Factors influencing Individual Behavior Intention of using E-government applications in Sindh Province

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Abstract

Electronic Application are used everywhere in order to carry out marketing and organizational activities. Although the literature that may link the application with governmental activities are rare. Moreover, the users of electronic Application are mostly consumers. Therefore, through using the same target audience this study is specifically focused towards the understanding of e-application and its influencing factors linked with governmental operations. This study highlights the essential elements that affect the adoption of e-government apps in the departments and field offices of the Sindh government. It also enables functionaries of the Sindh government for adopting e-government apps at several levels of government. Quantitative techniques have been selectedfor the purpose of analysis which indicated that social influence & trust in e- govt application have significant effect use of e-govt application. Similarly, moderation of some of the demographic factors like age and gender are also potent in defining the relationship.

Key words*: Electronic Application, Electronic Government Application, Marketing, Governmental Operations, Organizational Activities, UTAUT.*

Introduction

Electronic Application is used to carry out the organizational business activities to ensure good governance through the internet and intranet using electronic gadgets including the Laptop Computers, Desk-Top Computers, Mobile / Cell Phones (MCP), Radio Frequency (RF), Personal Digital Assistants (PDA), Packet Assembler / Disassembler (PAD), and Near-Field Communication (NFC) (Al-Saedi et al. 2020). Though, merely concentrating on intention to use information and communication technology could not be enough to get maximum output and advantages of the e-Application but thorough study is required to see factors which influence the electronic government application (e-govt app) adoption by the respective government for its better working (Cao et al, 2019). Now a days e-government application is a popular Information Technology trend and therefore has become very much common in the many countries across the globe. The adoption of e-government application has been globally recognized as evident from its adoption by our neighborhood country India in 1970s. The Indian government has spent a significant amount of money on automating and interconnecting its central, provincial, and local government departments, as well as other important areas of the Indian state, such as departments including central defense, finance, planning & development, education, health, census, and election commission.

E-govt application facilitates the organizational official business, and enable users to work smoothly and quickly through the web-based channels (Amegavi et al, 2017). According to a survey, majority of e-government service users are aware about the benefits of e- govt application and therefore, willing to adopt it (Mosweu et al.,2017). According to (Voutinioti 2013), delivery of services can be further increased by adopting e-government application. The e-government is implemented in Pakistan by the Federal Ministries and Divisions to make the government working more efficient and easily accessible. The National Information Technology Board has been entrusted with responsibility to facilitate the Federal Ministries and Divisions to completely adopt e-government initiatives.

In Sindh some of government departments have launched their websites to facilitate their stakeholders abut but there is still a pressing need to implement more effective e-government programmes to help their stakeholders including citizens. There could be a number of reasons impacting e-government adoption in Sindh i.e. citizens are still facing many problems relating to better public service delivery initiatives. The services provided by e-govt are taken into consideration as a provision of fast-track resolution mechanism for early redressal of grievances and provision of services by the public offices around the world. Basically, the e-government services system is an electronically managed Application

system whereby people can get easy access to various concerned authorities through the internet access for getting better service delivery. Governments are producing quality services for their citizens (Heeks at al., 2008). According to a study that almost 15% e-govt programs are successful. The 15% is very high rate of failure of e-govt programs. E-govt could be helpful for all governmental activities. The e-govt can be a key factor for good governance and sustainable development. However, due care including website security is utmost necessary and at any cost cannot be overlooked while adopting e-govt systems through internet to saveit from hacking. Besides, this study also examines one more independent variable i.e.Trust in e-govt applications, as a researcher's contribution.

Problem Statement

It is fact that the population is increasing day by day and it is going to be a big challenge for the governments to facilitate its stakeholders with reference to their issues and resolutions and the e-govt is the only solution available with the public organizations whereby they can provide timely facilitation to its public through internet-based e-govt application. The primary motivation for e-government adoption is to improve the existing service delivery by government agencies (Imran and Gregor, 2007).Since many studies have been carried out in this context but still some research gap exits, as there is nostudy available regarding e-govt application by the Govt of Sindh. Therefore, this study would focus to analyze the factors influencing adoption of e-govt application in Sindh Province. This study would be useful for the stakeholders of the Sindh government including its functionaries, and citizens.

Research objective(s)

This study identifies the important factors, which influence the acceptance of e-govt apps in Sindh Government's departments and their field offices, as well as enabling the Sindh Government's functionaries to adopt e-govt applications at various governance levels, including provincial, divisional, district, taluka, and union council / union committee, to ensure good governance at its rudimentary stage(s).

Research Question(s)

(i) Do the PE, EE, SI, FC and TEA have significant impact on behavioral intention to use e-govt application?

(ii) Do age, gender & use of internet significantly moderate the influence of PE, EE, SI, FC and TEA on BI to use e-govt application?

Literature Review

Adoption of e-application- factors influencing

A leading financial institution M/s Alipay had strategic partnerships with over 180 commercial banks, MasterCard, VISA, & other financial organisations, despite its obvious advantages, Alipay faced a set of problems, ranging from inherit technology to external competition. Users' privacy, for example, could be easily compromised, resulting in a lack of user trust. Traditional banks and other third-party payment platforms (like as WeChat) had also put Alipay under a lot of pressure. As a result, Alipay undertook research to identify bottlenecks that hinder user engagement and improve their services, as well as to learn more about the factors that drive Alipay user adoption. The technology was considered advanced to give appropriate information or services but it was not adopted. By combining context-awareness with the UTAUT, the study presented an Alipay user adoption model.

A UTAUT based research backs up the usage of the UTAUTparadigm in mHealth services for the older people in underdeveloped nations like Bangladesh. This study provides information pertaining to the challenges and problems, as well as practical tips while adopting e-application i.e. mHealth services. (Hoque et al, 2016).

The efficacious application of e-govt is subjected to its adoption by the very segments of the society that want the government to achieve it (Sharif et al., 2009). The major issues relating to higher rate of failure of e-govt projects are; the lack of awareness that can help people to adopt e-govt application (Sang & Lee, et al 2009). Heeks (2008), a study was carried out to make citizens aware of the value and accessibility of e-government applications and services. Colesca(2009) suggested a methodology to clarify trust decisions in e- government. Age, perceived utility, quality service, risk awareness, privacy / security concerns, organisational trust, technology, attitudes, trust trends, internet experience, education, and money wereall factors. The results show that age and privacy are important factors affecting trust. Researchers alsoconcluded that older people are less dependent on e-government applications. Lean (2009) also presented a theoretical model based on TAM and DOI for assessing Malaysian residents' willingness toadopt e-government apps. Perceived trust, perceived utility, perceived comparative advantage, and image were shown to be important factors for accepting e-government applications, according to the survey's findings. AlAwadhi, S., & Morris, A. (2008) had proposed a composite model "TG 6.3 260" (UTUAT) that adopted and used unified theory technology. The expected workload, duration of effort, peer influence, favourable conditions, gender, educational course, and online experience were all used as model indicators. Results of the survey showed that

expected indicators, duration of effort, communityimpact, and favorable conditions are important variables for the adoption of e-govt in the Kuwait. Kumaret al. (2007) suggested a model that transcends existing models by combining new variable as a qualityservice. Model variables include user features, such as perceived risk, perceived control, experience of using internet, website design, ease of use, and quality service.

Belanger and Carter (2005) conducted a poll to determine the major elements for e-govt application. They studied them using the DOI model. The results identified key factors which include relative superiority, consistency, image and ease of use in using e-govt application for stakeholders' purposes. The e-govt Application improve the convenience and accessibility of people to government works and services through ICT. Globally, it is seen that the governmental institutions in many countries are increasing theservices deliveries online (Carter & Belanger, 2005). They further stated that many largescale government institutions throughout the world are now offering their organizational services online for better service delivery. The e-govt service is particularly important because of its potential to minimizethe costs and to improve government services as compared to old-style govt service delivery mechanism.

The literature has been reviewed in detail to determine the factors that affect employees, stakeholders, businesses, institutions and people's intentions to access e-govt application. Under a proposed model by Gilbert et al. (2004), the reliability, low weight, information quality, financial security, experience, visual demand, visual barricades, and comparative productivity were stated as main elements which influence adoption of e-govt application and quality of information, trust / reliability, financial security, cost and time were taken as key variables. The main purpose behind launching e-govt application inside the government institutions are to ensure better working results & service delivery to stakeholders, business-partners, agencies, staff, offices and other agencies. Similarly, Feng (2002) well-defined the e-govt as an electronic application for the governmental institutions to facilitate its stakeholders through internet. The e-govt also provides easy access to the better service delivery system through ICT. The e-govt also provides many opportunities in the field of quality services to approach the institutions and processes.

Adoption of e-govt in Pakistan

A research exercise was carried out to analyze the success rate in percentage and it was found that that 50% of e-govt projects were partly unsuccessful, 35% were completely unsuccessful, and only 15% were successful. It was observed that the most of the failure cases of e-govt projects were belonging to the developing countries (Heeks, 2008). The developing countries require to be very careful for getting

success of e-govt initiatives/projects. The Govt. of Pakistan (GoP) also established the E-Govt Directorate. The main goal of Govt of Pakistan is to "enhance efficiency, effectiveness, transparency, and accountability and serve citizens in an efficient and cost-effective manner" (Shah et al., 2011). As per the 2010 United Nations Survey Report, the Southern Region of Asia is still shown as below average in the world and the Pakistan ranks 6th among 09 countries in the South Asian Region. The Pakistan has been stated a country that lacks e-govt capacity with below 1.0 or 0.2755E-Government Development Index Value (E-Govt D.I.V). In the latest survey conducted by the UN in 2010, Pakistan has been ranked 146th and it was ranked 131st among the world's countries in the 2010 UN Survey (UN E-government Survey, 2010). Pakistan also faces many challenges in implementing e-govt projects, like other developing countries. The expert reviews were conducted and some major issueswere identified which include the understanding of e-govt applications, its adoption by the govt institutions, the trust of stakeholders in ICT, and the trust in the govt. Since, Pakistan's acceptance rate of e-govt application is below average. In Pakistan the e-govt projects were initiated in 2005, but still has not adopted e-govt completely or at large scale in the country, which can be seen from the value of the E-Govt D.I.V. Therefore, it is necessary to promote the e-government application in Federal as wellas Provincial Governments.

UTAUT Model

UTAUT was presented by Venkatesh (2003). This model is consisted of four Independent Variables (IVs) which include performance expectancy, effort expectancy, social influence, and facilitating conditions; and one Dependent Variable (DV) that is use behavior and one mediating variable: behavioral intention; and four moderating variables: age, gender, experience and voluntariness. UTAUT is considered as modern development in ICT and it is one of the finest and most accepted advanced technological models in the current I.T era. The UTAUT model is widely adopted by the service-oriented organizations while carrying out research on adoption of e-applications. The UTAUT model describes why a user wants to utilise an Information System (IS) followed by e-Application and how can they use it. Venkatesh et al. (2003) created a comprehensive model that depicts the e-application acceptance process based on Information System (IS) in greater detail than any other single model. Therefore, UTAUT model has been adopted in this study to analyse factors influencing user's intention to use e-govt application.

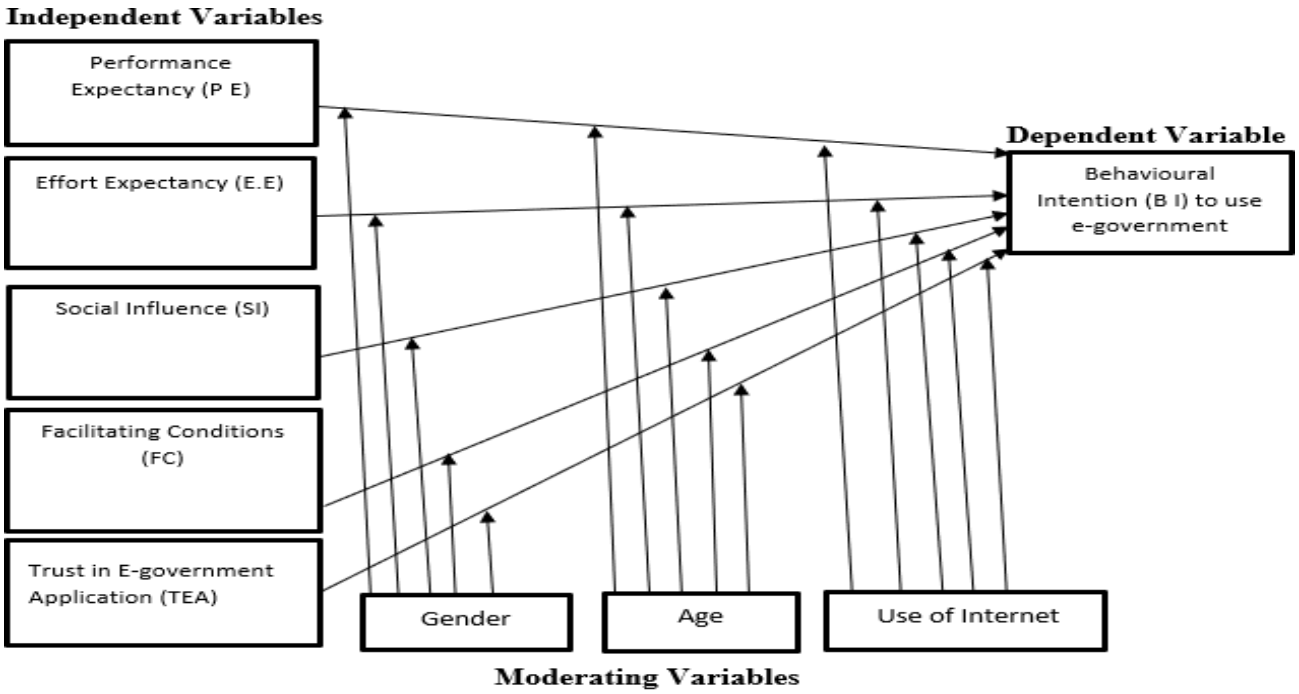
UTAUT's comparison with UTAUT-2

UTAUT is composed of performance expectancy (that is, the use of technology is recognized as

useful), effort expectancy (that is, the use of technology is simple & easy to use), and social influence (that is, the use of technology is important to an individual as his / her close relations, he / she has respect for, are also inclined to the adoption of technology), and the facilitating conditions (that is, s/he may be enable to use technology successfully by the technical and organizational capacity & infrastructure) (Venkatesh et al. 2003). Whereas, UTAUT-2 claims that its constructs, such as hedonic motivation .In comparison to UTUAT-2, the original UTAUT has been chosen as the most appropriate for this study to examine the factors impacting implementation of e-government application by the service oriented governmental organizations.

Figure 1

Theoretical framework of the study



(Figure 1)

Theoretical Framework

The paradigm suggested in figure 1 serves as the foundation for this research. This framework was developed on the basis of the UTAUT Model, which is mostly used in the context of consumers (Venkatesh et al. 2003). The prime consumers of e govt services are the citizens (Shareef et al., 2011). The UTAUT model is very useful for the e-govt Application and considered as most suitable for e-govt applications.

Hypotheses Development

The five independent variables/ predictors used in the regression modelling include PE, EE, SI, FE and TEA. This study would determine whether the BI to use e-govt application has significant relationship with each of predictors. In addition, mediation analysis of three mediators i.e. age, gender and use of internet would be carried out.

Performance Expectancy (PE)

Performance Expectancy is the variable that most substantially influences a person's intention to use information systems (Venkatesh et al 2003). According to earlier research, the performance expectancy has statistically significant relationship with behavioral intention. This positive association illustrates that more a person believes that using an e-government application can help them enhance their performance, the more likely they are to use it. Based on the foregoing, the following hypotheses are proposed with moderating effect of age, gender and use of internet:

H1: PE has significant impact on BI to use e-govt application.

Ha: Gender significantly moderates the influence of PE on BI to use e-govt application.Hb: Age significantly moderates the influence of PE on BI to use e-govt application.

Hc: Use of internet significantly moderates the influence of PE on BI to use e-govtapplication.

Effort Expectancy (EE)

According to Venkatesh et al (2003), that the more a person believes that e-government is simple to use and does not involve a lot of effort, the more likely they are to use the system. This association is consistent with prior research that found a favourable relationship between effort expectancy and behavioural intention. The following hypotheses are proposed with moderating effect of age, gender and use of internet:

H2: EE has significant impact on BI to use e-govt application.

Ha: Gender significantly moderates the influence of EE on BI to use e-govt application.Hb: Age significantly moderates the influence of EE on BI to use e-govt application.

Hc: Use of internet significantly moderates the influence of EE on BI to use e-govt application.

Social influence (SI)

According to Venkatesh et al. (2003), positive social influence has a significant impact on behavioural intention. Therefore, the social influence has a significant impact on behavioural intention, with the more the person's perception that the people around him think it is vital that he has an access to e-government

application. Based on the foregoing, the following research hypotheses are proposed with moderating effect of age, gender and use of internet:

H3: SI has significant influence on BI to use e-govt application.

Ha: Gender significantly moderates the influence of SI on BI to use e-govt application.Hb: Age significantly moderates the influence of SI on BI to use e-govt application.

Hc: Use of internet significantly moderates the influence of SI on BI to use e-govt application.

Facilitating Conditions (FC)

According to Venkatesh et al. (2003), Weerakkody et al (2013) and Weerakkody et al (2015), Facilitating conditions have significant impact on Use Behavior. They claimed that the facilitating condition had favorable impact on Use Behavior, with citizens believing that the organizations support them in using E-government by providing a medium to help them do so. Based on the foregoing, the following researchhypotheses are proposed with moderating effect of age, gender and use of internet:

H4: FC has significant influence on BI to use e-govt application.

Ha: Gender significantly moderates the influence of FC on BI to use e-govt application.Hb: Age significantly moderates the influence of FC on BI to use e-govt application.

Hc: Use of internet significantly moderates the influence of FC on BI to use e-govt application.

Trust in E-govt Application (TEA)

According to previous studies, trust in e-govt application is a crucial factor in increasing its consumers' satisfaction. The user's acceptance of a system is based on their trust in it. Furthermore,security and privacy are significant barriers to internet use; without confidence, society would not communicate or engage using personal data. This research also shows that trust in e-govt applicationinfluences the desire to utilize an e-application / service and it has a direct impact on behavioral intentions. The following are the proposed research hypotheses based on the above data with moderating effect of age, gender and use of internet:

H5: Trust in E-govt Application has significant influence on BI to use e-govt application.

Ha: Gender significantly moderates the influence of trust in e-govt application on BI onto use e-govt application.

Hb: Age significantly moderates the influence of trust in e-govt application on BI to usee-govt application.

Hc: Use of internet significantly moderates the influence of trust in e-govt applicationon BI to use e-govt application.

Research Methodology

We used multilevel data collection method in which we have multiple factors for performance evaluation with reference to each variable. In this paper we applied expected efficiency data collection, SI multilevel data analysis, performed descriptive analysis, finding the correlation matrix and verified the data reliability. The data reliability is performed using Cronbach Alpha value. After reliability testing, the descriptive data analyses are performed for the Likert style variables as well as the numeric variables such as age. Dimension reduction is performed with the help of Principle component analysis (PCA) using the correlation matrix of the variables. For moderation analysis we used moderators and applied moderation on 0.05.

Operationalization of constructs

A quantitative approach was used to collect data in order to analyse the theoretical model and hypotheses. The Measurement items of the constructs were adapted from the previous literature (see Table: 01).

Table No.1

Hypotheses	Constructs (IV)	Questions / Items Adapted Source	Questions/ Item(s)
H1: PE has significant impact on BI to use e-govt application. Ha: Gender significantly moderates the influence of PE on BI to use e-govt application. Hb: Age significantly moderates the influence of PE on BI to use e-govt application. Hc: Use of internet significantly moderates the influence of PE on BI to use e-govt application.	**Performance Expectancy (PE)**	Al-Saedi, K., Al-Emran, M., Ramayah, T., & Abusham, E. (2020). Developing a general extended UTAUT model for M-payment adoption. Technology in Society, 62, 101293.	**E- government application system helps me to accomplish tasks more quickly.**
			E- government application system increases work productivity.
		Chao, C. M. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. Frontiers in psychology, 10, 1652.	**Using the E-government application would improve my work performance.**
			Using E-government application increases my chances of achieving targets that are important to me.
		Madigan, R., Louw, T., Dziennus, M., Graindorge, T., Ortega, E., Graindorge, M., & Merat, N. (2016). Acceptance of automated road transport systems (ARTS): an adaptation of the UTAUT model. Transportation Research Procedia, 14, 2217-2226.	**I think E-government application will become an important part of the existing governance system**
			I think using E-government application in my day-to-day commuting is better and more convenient than using my existing form of manual working.
		Garone, A., Pynoo, B., Tondeur, J., Cocquyt, C., Vanslambrouck, S., Bruggeman, B., & Struyven, K. (2019). Clustering university teaching staff through UTAUT: Implications for the acceptance of a new learning management system. *British Journal of Educational Technology*, *50*(5), 2466-2483.	**I would find E-government application useful for my office assignments**
H2: EE has significant impact on BI to use e-govt application. Ha: Gender significantly moderates the influence of EE on BI to use e-govt application. Hb: Age significantly moderates the influence of EE on BI to use e-govt application. Hc: Use of internet significantly moderates the influence of EE on BI to use e-govt application.	**Effort Expectancy (EE)**	Al-Saedi, K., Al-Emran, M., Ramayah, T., & Abusham, E. (2020). Developing a general extended UTAUT model for M-payment adoption. Technology in Society, 62, 101293.	**E-government application is easy to use.**
			My interaction with E-government application is clear and understandable.
			It is easy for me to become skillful at using E-government application .
		Chao, C. M. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. Frontiers in psychology, 10, 1652.	**Learning how to use E-government application is easy for me.**
			I would find it easy to get the E-government application to do what I want it to do
		Madigan, R., Louw, T., Dziennus, M., Graindorge, T., Ortega, E., Graindorge, M., & Merat, N. (2016). Acceptance of automated road transport systems (ARTS): an adaptation of the UTAUT model. Transportation Research Procedia, 14, 2217-2226.	**It would not take me long to learn how to use E-government application**
		Tak, P., & Panwar, S. (2017). Using UTAUT 2 model to predict mobile app based shopping: evidences from India. Journal of Indian Business Research.	**I find the office work through E-government application is convenient for me.**
H3: SI has significant influence on BI to use e-govt application. Ha: Gender significantly moderates the influence of SI on BI to use e-govt application. Hb: Age significantly moderates the influence of SI on BI to use e-govt application.	**Social Influence (SI)**	Tak, P., & Panwar, S. (2017). Using UTAUT 2 model to predict mobile app based shopping: evidences from India. Journal of Indian Business Research.	**I do office work through E-government application because many people are doing so**
		Garone, A., Pynoo, B., Tondeur, J., Cocquyt, C., Vanslambrouck, S., Bruggeman, B., & Struyven, K. (2019).	**My colleagues think that I should use E-government application more innovatively**

Hc: Use of internet significantly moderates the influence of SI on BI to use e-govt application.		Clustering university teaching staff through UTAUT: Implications for the acceptance of a new learning management system. *British Journal of Educational Technology*, *50*(5), 2466-2483.	**Colleagues, who are important to me, think that I should use E-government application**
			The government supports the use of E-government application
			In general, the department supports the use of E-government application
			In general, the employees support the use of E-government application
			The Head of my organization thinks that I should use E-government application
H4: FC has significant influence on BI to use e-govt application. Ha: Gender significantly moderates the influence of FC on BI to use e-govt application. Hb: Age significantly moderates the influence of FC on BI to use e-govt application. Hc: Use of internet significantly moderates the influence of FC on BI to use e-govt application.	**Facilitating Conditions (FC)**	Hoque, R., & Sorwar, G. (2017). Understanding factors influencing the adoption of mHealth by the elderly: An extension of the UTAUT model. International journal of medical informatics, 101, 75-84.	**I have the resources necessary to use E-government application.**
			I have the knowledge necessary to use E-government application .
			E-government application is compatible with other technologies I use.
		Tak, P., & Panwar, S. (2017). Using UTAUT 2 model to predict mobile app based shopping: evidences from India. Journal of Indian Business Research.	**Electronic devices are generally well equipped (including hardware, software, network, etc.) for using E-government application**
			It is easy to gain the knowledge about E-government application (such as from leaflets, manuals, user guides, internet, etc.)
			E-government application are compatible with other technologies/apps I use.
		Garone, A., Pynoo, B., Tondeur, J., Cocquyt, C., Vanslambrouck, S., Bruggeman, B., & Struyven, K. (2019). Clustering university teaching staff through UTAUT: Implications for the acceptance of a new learning management system. *British Journal of Educational Technology*, *50*(5), 2466-2483.	**A specific person is available for assistance with difficulties when using E-government application**
H5: Trust in e-govt applications has significant influence on BI to use e-govt application. Ha: Gender significantly moderates the influence of trust in e-govt applications on BI on to use e-govt application. Hb: Age significantly moderates the influence of trust in e-govt applications on BI to use e-govt application. Hc: Use of internet significantly moderates the influence of trust in e-govt applications on BI to use e-govt application.	**Trust in E-Govt. Application (TEA)**	Al-Saedi, K., Al-Emran, M., Ramayah, T., & Abusham, E. (2020). Developing a general extended UTAUT model for M-payment adoption. Technology in Society, 62, 101293.	**E- government application is trustworthy.**
			I believe that all the data are confidential.
			I believe that I would get an immediate confirmation message when the work is completed.
			I would expect that the E-government application to be reliable.
		Chao, C. M. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. Frontiers in psychology, 10, 1652.	**E-government application has the ability to fulfill its task.**
Construct (DV)			
	Behavioral Intension to use E-Govt Service (BI)	Al-Saedi, K., Al-Emran, M., Ramayah, T., & Abusham, E. (2020). Developing a general extended UTAUT model for M-payment adoption. Technology in Society, 62, 101293.	**I intend to use theE-government application in the future.**
			I expect that I will use the E-government application in my daily life.

			I expect to use the E-government application frequently.
		Chao, C. M. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. Frontiers in psychology, 10, 1652.	**Assuming I had access to the E-government application, I intend to use it**
		Garone, A., Pynoo, B., Tondeur, J., Cocquyt, C., Vanslambrouck, S., Bruggeman, B., & Struyven, K. (2019). Clustering university teaching staff through UTAUT: Implications for the acceptance of a new learning management system. *British Journal of Educational Technology*, *50*(5), 2466-2483.	**I intend to approach E-government application more innovatively**
	Use Behavior	Hoque, R., & Sorwar, G. (2017). Understanding factors influencing the adoption of mHealth by the elderly: An extension of the UTAUT model. International journal of medical informatics, 101, 75-84.	**E-government application is a pleasant experience.**
			I use E-government application currently.
		Tak, P., & Panwar, S. (2017). Using UTAUT 2 model to predict mobile app based shopping: evidences from India. Journal of Indian Business Research.	**I rarely use E-government application to work online.**
			I sometimes use E-government application to work online
			I regularly use E-government application to work online.

The above table showing Operationalization of constructs

Population and Sampling

Population of this study encompasses anyone who uses e-governmental services wither through laptop, desktop computer or cell phone etc. Previously it has been indicated that prime uses of government e-Application are consumers (Shareef et al., 2011) but in developing countries like Pakistan it is difficult to implement e-government Application (Heeks 2008.)Thus, the population is government employees of Sindh Province working in institutions providing e-government services. Although these employees have very tough schedule and therefore the sample sizeis of 174 respondents. This has been done in consideration with Cohen et al (2000) that sample size mustbe considered through evaluating minimum study group size and employees of such organizations don'thave knowledge regarding e-application at initial stage of work i.e. grade 11-grade 16. Thus, very few employees having grade 11-16 are getting familiar with the use therefore our sample mostly includes grade 17 and above. Therefore, the data was collected by using Non-Probability Purposive Sampling Method.

Research Design

The purpose is to apply UTAUT model in Pakistan with reference to e-government services and thus it is for knowledge creation and similar has been indicated by Suanders et al (2009), that knowledge building is the purpose of epistemology. However, use of quantitative techniques indicated that

philosophical stance used for the study is post-positivism which is applicable on qualitative as well as quantitative designs however suits best for quantitative work (Zukauuskas, Vveinhardt, J. 2018). Data has been collected through questionnaire hence it is a survey and analysis has been made one thus cross-sectional approach of analysis has been used (Saunders et al., 2009)

Descriptive Analysis

For each variable, first the descriptive analysis is presented. For categorical variables the frequency distributions are presented with percentage of values in each category. The official grades of the respondents are 17 and above for 87.4% of the total 174 responses. Only 22 respondents are from 11 to 16 grades. The reason is that once technology is accepted at the officers' grade levels, it would be easier to implement at the lower grades staff. Academically, more than 95% respondents have completed bachelors or higher degree which could be one other indicator that technology diffusion is a useful way for them.

Table 2
Frequency of respondents

Frequency of Respondents with respect to their technological know how		
Valid	Frequency	Percent
0	7	4.0
1	10	5.7
2	33	19.0
3	21	12.1
4	80	46.0
Partially 4	23	13.2
Total	174	100.0
Frequency of Respondents with respect to their service experience		
Valid	Frequency	Percent
01-05	36	20.7
06-10	35	20.1
11-15	37	23.3
16-20	27	15.5
21-25	18	10.3
26 and above	21	12.1
Total	174	100.0
Frequency of Respondents with respect to their grade		
Valid	Frequency	Percent
11 to 16	22	12.6
17 and above	152	87.4
Total	174	100.0

Frequency of Respondents with respect to their qualification			
Valid		Frequency	Percent
	Intermediate	4	2.2
	Graduate	38	21.8
	BS	1	0.6
	BCS (Hons)	1	0.6
	LLB	1	0.6
	Master	57	32.8
	MS / M.Phil.	60	34.5
	PhD	11	6.3
	Post Graduate	1	0.6
	Total	174	100.0

Reliability Analysis

Initially the data has been tested for reliability through Alpha (α) and its value is found to be more than 70% of all latent variables thus in line with Beckler et al (2018), the working is appropriate as the value is higher than threshold value of 0.7. In addition, composite reliability and AVE values are also above the threshold values as 0.7 and 0.5 as suggested by Hair et al., 2018.

Table 3
Reliability Analysis

Constructs	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Behavioral Intension to use E-GovtService (BI)	0.807	0.866	0.565
Effort Expectancy (EE)_	0.765	0.842	0.517
Facilitating Conditions (FC)	0.797	0.860	0.551
Performance Expectancy	0.824	0.872	0.532
Trust in E-Govt. Applications (TEA)	0.787	0.852	0.537
Use of Internet	0.701	0.828	0.617
Social Influence (SI)	0.756	0.845	0.577

Principal Component Analysis (PCA)

The variable selection technique using PCA is applied on the dataset. This method is perceived as mother of Multi-Variant Data (Abdi & Wiliam, 2010). Analysis indicated that only first 14 principal components showing a cumulative 67.8% explained variation of the dataset. The rest of the PCs showing upto 2% increase in explained variations are thus are excluded from calculations.

Table 4

Principal Component Analysis (PCA)

Total Variance Explained						
Component	**Initial Eigen values**			**Extraction Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	13.509	28.143	28.143	13.509	28.143	28.143
2	2.747	5.723	33.866	2.747	5.723	33.866
3	2.093	4.36	38.226	2.093	4.36	38.226
4	1.737	3.618	41.845	1.737	3.618	41.845
5	1.557	3.244	45.089	1.557	3.244	45.089
6	1.432	2.983	48.072	1.432	2.983	48.072
7	1.41	2.938	51.01	1.41	2.938	51.01
8	1.312	2.734	53.744	1.312	2.734	53.744
9	1.271	2.648	56.392	1.271	2.648	56.392
10	1.226	2.555	58.947	1.226	2.555	58.947
11	1.12	2.333	61.28	1.12	2.333	61.28
12	1.107	2.306	63.585	1.107	2.306	63.585
13	1.057	2.202	65.787	1.057	2.202	65.787
14	1.003	2.09	67.878	1.003	2.09	67.878
15	0.944	1.967	69.845			
16	0.877	1.828	71.672			
17	0.865	1.802	73.474			
18	0.817	1.701	75.175			
19	0.801	1.668	76.843			
20	0.716	1.491	78.334			
21	0.676	1.408	79.742			
22	0.641	1.335	81.077			
23	0.617	1.285	82.362			
24	0.597	1.243	83.605			
25	0.576	1.2	84.805			
26	0.558	1.163	85.968			
27	0.54	1.125	87.094			
28	0.5	1.041	88.135			
29	0.478	0.996	89.131			
30	0.454	0.946	90.076			

31	0.408	0.85	90.926			
32	0.372	0.775	91.701			
33	0.369	0.77	92.471			
34	0.35	0.729	93.199			
35	0.344	0.717	93.916			
36	0.332	0.693	94.609			
37	0.3	0.625	95.234			
38	0.291	0.606	95.84			
39	0.278	0.578	96.418			
40	0.273	0.568	96.986			
41	0.238	0.495	97.481			
42	0.223	0.464	97.945			
43	0.203	0.422	98.367			
44	0.189	0.395	98.762			
45	0.185	0.385	99.147			
46	0.163	0.34	99.487			
47	0.14	0.291	99.778			
48	0.107	0.222	100			
Extraction Method: Principal Component Analysis (PCA).						

Table indicated that initial fourteen components are explaining 67.87 variance and in the light of Wang and Du (2000) initial fourteen must be retained.

Discriminant Validity

In this study, Discriminant Validity is analyzed, and the results revealed that all variables have achieved the criterion by Fornell & Larcker. As suggested by Hair et al., 2018, a latent variable should explain better the variance of its own indicators than the variance of other latent variables.

Table 5

Fornell & Larcker

Constructs	Behavioral Intension to use E-Govt Service (BI)	Effort Expectancy(EE)	Facilitating Conditions(FC)	Performance Expectancy (PE)	Trust in E-Govt. Application(TEA)	Use of Internet (UI)	Social Influence (SI)
Behavioral Intension touse E-Govt Service (BI)	0.751						
Effort Expectancy (EE)	0.632	0.719					

Facilitating Conditions (FC)	0.552	0.583	0.742				
Performance Expectancy	0.607	0.616	0.454	0.729			
Trust in E-Govt. Applications(TEA)	0.660	0.611	0.685	0.574	0.733		
Use of Internet	0.538	0.477	0.582	0.500	0.601	0.785	
Social Influence (SI)	0.471	0.540	0.521	0.547	0.562	0.533	0.760

Moreover, in order to achieve discriminant validity another criterion is analysed called Cross Loadings criterion were also examined, and results yielded the loadings of an indicator on its assigned latent variable should be higher than its loadings on all other latent variables.

Table 6
Loadings and Cross Loadings

Items	**Behavioral Intension to use E- Govt Service (BI)**	**Effort Expectancy(EE)_**	**Facilitating Conditions(FC)**	**Performance Expectancy**	**Trust in E-Govt. Applications(TEA)**	**Use of Internet**	**Social Influence (SI)**
BI01	**0.782**	0.547	0.360	0.471	0.518	0.409	0.372
BI02	**0.724**	0.409	0.407	0.405	0.519	0.420	0.287
BI03	**0.756**	0.459	0.412	0.608	0.444	0.427	0.374
BI04	**0.760**	0.501	0.439	0.375	0.454	0.340	0.338
BI05	**0.734**	0.453	0.461	0.409	0.543	0.418	0.394
EE02	0.424	**0.682**	0.463	0.504	0.398	0.355	0.471
EE03	0.461	**0.660**	0.422	0.369	0.447	0.262	0.379
EE04	0.475	**0.721**	0.344	0.453	0.443	0.333	0.356
EE05	0.469	**0.777**	0.481	0.487	0.461	0.452	0.377
EE06	0.434	**0.748**	0.386	0.400	0.440	0.308	0.359
FC01	0.324	0.381	**0.706**	0.357	0.526	0.507	0.503
FC02	0.438	0.542	**0.716**	0.305	0.508	0.430	0.408
FC04	0.351	0.435	**0.755**	0.239	0.460	0.420	0.319
FC05	0.443	0.427	**0.788**	0.368	0.514	0.376	0.373
FC06	0.458	0.373	0.744	0.401	0.532	0.445	0.351
PE01	0.479	0.439	0.298	**0.770**	0.361	0.339	0.438
PE02	0.372	0.403	0.273	**0.723**	0.374	0.256	0.321
PE03	0.441	0.472	0.392	**0.685**	0.473	0.408	0.362

PE04	0.397	0.461	0.370	**0.701**	0.402	0.414	0.437
PE05	0.396	0.368	0.289	**0.715**	0.447	0.420	0.397
PE06	0.537	0.532	0.359	**0.777**	0.454	0.356	0.429
SI03	0.341	0.432	0.389	0.351	0.385	0.365	**0.688**
SI05	0.348	0.360	0.378	0.417	0.465	0.429	**0.811**
SI06	0.294	0.334	0.307	0.382	0.382	0.329	**0.731**
SI07	0.428	0.489	0.480	0.493	0.466	0.473	**0.803**
TEA01	0.434	0.341	0.464	0.381	**0.700**	0.425	0.429
TEA02	0.336	0.309	0.502	0.321	**0.660**	0.375	0.386
TEA03	0.512	0.524	0.546	0.505	**0.776**	0.446	0.458
TEA04	0.546	0.481	0.543	0.401	**0.766**	0.505	0.363
TEA05	0.541	0.528	0.468	0.468	**0.755**	0.438	0.434
UB1	0.526	0.414	0.500	0.567	0.527	**0.818**	0.432
UB2	0.373	0.397	0.452	0.339	0.442	**0.806**	0.446
UB5	0.321	0.294	0.404	0.180	0.429	**0.729**	0.377

Hypotheses Results

Table 7

Hypotheses	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
Age -> Behavior	**0.01**	**0.008**	**0.042**	**0.23**	**0.818**	Not supported
Age*EE -> Behavior	0.123	0.111	0.097	1.265	0.206	Not supported
Age*FC -> Behavior	0.147	0.149	0.066	2.239	0.026	Supported
Age*PE -> Behavior	-0.095	-0.087	0.081	1.166	0.244	Not supported
Age*SI -> Behavior	-0.208	-0.193	0.075	2.76	0.006	Supported
Age*TEA -> Behavior	-0.022	-0.024	0.083	0.266	0.79	Not supported
Effort Efficiency -> Behavior	**-0.126**	**-0.125**	**0.102**	**1.235**	**0.217**	Not supported
Facilitating conditions -> Behavior	0.107	0.113	0.077	1.388	0.166	Not supported
Gen*EE -> Behavior	0.008	-0.008	0.121	0.063	0.95	Not supported
Gen*Fc -> Behavior	-0.122	-0.124	0.09	1.349	0.178	Not supported

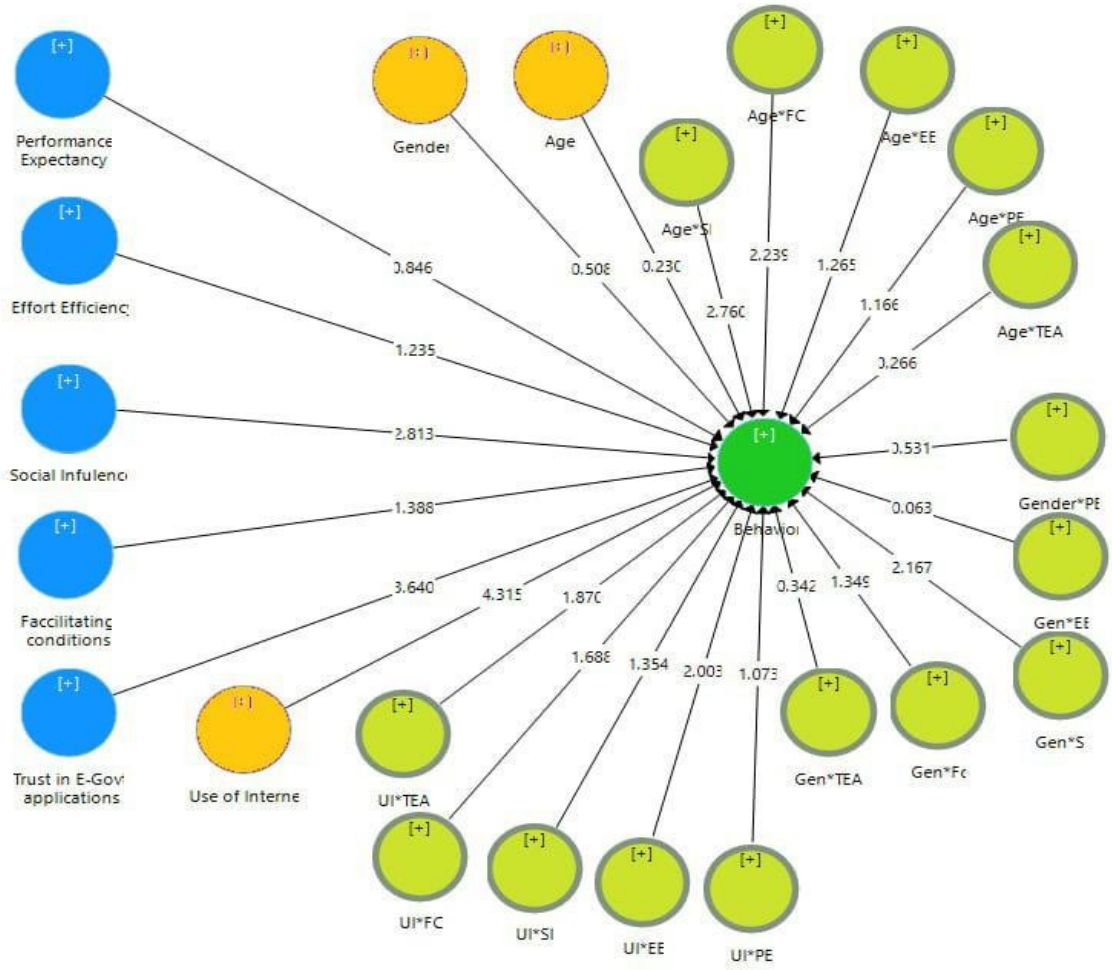
Gen*SI -> Behavior	0.157	0.151	0.072	2.167	0.031	Supported
Gen*TEA -> Behavior	-0.025	-0.019	0.074	0.342	0.733	Not supported
Gender -> Behavior	**0.028**	**0.034**	**0.055**	**0.508**	**0.612**	Not supported
Gender*PE -> Behavior	-0.053	-0.038	0.1	0.531	0.595	Not supported
Performance Expectancy -> Behavior	0.073	0.067	0.086	0.846	0.398	Not supported
Social Influence -> Behavior	**0.223**	**0.213**	**0.079**	**2.813**	**0.005**	Supported
Trust in E-Govt Application -> Behavior	**0.306**	**0.308**	**0.084**	**3.64**	**< 0.001**	Supported
UI*EE -> Behavior	-0.216	-0.205	0.108	2.003	0.046	Supported
UI*FC -> Behavior	-0.179	-0.143	0.106	1.688	0.092	Not supported
UI*PE -> Behavior	0.094	0.078	0.088	1.073	0.284	Not supported
UI*SI -> Behavior	0.104	0.082	0.076	1.354	0.176	Not supported
UI*TEA -> Behavior	0.187	0.17	0.1	1.87	0.062	Not supported
Use of Internet -> Behavior	0.354	0.358	0.082	4.315	< 0.001	Supported

Inferential Statistics indicating t-Statistics, p-values and results

T-statistics and p-values are two main components for inferential statistics and p-values need to be less than 0.5 (Kock & Hadaya, 2018) & t-statistics must indicate values that are equal to or higher than 1.97 (Duarte & Amaro, 2018). Therefore, in the light of these parameters social influence and trust on government Application are the two influencing factors on adoption behaviour that are social influence trust in government applications.

SMART PLS software is applied for performing moderation analyses using age, gender and use of internet (yellow circles). The five predictor variables PE, EE, FE, SI and trust in e-Govt Application are used as predictor variables (Blue circles). SMART PLS automatically computed the interaction terms to perform the moderation analyses (light green circles). Finally, the dependent variable BI is in the centre of the graph. The figure below showing the t- statistics values for each of the terms connecting with dependent variable BI.

Figure 2



Blue are Independent Variables. Sea Green are Interaction Terms. Yellow are the three Moderators. Dark Green is the Dependent Variables (BI).

Table 8

Reliability and Consistency

Model fitness		
	Saturated Model	Estimated Model
*SRMR	0.077	0.077
d_ULS	5.937	5.894
d_G	2.044	2.043
Chi-Square	1,749.10	1,743.29
NFI	0.551	0.553

Discussion & Analysis

Generally, there is a lack of information in government agencies about the adoption of e-govt app, as

well as crucial factors that can influence the e-govt's successful adoption. The adoption of e-govt apps in Sindh Province's government departments is also influenced by a number of factors, according to this research study. The results show that the factors influencing the adoption of e-government applications/services in Sindh are related to performance expectancy, effort expectancy, social influence, and facilitating conditions and trust in e-govt application. The results of the study based on the findings of hypotheses have been discussed in this part. The effects of factors and their influence on the adoption ofe-govt application are classified in two categories i.e. significant and non-significant factors and the same are also shown in the Table No.7.

Age as moderator has significant effects on BI to use e-govt application for the independent variables Facilitating Conditions (FC) and Social Influence (SI). Gender as moderator has significant effects on BI to use e-govt application for the independent variable Social Influence (SI). UI as moderator has significant effects on BI to use e-govt application for the independent variable Effort Efficiency (EE). Use of Internet (UI) as Moderator has significant effect on BI to use e-govt application with Social Influence (SI) and Effort Efficiency (EE). Social Influence has significant effect on BI to use e-govt application. Trust in E-Govt Application has strong relationship with BI to use e-govt application. The value of R Sq is 0.761 and R Sq Adj 0.724.

Age is not significant moderator when used with Performance Expectancy (PE), Effort Expectancy and Trust in E-Govt Application (TEA). Gender is statically insignificant as moderator with relation to Effort Expectancy (EE), Facilitating Conditions (FC), Performance Expectancy (PE) and Trust in E-Govt Application (TEA). Use of Internet (UI) is used as moderator and it has non-significant effects on FC, PE, SI, and TEA.

Conclusion & Recommendations

The findings of this study modify UTAUT models by including crucial variable such as Trust in E-govt Application (TEA), and the study also proposes a conceptual model of e-government adoption for better citizen service. The model will be used as a starting point for further research to get more understanding of the difficulties surrounding e-government adoption. This study also disseminates information on how governmental entities in Sindh Province and Pakistan can profit from the e-government application's potential benefits. This research work has also shown that by adopting e-govt application, the governmental departments may better perform and could cut down the inordinate delays in the disposalof their work and disruptions caused by uncertainties. This study has addressed a knowledge gap by demonstrating how governmental organizations can improve their performance by

deploying e-govt apps. It has also discovered that e-govt Application areeasier to use than manual systems or traditional methods for expediting government work. The findingsof the current research not only establish the necessity of investment on the adoption of e-govt applications/services, but also take note of good governance for better service delivery through e-govt application. Governmental entities might successfully handle interruptions and continue to provide expected services to their stakeholders using e-govt applications. It is a common understanding that in developingcountries, the e-govt is believed to reduce costs and to provide the institutions and its stakeholders witha quality service, high level of transparency in the govt systems.

The e-govt application provides paper less working in the governmental organizations and also ensures transparency and fairness in the procedures. The adoption of technological equipped Application in the government sectors would definitely improve the work performance. The e-government Application are cost-effective and would surely assist government organizations in ensuring good governance. The survey results also show that people trust e-govt Application more than the manual systems and traditional working, which are also considered as time consuming and expensive in monetary terms and it is therefore, recommended that the respective government(s) must timely adopt e-govt Application to ensure better service delivery.

References

Abdi, H., & Williams, L. J. (2010). Principal component analysis. *Wiley interdisciplinary reviews: computational statistics*, *2*(4), 433-459

Akman, İ. Yazıcı, A., Mishra A., Arifoğlu, A.(2005). *E-Government: A Global view and an empirical evaluation of some attributes of citizens*

Al-Saedi, K., Al-Emran, M., Ramayah, T., & Abusham, E. (2020). Developing a general extended UTAUT model for M-payment adoption. *Technology in Society*, *62*, 101293

Alwi, S. K. K., & Shaiq, M. (2021). Role of Human Resource Practices and Staff Satisfaction On organizational Performance. *Journal of Contemporary Issues in Business and Government Vol*, *27*(6)

Amegavi, G. B., Aduo-Adjei, K. O. F. I., & Owusu, R. I. C. H. M. O. N. D. (2017). Overcoming the hurdles of interorganizational Information Sharing in e-government implementation in Ghana. *Journal of Information Technology Management*, *28*(4), 31.

Beckler, D. T., Thumser, Z. C., Schofield, J. S., & Marasco, P. D. (2018). Reliability in evaluator-based tests: using simulation-constructed models to determine contextually relevant agreement thresholds. *BMC medical research methodology*, *18*, 1-12

Belanger, F., Carter, L. D., & Schaupp, L. C. (2005). U-government: a framework for the evolution of e-government. *Electronic Government, an International Journal*, *2*(4), 426-445

Carter, Lemuria, and France Belanger (2004). "Citizen Adoption of Electronic Government Initiatives." *Proceedings of the Hawaii International Conference on System Sciences* 37(C):1895–1904. doi: 10.1109/hicss.2004.1265306.

Carter, Lemuria, and France Bélanger. (2005). "The Utilization of E-Government Services: Citizen Trust, Innovation and Acceptance Factors." *Information Systems Journal* 15(1):5–25. doi: 10.1111/j.1365-2575.2005.00183.x.

Cheng, J. M., Kao, L. L., & Lin, J. Y. C. (2004). An investigation of the diffusion of online games in Taiwan: An application of Rogers' diffusion of innovation theory. *Journal of American Academy of Business*, *5*(1/2), 439-445

Cohen, L., Manion, L., & Morrison, K. (2002). *Research methods in education*. routledge

Davis, Fred D.(1989). "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." *MIS Quarterly* 13(3):319–40. doi: 10.2307/249008.

Dimitrova, Daniela V, and Yu-Che Chen.(2006). "Profiling the Adopters of E-Government Information and Services: The Influence of Psychological Characteristics, Civic Mindedness, and Information Channels." *Social Science Computer Review* 24(2):172–88. doi: 10.1177/0894439305281517.

Fuad, K., Nurrokhmahwati, N., & Handayani, R. T. (2021). BEHAVIOURAL ANALYSIS IN THE VILLAGE FUND SYSTEM USING THE UTAUT METHOD. IJIBE (International Journal of Islamic Business Ethics), 6(1), 68-78

Gilbert, David, Pierre Balestrini, and Darren Littleboy.(2004). "Barriers and Benefits in the Adoption of E-Government." *International Journal of Public Sector Management* 17(4):286–301. doi: 10.1108/09513550410539794.

Hung, Shin Yuan, Chia Ming Chang, and Ting Jing Yu.(2006). "Determinants of User Acceptance of the E-Government Services: The Case of Online Tax Filing and Payment System." *Government Information Quarterly* 23(1):97–122. doi: 10.1016/j.giq.2005.11.005.

Imran, Ahmed, and Shirley Gregor.(2007). "A Comparative Analysis of Strategies for EGovernment in Developing Countries." *Journal of Business Systems, Governance and Ethics* 2(3). doi: 10.15209/jbsge.v2i3.112.

Isaac, Willy C. (2007). "Performance Measurement for the E-Government Initiatives: A Comparative Study - ProQuest." 203.

Varnali, K., & Toker, A. (2010). Mobile marketing research: The-state-of-the-art. *International journal of information management*, *30*(2), 144-151

Mellado, F., & Lou, E. C. (2020). Building information modelling, lean and sustainability: An integration

framework to promote performance improvements in the construction industry. *Sustainable cities and society*, *61*, 102355

Miguel, Luis, and Bernal Malagon. (n.d.). "E-Government in Digital Era : Concept , Practice , and Development E-Government in Digital Era :"

Mosweu, O., Bwalya, K. J., & Mutshewa, A. (2017). A probe into the factors for adoption and usage of electronic document and records management systems in the Botswana context. *Information development*, *33*(1), 97-110.

Norris, D. F., & Moon, M. J. (2005). Advancing e-government at the grassroots: Tortoise or hare?. *Public administration review*, *65*(1), 64-75

Obaid, T., Abu Mdallalah, S., Jouda, H., & Abu Jarad, A. (2020, July). Factors for successful e-government adoption in palestine: a conceptual framework. In The 1st International Conference on Information Technology & Business ICITB2020

Perumal, Sundresan. (2009). The Success Model of Evolution from Government to E-Governance.

Phang, C. W., Li, Y., Sutanto, J., & Kankanhalli, A. (2005, January). Senior citizens' adoption of e-government: In quest of the antecedents of perceived usefulness. In Proceedings of the 38th annual Hawaii international conference on system sciences (pp. 130a-130a). IEEE

Sang, S., Lee, J. D., & Lee, J. (2009). E-government adoption in ASEAN: the case of Cambodia. *Internet Research*, *19*(5), 517-534

Saunders, Mark, Philip Lewis, and Adrian Thornhill.(2015). "Understanding Research Philosophies and Approaches." (January 2009):122–61.

Seddon, K. D., Barnett, I. C., & de Ambrosis, L. P. (1985, December). Use of large scale load tests in foundation design and construction: Proc 4th Australia-New Zealand Conference on Geomechanics, Perth, Western Australia, 14–18 May 1984 V1, P329–334. Publ Barton: Inst of Engineers, 1984. In *International Journal of Rock Mechanics and Mining Sciences & Geomechanics Abstracts* (Vol. 22, No. 6, p. 195). Pergamon

Shah, S. R. A., Khan, A. Z., & Khalil, M. S. (2011). Project management practices in e-government projects: a case study of electronic government directorate (EGD) in Pakistan. *International Journal of Business and Social Science*, *2*(7), 235-243

Shareef Akhter, M., Kumar, V., & Kumar, U. (2011). e-Government Adoption Model GAM: Differing service maturity levels Original Research Article. *Government Information Quarterly*, *281*, 17-35.

Sofia Elena, COLESCA. (2009). "Increasing E-Trust: A Solution to Minimize Risk in E Government Adoption." *Journal of Applied Quantitative Methods* 4(1):31–44.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178

Voutinioti, A. (2013). Determinants of user adoption of e-government services in Greece and the role of citizen service centres. *Procedia Technology*, *8*, 238-244Xie, Qijun, Wei Song, Xiaobao Peng, and Muhammad Shabbir. 2017. "Predictors for E-Government Adoption: Integrating

Xie, Q., Song, W., Peng, X., & Shabbir, M. (2017). Predictors for e-government adoption: integrating TAM, TPB, trust and perceived risk. *The Electronic Library*, *35*(1), 2-20

Žukauskas, P., Vveinhardt, J., & Andriukaitienė, R. (2018). Philosophy and paradigm of scientific research. *Management culture and corporate social responsibility*, *121*, 139