying the Technology Acceptance Model (TAM) in Egypt

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# Abstract

The significance of public services delivery has been realized by all governments worldwide. An overarching tool to enhance government productivity and enabling citizen-centric public services, especially in developed countries, has proven to be the electronic government (e-Government). While many scholars focused on the supply side of e-government, few researches studied e-government adoption from the citizens' perspective. To contribute to filling this research gap, this study aimed at measuring the perceptions of citizens towards the adoption of e-government services in Egypt. Using Technology Acceptance Model (TAM), the main objective of this research was gaining a better understanding of the factors affecting citizens' attitude towards the adoption of e-government. The research used a mixed-method approach, while adopting a purposive sampling including 442 internet users in Egypt. On the one hand, the findings of this research revealed that more than 70% of the respondents using e-government do perceive the digital portal as a useful and user-friendly tool which has a positive effect on the adoption of e-government. On the other hand, trust in government, insufficient legal framework as well as the lack of online integration and coordination among government authorities are key factors affecting citizens' attitude and perceptions negatively. Finally, the recommendations of this research which include strengthening the enabling environment and raising the awareness of citizens have a direct benefit for the Egyptian government, where other developing countries that share similar status in terms of interest in digital transformation of the public sector might potentially find the study relevant and useful.

**Keywords**: *e-government, Technology Acceptance Model, Trust, Perceived Usefulness, Citizen Adoption*

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# CHAPTER 1: INTRODUCTION

## 1.1 PRELUDE

The public administration sector in Egypt has always been facing significant challenges hindering its potentials and development as well as the economic growth of Egypt. These include, but are not limited to, the high number of staff employed by the public sector, limited transparency level as well as the reported relatively high level of corruption (Noll, J. 2019). Worldwide, the introduction of technology in both the public and private administration sector has proven to be a responsive means to enhancing the delivery of this sector.

Since the inception of e-government and the adoption of technology in the public sectors, researches have been conducted on diverse aspects of e-government including its stages, and maturity levels, as well as its wide range of benefits. These include combatting corruption, as well as the contribution to overcoming socio-political challenges as advocated by Pentland (2014). Having said that, the American government adopted the Big Data tool, as an example of the benefits that technology adoption brings about, to predict and monitor potential violations and corrupt practices towards Black citizens (Angwin, Larson, Mattu, & Kirchner, 2016). However, it is to mention that the advanced and reliable ICT infrastructure and technological standards in a developed country like the United States of America contributed to the success of Big Data adoption and implementation.

For decades, citizens, especially of the Arab World, have been suffering from the bureaucracy associated with the delivery of civic services such as the extraction of personal certificates including birth, death, and marriage certificates, as well as renewal of driving licenses and other public services. Additionally, the bureaucratic and centralized process of obtaining public services has opened the door for numerous corruptions in the public sector affecting the trust between citizens and governments. Hence, citizens' readiness to accept and use now a relatively new system (technology) is a crucial factor affecting the success of the digitalization initiative. Having said that, in a country like Egypt, with its unstable political and economic situation including the devaluation of the local currency, the digital transformation might not be feasible (Abassy & Mesbah, 2016). Moreover, 29.7 percent of the Egyptian population live in extreme poverty, according to the Central Agency for Public Mobilization and Statistics of Egypt (CAPMAS, 2019/2020), which makes the decision for a financial investment to adopt a centralized compatible nation-wide system might not efficient (Helmy, H. E, 2019). Nevertheless, adoption of technology comes with a huge set of benefits both to citizens and government. As stated in 2005 in the European Union agreements, electronic government is the tool allowing sharing and receiving information and communication technology to citizens of a country whereas it is crucial for governments to enhance this civil experience by enhancing the quality and quantity of the services obtained while enforcing the public laws (Hazlett and Hill, 2003).

Realizing the importance of digital transformation, Egypt has first announced its intentions to implement the e-government system in 2004. The action plan for implementation has been executed with some socio-political interruptions over the following decade. However, the government has embarked on an ambitious, fully-fledged project, Digital Egypt, *announced in 2020*, aiming for a full digital society and the establishment of a strong digital economy.

## 1.2 RESEARCH PROBLEM

In the past, government authorities paid little attention to the quality of the public administration sector and related services they render and deliver to the citizens as well as the level of responsiveness to the public. However, this changed over the past decades as various governments have recognized the prospects that adopting electronic governments will bring about pertinent to enhanced efficiency, better accessibility of service delivery to citizens, and improved transparency (Ebrahim & Irani, 2005). Moreover, it plays a significant role in promoting accountability and combating corruption (Chatfield and Alhujran, 2009). The latter benefits promote mutual trust which is a key factor affecting citizens' perception of e-government adoption. Furthermore,

In this regard, many developing countries rely on international technical experts to design and implement the e-government initiatives who often perceive them as IT projects (Elsheikh, Cullen, & Hobbs, 2008). Nevertheless, the central aspects of culture, socio-political context, trust, IT literacy and public values are disregarded. As pointed out by Heeks (2003), the e-government design is often far from the actual context of implementation which creates a gap leading to the failure of the e-government endeavor. Therefore, to achieve the ultimate benefits of e-government, governments shall assess their enablers and barriers based on their local context. While this pre-requisite is essential to achieve the desired outcomes of e-government including public satisfaction, and ultimately, economic development, most of the developing countries overpass this step (Gebba & Zakaria, 2012). Failing to assess and analyze the gaps creates a gap between the developed system and the actual situation which results in the e-government program failure in developing countries (Heeks, 2002).

In this regard, Egypt has not been an exception. The public administration sector in Egypt has been facing significant challenges slowing down the achievement of the full potential of the e-government program (Abdel Nasser, H & Asmaa H.& Haitham, E, 2017). The government has been attempting to adopt e-Government since 2001 in Egypt as a pillar of the administrative reform and development. While many challenges slowed down the pace of digital transformation in Egypt, the government is still keen on attaining the full potential of its e-government program.

In 2019, the government announced the comprehensive digital transformation, which comes in line with the second version of the national anti-corruption strategy and new vision for investments in Egypt (Ministry of Planning and Economic Reform, 2019). Scholars have studied the readiness of the Egyptian government to adopt the e-government program while assessing the government's technological, financial and political factors. However, this thesis focuses on the demand side of e-government; namely measuring the impact of citizens' acceptance on e-government.

## 1.3 <u>BACKGROUND</u>

*"Government of the people, by the people, for the people."*
*Abraham Lincoln, November 19, 1863.*

Advocating for democracy, Abraham Lincoln stated his abovementioned words pointing out to the significant mandate of government namely meeting the needs of citizens. Since its inception in the late 1990s, e-government is known as the latest innovation that was developed to render public services to the citizens (Grönlund, 2004). Throughout the years, different governments around the globe have been embarking on e-government projects to deliver public services electronically to citizens.

Worldwide, several governments have made bold decisions pertinent to significant investments in their technological development, ICTs and e-Government systems. Nevertheless, there are still considerable concerns around how these investments paid off in terms of realization of the full potential and the intended paybacks from these technological investments (Karavasilis, Zafiropoulos and Vrana, 2010).

In this regard, it is essential for governments to develop strategies beforehand to ensure the citizens' adoption of technology and online public services which will eventually enable the governments to achieve the desired objectives including enhancing transparency, combating corruption, costs reduction and enhanced public services delivery experiences (Warkentin *et al.*, 2002). In other words, it is vital that governments realize the equal importance of the two streams of e-government adoption namely the supply- and the demand-sides. The latter is essentially key as it represents the citizens and their interest in obtaining the services using the technological method offered by the government (Carter and Bélanger, 2005).

Therefore, it is sensible to consider the citizens needs for digital transformation and the necessary steps to be taken. So far, most practices of digital transformation from all over the globe includes main initial stages including the establishment of a website to share public information which later evolves to become an interactive platform with full transactions between different government departments, citizens as well as the private sector. Throughout the years, this practice has proven to be effective, especially in developed countries. Nevertheless, few developing countries have also proved to be effectively adopting digital transformation as well as e-Government with high level of interest and acceptance level from the demand side such as the United Arab Emirates and Bahrain from the Arab World (Radcliffe, 2018). For years now, these two countries have been

providing enhanced quality of public services to their citizens with high level of efficiency in the public sector in general. Additionally, these countries have widened their spectrum of public administration to include non-citizens who reside in their countries to assure that the public services reach everyone that lives on the land of these countries. (Sofiane, 2013)

On the same front of realizing the importance of the demand side of the citizens as a key success factor of e-government, researchers have analyzed various constructs and external factors to understand citizens' acceptance of technology and how these factors affect their choices and their use of e-government, accordingly. In terms of external factors, trust towards both technology and government has turned out to be a primary influencer. Furthermore, research also revealed other crucial factors including perceived ease of use and usefulness, as well as peer influence. (Carter and Bélanger, 2005). Due to their significant importance and the role these factors play in making the decision to adopt technology, in depth analysis need to be conducted considering the local context of each government.

## 1.4 RESEARCH QUESTION

In the past decade, Egypt has invested heavily in the ICT sector to be able to introduce e-service initiatives. However, the government's digital transformation initiative has not achieved its desired objectives. According to Heeks (2003), many developing countries fail to adopt e-government due to the mismatch between design and reality. Similar to other developing countries, Egypt has been facing numerous challenges slowing down the achievement of the full potential of the e-government program since its inception in 2001 (Abdel Nasser, H & Asmaa H.& Haitham, E, 2017). These challenges include the poor economic performance, political instability, high poverty levels and unemployment rates, as well as debt accumulation. (Abdou & Zaazou, 2013)

Nevertheless, the government is still keen on attaining the full potential of its e-government program. While the technological factors have been previously studied in research such as Gebba and Zakaria (2015), Zaied & El-Ghareeb, 2017), this thesis aims at examining citizens' perceptions on e-government and the effect of citizens' acceptance on the adoption of e-government in Egypt. To understand this more, several aspects will be explored such as the factors affecting citizens' acceptance and perspectives on e-government, and measures taken by the government from 2001 to 2021 to promote the digitalization transformation initiative. In that sense, the following questions will be explored:

**Research Question:**

1- How does citizens' acceptance affect the use of e-government services in Egypt?

**Sub-questions:**

- To what extent do citizens use the e-government services?
- How do citizens perceive the e-government services provided by the Egyptian government?
- What are the factors affecting citizens' acceptance in Egypt?
- What are the policies needed to improved adoption of e-government in Egypt?

## 1.5 RESEARCH OUTLINE

This study constitutes of seven chapters. The introduction in the first chapter gives an overview on the thesis structure and summarizes the flow of the study. Chapter two focuses on the study's conceptual framework to apply the Technology Acceptance Model on the Egyptian e-government platform as well as the research hypothesis. The literature on the different perspectives, dimensions, characteristics and categories of e-government are provided in the third chapter of the thesis under literature review. Moreover, this chapter provides an overview on digital transformation and e-government adoption in different contexts. Chapter four entails the contextual background of the thesis providing the necessary background on Egypt and e-government adoption whereas the methodology of the study, the data collection instrument and processes as well as the sampling are discussed in Chapter five. The findings of the study are discussed in chapter six along with the data validity, ethical consideration as well as the research limitations. Finally, chapter seven includes the conclusion and policy recommendations pertinent to the adoption of e-government services in Egypt.

# 2. CHAPTER TWO: CONCEPTUAL FRAMEWORK

## 2.1 INTRODUCTION

One of the factors that is crucial to implementing a successful e-government program is public acceptance of new technology. Researchers over the past two decades have always been studying the reason behind users' acceptance or refusal of technology adoption which led to the development of numerous models and theories. As discussed by Carter and Bélanger (2005), citizen acceptance and adoption of e-government programs is key to the successful implementation of digital transformation. In other words, the ultimate goal of e-government implementation is the enhancement of public services delivery which will not be reached if the citizens do not opt or accept the system of e-government (Panagiotopoulos and Al-Debei, 2010). This section, therefore, focuses on studying the literature that tackled the relationship between deployment of e-government and citizens' acceptance with reference to different approaches by scholars. In addition to the organizational determinants, it is essential that one pays special attention to how citizens perceive the new electronic program as this will determine their actual usage of it (Titah and Barki, 2006). Finally, Shajari and Ismail (2010) stated that the acceptance of citizens as well as the institutional processes represent 80 percent of the success of digital transformation in the public administration sector while the remaining percentage depends on the Information and Communication Technology infrastructure.

## 2.2 E-GOVERNMENT DEFINITIONS AND PERSPECTIVES

This section provides an overview of the e-government definitions and perspectives in the literature from various dimensions as some international organizations and scholars gave different focuses to the definition varying from its digital process and characteristics, its potential benefits, or its conceptual and historical perspective.

Starting with its characteristics, the United Nations highlights the remote nature of the process of providing public services as the process of virtual inclusion of data, digital platforms and networks to be used by the public sector" (UN, 2002).

In the same line, Means and Schneider (2000), defined the terminology as the relationships of the government with its clients and suppliers which include the private sector, the public as well as other governments relying on the use of a digital channel. Furthermore, the Organization for Economic Cooperation and Development (OECD) described it as *the use of ICT particularly the internet, to achieve better government* (OECD, 2003). Additionally, using diverse ICT facilities including database, social media platforms, as well as digital communication methods was a further definition provided by Jaeger (2003). Finally, further scholars focused on the broad outreach to different groups and segments of e-government as defined by Stamoulis (2000), Wimmer and Bredow (2002) illustrating that the delivery of digital services to all citizen will require dealing with unlimited users unlike from diverse backgrounds any other type of platform used.

The second classification related to how e-government is referred to in literature focuses on the benefits that e-government would bring about. To start with, the World Bank defines e-government as "government-owned or operated systems of information and communications technologies that transform relations with citizens, the private sector as well as other government organizations as to promote citizen empowerment, transparency and accountability, improve service delivery, and enhance government efficiency" (World Bank, 2001).

Additionally, UNESCO defines e-government as "the use of Information and Communication Technologies to promote more efficient and effective government, and make it more accessible and accountable to the citizens". Last but not least, researchers addressing e-government definition from the same dimension stated the importance of ICTs in creating a digitalized structure for networking (McClure, 2000).

Moreover, while the efficiency and effectiveness of digitalization was illustrated by Heeks, (2001), and benefits pertinent to the decentralization of governments and reduction of bureaucracy and enhanced transparency were discussed by La Porte, DeJong, & Demchak (1999). At the same front, e-government has a critical role in good governance that is beyond public service delivery. According to Riley (2001), "E-governance is the determination to adopt a digital platform with the aim of promoting both internal and external governmental relationships in an attempt to foster transparency, freedom of expression, human dignity, promote economic development as well as facilitate the efficient delivery of services".

Finally, at the conceptual level, e-government is characterized by the outcome of transforming technology to management as well as a change in technological significance of the government (Budd & Harris, 2004) while Elmagarmid et al. (2001) considers e-government as a preliminary move towards digitalization among government and its citizens. Additionally, e-government includes digital administration within and between individual government departments (Heeks, 2001). And, according to the United Nations Department of Economic and Social Affairs, e-government needs continued top-down determination with high-level political and strategic support to achieve its targets for project management solely will not be able to sustain the transformation (UNDESA, 2003).

As stipulated in the above section, the terminology of e-government holds diverse definitions according to different organizations and scholars. However, these definitions agree on the significance of e-government in the improvement of public service delivery.

## 2.3 MODELS OF TECHNOLOGY ACCEPTANCE

Different approaches were integrated into models throughout the past years in an attempt to explore the main factors as well as relationships affecting the success or failure of e-government programs (Kumar, R. et al, 2018) while excluding the limitations of the individual approaches (Gilbert et al., 2004). The next section discusses two models: Theory of Reasoned Action (TRA) and Theory of Acceptance Model (TAM). Similarities do exist between both models as they focus on how citizens perceive e-government and technology. Additionally, both models share the same key constructs: perceived ease of use and perceived usefulness (Hofmann, S., Becker, J. and Rackers, M. 2012).

**Theory of Reasoned Action (TRA)**

The theory of reasoned action was introduced by Martin Fishbein and Icek Ajzen in 1975 with the overall objective of interpreting the behavioral intention and its effect on the adoption of a system focusing on perceived usefulness and perceived ease of use as stipulated earlier. In this regard, TRA is considered as a reliable model to adopt while investigating human behavior. Nevertheless, this model is criticized for its assumption that citizens' behaviors are totally under volitional control (Kurland,2006). For this specific reason, this model could not be selected for the purpose of this research which would entail the examination of external factors to understand behavioral intention on the public decision to accept and use e-government.

**Technology Acceptance Model (TAM)**

The second model discussed in this section is the technology acceptance model (TAM) which examines the social factors related to citizens' acceptance or reluctance to new technology systems (Kumar, R. et al, 2018). This model was developed by Davis (1989) and has been advancing its theories on continuous basis to include two more updates; namely TAM 2 (Venkatesh, 2000; Venkatesh and Davis, 2000) and TAM 3 (Venkatesh and Bala, 2008).

TAM model with its different updates provides a comprehensive theoretical basis for researchers to assess the impact of external variables on users' perspectives towards new technology which will affect their decision to use this technology (Venkatesh et al., 2003b). In other words, this model determines the relationship between adoption of e-government and citizens' acceptance (Wallace and Sheetz, 2014).

While scholars claim that TAM 2 is a more comprehensive model than its first version, both versions seem to share two common variables in relation to e-government. On the one hand, both versions argue that perceived usefulness is one of the main variables affecting the extent to which citizens perceive technology as an enabler to enhance job performance. According to Venkatesh et al. (2003), this is described as "Performance expectancy". On the other hand, similar arguments could be found for both versions on the level of effort exerted by users while browsing the platform or the system, being the second main variable, referred to as effort expectancy.

In this context, researchers have used the TAM over the past decade to analyze e-government adoption among different governments (Gupta et al., 2008). To explore the factors affecting public acceptance of e-government in Malaysia, Suki and Ramayah (2010) applied TAM model that proved best suitable for the context and elements of the case study. Findings included the significant effect of numerous determinants including perceived usefulness, interpersonal influence, external influence, and attitude on the acceptance of e-government technology. In addition, Al-Shibly and Tadros (2010) applied TAM in their research on the different variables and their impact on employees' level of acceptance of e-government in Jordan. Findings revealed that the technology itself as well as perceived ease have high impact on e-government acceptance in Jordan.

Despite its significance, this model was still criticized for its inflexible framework that cannot integrate further variables to it (Benbasat and Barki, 2007). This model will be adopted for the purpose of this research. It proved to be highly credible with reliable instruments and empirically comprehensive in previous researches that focus on explaining individual's attitude (Pablou, 2003, Chen, et al. 2007).

## 2.4 RESEARCH MODEL

This section presents the research model adopted in this study integrating the Technology Acceptance Model incorporating selected key elements being discussed in the literature due to their relevance to e-government acceptance such as trust in government and website design. As discussed in the previous section, the TAM model focuses on four main factors including: Perceived Usefulness, Perceived Ease of Use, Attitude, and Behavioral Intention.

TAM advocates that the attitude towards the acceptance and usage of technology as well as perceived usefulness is a fundamental factor that influences the behavioral intention determining whether to adopt e-government or not. Attitude is affected by the two beliefs perceived usefulness and perceived ease of use. In this regard, demographic characteristics as well as other external variables such as trust and social influence might affect perceived usefulness and ease of use.

According to Davis (1989), while TRA model proposes the possibility of behavior prediction, Technology Acceptance Model hypotheses include the possibility to predict technology usage. According to Burton Jones and Hubona (2006), this model divides the process of IT adoption into four stages including external variables that affect the citizens' beliefs to adopt technology, citizen's beliefs that affect their attitudes towards using technology, citizens' attitudes affecting their intentions to adopt technology, and finally, citizens' intentions that assess the actual use of technology.

In this regard, TAM model places behavior intention and attitude as two factors influenced by perceived usefulness and east of use, while having an effect on the actual use of technology. This means that the more the citizens perceive the system as an easy tool, the more the likelihood for them to use this tool. On the same front, Davis (1989) advocates that there is a positive correlation between perceived ease of use and perceived. Moreover, Bagozzi (1989) suggests that TAM aims at measuring the effect of external factors on people's belief and intentions.

In this domain, several scholars have discussed the impact of citizens' perceived usefulness on their acceptance to use e-government while focusing on users with adequate ICT literacy to be able to assess how beneficial it is to adopt the digital system. For instance, Al-adaileh (2009) argues that citizens with inadequate computer skills might not value or perceive the digital tool as a a useful system and might only adopt e-government for its ease-of-use element.

Figure 1: E-government Adoption Conceptual Framework
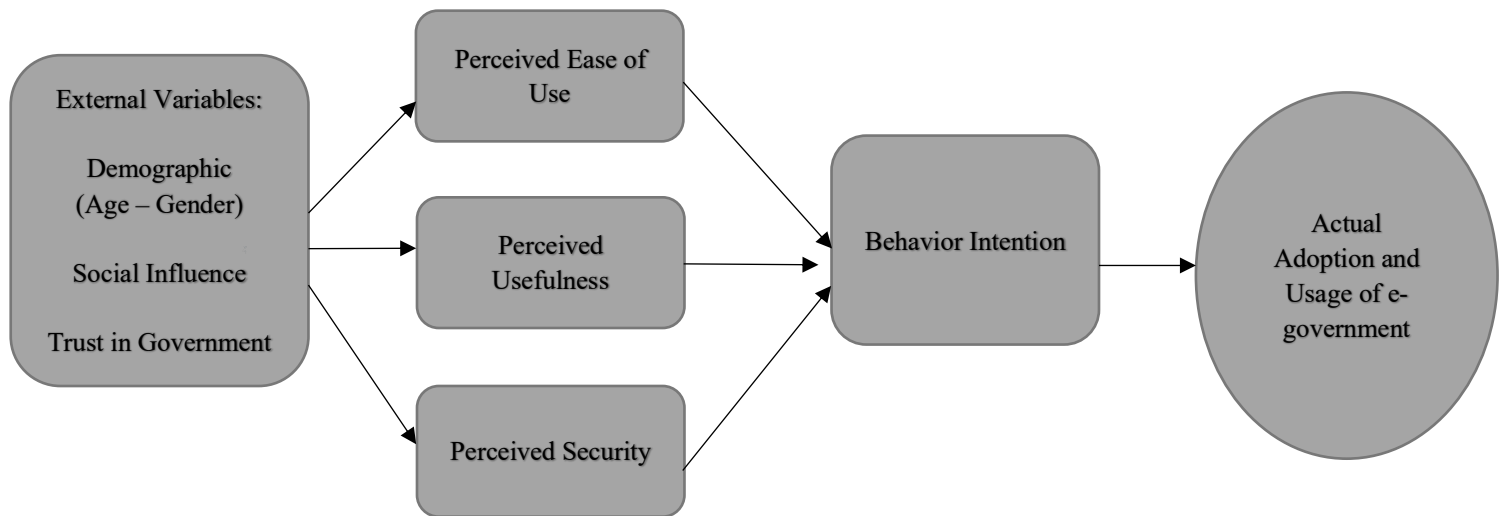


Source: Constructed by the researcher. Inspired by Davis (1989)

The following section provides definitions of the different constructs and the rationale behind their selection to be incorporated in the research model. Also, Figure 1 below proposes the research model for e-government adoption.

Based on the argument of Davis (1989), perceived usefulness is part of the TAM model for its linkage to the effectiveness and productivity of the system. While according to Carter & Belanger (2004), perceived usefulness is considered a crucial variable the e-government adoption. According to Fu et al. (2006), citizens' perception of the system's usefulness has a great effect on their intention to use e-government.

Hence, the researcher believes that this variable needs to be integrated and examined in the model to assess its relationship with citizens' attitude. Another important construct of TAM model is **Perceived ease of use** which is believed to be a determinant of the attitude towards technology use by several researchers. This factor refers to the level of mental effort that one has to exert while using a technological system according to Davis (1989). Additionally, **Behavior Intention** in the TAM model correlate to both usefulness and ease of use which is also a key factor for consideration (Davis, 1989). With reference to Ajzen (1991), behavioral intention determines the user's intention to adopt a certain technology in the future which can be a tool to predict citizens' adoption. The model was built up coupling with age, gender, education level of the research participants in addition to trust in government, perceived security, and social influence which are believed to be key external

## 2.5 Hypotheses

Over all, four hypotheses were proposed based upon the previous conceptual model. Data was collected to test the proposed model and were tested as part of this research. Additionally, we relied on the conceptual framework for the assessment of the viability of the research model to assess the relationship between the constructs on the use of e-Government in Egypt.

Hence, the following hypotheses are being proposed by the researcher:

H1: *There is a negative relationship between Age and Perceived Ease of Use of e-government and Behavior Intention and E-government actual use.*

*H2: There is a positive relationship between Perceived Ease of Use and E-government actual use.*

*H3: There is a positive relationship between Trust in Government and Perceived Security and Behavior Intention and E-government actual use.*

*H4: There is a positive relationship between Social Influence and Perceived Usefulness and Behavior Intention and E-government actual use.*

## CHAPTER THREE: LITERATURE REVIEW

### 3. 1 INTRODUCTION

The literature review of this research is structured into four main sections. The first discussed an overview of electronic government and its evolution while the second section entails the different dimensions and components of e-government as studied in previous researches by different scholars in relation to citizens' acceptance. The following section focuses on the streams of e-government being the demand- and supply sides whereas the final section includes a review of e-government adoption around the world, divided into two sub-sections; namely the context of e-government adoption in developed countries and e-government adoption in developing countries.

### 3.2 E-GOVERNMENT OVERVIEW

In the late 1990´s, the term electronic government was introduced to the world for the first time. However, a literature on "IT in government" could be tracked to the 1970s focusing on the internal use of technology within governmental entities (Kraemer, et al, 1978, Danziger and Andersen, 2002).

While some people understand it as a government website on the internet, e-government is much more than that. It is a complex process that entails a great transformation in the way government provides its services to the public, as well as a re-structuring of the government's own internal procedures, processes and affairs. The United States, Australia as well as numerous European Union countries were among the pioneers embracing e-government.

The significant importance of technology advancement and its use seems to be clear for everyone, it is crucial to understand that e-government is a complex process. One reason for this is the shift in the service delivery method adopted by the government. In addition, the re-structuring of the government's own internal procedures, processes and affairs. Theoretically, e-government is an enabler to good governance and ultimately leads to economic development through promoting less centralized and more transparent processes. It is also believed to reduce corruption as surveillance of public administration would limit manipulation, misuse of power, and abuse of authority among public officials.

Having said that, the feasibility and readiness of e-government adoption seems to differ from one country to the other due to cultural, financial, infrastructural, political, and environmental factors. For instance, in many developing countries, adopting an electronic government is still a major challenge due to lack of well-established and reliable Internet connections, poor technological infrastructure, as well as inadequate skills and capacities; three ingredients to successful adoption (Fedorowicz, 2010). Others failed to adopt e-government due to the lack of transparency and accountability that influences the decision of citizens to accept the digital method. Several studies show that the readiness of the public to accept e-Government could be a key enabler or barrier that affects the e-Government process.

### 3.3 E-GOVERNMENT DIMENSIONS

With reference to the abovementioned definitions, it is to conclude that the perception of e-government is broad and can be explored and defined based on various different perspectives. However, an important aspect that needs special attention is the need to redirect the public service delivery from an inward-looking approach to a citizen centric approach whereby the experience and expectations of citizens are being prioritized. In this regard, Ho (2002), highlighted the paradigm shift that will be encountered in public administration as a result of the redirection in public service delivery, change in process management, internal and external communication methods, as well as mode and conditions of service delivery.

Having said that, this section discusses how e-government dimensions were studied by scholars in literature focusing on the characteristics as well as categories of e-government. Starting with the characteristics, many existing literatures provided the following classification of e-government characteristics: Technology, Processes, People, Institutionalization, as well as Security and Privacy (Aderonke, A. and Okunoye, A. 2014).

*Technology* – shaping the core pillar of electronic governments, technology includes the technological infrastructure, legal framework as well as human capital (Heek, 2001).

*Processes* - the deployment of e-government entails a complex of operational processes and considerations. These include maintenance, knowledge and capacities, standards and policies. (Heeks, 2001).

***People*** – different scholars have studied this characteristic from two different perspectives; namely the public employees who will be in charge of the digital transformation as well as the citizens who shall be using the portal (Liu & Zhou, 2010).

***Institutionalization*** – This characteristic has a cultural and structural dimension. It refers how public services are well integrated to enhance coordination across governmental bodies and citizens. However, scholars tackled the institutional barriers that may be encountered including lack of institutional frameworks, lack of motivation and increased resistance, and insufficient budget allocations to deploy the technology and develop the needed ICT capacities of governmental officials (Heeks, 2001).

***Security and Privacy*** – As much as the adoption of e-government brought about benefits to many countries, security and privacy are still two key threats of technology (Belanger, F. and Carter, L. 2008). The reluctance that most people have towards acceptance of e-government rises from the fact that they do not trust using technological platforms and relying on electronic transactions especially with regards to the obtaining public services (Palanisamy, R. and Mukerji, B. 2012).

As for the classifications, researchers, throughout the years, have presented different views on this domain. However, an important and overarching classification, according to Wang and Liao (2008) and McClure (2001), includes the following categories: (1) government-to-citizen; (2) government-to-business; and (3) government-to-government; and finally (4) government-to-employee.

**Government to Citizen (G2C)**

This paper focuses on this category which includes the delivery of public services to citizens of a country through a digital tool, also known as platform, as described by Fang (2002). Additionally, it was referred to by Valentine (2004) as the process of enabling citizens to obtain public services offered by the government through an electronic open and interactive platform at any time. Carter and Bélanger (2005) advocates that this category shall also be designed to enhance the communication among citizen and government, which is to a great extent the ultimate benefit of e-government.

**Government to Business (G2B)**

Private sector engagement is as vital as the public. Hence, the interaction with businesses is key to the adoption of technology with the ultimate goal of exchanging information, in particular that relates to tax and employment laws, safety and environment. In addition, Heeks (2012) argues that this service category shall enhance transparency and facilitate the processes including obtaining permits and procurement processes. Furthermore, it ensures equal access to information by everyone with transparent feedback that can be monitored (Michael and Mendes 2012; Charoensukmongkol and Moqbel, 2014).

**Government to Government (G2G)**

Another important category is the engagement and efficient collaboration among public authorities which can be facilitated by digital transformation. This service category shall enhance the efficient coordination and operations between government agencies (Fang, 2002). On the same front, this category ensures the efficient communication and coordination among government entities (Christensen and Lægreid 2007).

**Government to Employees (G2E)**

Benefiting from e-government can also be doubled for civil servants where they will benefit from the technological system as all citizens but also through the exclusive benefits that are related to the government-to-employees services including the efficient communication and coordination as well as the e-learning and capacity development programs offered to the governments' employees in the framework of digital transformation. in this category, the cooperation among government entities as well as their effectiveness and efficiency are being monitored to that the desired quality of public services will be achieved (AlAwadhi and Morris, 2009).

## 3.4 STREAMS OF E-GOVERNMENT ADOPTION

Reddick (2005) argues that it's common to find two perspectives of e-government adoption literature; namely the supply-side (the government), and the demand-side (beneficiaries).
On the one hand, Coursey, Yang, Kasserkert and Norris (2007); Ferro & Sorrentino (2010), Norris and Reddick (2013); as well as Li& Feeney (2014) argue that the first perspective focuses on the factors affecting the supply of public services by the government which include ICT infrastructure, as well as the size, culture and personnel of governmental organizations.

In addition, Moon (2002) studied the institutional environment of e-government services implemented by governmental authorities in the United States of America. His research findings included that the authorities' size is an important institutional factor in the development and adoption of technology.

On the other hand, the perception of public services beneficiaries, *classified as the demand-side*, was identified as the second stream of e-government adoption according to Lin et al. (2011), Al-Hujran et al., (2013), Liu et al. (2014) and Rana & Dwivedi (2015). In this regard, these scholars also studied the factors affecting the demand side of e-government adoption whereas trust was identified as a main influencer, as well as usefulness, ease of use attitude and IT literacy. On the same front, Warkentin et al. (2002) discussed the effect of perceived usefulness and perceived ease of use on the adoption e-government (Warkentin et al. 2002). These arguments by the aforementioned scholars are aligned with the core constructs of the Technology Acceptance Model (TAM) that was developed by Davis in 1989 which is also the model adopted in this thesis.

Addressing the same issue, Alsaghier et al. (2005) argue that citizens' acceptance is a key factor that needs thorough analysis and consideration in e-government implementation. Furthermore, their research findings show that trust between citizens and government is a key factor affecting the success of e-government programs. Galindo (2002) argues that trust is a perquisite to social and economic interaction between any government and its citizens. in the context of e-government adoption, trust refers to the expectation of citizens that the government will perform a specific action (Mayer et al. 1995). More advocates include Al Sawafi (2003) who addressed the trust factor concluding that the success of e-government implementation depends on the trust in the security of the introduced governmental technology which include digital signatures.

### 3.5 E-GOVERNMENT AROUND THE GLOBE

The first part of this section presents how e-government has been implemented around the world while the second part focuses on the adoption of e-government in developing countries, as well as Egypt. Since its inception, numerous governments paid attention to the significance of e-government adoption and its role in enhancing the delivery of public services and hence, relationship with citizens (Ebrahim & Irani, 2005). Similar to other scholars, Tahrani (2010) argues that many governments have realized the need for digital transformation and the integration of new ICT systems into their national action plans. This results from the realization of digital transformation as a strategic tool to promote transparency and combat corruption as argued by Chatfield and Alhujran (2009). Furthermore, research conducted on e-government adoption in the Andean countries (Bolivia, Colombia, Ecuador, Peru and Venezuela) examined the link between e-government adoption and sustainable development (Aniscenko et al, 2017). The research findings reveal the positive correlation resulting from the positive effect of e-government on good governance and enhanced transparency, which are core determinants of sustainable development.

Having said that, the United Nations has reported in 2010, that most of the public organizations around the globe have succeeded to develop websites where citizens can at least access information through. Nevertheless, the progress of completing financial transactions as well as participatory activities between citizens and governments on e-government platforms is still limited (Šèeulovs et al., 2015). This would certainly vary from one country to the other due to several political, economic, technological readiness or social factors.

To comprehend the reason behind the success or failure of governments adoption of e-Government, some studies assessed the success factors of e-Government services focusing on technological elements in terms of compatibility and complexity (Zafiropoulos et al., 2012; Alateyahet et al. 2013). Nevertheless, Seng et al. (2010) advocates for the significance of studying the cultural aspect of e-government adoption and its important effect on e-government (Seng et al., 2010).

Whether technological or cultural factors are being examined, Heeks (2005) argues that the variance of E-Government adoption and the key success factors vary from one country to another. In alignment with the arguments on the cultural effect on the adoption of technology, most of these countries depend upon adopting foreign technology and qualified experts who are not necessarily familiar with the local socio-cultural context of the receiving country, which might result in failure of the technology deployment (Ali et al. 2009).

"When Western technology is exported to developing countries, there are a number of possible cultural and social conflicts" (Yavas et al., 1992). Last but not least, the demographic characteristics are key variables affecting the adoption of e-government among citizens as argued by different scholars including Venkatesh and Zhang (2010).

## 3.5.1 E-GOVERNMENT IN DEVELOPED COUNTRIES

Shifting from traditional to electronic government is considered a complex process that includes a multitude of political, social, institutional and technical aspects. To enable the smooth transformation, governments need to develop cross-sectoral strategies that involve the integration of operational processes (Mishrif and Selmanovic, 2010).

In the context of developed countries, the United States of America, Canada, United Kingdom, Australia, Norway and Germany are successful models in the adoption of e-government and realization of the potentials of digital transformation (Accenture, 2010). Success factors may include their advanced technological infrastructures in comparison to developing countries (Khoury et al., 2015). Also, unlike the challenge of insufficient technical capacities and skills to establish and adopt digital transformation strategies that developing countries face, developed countries have the necessary human assets with high quality education and capacities needed for this technological initiative (Khoury et al., 2015).

In this regard, the enablers of e-government adoption in developed countries include the availability of technical staff who have the required capacities to assess what citizens expect from the e-Government in order to help design better services that are affordable for both governments and citizens.

Moreover, these governments have reliable ICT infrastructure, high internet penetration and adequate skills of citizens to use technology, relatively more experienced in democratic system and active civic participation in policy-making process, adequate human resources with high skills to implement the e-government (civil servants) (Diaz et al., 2015).

In the interim, global assessments have been conducted to report on the progress of e-Government adoption all over the globe (Song, 2010). Additionally, reports and researchers were published discussing the benefits of e-government in different domains including but not limited to health, education, transportation and immigration. According to literature, e-government initiatives have the potential to generate a wide range of advantages and opportunities for governments and citizens everywhere. While individuals receive quicker and more convenient services, governments of developed countries have realized cost savings and increased efficiency in their institutional operations. In this regard, the majority of developed countries offer online public, and managed to promote their e-government programs to encourage citizens' engagement on a wide range of civic participation and affairs offerings that include, but are not limited to, IDs' issuance and renewal, tax filing and payment, as well as online voting. In order to enable the usage of services and the provision of information to their citizens over the Internet, many countries have established helpful e-Government projects, and others are following (Carter and Bélanger, 2005).

## 3.5.2 E-GOVERNMENT IN DEVELOPING COUNTRIES

Developing countries have a different set of conditions and struggles pertinent to public administration in comparison to developed countries. Hence, there is no 'one size fits all' model that governments can adopt to enhance the delivery of their public services.

In other words, more localized solutions are needed taking into consideration the technical, social, and political aspects of different countries. Therefore, prior to the adoption of e-Government, it is advised that countries conduct a comprehensive analysis and needs assessment of their condition with regard to their shortcomings, strengths, threats, and opportunities (Zarei et al., 2008).

The obstacles that prevent the deployment of e-Government in developing nations have been the core objective of several researches throughout the years. For instance, the Middle East and North African (MENA) countries have struggled to attain adequate levels of social and economic progress, which has increased pressure on their governments to reform public institutions and improve the delivery of public goods in those nations (Mishrif and Selmanovic, 2010). Over the past two decades, most of the MENA countries have realized the necessity to develop national reform programs and enhance good governance including the need to adopt e-Government and other e-Tools to boost administrative effectiveness and improve the public administration sector (Mishrif and Selmanovic, 2010).

Many researchers have explored the factors influencing e-government adoption as well as its implementation in the developing world (Weerakkody et al. 2011). The ability of developing

countries to obtain the full benefits of e-government is limited and is largely restricted by the existence of a combination of political, legal, social and economic barriers (T. R. Gebba and M. R. Zakaria, 2015). On the one hand, H. Elkadi (2013) discussed the centralization found in developing countries, claiming that a developing country like Egypt is considered to be one of the oldest countries in history characterized by its highly central government. In addition to centralization, researchers like Q. Li and E. O. Abdalla (2014), argue that the government in Sudan lacks the necessary ICT infrastructure and human resource capacity and technical skills, effective government legislation to adopt e-government.

On the other hand, another important research developed by R. Kanaan and S. Rogerson (2011) about e-government adoption in Jordan, argues that changing ministers, Citizens' perception and expectations to e-government, lack of awareness on e-government, transparency and data security, reluctance to change in public sector and wasta (connections) are barriers that hinder the adoption of e-government. Furthermore, R. Schwester (2009) highlights institutional resistance, bureaucracy and lack of public support are main contributors to the failure of e-government adoption in developing countries. Focusing on the demand side of e-government adoption, namely the acceptance of people to use e-government, Carter and Belanger (2005), Belanger and Carter (2008), and Reddick (2005) have studied the element of Trust. In addition, they have analyzed the dimension of trust and its effect on the citizen adoption of e-government services. Needless to say, trust has a direct and significant effect on everyone's opinion to opt for or out of certain offerings.

In this regard, Papadopoulou, et al, (2010) introduced seven dimensions of trust including "Trust in stored data, trust in service, trust in information, trust in system, trust in transaction, trust in government organization and institution-based trust". In line with the aforementioned, Nam (2018) and Shareef et al. (2016) argue that electronic governments and digital governmental endeavors are of significant importance to improve the relationships between governments and citizens. Last but not least, Grimmelikhuijsen and Knies (2017) referred to e-government as an effective method to establish and enhance trust between governments and their citizens.

## 3.6 RESEARCH GAP

While several studies have addressed organization and ICT-related factors and their effect on e-government adoption in developing countries, a clear gap still exists in research examining these behavioral aspects affecting citizens' acceptance towards e-government. To that end, Egypt was selected for examination representing developing countries.

This thesis aims to study the impact of citizens' acceptance of on the adoption and use of e-government public services in Egypt which introduced the e-government program in 2001. While different online services have been announced ever since, few citizens have opted to use those services (MSAD, 2010, El Baradei1.L et al., 2012, Elkadi, 2013). Therefore, a deeper analysis of the effect that selected variables has on citizens' adoption of e-government services in Egypt is needed. This research can also have important implications for other Arab countries with similar circumstances.

**3.7 SUMMARY**

The literature review chapter aims at giving the reader the various perspectives of e-government studied by different scholars. The section on the existing literatures on the classification of e-Government show that Technology, Processes, People, Institutionalization, as well as Security and Privacy are the main characteristics of e-government. Moreover, the literature review chapter focuses on the categories of e-government which vary from Government to Citizen, Government to Government, Government to Business as well as Government to Employee.

In a Government to Citizen context, this thesis studied the influence of individuals' perception on e-government adoption including trust, perceived ease of use and useful of e-government adoption which was also identified in literature as the demand-side stream of e-government adoption. Finally, this chapter provides a review of literature by different scholars about e-government and its adoption around the world, in developed and developing countries.

# CHAPTER FOUR: CONTEXTUAL BACKGROUND

## 4.1 INTRODUCTION

This chapter provides the necessary contextual background of Egypt, its ICT infrastructure and e-government enabling environment. The literature review conducted for this thesis show that some studies were conducted pertinent to the digitalization endeavors of the Egyptian government including the assessment of ICT sector in Egypt and the adoption of e-government in Egypt. In their researches, some scholars discussed the social, technological, financial and legal barriers of e-government adoption (Kamel and Hussein, 2002; Aladwani, 2003; Ibrahim, 2007; Neil and Bernd, 2009). In this regard, this chapter includes an overview of Egypt's rankings in terms of technological capacities and infrastructure while comparing Egypt's e-government readiness ranking with other Arab countries in terms of e-government development.

## 4.2 PROFILE OF EGYPT

According to datareportal, Egypt's total population was 105.2 million in January 2022, of which 49.5 percent of Egypt's population is female, and 50.5 percent of the population is male. As of January 2022, Egypt reported 75.66 million internet users with an internet penetration rate of almost 72% of the population rising from 60 million users from January 2021 as shown in the figure below:

Figure 2: Different Perspectives: Internet Adoption
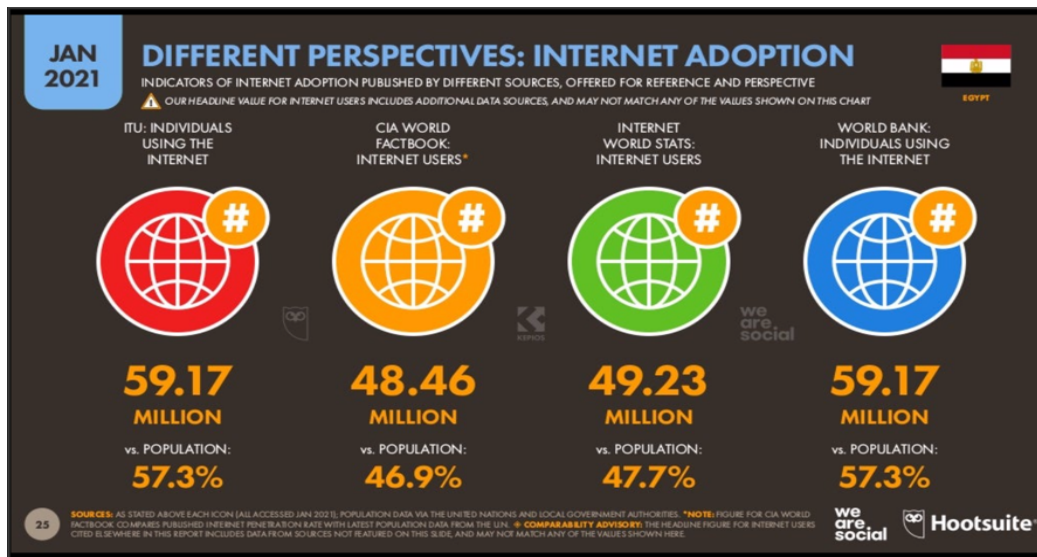
Moreover, data from the same source show that the average daily time users aged between 16 to 64 spend while using the internet is more than 7 hours in January 2021.

Figure 3: Overview of Internet Use in Egypt
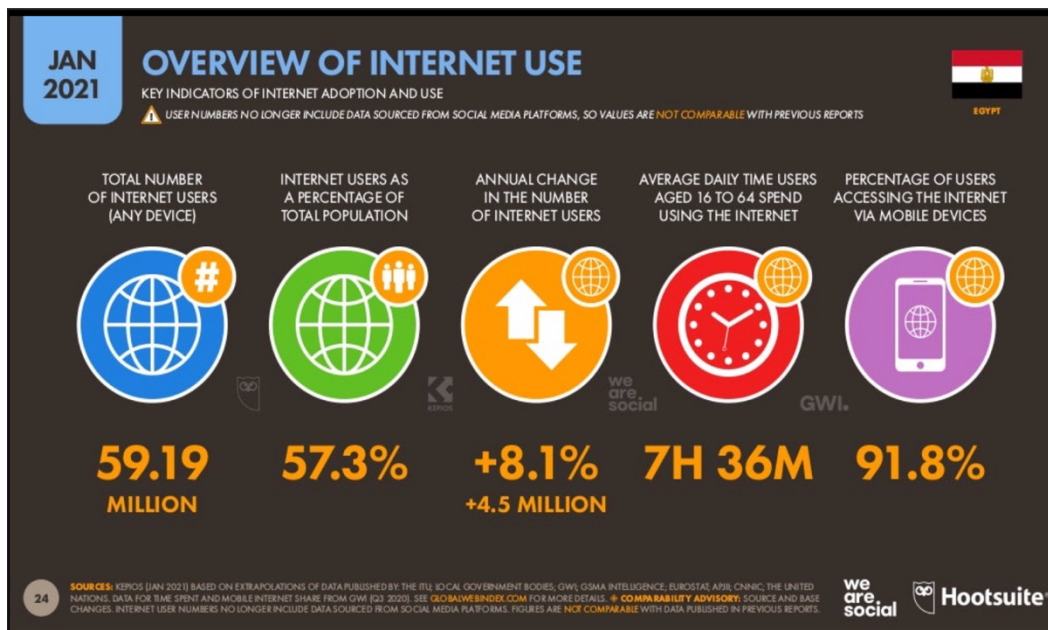
## 4.3 E-GOVERNMENT ADOPTION IN EGYPT

Officially inaugurated on 25 January 2004, the e-government portal of Egypt was considered a main milestone in delivering what was promised in 2001 with the announcement of the digital transformation vision. It was successfully launched in two languages; Arabic and English as a user-friendly portal for citizens, foreigners as well as the private sector (United Nations, 2004). The Egyptian e-government implementation program was planned to take place on two phases; from 2001 to 2007, and, from 2007 to 2012 with the objective to offer a wide range of transactional services (UNDESA, 2004). While the first stage aimed at establishing the ICT and legislative eco-system of the digitalization plan, the second stage aimed at focusing on the implementation of pilot projects across the country (MoSAD, 2006).

Being the primary responsible body for the e-government program in 2004, the Ministry of State for Administrative Development (MSAD) attempted to ensure the design of a well-integrated e-government portal. While some progress could be witnessed in the first phase including the development of pilot testing of some services on the portal as telephone and internet invoices of Telecom Egypt Company, the program still encountered numerous challenges (Azab et al., 2006).

Parallel to that, the government was still to enhance the enabling environment of the initiative by introducing relevant laws and technological frameworks. Nevertheless, the second phase was disrupted by major socio-political, economic and societal challenges including the 2011 revolution. The demand for a comprehensive and new vision urged the need for digital transformation in the public administration sector to enhance efficiency, combat corruption, improve transparency and promote trust between the government and citizens.

Efforts in this domain included in this phase the establishment and development of ministerial websites, and efforts to enhance Egypt's electronic readiness for digital transformation. This also entailed the introduction of new administrative programs and reforms with the launch of Egypt's Vision 2030 in 2016. The digital transformation project is being primarily implemented by the Ministry of Communication and Information Technology in collaboration with the Ministry of State for Administrative Development. However, other key Egyptian governmental bodies are envisioned to be engaged in the implementation process (Ayman, D. & AbdelAzim, R. 2016). Services such as notarization, renewing driving licenses, utilities and electricity, municipalities, issuance of E-Visas, Endowed Asset Management, Farmer's Card, Health Insurance, among others were promised in 2019.

However, only the Civil Status Services Portal succeeded in the delivery of services to the public including the following: Birth Certificate Extract, Divorce Document Extract, Marriage Document, Death Document Extract, Family Record Extract (The Egyptian Online Portal) could. The digital transformation project is Egypt's initial action in the E-Government adoption. The project's slogan is "The Government Now Delivers" and aims at delivering online services to different segments in Egypt including citizens as well as the private sector.

To that end, the preliminary data collected for the purpose of this thesis show that Egypt has taken bold steps to improve its readiness to implement the digital transformation project over the past decade. The government invested in communication infrastructures in an attempt to enhance the network and the connectivity and access. Furthermore, relevant policy measures were successfully taken including the deregulation of telecommunication sector. As shown below, Egypt's ranking enhanced in 2020 in comparison to its 2018 ranking on e-government development.

Figure 4: E-Government Development Index
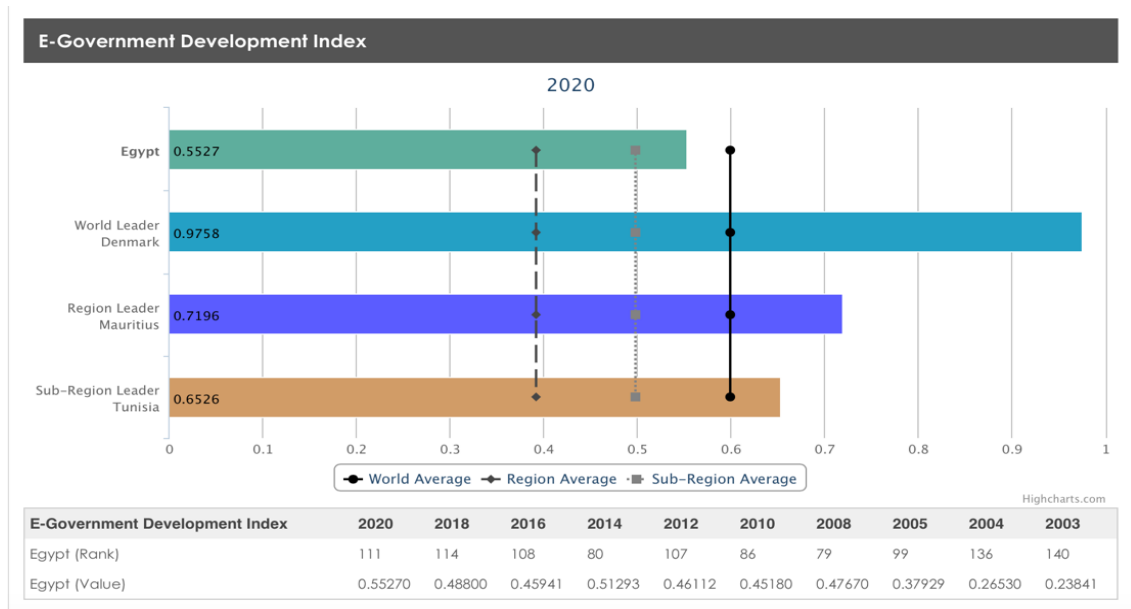


**E-Government Development Index**

**2020**

| E-Government Development Index | 2020 | 2018 | 2016 | 2014 | 2012 | 2010 | 2008 | 2005 | 2004 | 2003 |
|---|---|---|---|---|---|---|---|---|---|---|
| Egypt (Rank) | 111 | 114 | 108 | 80 | 107 | 86 | 79 | 99 | 136 | 140 |
| Egypt (Value) | 0.55270 | 0.48800 | 0.45941 | 0.51293 | 0.46112 | 0.45180 | 0.47670 | 0.37929 | 0.26530 | 0.23841 |

Source: UNDESA (2020) https://publicadministration.un.org/en/Research/UN-e-Government-Surveys

Another key pillar of this survey is the assessment of e-participation demonstrating the rankings of the 193 on civic participation and interactive governance through the use of technology.

Figure 5: E-participation Index



**E-Participation Index**

**2020**

| E-Participation Index | 2020 | 2018 | 2016 | 2014 | 2012 | 2010 | 2008 | 2005 | 2004 | 2003 |
|---|---|---|---|---|---|---|---|---|---|---|
| Egypt (Rank) | 106 | 109 | 107 | 54 | 15 | 42 | 49 | 73 | 123 | 123 |
| Egypt (Value) | 0.51190 | 0.53930 | 0.40678 | 0.54901 | 0.68420 | 0.28571 | 0.25000 | 0.07936 | 0.01639 | 0.01720 |

Source: UNDESA (2020) https://publicadministration.un.org/en/Research/UN-e-Government-Surveys
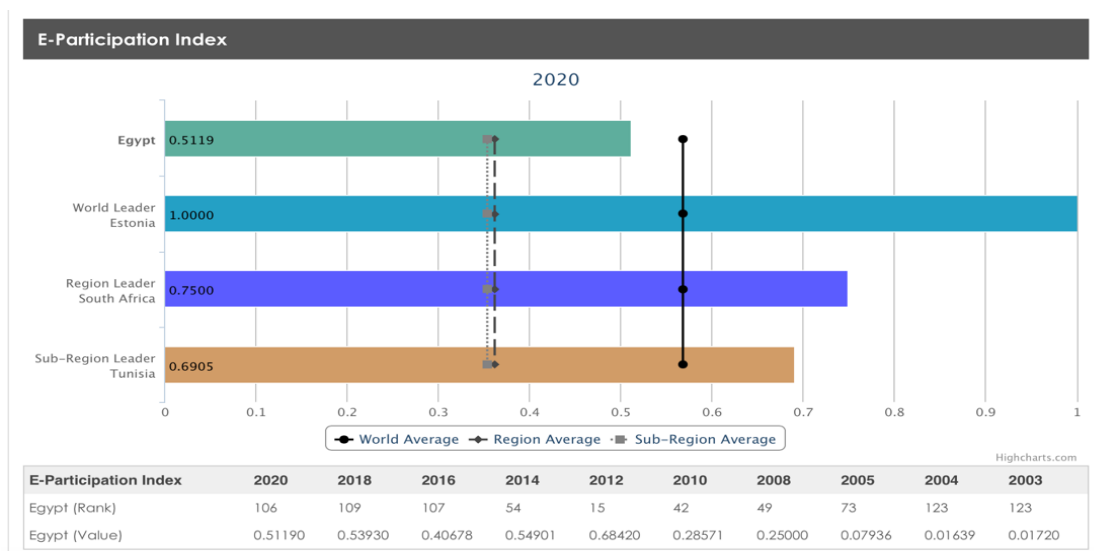
Though the available data shows some progress towards digital transformation in Egypt, the government should study all the factors contributing to the success of e-government before reaching the project's maturity level to be able to adjust necessary measures where needed. One of the key factors to be analyzed is the level of citizens' acceptance of the e-government. Impressions and experiences from citizens who have used the online services as well as citizens who refrain from using them shall be gathered and analyzed. In an attempt to do so, a poll was created on the government's online portal to explore whether citizens accessed their governorate's online portal as shown below.

Figure 6: The Egyptian Online Portal Interface



Source: https://www.digital.gov.eg
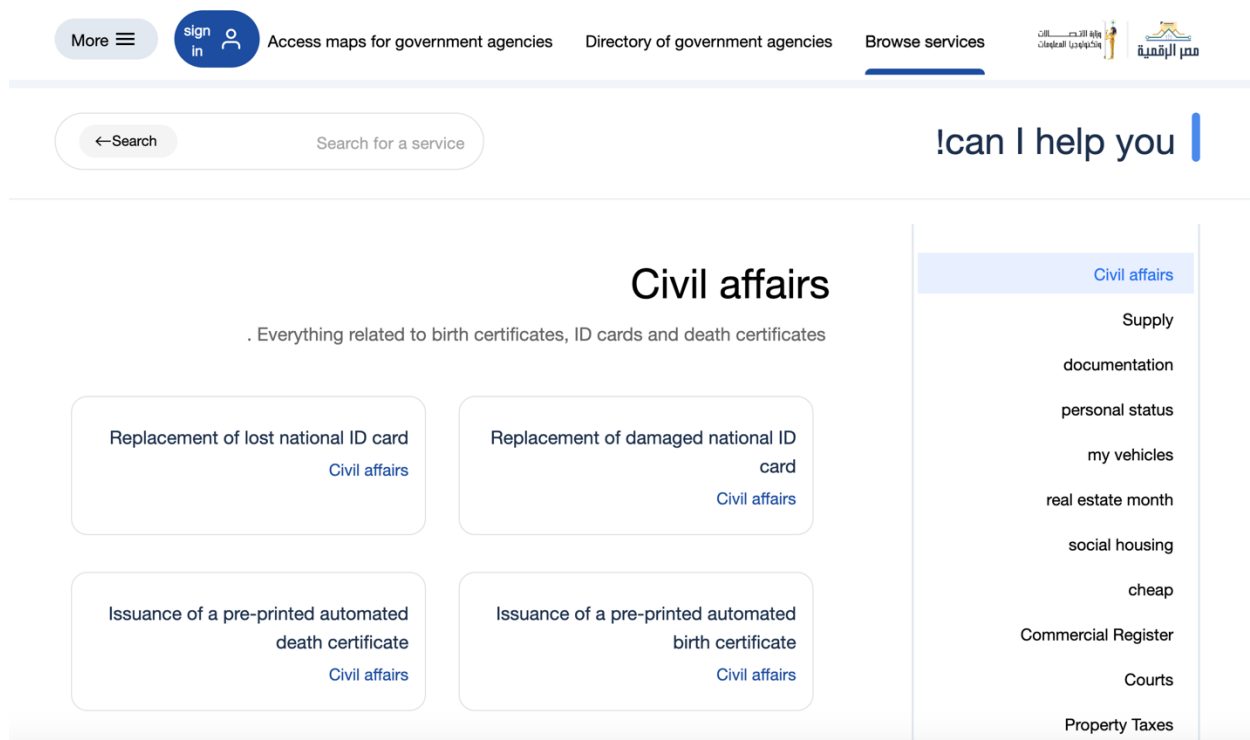
In 2021, the Arab Monetary Fund issued a report ranking Egypt among the top countries in the provision of electronic payment services, as well as digital wallets and financial technology solutions. In addition, Egypt has ranked 84th on the latest Network Readiness Index (NRI) for 2020. This ranking places Egypt ahead of other Countries in Northern Africa due to the adequate technological literacy and high use of technology and internet among Egyptians. The Networked Readiness Index is an important publication that is being issued on annual basis by the World Economic Forum with the overall objective of assessing the level of readiness of countries to benefit from ICT offerings and opportunities. Furthermore, the issued decree narrates the development of the ICT adoption as a tool to combat corruption. In addition, the United Nations conducts an e-government survey to assess e-government progress within 193 United Nations Member States. The rankings of Egypt throughout the past decade indicate that Egypt struggles with e-government adoption despite the efforts exerted.

**Table 1: E –government ranking of selected countries in the Middle East**

| Country | 2012 ranking | 2014 ranking | 2016 ranking | 2018 ranking |
|---------|--------------|--------------|--------------|--------------|
| **Bahrain** | 37 | 18 | 24 | 26 |
| **United Arab Emirates** | 28 | 32 | 29 | 21 |
| **Saudi Arabia** | 41 | 36 | 44 | 52 |
| **Qatar** | 48 | 44 | 48 | 51 |
| **Oman** | 64 | 48 | 66 | 63 |
| **Kuwait** | 63 | 49 | 40 | 41 |
| **Tunisia** | 103 | 75 | 72 | 80 |
| **Egypt** | 107 | 80 | 108 | 114 |
| **Morocco** | 120 | 82 | 85 | 110 |

Source: United Nations E –government Survey, 2018

Constructed by the researcher

Inspired by: Doaa (2016)

In comparison to other Arab countries, we can interpret that Egypt is quite lagging behind. However, rapid technological advancement in other countries as well as lack of financial investments might be contributing factors to the dropping in Egypt's ranking.

As for the efforts in relation to the relevant legislative framework, reforms to support the digital transformation process have been issued including the Presidential Decree No. 501 of 2017. This decree relates to the establishment of the Supreme Council for the Digital Society which aims at developing policies and plans to foster and promote digital transformation. Furthermore, an evaluation of the Egyptian websites' readiness demonstrates their ability to be informative with limited capacities to render real services to the public.

In conclusion, the rankings of Egypt in various international reports differ based on the selected indicators being used. However, on the supply side, reports show that Egypt might be lagging behind in its e-government program implementation in comparison to other Arab countries. On the demand side, the latest e-participation index issued by UNDESA in 2020 shows little progress in the digitally-supported participation in processes between the Egyptian government and the citizens. As this thesis focuses on the demand side of e-government adoption, the e-participation trends in Egypt are key to analyze how civic engagement and open, participatory governance is being promoted through the usage of ICT Technologies including the digital portal of Egypt.

# CHAPTER FIVE: RESEARCH METHODOLOGY

## 5.1 INTRODUCTION

The chapter begins by presenting the research methodology used for the purpose of this thesis, the research strategy, the procedures used for data preparation, the sampling of the research as well as analysis of the responses and descriptive data as per the filled in questionnaires.

## 5.2 MIXED METHOD APPROACH

Mixed-methods research refers to the use of both quantitative and qualitative methods in the process of a single study, data collection and data analysis. Scholars including Creswell and Plano Clark (2011) argue that using the two methods of research together fills in the data gaps and balances the limitations of each method. Comprehensiveness and increased confidence in findings are key benefits of the use of the mixed-methods approach. Consequently, this approach was used in this research context, combining both open and closed-ended questions in the research survey.

According to Ittner (2013), the qualitative method is more subjective concerning its features. It also uses analytical views to obtain the needed data which is required for human and public actions and supports researchers to understand processes and information. In this research, an open-ended question was integrated in the survey to give the participants the space to reflect on their experience and perspectives towards e-government. Moreover, integrating the qualitative approach was key as the topic of e-government adoption by citizens to listen to the voices of the actual users and how they perceive the e-government initiative.

Combining compound methods in this thesis was beneficial to test the factors by using a different approach to create the diversity in the primary data sources. As for employing the quantitative

method, using closed-ended questions in the survey enabled the use of minimal bias data, collection of objective results, exploration of frequency, and obtaining measurable and quantitative responses, in addition to the willingness of the sample to respond promptly, the researcher to easily compare responses and eliminate irrelevant answers.

Having said that, a convergent design was adopted for the purpose of this thesis where the researcher compiled both quantitative and qualitative data in parallel. Upon completion of this stage, the researcher compared the analysis to confirm the data and cross-validate while providing more confidence to the results and findings of the data. For example, in one research, both qualitative and quantitative findings can be interactively used to draw the final results of the research (Crabtree et al., 2005). In this regard, both data sources were collected in parallel of using the responses of the survey, analyzed the data separately, and finally, merged the results together in the findings and discussion chapter of this thesis.

## 5.3 RESEARCH STRATEGY AND DATA COLLECTION

The process of collecting data began when with the identification and selection of the topic and focus of the thesis. To obtain initial data related to the topic, the researcher focused on a wide range of sources that include studies revolving around e-government adoption and technology acceptance in developing countries. Moreover, papers and reports from national and international authors and scholars have been referred to. Following Johnson (2006), the stages of research were adopted as follows:

1. Identify research scope study      2. Identify research specific objectives

3. Select research method          4. Collect data

5. Order and analyze the data          6. Write up

This section presents the methods used to address the research questions. A description of the selected method, and the used research process conducted by the researcher was entailed in this section. The outcome of this study entails analysis of the determinants affecting citizens' acceptance of e-Government in Egypt. In this study, a mixed methods approach was selected for the purpose of data collection to measure and analyse e-government service adoption.

Aiming at measuring citizens' perspectives and acceptance to adopt the e-government portal, a questionnaire was designed and disseminated in an attempt to collect data that indicates the perceptions and impressions of citizens towards e-government. As advocated by Fink (2006), a wide range of communication methods can used to collect data from survey questionnaires including mail and internet surveys, as well as personally administered surveys (Fink, 2006).

## 5.4 SURVEY PROCESS AND ADMINISTRATION

The questionnaire was approved by the Internal Review Board (IRB) of the American University in Cairo in 2-month timeframe due of unclear questions and recommendations for improvement to be considered by the researcher to avoid misleading or confusion of the respondents. It was also essential to avoid long questionnaires as these are less attractive to respondents while the aim of the researcher was to increase respondent engagement. According to Brent (2011), respondents would abandon questionnaires that need more than 8 minutes to complete.

For the purpose of this study, it was quiet challenging to reach out to respondents using random contact information due to ethical consideration. To that end, the researcher relied on purposive sampling which is often used in order to collect data from a specific target group (Tashakkori and Teddlie, 2003). This technique is usually used in research for the identification of resourceful data collection using its effective nature of being less time consuming (Patton, 2002). It includes identification of potential respondents from a specific target group that is likely to be knowledgeable about the topic of investigation (Cresswell & Plano Clark, 2011). Furthermore, researchers opt for this technique when they are aware that their identified sample has the interest to participate in the survey and are willing to share experiences and responses (Bernard, 2002). In this regard, sampling through reaching out to acquaintances, and individuals from the researcher's network and circles was used.

The questionnaire was distributed among a sample of 650 people varying from public and private sector employees, students at the graduate and post-graduate levels, and other internet users in Egypt. The outreach and dissemination of questionnaires included potential respondents who tend to use Internet in their daily life and mainly reside in the capital (Cairo) and the second largest city in Egypt (Alexandria). The questionnaire participants were approached via email whereas 5 hard copies were filled in manually by the respondents. While the final sample included 442 responses, *after deducting the missing, extreme and outlier data*, the analysis of the research data was conducted based on their quantitative and qualitative input. The response rate achieved is fairly acceptable (68%). On reason for reaching this rate is the digital outreach method used as the majority of respondents were approached through the Internet.

The survey responses aimed at examining the level of responsiveness, level of acceptance and perceptions of the sample towards the digital transformation. The data collection started in January 2022 after the receipt of the Internal Review Board (IRB) Approval in December. The data collection process took place over 2 months. As for the data analysis, both quantitative and qualitative were analyzed over the period of 3-month starting April and concluding in July, 2022. In addition to the primary data collected for the research, surveys and cases studies conducted by international and local organizations were explored for further interpretation and data triangulation which enables the development of a holistic understanding of the research topic (Patton, 1999).

The questionnaire has two sections; 1- Demographic and general information module; 2- The subject matter reflecting the four main constructs being analyzed in the research; namely: Perceived Usefulness, Perceived Ease of Use, Peer Influence and Trust. The findings of the data presented below and the outcome of the descriptive analysis refer to the relationship between the variables and the constructs. In this regard, the findings of this research are consistent with the proposed conceptual framework proving the direct and positive relationship of the tested constructs in the hypothesis on the use e-government services by Egyptians.

This thesis examined the usage and adoption of e-government as an innovative and efficient endeavor in Egypt, while considering the cultural dimension of citizens' perception and its effect on the actual usage and adoption. According Alsajjan and Dennis (2010), the adoption of e-government services has a social aspect which influences people's decision to adopt or refuse the digital program which can also lead to its failure.

In this regard, the final version of the questionnaires was agreed upon by the researcher' supervisors and the Internal Review Board committee after being amended to improve the data collection process more efficient and interesting based on specific recommendations. Development of the question wording was an important milestone to the researcher where the sequences of questions and assurance of incorporating relevant and well-structured questions was key.

The questionnaire sheet which was distributed included 7 social-demographic questions, and 43 questions that are based on a 7-point scale. At the end of the questionnaire, one open-ended question was incorporated to receive feedback from respondents in their own words. The method used to distribute the questionnaire was based on digital dissemination where respondents answer the questionnaire electronically. However, five questionnaires were printed on A4 papers based on the personal preference of the respondents to fill in the questionnaire manually. In this regard, a respondent needed between 10 to 15 minutes to fill in the questionnaire. The five hard copies were distributed among identified internet users in the professional context of the researcher who showed interest to participate in the survey to reflect their experiences with the usage of e-government services.

The diversity of respondents was considered in terms of age, social and educational backgrounds, regardless if they used the e-government program or not. However, the questionnaire was addressed to Internet users. Furthermore, the questions were brief and drafted in a simple language in order to be easily communicated and interpreted by all the respondents. While both English and Arabic versions of the questionnaire were distributed among the sample, responses received were entirely in English.

Chomeya (2010) advocates that using questionnaires with Likert style scale is recommended when TAM model is adopted. The questionnaires were initially developed with the aim of measuring the effect of the variables on e-government usage and adoption.

The questionnaire was designed to incorporate the proposed variables including demographic characteristics as well as key constructs that are believed to be essential factors affecting the behavioral intention to adopt e-government by citizens.

Upon completing the questionnaire, the researcher cleaned the data on an excel sheet whereas 442 questionnaires were received. From the received quantitative and qualitative responses, the researcher was able to explore the level of e-government adoption among selected citizens who already used the e-government portal, and those who are non-users. The total number who finally participated was 442, *(208 outliers),* whereas 385 respondents were found to be adopters of e-government. The results of the demographic survey (general information section) as well as the online services survey are discussed below. The below section is also essential in order to understand the demographical background of the purposive sample and also to present the difference between users of e-government and non-users in terms of gender, age and educational background.

## 5.5 DATA ANALYSIS PROCESS

The process preceding the collection of data through the questionnaire, included first analyzing the quantitative data collected relying on the Cross-tabulation method which is a most common quantitative data analysis method. Usually, this method depends on drawing inferences between different data-sets in the research. It is also essential to arrange the data in proper order using an excel sheet for instance to structure the quantitative data into a specific format which will then be used to establish a pattern.

Descriptive statistics can be summarized into six different typologies namely; mean, median, mode, frequency, minimum and maximum values, as well as percentages.

Upon deciding on the measurement scale used to conclude descriptive statistics for the variable, the researcher may identify the best method to present data and analyze collected data. As for the qualitative analysis, the responses to the open-ended question of the survey were analyzed in parallel to the quantitative analysis. The questions focused on respondents' opinion about e-government services in general leaving space to voice any concern, reflection on experience or observation as a user.

## 5.6 DATA VALIDITY

In this research, the final questionnaire was translated into the Arabic language considering that it's the native language of Egyptians and some citizens might feel more comfortable responding in Arabic. Therefore, the researcher provided the questionnaire in both languages, English and Arabic, to enhance the process of the data collection. Since imprecise interpretation from English

to Arabic could lead to misunderstandings as well as miscommunication that should be avoided, the researchers should pay special attention to the accuracy of the terminologies used meaning and misunderstanding (Saunders et al*.,* 2003). This would ensure valid data collection. In order to ensure enhanced validity, the questionnaire was checked by two persons who are fluent in both languages.

## 5.7 SUMMARY

This chapter underlined the research methodology using a mixed-method approach for it was found to be the most suitable approach for the purpose of the thesis. Moreover, this chapter highlighted the process of data collection and survey administration explaining the distribution of 650 questionnaire sheets which included 7 social-demographic questions, 43 closed-ended questions using a 7-point scale while incorporating one open-ended question to enable the respondents to reflect on their experience of using the digital portal. While 208 questionnaires were identified as incomplete and outliers, 442 participants completed the forms showing that 385 respondents were actual adopters of e-government.

# CHAPTER SIX: FINDINGS AND DISCUSSION

## 6.1 INTRODUCTION

The variables examined in this research include gender, age, education, perceived usefulness and ease of use, social influence and trust. They are discussed and analysed in the following section based on the findings of the data collection used to examine citizens' acceptance of e-government.

## 6.2 DATA FINDINGS

This chapter presents the results of the conducted survey for the current study. The findings were analyzed based on the data received from both the quantitative and qualitative input of the respondents.

## 6.2.1 DEMOGRAPHIC CHARACTERISTICS

According to the questionnaire responses, males represent 203 out of 442 received questionnaires whereas 239 females responded to the questionnaire. Out of the 203 male respondents, the data shows that 187 male respondents are users of e-government representing 92%, in comparison to 198 out of 239 female respondents who are users of e-government representing 83%. This presents higher percentage of male users than female users of e-government in Egypt. One interpretation of this result can be explained from the fact that women still lag behind men in their use of digital technologies. According to the Digital Gender Gap Report 2022, the likelihood of women around the globe to use mobile phones is 7% with more than 15% less likelihood to use internet. However, the difference between both results is minimal and not strong enough to prove that Gender is one of the main factors affecting acceptance of e-government in Egypt.

**Table 2: Demographic Characteristics of Users and Non-Users**

|  |  | Users | | Non-Users | |
|---|---|---|---|---|---|
| **Variable** |  | **Frequency** | **Percentage** | **Frequency** | **Percentage** |
| Gender | Male | 187 | 49% | 15 | 27% |
|  | Female | 198 | 51% | 41 | 73% |
| Age | 18 - 22 | 85 | 22% | 13 | 23% |
|  | 23 - 45 | 254 | 66% | 33 | 59% |
|  | > 45 | 46 | 12% | 10 | 18% |

Source: Constructed by the researcher

Data collected in the questionnaire shows that there is a decrease of e-government use with increase of age whereas the majority of e-government adopters were aged between 23-45 representing 66%. Age groups that exceed 45 represent 12% while younger age groups between 18 and 23 represent 22%. According to UNICEF, Egypt's youth represent one third of the population who tend to be more technology savvy while senior age groups are less likely to adopt e-government due to their lack of awareness and interest in learning the use of new technological methods.

H1: *There is a negative relationship between Age and Perceived Usefulness and Behavior Intention and E-government actual use.*

The findings confirm hypothesis 1 as the lower the age group of the users found to be, the more they perceive e-government to be useful and thus, the higher the level of use would be.

## 6.2.2 EDUCATION

Data related to education reveals that out of the 442 respondents, 343 respondents are educated to Bachelor level representing 77%, which is considered the majority of the respondents, while 6% are educated to post-graduate degree followed by high school or lower education level of 74 respondents representing 17%.

The table below shows the correlation between the educational level of respondents and e-government adoption.

**Table 3: Classification of e-Government users by educational level**

| Education | < High school | Bachelor degree | Post-graduate studies | Total |
|---|---|---|---|---|
| **User/ Adopter** | 9 | 306 | 63 | 385 |
| **Percentage from total users** | 2% | 79.4% | 18% | 100% |
| **Percentage of users from same education category** | 36% | 89.2% | 94.5% | |
| **Non-User/ Non-Adopter** | 16 | 37 | 4 | 57 |
| **Total respondents** | 25 | 343 | 74 | 442 |

Figure 7: Respondents Educational Background Breakdown
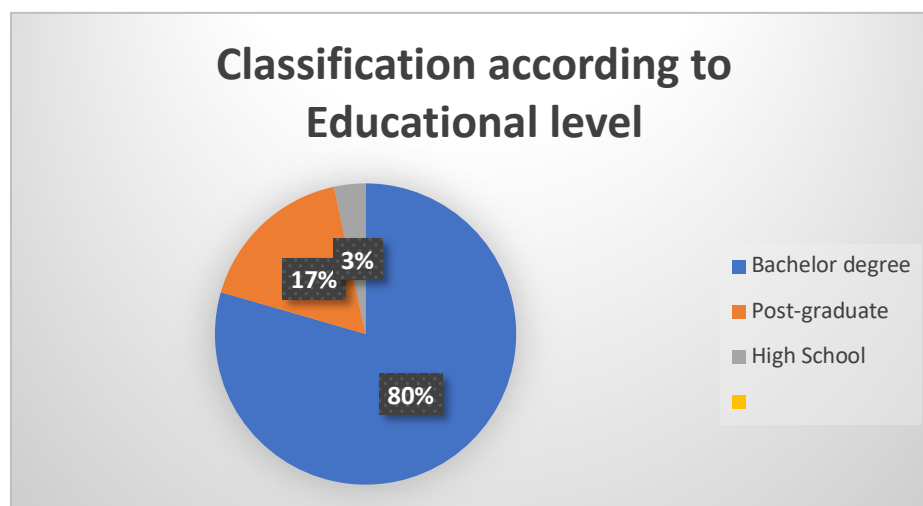


Source: Constructed by the researcher

Based on the data collected pertinent to the education background of the respondents, it is clear that there is an increase of e-government adoption with the increase of Education as 94.5% of respondents with post-graduate studies are e-government users, followed by 89.2% of the total graduate respondents, and finally 36% of the high school or lower education level used the e-government at least once.

## 6.2.3 PERCEIVED USEFULNESS

To the users, the degree to which the e-government is perceived to be of benefit and useful which would consequently influence their attitude and acceptance. If the e-government system is perceived to be useful, the users would have a positive attitude and intentions to its adoption. They might also find that the e-government system is very useful, as it would enhance the effectiveness and efficiency of civil services delivery. According to the responses under the Perceived Usefulness section of the questionnaires, 278 out of 385 (72%) of the users confirmed their agreement on the usefulness of the e-government portal as well as its importance in enabling equal access to information by all citizens being also an efficient mean of issuance of civil services that saves time and resources.

This result was based on the responses to thirteen questions under Perceived Usefulness than revolve around the following main ideas: a- easy and equal access to information; b- useful communication tool with the government; c- improved quality of services.

**Table 4: Perceived Usefulness of e-government Adoption among Users**

| | |
|---|---|
| Actual Users | 385 |
| Access to information | 312 |
| Useful communication tool | 233 |
| Improved quality of services | 289 |
| Mean | 278 |

Source: Constructed by the researcher

**Figure 8: Pillars of Perceived Usefulness of e-government among Users**
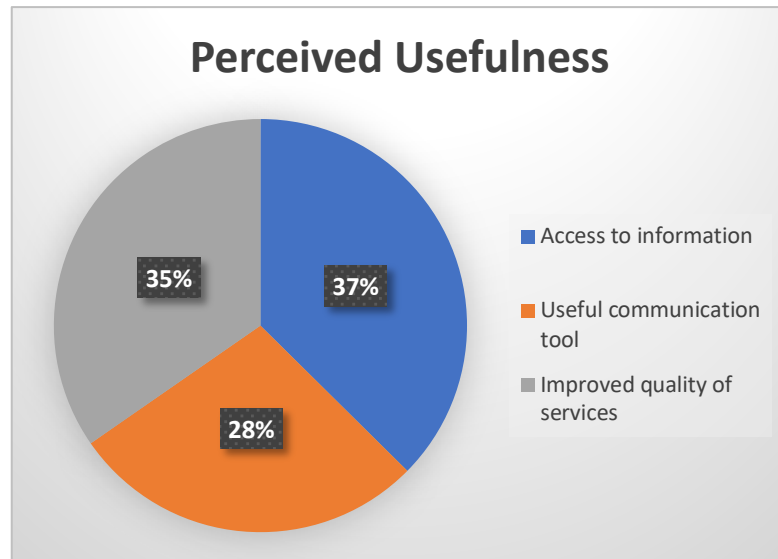


Source: Constructed by the researcher

## 6.2.4 PERCEIVED EASE OF USE

This section of the questionnaire gathered information about how user-friendly the digital portal and other governmental websites are believed to be by users. Responses to the questions revealed a mean of 299 out of 385 (77.6%) of users who find the e-government initiative of Egypt a program to entail a number of user-friendly platforms and websites with easy-to-use service delivery experience that require minimal effort. Having a deeper look at how each category in this section of the questionnaire is responded to, it is to conclude that 98% of the users possess the adequate technical skills needed to use e-government. This proves that the platform is not sophisticated and does not require high level of IT knowledge.

This results in a favorable attitude to using e-government, which can also be interpreted as a success by the government to design user-friendly portal. However, when analyzing the level of satisfaction of the users related to the portal design and online features including menu choices, only 54% of the users were found to be satisfied.

In comparison to the other elements assessed under the same section, there seems to be a room for improvement with regards to the overall design of the platform to encourage current users to revisit the portal and continue obtaining online services, as well as to attract more users of the Egyptian population to adopt e-government. Finally, 80% of the users confirmed the availability of the necessary online devices and facilities that are needed to opt for the e-government services which could be computers, internet connection, mobile devices or laptops to perform the online actions on the portal.

**Table 5: Perceived Ease of Use of e-government among all Users and Non-Users**

| Variable | Users 385 | Non-Users 57 |
|---|---|---|
| **Perceived Ease of Use** | 299 | 0 |
|  | 78% | 0% |

Source: Constructed by the researcher

**Table 6: Perceived Ease of Use of e-government of Users**

| Actual Users | 385 | |
|---|---|---|
| Possess adequate IT skills to use the platform | 379 | 98% |
| Satisfied with the platform design and features | 209 | 54% |
| Own necessary online devices and facilities (PC, internet, mobile, laptop, etc..) needed for the use | 309 | 80% |
| Mean | 299 | |

Source: Constructed by the researcher

*H2: There is a positive relationship between Perceived Ease of Use and Attitude towards e-government and e-government actual use.*

This finding shows the direct and positive relationship between Perceived Ease of Use and Attitude towards e-government and e-government actual use tested in hypothesis 2 as the more the users perceive the e-government platform as an easy and user-friendly tool, the more positive their attitude will be towards using and adopting e-government.

## 6.2.5 SOCIAL INFLUENCE

This section focuses on assessing the level of influence that the circle of acquaintances of a citizen has on their acceptance to e-government. The findings reveal that respondents are significantly affected by the decision of their peers to use e-government whereas the more their appeal and interest in the use of e-government would be the more friends and acquaintances in their circles use it.

**Table 7: Social Influence for Users and Non-Users of e-government**

| Variable | Frequency | Percent |
|---|---|---|
| Social Influence for Users | 337 | 88% |
| Social Influence for Non-Users | 48 | 84% |

Source: Constructed by the researcher

As presented in the results in Table 7, both users and non-users of e-government services agree that social influence is a factor affecting one's intention to adopt e-government. 322 out of 385 users responded that they opted for the vaccine registration through the Ministry of Health portal as they were obliged to. However, they would also feel encouraged to do so as it had no financial implications noting that no financial payments or transactions were involved according to the feedback provided in the open-ended question in the survey.

In addition, statements in the open-ended question revealed that users feel motivated to at least try the e-government portal to share their experience when the topic is brought up during family and friends' gatherings. Last but not least, almost all users confirmed that the adoption of e-government would fit into their lifestyles where the use of technology is part of their daily lives and a primary means of communication.

**Table 8: Social Influence and e-government users**

| Actual Users | 385 | |
|---|---|---|
| Use of Obligatory services (eg. Vaccine registration) | 322 | 84% |
| Agree to Peer Influence | 337 | 88% |
| Digital portal fits into lifestyle | 379 | 98% |

Source: Constructed by the researcher

*H4: There is a positive relationship between Social Influence and Attitude to use e-government services and e-government actual use.*

Hypothesis four entailed the examination of the relationship between Social Influence and Attitude to use e-government services, and thus, the actual use of e-government. Findings show the positive correlation between these variables for the more the users are affected by their peers' adoption of e-government, the more they will be willing to actually use it.

## 6.2.6 TRUST IN E-GOVERNMENT

Being an important element affecting governments' digital transformation, trust in e-government refers to the societal confidence of the reliability, accountability and safety towards a governmental technological system. In the questionnaire, this section focuses on the integration of data coming from different governmental authorities, the safely feeling in financial and non-financial transactions with the portal, the privacy and security measures of the government associated with e-government, sharing personal data including financial information as well as the facilitated online payments of services.

This factor has found to be of high significance according to the questionnaire's responses. Responses to the different questions of this sections varies slightly. However, the two most disappointing findings relate to the trust in completing financial transactions on the e-government portal as well as the confidence in the privacy and security measures embedded by the government. Both results show that only 18% of the users actually feel trust towards the government which is alarming. Furthermore, only 22% of the users trust the internal coordination and integration of data among the different governmental bodies and authorities. Finally, the findings show that 51% of the users trust to complete non-financial transactions on the online platform such as the registration for of the Covid-19 vaccine.

**Table 9: Percentage of users and non-users trusting government**

|  | Trust | No Trust |
|---|---|---|
| **User (385)** | 76 | 309 |
|  | 20% | 80% |
| **Non User (57)** | 7 | 50 |
|  | 12% | 88% |

Source: Constructed by the researcher

**Table 10: Pillars of Trust among Users**

| | | |
|---|---|---|
| Actual users | 385 | |
| Trust in internal coordination and integration | 83 | 22% |
| Trust in completing financial transactions | 71 | 18% |
| Trust in completing non-financial transactions (eg. Vaccine) | 197 | 51% |
| Trust in the privacy and security measures of government | 69 | 18% |

Source: Constructed by the researcher

**Figure 9: Pillars of trust in Government of Actual Users**
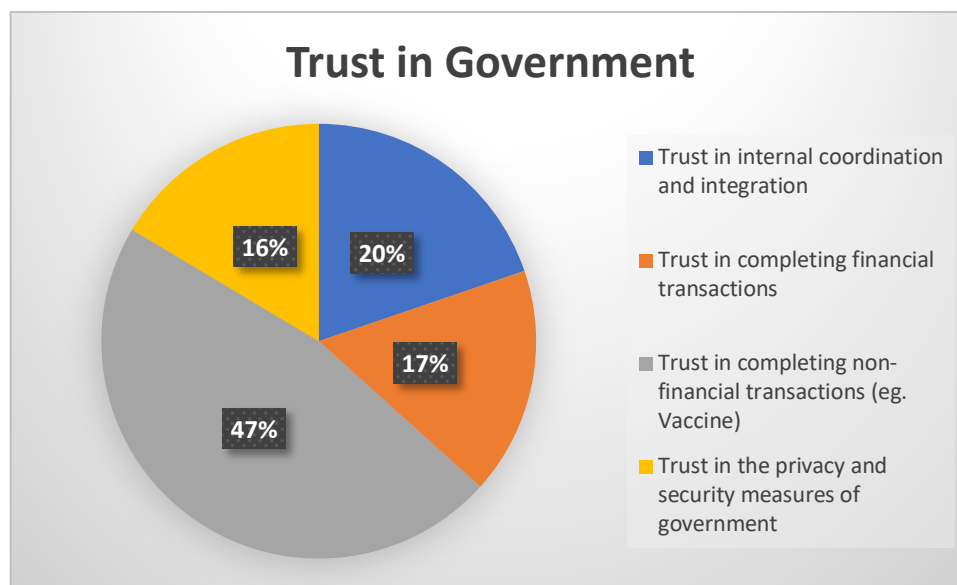


Source: Constructed by the researcher

*H3: There is a positive relationship between Trust in Government and Perceived Security and Behavior Intention and e-government actual use.*

The finding reveals the direct and positive relationship between Trust in Government and Perceived Security, and thus behavior intention and actual use of e-government. The more trust the users have in the government, and the more confident and secure they will feel towards the public administration, the more their intention would be towards adopting e-government.

**6.3 DISCUSSION**

In this study, a TAM-based theoretical model was tested with the following constructs: Perceived usefulness, Perceived ease of use, Peer influence and trust in government. Similar to previous researches in the same domain, this study provides evidence of the significant effects of the variables of TAM model on the adoption of e-government services.

However, the analysis focused on the behavioral aspect moderating the citizens' direction towards e-government. This section hence interprets and discusses the data to enable the policy makers to better make informed decisions related to the acceleration of the digital transformation program. This section, therefore, discusses three key perspectives of e-government users based on both the quantitative and qualitative analysis. In this regard, respondent quotations were used to provide invaluable perspectives and enhance the credibility of the analysis using the own words of the respondents.

## E-GOVERNMENT ADOPTION AND THE TRUST HURDLE

Trust was found to be a major concern by the users of the Egyptian digital portal according to the questionnaire. Raising trust is key to the achievement of the digital transformation outcomes. After more than a decade from the 25th of January revolution, the government is still working on developing trust between its citizens along with a democratic environment. Until this moment, citizens would still question the transparency and motives of the government with any announcement of news or enforcement of new policies. The need to finally ensure good government and accountability would lead to political trust. However, the government still encounters several national securities, political and economic challenges that makes the whole condition more complex.

The fact that Egypt still has poor rankings on global indices pertinent to good governance and transparency makes Egyptians less likely to trust the government. Having said that, Egypt scored 33 points out of 100 on the 2021 Corruption Perceptions Index reported by Transparency International. (Transparency International, 2021).

Furthermore, Egypt is ranked 117 out of 180 countries when assessing corruption levels, according to the 2021 Corruption Perceptions Index reported by Transparency International (2021). On the one hand, corruption is a main factor that affects the confidence of citizens in their government negatively. On the other hand, transparency and integrity especially in the public administration sector contribute significantly to the increased mutual trust. Therefore, combating corruption and enhanced transparency are essential to achieve an improved quality of public services delivery, according to the Organization for Economic Co-operation and Development (OECD). It is, therefore, essential to understand the connection between corruption and the lack of trust and how the latter affects citizens' acceptance towards the government.

- "e-government is still run by the same civil servants who were previously running the traditional public sector that was known for its corruption. What's the guarantee that this system is our savior now?" (*Respondent 1.*)

In real terms, e-government has been used by a number of international public agencies as an enabling tool to assist them in achieving its expected goals. Some governments have achieved a progressed position when they started linking their public sector reform with e-government strategies. Needless to say, e-government cannot be the only tool to combat corruption.

Nevertheless, it should be coupled with specific indicators that are customized based on contextual analysis aiming at increasing transparency, reducing administrative corruption and improving service delivery and empowerment. This will also enable citizens to comprehend the government process and procedures, which will eventually lead to enhanced trust towards the government. With respect to this, The United Nations (UN) conducts an e-government survey to assess e-government progress within 193 United Nations Member States. An assessment of how the introduction of digital platforms in the public sector as a tool to combat corruption was conducted using corruption perception index (CPI). The index concludes that the proper establishment of an effective online service, diverse governments positively combated corruption and builds more transparent government. The degree of participation was recorded to have a direct impact on controlling corruption especially in non –OECD countries lacking the basis of transparent government (Eunhee.L, 2017). In this regard, the implementation of a fully-fledged e-government program might be an efficient tool on the long-term that needs significant investment in numerous sectors to enable its adoption.

According to the world bank, the proper formulation of e-government projects is important to its success where fostering the well-being and citizens' satisfaction is the main purpose.

- "When issuing my travel movement certificate on the portal, I failed to find a track status option on the menu. After paying the fees online, I physically visited the civil affairs authority in Abbaseya to request the certificate again due to the lack of trust in the portal. I might as well wait forever to receive my certificate." (*Respondent 2.*)

Additionally, Egypt lacks the enforcement of a comprehensive e-signature legislation which is considered a main legal challenge for the successful implementation of e-government resulting also in the failure of other electronic services in Egypt pertinent to the administration of taxes which require signature.

Another important aspect when assessing citizens' perceptions on e-government is the lack of trust of the government. This can form a threat to e-government for obtaining online public services requires the provision of personal information as well as online payment methods to complete the transactions for the services to be rendered. In this regard, the lack of trust might prevent citizens from revealing such information due to security concerns.

> - "Why would I take the risk of paying online and sharing my bank details? There is always a workaround in the public administration sector here". *(Respondent 3)*

In this regard, the continuous development of the digital transformation shall be recognized as comprehensive mean that will combat corruption, reduces administrative and operational bureaucracy and enhances services delivery to citizens. It is to mention that e-government formulation in Egypt should always be linked to the administrative reforms with the aim of promoting economic development. This administrative reform will lead to less centralization and more efficient management and then economic development (Doaa M. Ayman & Riem Abdel – Azim, 2016).

In addition, the voluntary and, *non-financial,* usage of e-government services often mediate the mutual trust between citizens and the government in early stages of e-government implementation.

- "The Vaccine registration proved to be a successful pilot project for online services. But undoubtedly, services that include online financial transactions will form a challenge due to lack of trust in e-government". *(Respondent 4.)*

## <u>LEAVING NO ONE BEHIND</u>

Perceived Usefulness and ease of use have revealed as significant factors affecting citizens' attitude to adopt e-government services. The perceived benefits that would result from citizens use is the primary motive for them to accept the use of e-government services for the experience with obtaining public services will be improved by using technology. The relevant findings are consistent with the TAM model where an examination of the effect of perceived usefulness and ease of use on attitude is analyzed (Davis, 1989).

While the findings confirm that current users are satisfied with the e-government platform, they also reported that the overall design of the portal needs enhancement with regards to its features and menu options. Improvements in the portal design along with the compatible infrastructure will ensure the increase in number of users.

- "The website is user-friendly as long as you are using a laptop or a desktop. The application has to be uploaded on the mobile phone to be able to complete the transaction which is not very convenient". *(Respondent 4.)*

It is also to mention that the sample used in this thesis reside in Cairo and Alexandria where the ICT infrastructure is considered satisfactory. However, the government shall ensure that citizens in rural areas of Egypt also have the proper access to the system which might result in further ICT infrastructural investments.

> "…Not sure if the digital initiatives target all Egyptians. We really have many poor people with no access to basic infrastructure, and access to online public services is a luxury they do not want... or even need". *(Respondent 6.)*

For a country like Egypt where 29.7% of the population live in extreme poverty, according to the Central Agency for Public Mobilization and Statistics of Egypt (CAPMAS 2019/2020), the decision to make this financial investment to adopt a centralized compatible nation-wide system might not be efficient (Helmy, H. E, 2019).  Last but not least, to ensure the ultimate equality pertinent to public services delivery, the government shall at a later stage consider the availability of online services for people with disabilities. All citizens of the country shall be able to have equal access to the public services.

**<u>INFLUENCE OF PEER NETWORKS</u>**

The findings of the questionnaire reveal that respondents are significantly affected by the choice of their peers to adopt e-government as they find it interesting to share experiences related to the use of a new technology. This is an example of how social networks enforce behavior. During the pandemic, most of the Egyptians felt obliged to register to the Ministry of Health portal to request the vaccine. People on the streets were sharing their experiences with this new method while feeling relevant to the "hot topic" that citizens, media and government are engaged with.

- "I was provoked by the importance of coping with my colleagues at work to register for the vaccine and we challenged each other who will get the vaccine appointment first". *(Respondent 5.)*

The peer pressure and being influenced by the network and their direction and preferences proved to affect citizens' intention to use of e-government. The findings reveal that the word of mouth contributes to shaping citizens' perception towards the usage of e-government, especially when e-government is perceived as an innovation. In that sense, citizens might feel curious to at least try it once to get an idea of how this newly introduced tool runs. Sharing experiences together on the usefulness, ease of use and trustworthiness of e-government services, the word of mouth affects their perceptions and leads to their behavioral intention on whether to or not to adopt e-government.

## 6.4 ETHICAL CONSIDERATIONS

To develop this proposal into a thesis, the researcher obtained the necessary approvals from the Internal Review Board of the American University in Cairo (AUC). The participants of the survey were selected to contribute to the knowledge shared in this research and they were informed that the findings of the questionnaire will be kept anonymous and confidential. Moreover, the researcher assured to the participants that taking part in the survey is completely voluntarily and were briefed about the nature and purpose of the study. The questionnaire included a cover letter stating the title of the research, relevant contact details of the researchers as well as a brief introduction to the topic of the study.

## 6.6 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Limitations of this research would include the scarce literature on citizens' acceptance of e-government especially in Egypt for the whole digital transformation program is relatively young and new. Furthermore, it is to mention that this research represents a specific timeframe, and does not reflect if and how the citizen's attitude and behavior may change in the future. This research also targeted people who tend to use technology in their daily life who mainly reside in the capital (Cairo) and the second largest city in Egypt (Alexandria). Hence, it might be essential to conduct a study with illiterate citizens, as well as to expand the geographical coverage of the survey, to ensure that voices of all citizens about e-government adoption are heard. Last but not least, this research focused on obtaining respondents' perceptions of the main digital portal of Egypt rather than a specific ministry's website.

**CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS**

Over the past decades, countries all over the globe have been trying to replace the existing paper-based public administration system with e-government which refers to the adoption of Web-based Internet applications that enable citizens to access information and get governmental services delivered. Developing countries, in particular, have been exerting considerable effort to improve the communication and technology sectors which is a vital step and a main contributing driver to the overall economic performance and development (McBride & Stahl 2009). How these countries are progressing depends heavily on their resources as well as the complexity of planning and implementation. Therefore, most technological innovations and successful adoption of e-government have taken place in developed countries.

While Egypt has strongly invested in the development and acceleration of its e-government portal, the acceptance and success of e-government is still subject to the demand side, namely citizens acceptance to use platform in order to render the public services. Thus, the main objective of this research is to gain a better understanding on the factors affecting citizens' use of technology using TAM model. This research also aims at supporting public officials to make informed decisions when implementing the digital transformation initiative.

As a starter, it is essential for the Egyptian government to ensure that its digital transformation endeavor offers a multitude of opportunities across different sectors that can benefit Egyptians, by enhancing the public and private sectors. It is also vital that the government resumes what it started in 2001 and ensures the necessary policies are in place to realize the full potentials of digital transformation in general, and in the public administration domain in particular.

**Recommendations**

### Trust in Government and Technology

In alignment with the new political direction of the Egyptian government for developing socio-political and economic administrative reform programs, it is essential to prioritize the promotion of mutual trust between the government and citizens. One recommendation to do so is to establish a comprehensive framework which includes networking, operational and legislative standards that promote trust in the governmental program while putting citizens' safety and security at the top of the digitalization agenda. In other words, the government shall realize the crucial role of trust in the adoption of e-government in Egypt. Hence, the government shall, take the necessary measures to enhance its transparency levels, communicating the governments visions clearly pertinent to the national initiatives and their expected outcomes, as well as the development of a secure e-signature tool in order to fully utilize the benefits of E -governments and to accelerate the process of documents submission without the need to physically visit the ministry or the institute for documents completion. Furthermore, the government shall design and execute awareness programs. These shall focus on promoting the benefits of using the digital portal and increase familiarity of the citizens with the ICT initiatives addressed to the public to improve their satisfaction.

### Content Development, Maintenance and Integration

Furthermore, the government shall consider having a compatible and well-integrated version of its e-government platform with different electronic devices to enhance facilitated usage of these services. The studies discussed in the contextual background of this thesis show that the penetration rate for mobile technology in Egypt is higher than the rate related to the use of the traditional computer devices.

This means that the government shall ensure the availability of its public services delivery using mobile platforms. Furthermore, the government should focus on the content development while conducting regular reviews and monitoring of the digital platform. The aim of this review is to assess the smooth operations and accessibility of the platform and its updated content.

Last but not least, the Egyptian government should ensure that not only the digital platform but also all ministerial websites are integrated and user-friendly with an attractive and unified design. Moreover, the government shall ensure that all links and tabs placed on the different websites are properly working and updated. Finally, these links should not further direct the users to deleted or outdated information and links.

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**E-Government in Egypt: Attitudes and Perceptions Survey**

This survey is carried out with the overall objective to measure the acceptance of Egyptian citizens towards the adoption of e-government services. Your contribution is highly appreciated and critical to the success of this research. All information provided will remain confidential and only the researcher has access to completed surveys. If you have any inquiries or comments, please don't hesitate to contact me by email: rana.khamis@aucegypt.edu

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## Section One: General Information

**Demographic Survey**
1. What is your gender? ___ Male ___ Female
2. What is your age? ___ years
3. Highest degree you have earned
__Associate degree, some college or no college
__Bachelor
__Post-graduate Studies
__Other
4. How long have you been using the Internet?
5. How often do you use the Internet?
Daily    Two or three times a week        Once a week     Once a month    Rarely
6. How would you rate your proficiency with the Internet?
Poor    Fair    Good    Very Good        Excellent
7. For what purposes do you use the Internet?
Email   Information search        Shopping        Entertainment   Other:

## Section Two: E-Government and online services
8. Have you ever used any e-Government services on the Egyptian digital portal, such as National ID renewal?
☐ Yes           ☐ No

## A- Perceived Usefulness
9. E-Government portal would enable me to access information and services when I need them on 24/7 basis.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

10. The portal provides the precise information that I need

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

11. Online services would make my communication with the government difficult
Strongly disagree 1 2 3 4 5 6 7 Strongly agree


12. The portal would improve the quality of traditional services provided

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

13. I would find online services useful as there are a wide range of information and services available on e-government website

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

14. The e-government portal would give all citizens equal chances to carry out their services with government.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

15. The frequency I use with the portal is high

Strongly disagree 1 2 3 4 5 6 7 Strongly agree


16. The portal facilitates issuance of civil services

Strongly disagree 1 2 3 4 5 6 7 Strongly agree


17. The portal saves me time
Strongly disagree 1 2 3 4 5 6 7 Strongly agree


18. The portal provides better way of control
Strongly disagree 1 2 3 4 5 6 7 Strongly agree

19. I would find it easier to talk face to face with someone rather than use online services

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

20. I have enough Internet experience to use online services

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

21. I would find it difficult to use online services because of lack of knowledge about them

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

**B- Perceived Ease of Use**

22. The portal is easy to use

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

23. I feel qualified enough to use the portal

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

24. I would find it difficult to become skillful in using online services.

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

25. The portal provides up to date information

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

26. The portal presents output data in representative and suitable way

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

27. The portal crashed several times

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

28. I need more practice to efficiently use the portal

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

29. I have used the portal and I am satisfied with the services

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

30. The portal has met my expectations

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

31. I recommend using the portal

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

32. I have the resources necessary to use online services, such as PC, Internet, smart phone… etc

  Strongly disagree 1 2 3 4 5 6 7 Strongly agree

33. The font size was large enough for me to use the application easily.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

34. The application prevented me from making errors whenever possible

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

35. Menu choices and function keys are logical

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

36. The help function was visible and helpful for me to complete tasks.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

37. There were enough function keys (menu and icons) to support functionality, but not so many that scanning and finding are difficult.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

38. There were too many steps to accomplish my task.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree


## C- Section Three: Peer Influence

39. I would only use online services if I am obliged to (Vaccination registration)

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

40. I would be prepared to use online services even if no one else I knew was using them.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

41. I would use the online services if my friends used them.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

42. Using online services would fit into my life style
Strongly disagree 1 2 3 4 5 6 7 Strongly agree


## D- Trust in Government

43. There is obvious and complete integration of data coming from different governmental authorities

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

44. I feel safe in my non-financial transactions with the portal

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

45. I feel safe in my financial transactions with the portal

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

46. I trust the privacy and security measures of the government associated with the portal

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

47. I would hesitate to provide my personal information on the portal.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

48. I would hesitate to provide my financial information on the portal.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

49. I trust the payment methods introduced by the government to facilitate online payments of services such as Aman, Fawry, etc…

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

50. I would like to use this application in the future.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

51. Generally, what is your opinion about e-Government services?