Factors Affecting Electronic Government Adoption and Acceptance in Developing Countries

Course Name:	Seminar in global management and competitive intelligence
Course Code:	MGT 654
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1. Abstract

This research paper in international Master of Business Administration aim to undertake most affected factors which influencing the adoption and acceptance of electronic government (e-government) from customers side, especially in developing countries which faces different difficulties in the preparation of infrastructure needed for electronic government, and implementation and even in the participation in the services from users. Accordingly, the appropriate adoption and acceptance models used for these electronic government services. Finally, and based reviewed literature, we will provide a recommendation for one of Egyptian e-government service called eMisr.

Keywords E-government adoption. Adoption Models. Developing countries.

2. Methodology

Review and analysis for around thirty-eight published papers in last period of time about the electronic government adoption, and information technology service adoption models and theories to reach to the most determines that influence the electronic government adoption and electronic government service acceptance.

3. Introduction

The Information and communication technologies, and the internet technology introduced transformation for the traditional concept of communication and interaction between individuals and businesses around the world, as it provides a new way of communication, interaction and access to information (Urbina & Abe, 2017). One of the applications of the new technologies in information and communication is e-government or online government which should provide better services to customers with high quality and easy access (i.e. effective and efficient service) and be ensuring accountability and transparency-government is not only application but it's socio-technical system depends on technology, customers or peoples which will use services, process, and resources such as technological infrastructure of communication and information (Napitupulu, 2017). The researches published regarding the electronic government adoption are divided to provider side which studies factors that affecting on providing or supplying the services (e.g. technological infrastructure for communication and information system, current status of e-government projects, and financial capability to develop e-government) and users side perspective which study essential factors for government customers (Adolph, D., & Bortier, 2017). User's acceptance and adoption is essential to consider electronic government or online service successfully implemented, so various theories and models are utilized to understand users' acceptance, adoption, and intention toward using information technologies and information systems (i.e. technology acceptance model, theory of diffusion of innovation, theory of reasoned action, theory of planned behavior, motivational model, model of PC utilization, social cognitive theory and unified theory of acceptance and use of technology) (Kumar, Sachan, & Mukherjee, 2018). Researchers have been combined those approaches and models to reach to factors and the relations found between these mentioned factors that may have impact on the user's intention or

adoption of online and electronic government services, this combination between approaches and models reduced any limitation found on standalone models (Kumar, Sachan, & Mukherjee, 2018).

4. Literature review for keywords

In this section, review from literature for electronic government meaning and its benefit for the public, e-government services and its categories. Finally, review for adoption models used in information technology system to be able to understand virus adoption models developed by researchers.

4.1 E-government

From literature, electronic government has many definitions which lead to the same idea (Bannister & Connolly, 2012). Using technologies communication method in operation, public service delivery, and administration of governmental functions is called electronic government or the term e-government (Urbina & Abe, 2017). Every government should provide a lot of services and carry out the responsibilities to deliver and provide more valuable service to public users, and when these services are provided electronically or through website/online base can be considered as an electronic government services (Adolph et al., 2017). E-government advantages and benefits are many as it can reduce cost and time for services, improve efficiency of the services, improve the quality of services which provided by government to its client, enhance flexibility to access governmental information, and finally increasing the transparency and trust between government and clients (Al Kilani & Kobziev, 2017). The benefits of electronic government can be defined as

corruption limitation which increases transparency and quality of service, around the clock service availability, reducing for paper and administration workloads, no transportation and no time to waste between governmental agencies and according to all these advantages the process for any service will be faster (Zawaideh, 2017). The benefit from e-government can be impacted due to the service quality represented on factor like information quality factor which found on the qualitative study in Kuwait as a major factor to get more valuable e-government benefit from e-government (Alenezi, Tarhini, & Masa'deh, 2015).

Researchers identify a lot of definition for electronic government according to the perspective of researcher, from technological perspective it's the using of the new technologies, world wide web, and internet as medium to reach to more better government and to provide services and information to public (Zaied, Ali, & El-Ghareeb, 2017). Moreover, management perspective consider it as using information and communication technology to enhance government effectiveness, efficiency, accountability, and transparency, another extra more definition from political perspective for electronic government can be found in democracy to be electronic democracy and administration to be e-administration as it also uses information & communication technologies to achieve balanced government (Zaied, Ali, & El-Ghareeb, 2017).

There is big difference between terms electronic government and electronic governance, electronic government term is used within government interactions and connections between its clients, and when using recent technologies in communication and information systems in these interactions it called e-government. Simply electronic government's focus is on constituencies and stakeholders outside the organization, whether it is the government or public sector at the city, county, state,

national, or international levels, but e-governance focuses on administration and management within an organization, whether it is public or private, large or small (Gupta, Singh, & Bhaskar, 2016). electronic or online government development can be carried out on different side, organizational readiness, technologies in communication and information systems readiness, and other factors externally like technological and sociocultural factors (Kelidbari & Alizadeh, 2017). With the increase of technology, new model of electronic government called smart e-government appears as government cooperate more to enhance relationship between both sectors in business (i.e. private and public), provide administration for governmental service to citizens with smart way in order to meet their expectation, and finally government which is transparent enough to gain trust and respected participation from users (Myeong, Kwon, & Seo, 2014).

Governments should ensure design on information and transactional service in the website deploying phase to have factors such as accuracy (i.e. ensure that users are following the correct procedures and policies), easy to be used, completeness (i.e. ensure information and websites content are ready to allow citizens to complete certain service or task), customization (i.e. to know individuals usual used data), and convenience (i.e. available around the day) as it found very important and can help in increasing transparency and trust in online government, and simply this can be achieved in solution phase when contracting with vendor which will deploy this website or electronic solution (Venkatesh, Thong, Chan, & Hu, 2016).

4.2 E-government services

Different types for electronic government service are found, according to the service users' perspective, as the electronic government to government service, electronic government services which provided to citizens, and electronic government services which provide to business entities (Adolph et al., 2017).

4.2.1 Government to government (G2G) service:

This type of electronic government service can be presented as the correspondence, collaborations and exchanges between various levels and areas of government utilizing data and correspondence advancements to improve the productivity and adequacy of government segments, and furthermore this sort of ought to be in charge of permitting all the administration divisions cooperating productively and viable to give better administrations with high quality to the end users represented on citizens or businesses (Nulhusna, Sandhyaduhita, Hidayanto, & Phusavat, 2017; Al Kilani & Kobziev, 2017; Siddiquee, 2016).

4.2.2 Government to citizen (G2C) service:

Government to civil public service is the main target of developing electronic government, it is mainly needed to provide citizens the ability to get information about government, paying facilities invoices and any other administration service government to provide to its citizens to be any time and without any geographic barriers, also this type of service to citizens have role in enhancing connections between governments and its citizens (Al Kilani & Kobziev, 2017; Nulhusna, Sandhyaduhita, Hidayanto, & Phusavat, 2017; Siddiquee, 2016).

4.2.3 Government to business (G2B) service:

Government to business service can be described as the service which provided from government to business users to enable communication regarding polices, taxes payment, regulations of government, investments forums and needed permits. this service should be provided on the level of maturity which can reflect good image about government for business users (Al Kilani & Kobziev, 2017; Siddiquee, 2016).

Next table shows a lot of e-government service categories.

Table 1 electronic government services categories.

Types	Definition
Government-to-Citizen (G2C)	It is an e-government service, from government to citizen in the form of offering valuable information and know-how's.
Citizen-to-Government (C2G)	It is an e-government service, offered for payment of bills and other valuable feedback from the citizen to government.
Government-to-Business (G2B)	It is an e-government service providing transactions and procurement facilities for government purchases and call for tenders.
Business -to-Government (B2G)	It is an e-government service providing communication, collaboration, transactions and procurement of goods and services for business initiatives.
Government-to-Employee (G2E)	It is an e-government initiative that will facilitate the management of the civil service and internal communication with governmental employees to encourage paperless office.
Government-to-Government (G2G)	It is an e-government initiative to provide the Government's departments or agencies cooperation and communication online. It includes internal exchange of information and commodities.
Government-to-Nonprofit (G2N)	It is an e-government initiative that provides information and communication from government to nonprofit organizations, political parties and social organizations, Legislature, etc.
Nonprofit-to-Government (N2G)	It is an e-government initiative that enable exchange of information and communication from non-profit organization to government organizations, political parties and social organizations, Legislature, etc.

Source: Zaied, A. N., Ali, A. H., & El-Ghareeb, H. A. (2017, October). E-government adoption in Egypt: Analysis, challenges and prospects. International journal of engineering trends and technology (IJETT), 52(2), 70-79. Page 73.

4.3 Adoption Models

This section is reviewing the acceptance and adoption models used in information technology and extensions introduced to these acceptance and adoption models to explore, understand, and find the best way of adoption.

The term adoption of technology can be defined as the moment when users decided to select technology in their requirements, which will lead to the stage of diffusion (Sharma & Mishra, 2014). The adoption can be carried out from two prospective, from normal user's perspective or organizational perspective, regarding the adoption of normal users it is very important as it leads to global diffusion of technology (Sharma & Mishra, 2014).Information technology systems adoption and acceptance model's studies aim to understand the independent variables that explain the user's behavior when using technology (Kumar, Sachan, & Mukherjee, 2018). (Gupta, Singh, & Bhaskar, 2016) in research consolidated main determinates of electronic government adoption which defined as the frequency of using electronic government services, willingness, intention, and involving in electronic government connections (Gupta, Singh, & Bhaskar, 2016). Definition of electronic government adoption to be user's receiving and providing data and requesting governmental services. The researches published regarding the adoption topic are increasing starting from 2007 to be sixty-six research at 2015, which can be due to increase in the technology level in last decades (Rad, Nilashi, & Dahlan, 2018).

(Al Kilani & Kobziev, 2017) in literature review research provided a comprehensive literature review regarding all adoption theories and model used in information technologies but listed below are the most commonly used models.

4.3.1 Technology acceptance model (TAM):

It is generally utilized in technologies adoption due to its simplicity (Sharma & Mishra, 2014).As this model describes the nature of belief, attitude, intention, behavior and their reference with the adoption of information technologies, and it found from psychology that estimates behavioral intention based on attitudes and subjective norms (Rad, Nilashi, & Dahlan, 2018).Davis at nineteen eighty-nine developed this model which used for analyzing the behavior of individuals, especially through the application of different kinds of information technologies and systems (Sharma & Mishra, 2014) (Zawaideh, 2017).Technology acceptance model assumes two constructs that influence the intention of users to select using the electronic version of service and accept it, these constructs are defined as ease of use and perceived usefulness (Rad, Nilashi, & Dahlan, 2018). Technology acceptance model did not explore the external factors that may influence or impact the perceived usefulness which is user believes on performance enhancement after using certain system or service to achieve task, and perceived ease of use which is user believes that new service or system will be totally less efforts, so it extended to TAM2 at 2003 developed by Venkatesh to add image, subjective norms which is the User's perception that his/her relatives will perform social pressure, after using the service or system, output quality, perceived enhancement, result demonstrability, and job relevance in addition to two moderators, voluntariness and experience (Rad, Nilashi, & Dahlan, 2018; Bwalya, 2009; Zawaideh, 2017). TAM 3 is the latest version of technology acceptance model, which added some new constructs like emotional variables with variables which

added to the extended version of technology acceptance model which are perceived usefulness, subjective norm, and perceived enhancement (Rad, Nilashi, & Dahlan, 2018).

4.3.2 Diffusion of innovations (DOI):

Diffusion of the innovations theory which was proposed by Rogers at 1995 assured that the main factors that influence on the diffusion of technology can be considered as five (i.e. observability, trialability, complexity, relative advantage, and compatibility) which are characteristics of technology itself and namely are (Rad, Nilashi, & Dahlan, 2018). Diffusion of the innovations theory proposed sequence have five elements which are knowledge, persuasion, decision, implementation, and configuration (Sharma & Mishra, 2014).

4.3.3 DeLone and McLean information systems success model:

This model success to be used many times to measure information technology system success in applications such as electronic government, and electronic commerce, this model assesses the success from different sides (Rad, Nilashi, & Dahlan, 2018). The information dimension which is the conclusion of received message on the receiver side and the success of the information in delivering the sent and proposed message is one dimension and is called system quality, also information quality and service quality are the reminding dimensions of this success model (Nulhusna, Sandhyaduhita, Hidayanto, & Phusavat, 2017; Rad, Nilashi, & Dahlan, 2018).

4.3.4 Unified theory of acceptance and use of technology (UTAUT):

This model purposes to define technology acceptance and it is resulted from integration of 8 adoption theories and models (i.e. technology acceptance model, theory of reasoned action, motivational model, model of personal computer use, diffusion of innovations theory, social cognitive theory, combination theory between planned behavior and technology acceptance model, and theory of planned behavior) to be effective for wide range of technology applications (Sharma & Mishra, 2014).The theory built up on some constructs (i.e. effort expectancy, performance expectancy, facilitating conditions, and social influence) (Sharma & Mishra, 2014). The unified theory of acceptance and use of technology used behavioral intentions to estimate technology user's behavior and the model offers also a valuable model for acceptance and use of technology (Rad, Nilashi, & Dahlan, 2018). The unified theory of acceptance and use of technology found powerlessness to clarify individual behavior, as it found that exclusive few articles have really utilized the develops of this model in their examination, but it has been utilized more for hypothesis building (Sharma & Mishra, 2014). UTAUT2 developed to enhance UTAUT and avoid its limitation which enhance adoption theory to the consumer framework (Rad, Nilashi, & Dahlan, 2018). UTAUT2 constructs from seven variables (i.e. performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and user's habit) (Rad, Nilashi, & Dahlan, 2018).This model shows more than 70% percent in explaining technology acceptance and intention to use when it be compared by other models (Gupta, Singh, & Bhaskar, 2016).

4.3.5 Technology organization environment framework (TOE):

This Theory is leading one to find the way for introducing technologies inside organizations by segregate the factors to three categories, technologies itself, organization internal factors, and other external environmental factors (i.e. regulations, and competition existing) (Rad, Nilashi, & Dahlan, 2018). The model considers technological factor as the type of technology organization need to be used and if it is available or not (Rad, Nilashi, & Dahlan, 2018). Regarding the organizational factor, it is the characteristic of organization itself (e. g. company size, number of employees, type of management), and it is all types of interactions between employees inside the organization and the methods of communications between them (Rad, Nilashi, & Dahlan, 2018).

4.3.6 Theory of reasoned action (TRA):

TRA applied widely in the different research area (Zawaideh, 2017). It assumes that users are rational beings and usually use available things to them (Rad, Nilashi, & Dahlan, 2018). This theory claims that an individual's belief about consequences of a behavior and to be able to evaluate the result from any action, attitude should be defined first (Rad, Nilashi, & Dahlan, 2018). Behavioral intention of individuals, individual's attitude, and subjective norms are the main constructs of the theory of reasoned action, and logically the sequence of constructs can be accepted as the behavior is the result from subjective norms plus attitude (Sharma & Mishra, 2014).

4.3.7 Theory of planned behavior (TPB):

At nineteen ninety-one Ajzen introduced this theory (Sharma & Mishra, 2014); Vejačka, 2016). It is the new edition of theory of reasoned action with adding new construct (i.e. perceived behavioral control) that can be defined as the perception of users on how using new thing will be easy or difficult (Sharma & Mishra, 2014). Planned behavior theory assumed that intention for taking new action controlled three constructs (i.e. user's attitude perceived behavioral control, and the subjective norm are the constructs of this model (Rad, Nilashi, & Dahlan, 2018; Sharma & Mishra, 2014). The hypothesis expects that individual's control over their conduct as lying on a continuum from effortlessly performed practices as opposed to the practices that need more exertion and assets, this control considered as most important reason for the behavior and intention connection (Sharma & Mishra, 2014; Rad, Nilashi, & Dahlan, 2018).

4.3.8 Uses and gratifications theory:

U&G is a hypothetical system to ponder how mass correspondences media, including daily papers, radio, and TV, and now web-based social networking, are used to satisfy the requirements of individual clients with various objectives, it can be viewed as that the primary reason for uses and gratifications (Rad, Nilashi, & Dahlan, 2018). It to clarify the reasons why people pick a particular medium over elective correspondence media to pick up a comprehension of social and mental needs and to elucidate clients thought processes

while connecting with PC interceded interchanges media including online networking (Rad, Nilashi, & Dahlan, 2018).

4.3.9 Perceived value model:

Perceived value model can be used in order to get vision about user's behaviors in buying or electronic government adoption, perceived value model is very difficult and hard to be quantitative, however it can be defined as a quality and price trade-off or the value of money, also it can be the service or product usefulness evaluation according to what will be received and given. Furthermore, the definition of value is the given item like time, money or effort compared to the quality or volume received (Rad, Nilashi, & Dahlan, 2018).

4.3.10 Social cognitive theory (SCT):

This theory considered as human behavior most significant theories, SCT helps in the prediction of human technology use as liking technology using, performance outcome expectations, anxiety, self-efficacy, and personal outcome expectations are the core variable of this theory (Rad, Nilashi, & Dahlan, 2018). Self-efficacy measures individual's technology using ability to finalize certain work and anxiety considered as the feeling during dealing with the new technology, like using the computer for the first time (Sharma & Mishra, 2014).

4.3.11 Social identity theory:

The social identity theory is social-psychological, and accordingly, peoples are classified to many social classes, cognitively ordering and segmentation for the social environment are used as tools which let peoples identify themselves and others by it (Rad, Nilashi, & Dahlan, 2018).

4.3.12 Trust model:

Trust as a term was under focus study in last period different point of view, which include marketing and social psychology, trust has been theorized to terms like the system of belief and behavior, also trust has been viewed as societal, organizational, inter-group, and interpersonal relationships (Rad, Nilashi, & Dahlan, 2018).

4.3.13 Uncertainty reduction theory:

Uncertainty reduction theory claimed that the first thing people do when using something new is to minimize the uncertainty of this thing by three ways which are passive (i.e. just observation), active (i.e. collecting data), and interactive (i.e. start dealing and acting) (Venkatesh, Thong, Chan, & Hu, 2016).

The conclusion from these models that each model has its variables which may be defined in the certain model only or be used by another model. Attituded and subjective norms are the two constructs of the TRA model (Gupta, Singh, & Bhaskar, 2016). Perceived usefulness, perceived ease of use are the constructs for TAM, which extended by adding voluntariness, image, result demonstrability, output quality, and job relevance to result of the TAM2 model. Compatibility,

observability, trialability, and complexity are the constructs of the DOI model (Gupta, Singh, & Bhaskar, 2016). Finally, performance expectancy, social influence, effort expectancy, and facilitating conditions are the four constructs which used in the UTAUT model (Gupta, Singh, & Bhaskar, 2016).

5. Identification for most common independent variables and constructs in adoption models

This section will list definition for most common independent variables and constructs in adoption models and in the reviewed researches and papers.

These factors are the most found and used in adoption models which are TRA, TAM, TAM2, TPB, DOI, and UTAUT, except trust which not included in these models (Rana, Dwivedi, & Williams, 2015).

5.1 Performance expectancy:

Performance expectancy or PE is the measure of the beliefs of technology users that using certain electronic service or application will be useful in increasing the achieving of a certain function or task (Sharma & Mishra, 2014). It is defined clearly as for how much an individual trust that utilizing the framework will encourage him or her to accomplish picks up in work execution (Venkatesh, Morris, Davis, & Davis, 2003). Performance expectancy found with

different names in many models as perceived usefulness in technology acceptance model, a relative advantage in the DOI model, and outcome expectations in Social cognitive theory (Gupta, Singh, & Bhaskar, 2016).

This independent variable found in eight adoption theories and models (i.e. technology acceptance model, trust model, social cognitive theory, big five theory, theory of planned behavior, unified theory of acceptance and use of technology (UTAUT & UTAUT2), and task-technology fit model) (Rad, Nilashi, & Dahlan, 2018).

5.2 Facilitating conditions:

It's the facilitating actions taken to facilitate the use of new technology used by users, support provisioning for PCs users (Sharma & Mishra, 2014). Facilitating conditions is like compatibility construct in diffusion of innovation model, and like perceived behavioral control construct in the combined model of TAM and TPB (Gupta, Singh, & Bhaskar, 2016).

5.3 Effort expectancy:

Effort expectancy is like the factor perceived ease of use: the measure of technology user's beliefs that using certain electronic service will be effortless (Sharma & Mishra, 2014)in the technology acceptance model, or as the factor which in DOI model which is called complexity (Gupta, Singh, & Bhaskar, 2016; Venkatesh, Morris, Davis, & Davis, 2003).

5.4 Social influence:

In the context of the technology, social influence is about the degree to which a technology user see the relatives' believes about the electronic service or application this user going to use (Zawaideh, 2017; Venkatesh, Morris, Davis, & Davis, 2003). Social influence is like the construct subjective norms mentioned in some models (e.g. theory of reasoned action, and theory of planned behavior) or image construct mention in diffusion of innovations (Gupta, Singh, & Bhaskar, 2016).

5.5 Trust:

Trust found very important in the adoption and acceptance of electronic government, and it is highly recommended to be included in adoption and acceptance models for information technology, as long as users of electronic and online service are providing there personal and financial information, especially in country which has high level of corruption (Gupta, Singh, & Bhaskar, 2016). Trust is divided in the electronic government researches to trust in government and trust in technology (Gupta, Singh, & Bhaskar, 2016).

6. Reviewing determinants that influence the adoption and acceptance of electronic government Services

In the bases of the revised papers, the determinates of electronic government services adoption are discussed a lot in literature especially in developing countries, and here below review for some selected researches regarding the adoption of e-government and online services.

(Rana & Dwivedi, 2015) in empirical study validated extended social cognitive theory to analyze and understand the adoption and acceptance of electronic government by collecting four hundred and nineteen responses by using survey consisted of total twenty-seven questions including ten questions about respondent's demographic characteristics, and seventeen questions on six different constructs of the proposed research model from India cities (Rana & Dwivedi, 2015). It was the first study which used social cognitive theory to check the acceptance and adoption level of electronic government (Rana & Dwivedi, 2015). (Rana & Dwivedi, 2015) claim that SCT with adding social influence construct contains all suitable significant variables and ideas that provide valuable factors to know individual's adoption behavior especially in developing country like India, and SCT is under-represented in the area of electronic government (Rana & Dwivedi, 2015). The research proposed model of hypothesized 7 relationships between 6 selected variables which are outcome expectation, affect behavioral intention, anxiety, self-efficiency, and social influence (Rana & Dwivedi, 2015).

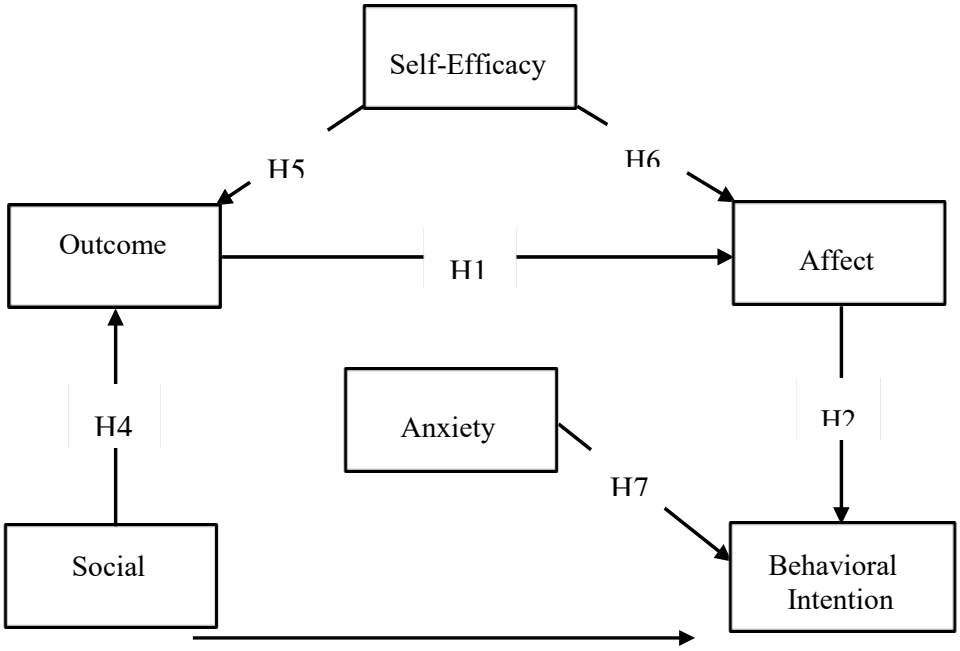

Figure 1 (Rana & Dwivedi, 2015) proposed framework for e-government adoption

Source: Rana, N. P., & Dwivedi, Y. K. (2015). Citizen's adoption of an e-government system: Validating extended social cognitive theory (SCT). *Government Information Quarterly, 32*(2), 172-181. Page 175.

(Sharma S. K. , 2015) studied the relation between online provided service by government of Oman as dependent variable and independent variables which are service quality and demographic parameters (i.e. age, gender, and education level) using questionnaire in population of two hundred and forty-eight users of online services provided by government, considering that the researches which introduced in the effect of demographics in the area of electronic government is not enough (Sharma S. K., 2015). (Sharma S. K. , 2015) defined service quality as reliability (i.e. using website of service

without any wasting for time or long time for data retrieving), security (i.e. security for users' transactions and their personal information), responsiveness (i.e. getting required service by users done in reasonable time), and efficiency (i.e. simplicity of web page) (Sharma S. K., 2015). The research result shows that service quality, age, and education level are the key factors that determine/ influence the adoption/acceptance process of electronic government service, but gender, not significant factor, this may due to the nowadays booming in using technology between both men and women, however previous studies show that men are more likely to use technologies than women (Sharma S. K., 2015). The result regarding age is reasonable and valid as with increases in age the adaption to new technology decreases, and for the education level testing result, it is also reasonable as the increase in education level means the increase in willingness to technology in general (Sharma S. K., 2015).

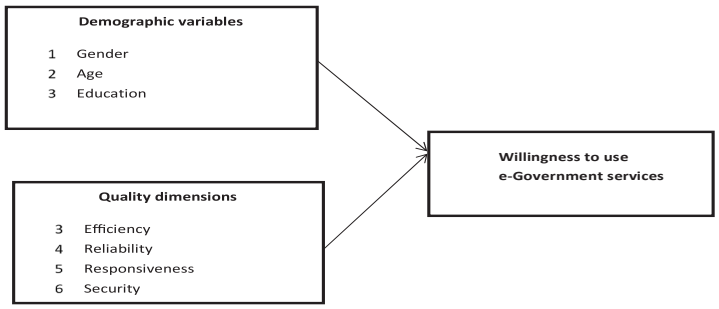

Figure 2 (Sharma S. K., 2015) proposed framework for e-government adoption

Source**:** Sharma, S. K. (2015). Adoption of e-government The role of service quality dimensions and demographic variables. *Transforming Government: People, Process and Policy, 9*(2), 207-222. Page 213.

(Vejačka, 2016) tested in quantitative research the technology acceptance model in study of citizen's adoption for Slovakia online government through survey between three hundred and twenty-six user of electronic government then analyzed it and found that the main variables of the technology acceptance model are influencing the intention to use online government, which is consistent with previous researches (Vejačka, 2016).

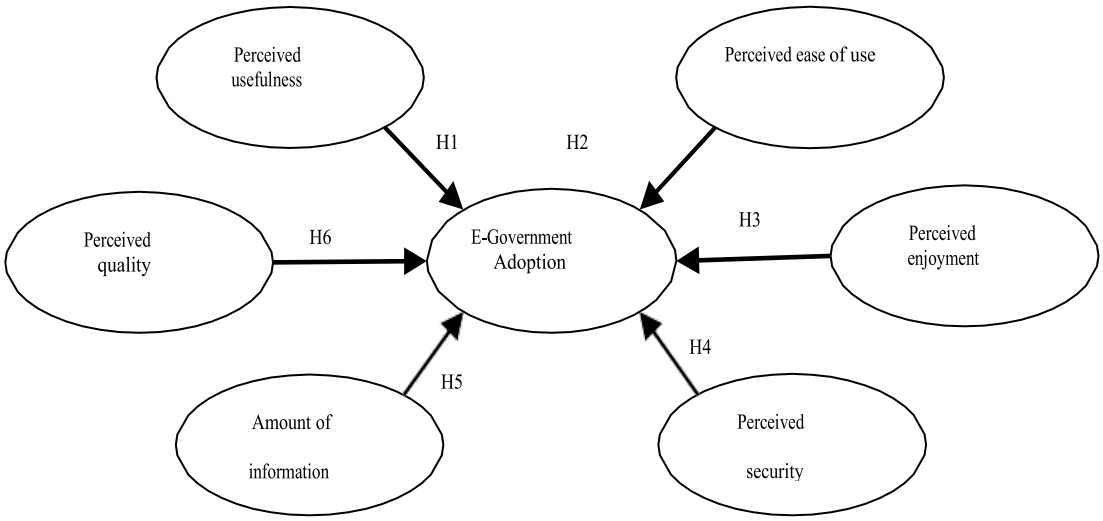

Figure 3 (Vejačka, 2016) proposed framework for e-government adoption

Source: Vejačka, M. (2016). Citizen Adoption of eGovernment in Slovakia. *Journal of Applied Economic Sciences, 11*(7), 1395-1404. Page 1399.

(Gupta, Singh, & Bhaskar, 2016) studied citizen's acceptance and adoption level of online government services in New Delhi at India and collected primary data from three hundred and ninety-six user of electronic government service (Gupta, Singh, & Bhaskar, 2016). The proposed framework for citizen's adoption level and acceptance of online government services in India based on integration of two models (UTAUT model and trust) and added

the satisfaction of citizens as a significate variable, especially in developing country like India (Gupta, Singh, & Bhaskar, 2016). The result from collected data ensured factors that affecting citizen's adoption of online government service are performance expectancy, effort expectancy, social influence, provided facilitating conditions, available facilitating conditions, trust in government, trust in technology and citizen satisfaction (Gupta, Singh, & Bhaskar, 2016). Figure 4 shows the proposed framework for (Gupta, Singh, & Bhaskar, 2016) e-government adoption study.

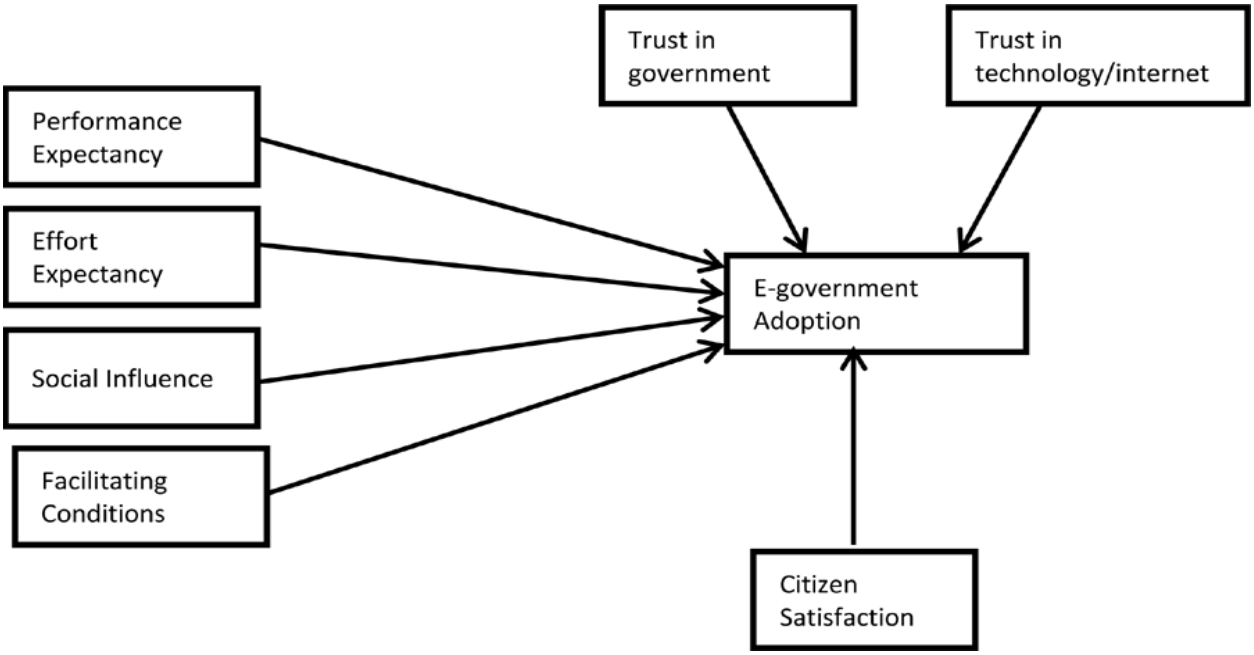

Figure 4 (Gupta et al., 2016) proposed framework for e-government adoption

Source: Gupta, K. P. , Singh, S. , & Bhaskar, P. (2016). Citizen adoption of e-government: a literature review and conceptual framework. *Electronic Government, An International Journal, 12*(2), 160-185. Page 172.

A very special study published regarding the trust and transparency factor role in managing the user's uncertainty in electronic service introduced to can be practically used by governments to alter beliefs of individuals using the electronic government, this is by reducing uncertainty which qualitative in the model by two factors (i.e. trust and transparency) (Venkatesh, Thong, Chan, & Hu, 2016). (Venkatesh, Thong, Chan, & Hu, 2016) highlighted the main drivers for excellent online government services which are the quality characteristics of information and the characteristics of channel used to approach citizens. The data were collected from 4430 online government user in Hong Kong then data analyzed using hierarchical regression analyses and result were consistent with other studies regarding some of independent variables (i.e. age, gender, and educational level) (Venkatesh, Thong, Chan, & Hu, 2016). Researchers recommended some points with steps for government to increase citizens intention to use the electronic and online services by focusing on certain parameters such as increasing the transparency of online services with show model of how to finish the required service online and allow users to be informed with every update in the service and when it is expected to be finished via e-mail or short message, increasing trust on the online service by actually use the latest technology in security system which will let people trust service and feel safe regarding transactions done through the governmental websites (Venkatesh, Thong, Chan, & Hu, 2016). Figure 5 shows proposed model for (Venkatesh, Thong, Chan, & Hu, 2016) study model.

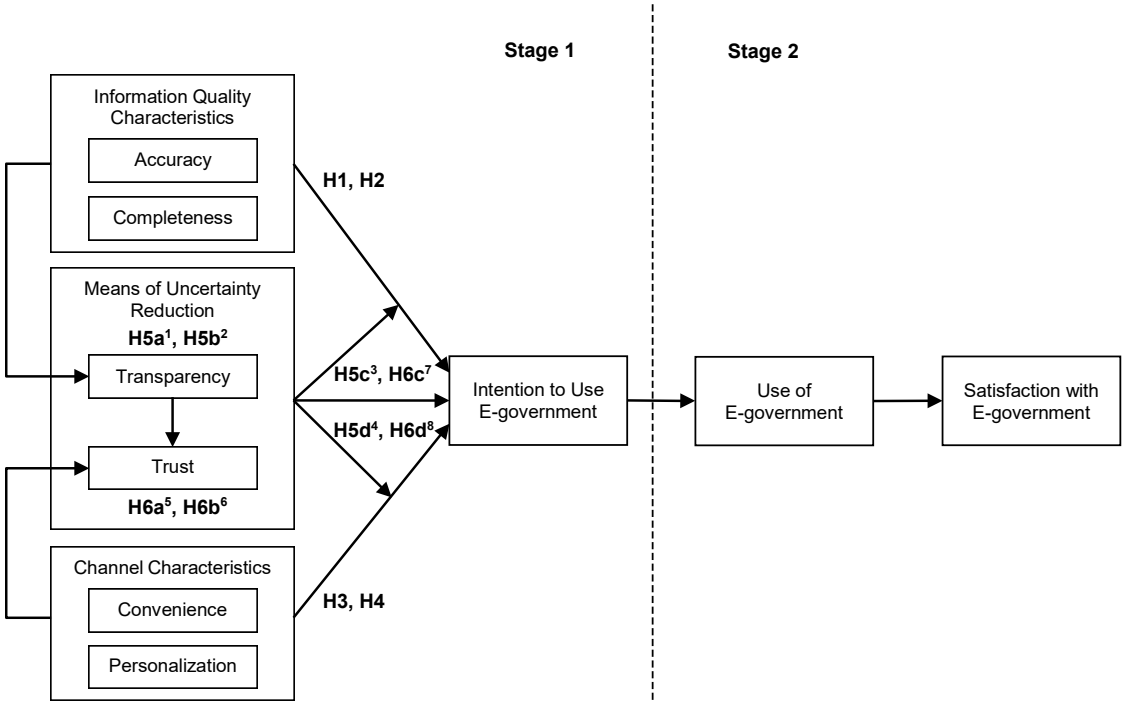

Figure 5 (Venkatesh et al., 2016) proposed framework for adoption and usage of e-government model

Source: Venkatesh, V. , Thong, J. Y. , Chan, F. K. , & Hu, P. J. (2016). managing citizens' uncertainty in e-government services:The mediating and moderating roles of transparency and trust. *Forthcoming in Information Systems Research, 27*(1), 87-111. Page 9.

The conducted research on electronic government adoption by (Urbina & Abe, 2017) from Philippines citizen perspective suggested that independent variables which are sociodemographic, access to various type of technologies and internet, and attitude to electronic government are the main factors that influence electronic government awareness and adoption (Urbina & Abe, 2017). Researchers utilized data from Philippines non-profit

organization during March of 2014 which includes data about 1200 citizens financial and social status. The population were equally males and females from four different geographical locations, most of them were completed high school and in age of 30 to 34, and in social class D, then data were analyzed using statistics science to reach to research result. 32% percent where somewhat willing to provide personal data on the website of government, 29% percent were very willing, 19% percent were not decided, 13% percent were very unwilling, and 8% percent were somewhat unwilling. On the other hand, these population answered that government website is very useful by 42% percent, 36% percent answered somewhat useful, 16% percent not decided, and 6% percent answered not useful at all and somewhat useful. 91% percent were not used government website and 65% percent do not know anything about government website and online services. These results show low usage of internet and computer is low which mean a big barrier for adoption of government online service in Philippines. The results of research where to certain extend meeting the literature finding regarding the relation between independent variables and the attitudes toward electronic government, as positive effect relation found between the dependent variable and perceived usefulness of e-government, educational level, access to technology, and internet using frequency (Urbina & Abe, 2017). Figure 6 shows (Urbina & Abe, 2017) proposed framework in studying adoption of online government in the Philippines (Urbina & Abe, 2017).

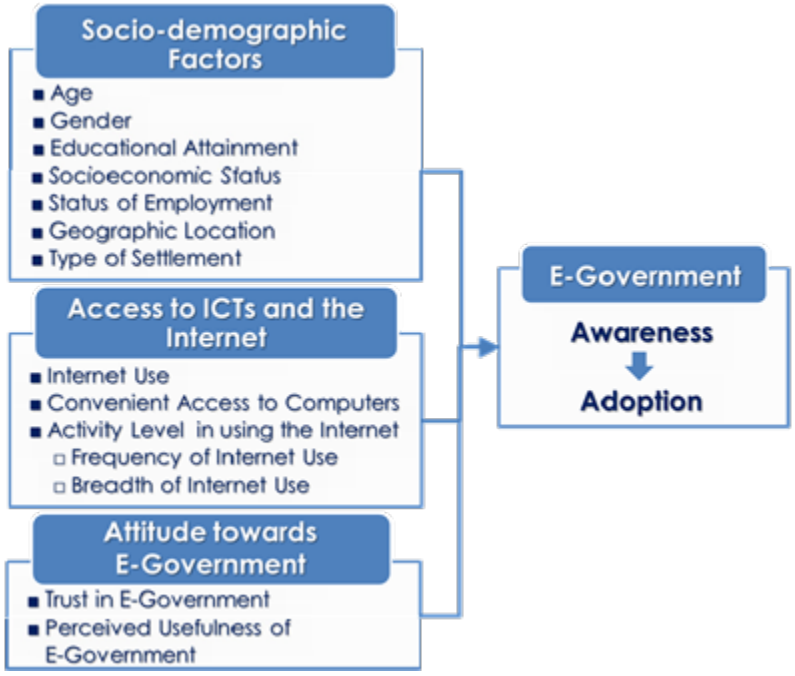

Figure 6 (Urbina & Abe, 2017) proposed framework for e-government adoption

Source: Urbina, A. U. , & Abe, N. (2017). Citizen-centric perspective on the adoption of e-government in the Philippines. *The Electronic Journal of e-Government, 15*(2), 63-83. Page 77.

(Napitupulu, 2017) in explored research for factors that could encourage users influence of e-government service in Indonesia and proposed twenty-six hypotheses with fifteen constructs and eleven independent variables in his developed model (Napitupulu, 2017). (Napitupulu, 2017) divided factors that influence adoption of e-government service into three categories (human dimension, technological dimension and organizational dimension) (Napitupulu, 2017). Human dimension includes human factors such as user's readiness to use electronic government service and perceived value, accordingly, it

includes optimism, innovativeness, discomfort, insecurity, compatibility and social influence (Napitupulu, 2017). Regarding technology dimension includes information quality, system quality, and service quality factors, which supposed to enhance user's acceptance of provided service, finally, organization dimension includes facilitating conditions availability in the government (Napitupulu, 2017). Figure 7 shows the proposed model adoption model for e-government by (Napitupulu, 2017).

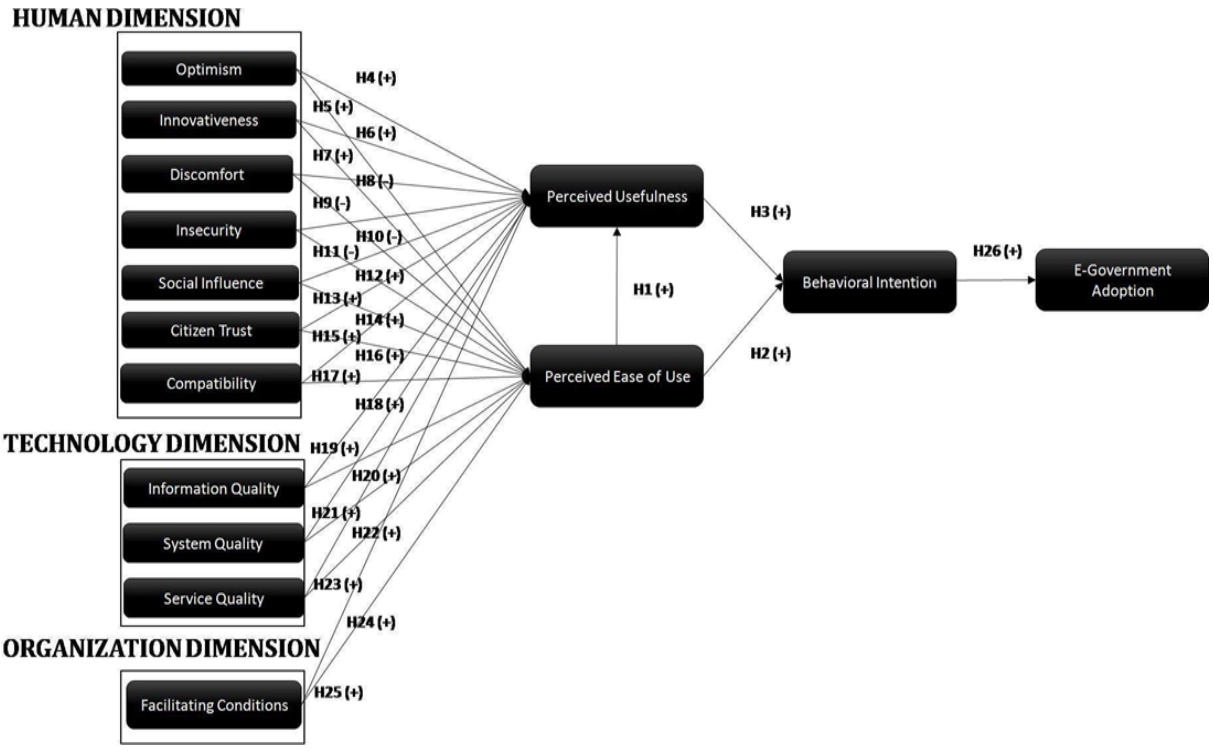

Figure 7 (Napitupulu, 2017) proposed framework for e-government adoption

Source: Napitupulu, D. (2017). A Conceptual model of e-government adoption in Indonesia. *International Journal on Advanced Science Engineering information technology, 7*(4), 1471-1478. Page 1476.

(Elmansori, Atan, & ali, 2017) studied factors which have role in influencing citizen to use electronic and online government in Libya and proposed new conceptual framework integrated from different models (i.e. extended form of technology acceptance model, and technology organization environment framework) and selected the constructs of usefulness, ease of use, information technology knowledge, technology factors, trust, and behavioral intentions as shown in figure 8 (Elmansori, Atan, & Ali, 2017). (Elmansori, Atan, & Ali, 2017) categorized variables to two groups which are individual, and technological factors based on technology organization environment framework model (Elmansori, Atan, & Ali, 2017).

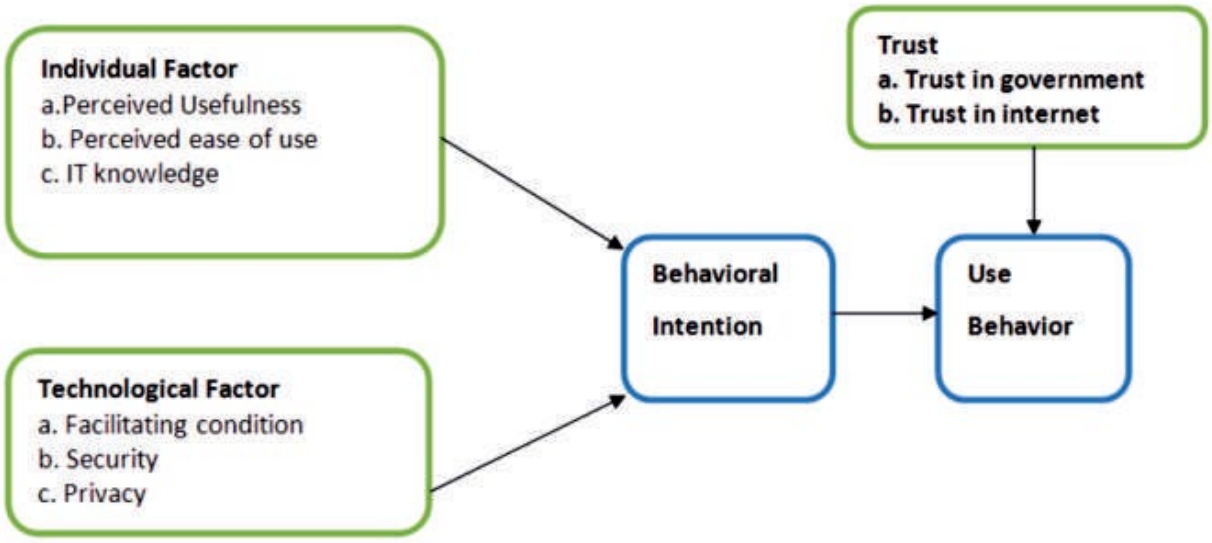

Figure 8 (Elmansori et al., 2017) proposed framework for e-government adoption

Source: Elmansori, M. M. , Atan, H. , & Ali, A. (2017, September). factors affecting e-government adoption by citizens in Libya: A conceptual framework. *I-manager's Journal on Information Technology, 6*(4), 1-14. Page 5

(Nulhusna, Sandhyaduhita, Hidayanto, & Phusavat, 2017) studied the role of trust on the intention of user to go and use government online service based on D&M information system success model and collected data from 5 different cities in Indonesia via questionnaires distributed between users which dealing with online government service (mainly citizens), and the respond from 293 users analyzed, and finding ensure that information quality and service quality have significant correlation with trust of citizens on e-government service (Nulhusna, Sandhyaduhita, Hidayanto, & Phusavat, 2017). Figure 9 shows proposed conceptual framework for the study done by (Nulhusna, Sandhyaduhita, Hidayanto, & Phusavat, 2017)

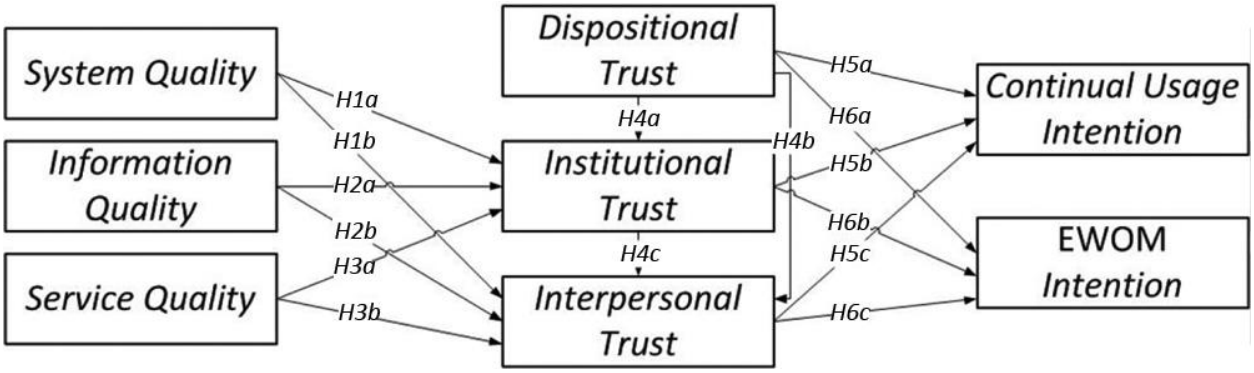

Figure 9 (Nulhusna et al., 2017) proposed framework for adoption of e-government

Source: Nulhusna, R. , Sandhyaduhita, P. I. , Hidayanto, A. N. , & Phusavat, K. (2017). The relation of e-government quality on public trust and its impact on public participation. *Transforming Government: People, Process and Policy, 11*(3), 393-418. Page 403

The most recent acceptance model UTAUT used in adoption quantitative research at Jordon by analyzing two hundred and sixty-six respond on distributed questionnaires, the ninety percent of respondents were using the internet, but the majority of respondents do not use or have knowledge about e-government services (Zawaideh, 2017). (Zawaideh, 2017) proposed a new framework in the study of the adoption and acceptance of electronic government service as shown in figure 10 (Zawaideh, 2017). Research finds that UTAUT applicable by eighty-five percent and independent variables perceived expectancy, effort expectancy, facilitating conditions, and social influence significantly influence user's intention to use the electronic government service and accept it (Zawaideh, 2017).

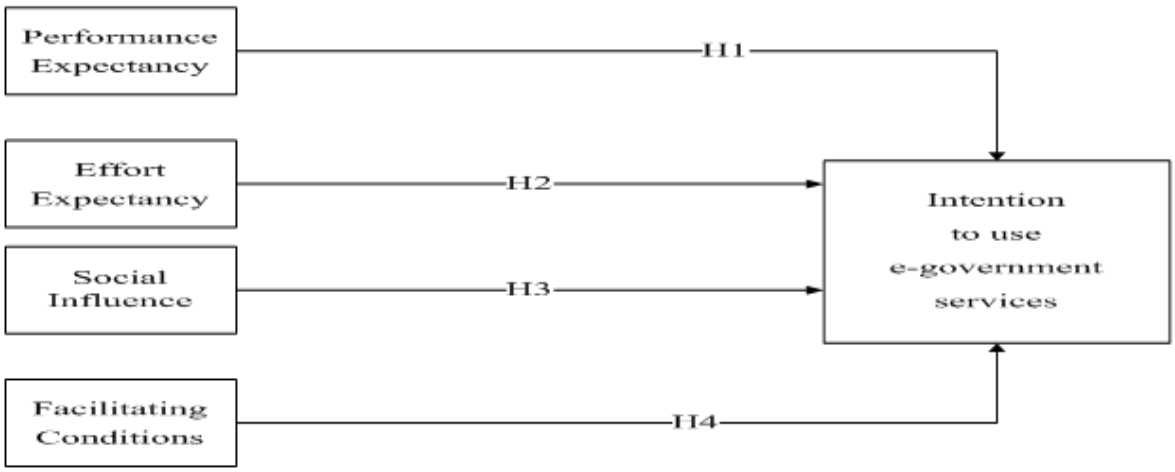

Figure 10 (Zawaideh, 2017) proposed framework for acceptance of e-government services

Source: Zawaideh, F. H. (2017, February). acceptance of e-government services among Jordanian citizen. *International Journal of Recent Advances in Multidisciplinary Research, 4*(2), 2348-2351. Page 2350.

(Kumar, Sachan, & Mukherjee, 2018) tried to explore factors influence Indian citizens adoption of e-government service directly and indirectly by using online and questionnaire survey distributed between 671 (382 responses only where used in analysis using statistic) e-government user from different geographical areas, during 4 months from 2016 till 2017 (Kumar, Sachan, & Mukherjee, 2018). (Kumar, Sachan, & Mukherjee, 2018) developed model with 13 independent variables based on technology adoption theories and models (DOI, technology adoption and behavioral, social and cultural characteristics) trying by that to explore a new model for direct and indirect factors influence e-government adoption as shown in below figure 11 (Kumar, Sachan, & Mukherjee, 2018). The result from analyzing collected data ensure that perceived awareness for electronic government service and its benefits have significant impact directly and indirectly on user's intention to use e-government service, and citizens will directly use this service if they have psychological and technical abilities, perceived usefulness found also significant variable directly and indirectly (Kumar, Sachan, & Mukherjee, 2018). Regarding availability of resources found significant positive on direct adoption and negatively significate on indirect adoption side (Kumar, Sachan, & Mukherjee, 2018). Trust in internet, trust in government, social influence found significant positive relation in the adoption of electronic government in both ways directly and indirectly (Kumar, Sachan, & Mukherjee, 2018). The variables which found its significantly negative in the adoption of electronic government from indirect prospective are the availability of resources, computer self-efficacy, perceived ease of use, perceived compatibility, multi-language option, and voluntariness (Kumar, Sachan, & Mukherjee, 2018).

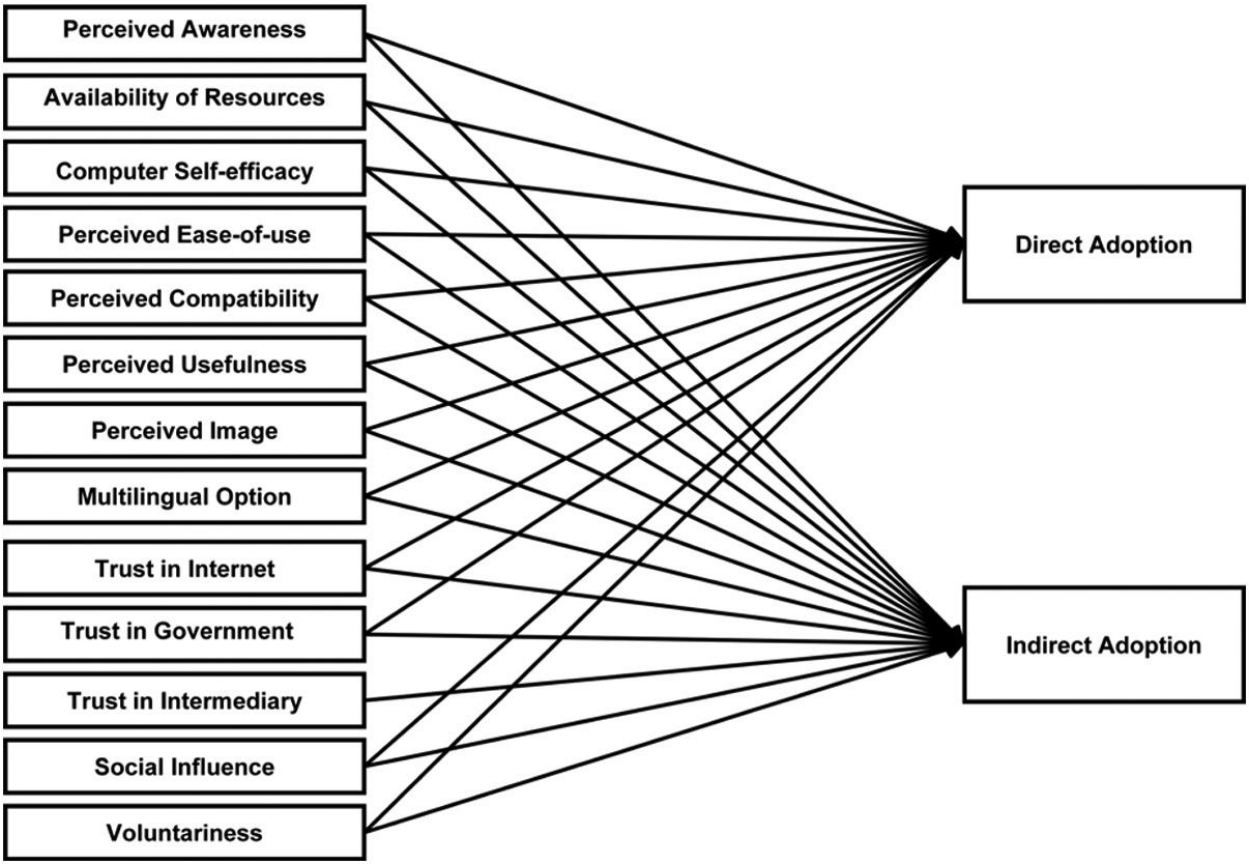

Figure 11 (Kumar et al., 2018) proposed framework for the adoption of e-government

Source: Kumar, R. , Sachan, A. , & Mukherjee, A. (2018). Direct vs indirect e-government adoption: an exploratory study. *Digital Policy, Regulation and Governance, 20*(2), 149-162. Page 154.

7. Conclusion

Based on literature reviewed in the area of adoption and acceptance of electronic government services especially in developing countries, acceptance of services from citizens side depending a lot on individual's factors rather than groups factors.

Trust, socio-demographic are found a lot in developing countries as a significant factor affecting the adoption and acceptance of electronic government from citizens side. Regarding the adoption and acceptance models that most used are technology acceptance model, and unified theory of acceptance and use of technology. But for sure the online or electronic government adoption and acceptance still under investigation and will be for the coming years till establishing the most valuable model to adopt and accept the electronic government services as per reviewed researches

(Ahmad, Markkula, & Oivo, 2014; Elmansori, Atan, & Ali, 2017; Kumar, Sachan, & Mukherjee, 2018; Napitupulu, 2017; Rana & Dwivedi, 2015; Sharma S. K., 2015; Urbina & Abe, 2017).

8. Recommendation for Egyptian electronic and online government service

Egyptian government working hard in its electronic and online government projects from different sides, starting from enhancing infrastructure to enable high speed internet service through fiber cable, followed by using this infrastructure to connect all governmental agency to the central point, which supposed to be the Egyptian new administrative capital. Egyptian electronic government targeting conversion for all administrative work to be electronic which will enhance provided service to citizens and investment. One of government project toward e-government called eMisr, it's mainly to connect governmental agency to its ministry, such as

connecting all Egyptian schools to ministry of education through high internet service starting with speed 4 megabits per second (4 Mbps) and this service to be used by employees and citizens. E Misr project is working well from implementation point of view as its first goal to provide broadband services access for 75% of Egyptian households with a minimum speed of 2 Mbps by 2015, then to provide this service for 90% of Egyptian households with a minimum speed of 25 Mbps by 2021. But unfortunately, eMisr still not adopted by users yet due to some factors, which can be understood after reviewing adoption and acceptance models in developing countries literature, users such as employees which are over 40 years old don't have awareness of using electronic service. On the other hand, student which can this service not mature enough to use the service in a professional way, accordingly Egyptian government need to invest more in Egyptian people's awareness regarding the service to get maximum benefit from the provided service.

In the opposite side Egyptian government need to focus more in technologies infrastructure and allow high speed internet service to user's home through the latest technology (i.e. fiber) and obligate the four telecommunication operators (i.e. Telecom Egypt, Etisalat Misr, Vodafone, and Orange) to provide internet services with reasonable price to public, and also to speed up the deployment of the latest telecommunication standard (i.e. 5G) which will allow business users to have speed of internet reach to 200 megabits per second which will be benefitable to let people able to deal with information in an effective way. From deferent prospective Egyptian regulatory should work on modification laws and policies to be more agile with new technologies, by allowing online signature, and taxation.

Below table shows the e-government status for Egyptian e-government developing and participation indexes (UN E-Government Knowledgebase, 2018).

Table 2 Egyptian electronic government indexes

Region	Africa
Sub-Region	Northern Africa
Income	Lower middle income
Income Value	3,010 USD, GNI per capita
Population	93,778,172
E-Government development index	0. 4880 Rank 114 of 193
E-Participation Index	0. 5393 Rank 109 of 193

Source: *UN E-Government knowlegebase*. (2018, July 31). Retrieved from https://publicadministration. un. org/egovkb/en-us/Data/Country-Information/id/53-Egypt.

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