A Conceptual Model for E-government Adoption in Egypt

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Abstract— Electronic government (e-government) was created as an efficient method for government adeptness and proficiency as a vital facilitator for citizen-oriented services. Since their establishment over a decade ago, E-government services are recognised as a vehicle for accessing online public services. Both governments and academic researchers comprehend the difficulty of low-level adoption of e-government services among citizens; a shared issue between both developing and developed countries. This paper investigates determinants and factors necessary to enhance adoption of citizens for e-government services in developing countries, with particular focus on Egypt, by extending the Technology Acceptance Model (TAM) using a set of political, social, and design constructs that were developed from different sources of research literature.

Keywords— *E-government, Adoption, Technology acceptance model, Adoption models*

I. INTRODUCTION

Information and Communication Technology (ICT) is currently thought of as a key factor in developing any society. With the majority of countries globally having incorporated new technologies with links to the Internet and the World Wide Web, currently many governments are attempting to employ these technologies to develop the method by which they provide services to citizens.

E-government is defined as the use of information and communication technologies (ICT), especially Internet and world-wide-web, to improve efficiency, cost and quality of the government information and services provided to stakeholders: citizens, businesses, employees and other government agencies [1]. The acceptance and success of e-government relies on the willingness of citizens to implement these innovative technologies. Hence, many governments around the world currently suffer from the low level of adopting e-government services by citizens, particularly in the Arab world [2].

Without understanding what factors influence the public to utilise e-government services, a government will be incapable of devising a strategy to expand up-take or e-government services [3]. However, understanding of citizen adoption of e-government services is currently lacking due to the following:

• Despite technology implementation from the user viewpoint has been significantly reviewed in contexts of e-commerce and Internet [4], comparatively fewer analyses have concentrated on citizen adoption of e-government services [5].

• There is a lack of empirical research that considers technological issues of e-government adoption, as well as behavioural issues [5].

Hence, more empirical studies are required in the area of e-government adoption to help governments to improve their comprehension of the factors, which affect citizen adoption of e-government services. In addition, a thorough examination of the e-government adoption studies reveal that a bigger percentage of published literature was conducted in developed countries. Hence, scarce material is available about the factors influencing e-government adoption in developing countries.

Egypt has been selected for investigation as a representative of a developing country, with a running e-government program since 2001 offering transactional services [6]. Despite the high number of services offered online, limited numbers of users are using the services. Therefore, an enhanced comprehension of issues influencing citizen adoption of e-government services is critical in Egypt. This research has important implications for other Arab countries with similar circumstances.

This paper presents the development of a new model for factors affecting e-government services adoption by integrating the TAM model with a set of social, political and design variables extracted from the various research resources: government and internet trust, perceived public value of e-government (which is the value that the public can acquire through the use of e-government services), and website design. This extended TAM model is to examine the impact of these factors upon citizen adoption of e-government services in developing countries with similar national cultures and values, by specifically applying the new model to assess Egyptian e-government adoption as a representative.

II. TECHNOLOGY ACCEPTANCE MODELS

A. Theory of Reasoned Action (TRA)

TRA is a well-accepted and widely studied intention model that was utilised successfully to clarify behaviour across a vast variety of settings [8]. According to TRA, an individual's behaviour is best predicted by his/her behavioural intention, in turn determined by the person's attitudes and subjective norm. TRA scope disregards a broad range of behaviours, for example impulsiveness, spontaneity, cravings, or even mindlessness because performance may be involuntary or because the actor is not intentionally engaging into these

behaviours. In this research study related to e-government, users require certain skills, experiences and base knowledge of the of Internet technologies to enable having obvious behavioural intention to accept E-government services, hence this model was not found suitable as an adoption model for e-government.

B. Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB) is offered as an addition to the Theory of Reasoned Action (TRA, connected to voluntary behaviour), due to the restrictions of TRA in accommodating for behaviours over which users exhibit deficient control. The TPB presented a third independent determinant of intention, perceived behaviour control (PBC).

This TPB model, like TRA, lacks the users' necessity for certain skills, experiences and base knowledge of the Internet technologies to have evident behavioural intention on the acceptance of E-government, hence this model was not found suitable as an adoption model for e-government.

C. Unified Theory of Acceptance and Use of Technology

Venkatesh et al. [7] introduced the Unified Theory of Acceptance and Use of Technology, by synthesising constructs from eight existing technology acceptance models: TRA, TAM, TPB, the Motivational Model (MM), the combined TAM and TPB (C-TAM-TPB), the Model of PC Utilization (MPCU), DOI and Social Cognitive Theory (SCT). The authors argue that UTAUT offers a valuable instrument for managers to evaluate the prospect of technology acceptance in the organisational context.

However, computer anxiety, computer self-efficiency, and attitude towards the use of technology were theorised not to be direct determinants of intention . These constructs were not included in the final model, therefore, this was not found suitable as an adoption model for e-government since Attitude construct was omitted from the model, the importance of which for e-government adoption is highlighted subsequently.

III. RESEARCH MODEL AND HYPOTHESES

A. Technology Acceptance Model

There are different models developed by the IS researchers to understand and predict technology acceptance and usage . The Technology Acceptance Model (TAM) which was created by Davis [26]; was the suitable model to be used in this research. The TAM model is an example of the models that IT/IS researchers utilised to forecast and explicate the fundamental issues that encourage users to accept and implement new information technology systems.

TAM was the model used for technology acceptance of e-government in this research due to the following reasons:

- It is a generic model that can be practical to use in any ICT context. Also it has widespread support through validation, applications and replications because of its ability to forecast use of information systems [27].

- TAM is recognised as a well-tested, well-established, powerful, and robust model for predicting user acceptance of technology [28].

- Diverse research and empirical studies used TAM for e-government applications especially to model users' behaviour and intention to utilise different e-government applications or systems

- The ability to add external constructs or variables to the model (through perceived ease of use and perceived usefulness constructs) e.g. trust in Internet, website design. This would enable testing their effects on the adoption of technology, in this research being e-government services.

- TAM model contains the Attitude variable, not included in other versions of TAM and in the UTAUT model.

- Using e-government needs certain skills, experiences and knowledge base of Internet technologies to show evident behavioural intention towards E-government usage. This point was ignored by TRA and TPB but not by TAM.

TAM hypothesises that the up taking of a new information system can be expected based on users' behaviour intention (BI), attitude towards use (ATT), and two other factors: perceived usefulness (PU) and perceived ease of use (PEOU). Davis [8] defined perceived usefulness as "the degree to which a person believes using a system provides all the required information"; perceived ease of use as "The degree to which a person believes that using a system would be free of mental effort"; attitude as "Individual's positive or negative feelings (evaluative affect) about performing the target behaviour"; behaviour intention as strength of one's intention to do a certain behaviour (for innovation), and actual system usage.

Based on the original TAM construct relationships (figure 1, left constructs), the magnitude of the following existing hypotheses are measured in this study:

H1: There is a direct & positive association between Perceived Usefulness (PU) and Attitude (ATT) towards using e-government services.

A high level of PU leads to more positive attitude (ATT) [2]. PU has been constantly found as a direct determinant of intention to use (BI), and also affects a user's BI indirectly as a direct determinant of ATT [9].

H2: There is a direct & positive association between Perceived Ease of Use (PEOU) and Attitude (ATT) towards using e-government services.

H3: There is a direct & positive association between Attitude (ATT) towards e-government and Behaviour Intention (BI) to using e-government services.

Perceived ease of use is another main impact factor of attitude toward use in the TAM model. This internal belief links to an individual's evaluation of the mental effort required to use a system [8]. Enhancements in perceived ease of use may add to better performance. PEOU has been shown to influence behaviour through two causal ways: (1) an indirect effect on behaviour via ATT and (2) an indirect effect on behaviour via PU.

H4: There is a direct & positive association between Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) of e-government services

Attitude is the construct that gathers most attentiveness and is used most extensively for forecasting users' "likelihood to adopt a new technology" [10]. Practically, users today have many technology innovations options, for which they might have developed a favourable or unfavourable attitude about, regardless of whether they have actually used the product in question.

H5: There is a direct & positive association between Perceived Usefulness (PU) and Behaviour intention (BI) to use e-government services.

According to Davis [8], Customer's intention to adopt and make use of a certain technology depends not only on the attitude but also on how the customers believe that using e-government would provide all required information – i.e. usefulness. Fu et al. [9] established that behavioural intention was largely driven by perceived usefulness.

H6: There is a direct & positive association between Behaviour intention (BI) to use e-government services and E-government actual use.

Most technology adoption researchers have utilised behaviour intention to expect technology adoption. Ajzen [10] suggests behavioural intention has a direct effect on adoption. Measurement of behavioural intention comprises of the intention, and predicted use of e-government services.

B. External variables

Perceived usefulness and perceived ease of use could be impacted by external variables considered in the original TAM model. This study extends the original TAM by integrating the original TAM constructs with the new constructs: trust in government, trust in the internet, website design, perceived public value, and demographic variables (age, gender, education level) to test how this new adjusted model of factors influences citizen adoption of e-government services. Hence the following new hypotheses are tested in this study:

H7. Age is negatively associated with Perceived usefulness (PU) from e-government service websites.

H8. Age is negatively associated with perceived ease of use of e-government service websites (PEOU).

Older users might have inadequate experience using computers and the Internet, hence it is possible that they might have self-efficacy worries regarding learning how to use services offered online. In a similar manner, older users tend to have self-referent opinions about perceived changes concerning their performance competencies due to aging.

H9. Perceived usefulness (PU) is more salient for men than for women

Generally, men are encouraged to be "assertive and competitive", and women to be "nurturing and cooperative"; these different gender roles are often conveyed through socialisation [19]. Gender could be a factor in defining a person's way of assessing a technology; e.g., usefulness or ease of use. Some empirical evidence proposes that perceived usefulness is more important for men than for women [7]. The social roles and prospects for women seem rigid in the Arabian culture [20].

H10. Perceived ease of use (PEOU) is more important to women than men

Former studies report that male students generally appear more comfortable learning and trialling with IT than female students; e.g., Venkatesh et al. [7] observed that women have more regard for service aspects more than men. Hence, female users could appreciate the ease of use of computer technology more than male users.

H11. Perceived Usefulness (PU) related to the Internet is lower for less academically educated individuals.

H12. Perceived ease of use (PEOU) related to the Internet is lower for less academically educated individuals.

The choice to use a new technology is directly linked to the amount of knowledge a person has about how to use that technology suitably, and complex technologies, like e-government, demand additional knowledge [21]. Early adopters of new technologies could have higher educational levels, mirroring their capability to comprehend "how-to" knowledge quicker than those with less education [21].

H13: There is direct & positive association between Trust in the Government (TG) and Perceived Usefulness (PU).

H14: There is direct & positive association between Trust in the Government (TG) and Perceived Ease of Use (PEOU).

"Trust in government" can be defined as the public's evaluation of government according to their perceptions of political authorities, institutions' and agencies reliability and competency to offer services in accordance with citizens' expectations [11].

H15: There is direct and positive relationship between Trust in the Internet (TI) and Perceived Usefulness (PU).

H16: There is direct and positive relationship between Trust in the Internet (TI) and Perceived Ease Of Use (PEOU).

Trust in the Internet can be identified as institution-based trust [11], which is "belief that needed structural conditions are present (e.g. in Internet) to enhance the probability of achieving a successful outcome in an endeavour like e-commerce" [12]. Prior research has extensively recognised trust in the Internet as an important predictor of adopting e-government services.

H17: There is direct and positive relationship between Website design (WD) and Perceived Usefulness (PU).

H18: There is direct and positive relationship between Website design (WD) and Perceived Ease of Use (PEOU).

As e-government websites develop to be the major medium for online communication between government and citizens, designing user-centred websites will be a necessity for governments [16]. Bertot & Jaeger [17] claim that accessibility is one of the vital requirements in creating beneficial user-centred e-government services. Studies reveal the significance of well-presented material on government websites in confirming citizens' satisfaction with the offered services [18]. Without suitable assessment of web-based e-government services, some e-government advantages, e.g. speedy access to government services and cost decrease cannot be guaranteed.

Fig. 1: Proposed Model (original five TAM constructs to the right)

H19: *There is direct & positive association between Perceived public value (PPV) and the Perceived Ease of Use (PEOU) of e-government services.*

H20: *There is direct & positive association between Perceived public value (PPV) and the Perceived Usefulness (PU) of e-government services.*

Perceived value is a subjective assessment between all material / content that is received, and all that is surrendered during the procedure of obtaining / using a consumption related object (product, store, service) [14]. More attention has been paid recently to perceived value as a stable construct to predict buying behaviour. Customers' value perceptions have been found to influence customer behavioural intentions. It increases their willingness to buy a product or use a service, and decreases their intentions to trying to find an alternative [15].

According to studies, individuals with less academic education report inadequate knowledge as one of the major reasons why they don't choose to use the Internet [22]. Figure 1 below shows the proposed model with the hypotheses:

Table 1: Model fit indices for the research model

Fit Index	Recommended Value	Scores	Accepted fit?
X^2	$p > 0.05$	0.839	Yes
X^2/df	< 3.00	1.386	Yes
GFI	> 0.90	0.926	Yes
RMSEA	< 0.08	0.000	Yes
RMSR	< 0.08	0.061	Yes
AGFI	> 0.90	0.935	Yes
NFI	> 0.90	0.998	Yes
CFI	> 0.90	1.000	Yes

III. SAMPLE AND SURVEY

This research utilised survey questionnaires to gather information on attitude towards e-government adoption from 897 Egyptian citizens with regular access to the internet. 53% of the participants were male. The highest percentage (68.3 %) was between 18-30 years old. College degree holders represented a higher percentage of respondents (59.1%).

This study examined the different factors and their hypotheses indicated previously. Majority of the questionnaire items testing the hypotheses were customized from previous studies [24]. The five-point Likert Scale was used to measure responses to the questions. Since English is not the first language of the respondents, who don't have English fluency, the questionnaire was translated into Arabic. For validation, reverse translation was done, translating the questionnaire from English to Arabic first and then from Arabic to English.

IV. RESULTS

Amos 21 and PASW 18 were used to test the goodness of fit of the model. The overall model fit was assessed using seven indices: Chi-square (X2), Degree of freedom/Chi-square (X2/df), Comparative Fit Index (CFI), Normed Fit Index (NFI), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Root Mean Square Error of Approximation (RMSEA).

The results as per Table 1 demonstrate that all indices had clearly exceeded the ideal standard values that were suggested for a good model fit, which means that the model had reached an acceptable level and could be used to explain the hypotheses. Hence, the path coefficients for each individual hypothesis of the structural model were tested next.

According to Table 2, path analysis of the research model showed Perceived Usefulness had a strong positive significant effect on Attitude (H1, $\beta=0.41$, $p<0.001$), but insignificant effect on BI (H5, $\beta= 0.06$, $p>0.05$). Perceived Ease of Use had a moderate positive significant effect on Attitude (H2, $\beta=0.14$, $p<0.01$) and a strong positive significant effect on Perceived Usefulness (H4, $\beta=0.45$, $p<0.001$).

Path Analysis

Behaviour Intention had strong positive significant effect on Electronic Government Actual Use (H6, $\beta=0.66$, $p<0.001$). Trust in Government had a strong positive significant effect on Perceived Usefulness (H13, $\beta=0.13$, $p<0.001$) and a moderate positive effect on Perceived Ease Of Use (H14, $\beta=0.25$, $p<0.01$), while Trust in the Internet had weak positive effect on Perceived Usefulness (H15, $\beta=0.09$, $p<0.05$) and a strong positive effect on Perceived Ease Of Use (H16, $\beta=0.26$, $p<0.001$). Website Design had moderate positive effect on both Perceived Usefulness (H17, $\beta=0.189$, $p<0.01$) and Perceived

Ease of Use (H18, $\beta=0.203$, $p<0.01$). Public Value had significant strong positive effect on both Perceived Usefulness (H19, $\beta=0.166$, $p<0.001$) and Perceived Ease of Use (H20, $\beta=0.21$, $p<0.001$).
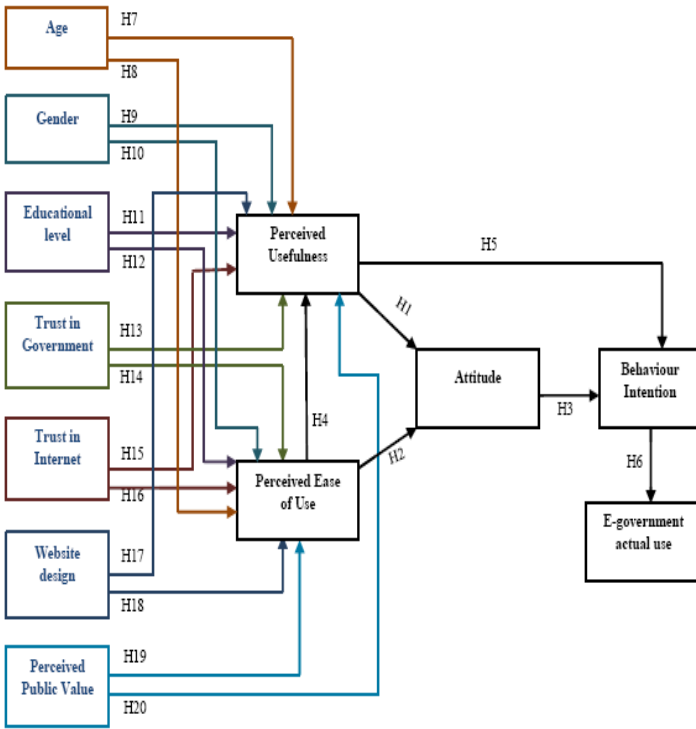
Table 2: Summary of hypotheses tests

Hypothesis	independent	dependent	Path	Path Coefficients β	P-Value	Results
H1	PU	ATT	PU→ATT	0.41***	0.000	Supported
H2	PEOU	ATT	PEOU → ATT	0.14**	0.005	Supported
H3	ATU	BI	ATU → BI	0.60***	0.000	Supported
H4	PEOU	PU	PEOU →PU	0.45***	0.000	Supported
H5	PU	BI	PU→BI	0.06	0.156	Not supported
H6	BI	EGAU	BI→EGAU	0.66***	0.000	Supported
H7	Age	PU	Age→PU	0.72	0.126	Not supported
H8	Age	PEOU	Age→PEOU	0.39	0.272	Not supported
H9	Gender	PU	Gender→PU	-0.57	0.567	Not supported
H10	Gender	PEOU	Gender→PEOU	0.25	0.796	Not supported
H11	Education	PU	Edu→PU	0.64	0.096	Not supported
H12	Education	PEOU	Edu→PEOU	0.54	0.144	Not supported
H13	TG	PU	TG→ PU	0.13**	0.005	Supported
H14	TG	PEOU	TG→PEOU	0.25**	0.005	Supported
H15	TI	PU	TI → PU	0.09*	0.021	Supported
H16	TI	PEOU	TI→ PEOU	0.26***	0.000	Supported
H17	WD	PU	WD→ PU	0.189**	0.005	Supported
H18	WD	PEOU	WD→ PEOU	0.203**	0.003	Supported
H19	PV	PU	PV→ PU	0.166***	0.000	Supported
H20	PV	PEOU	PV→ PEOU	0.21***	0.000	Supported

***P<0.001, **P<0.01, *P<0.05

Table 3: Model Coefficient of Determination (R^2) results

Independent construct	Dependent Construct	R2 (%)
TI, TG, PV, WD	PU	65
TI, TG, PV, WD	PEOU	66
PU, PEOU	ATT	60
ATT	BI	75
BI	EGAU	47

With regard to how relationships between the different constructs explained the variances of their results (R^2) (Table 3): Attitude explained 74% of the variance in Behaviour Intention. Trust in Internet, Trust in Government, Public Values, and Website Design explained a range of 65-66% of variance in Perceived Usefulness and Perceived Ease of Use. Perceived Ease of Use had the strongest effect on Perceived Usefulness compared to the other factors. Trust in Internet had the strongest effect on Perceived Ease of Use compared to the other factors. Moreover, Perceived Ease of Use and Perceived Usefulness explained 60% of variance in Attitude. Perceived Usefulness was found to be the strongest effect on Attitude. Lastly, Behaviour Intention explained 47% of variance in Electronic Government Actual Use. All associations can be seen to be strong to moderate between the constructs indicating the high value of goodness of fit of the model.

V. DISCUSSION

Perceived Ease of Use was established as a variable that affects the adoption process due to its various impacts on key variables such as Perceived Usefulness and Attitude (H4, H2 tested previously). As long as as citizens recognise that using e-government services is effortless (easy to use) their Attitude and Perceived Usefulness become increased. It is the government's responsibility to explain e-services based on users' needs and knowledge, so as to render them uncomplicated to use for the wide-range of citizens in relation to Internet experience.

Perceived Usefulness is revealed as the most important factor affecting citizens" attitude (H1) (directly) to adopt e-government services. This gives evidence that, comparable to other technology focused services, the observed benefits resulting from using them are the main reasons for citizens to adopt e-government services. If the e-Government system is seen to be useful, the users will have positive attitudes and strong intentions for using the system. Managers responsible for providing the online public services should consider that in order for potential users to adopt a service, they have to perceive its usefulness first.

Attitude had a significant positive effect on Intention to use e-government services (H3). The findings demonstrated that the intention of citizens' to utilise e-government services is mostly affected by their attitude towards using these services and less so by perceived usefulness. However, prior research has suggested that the inclusion of attitude is not meaningful but this paper suggests otherwise, due to the voluntary nature of citizens" adoption of e-government services. Voluntary users shaped their intentions to utilise the systems mainly based on their attitude toward using the system. This result confirms the importance of Attitude in the TAM model, as this variable was removed from other versions of the TAM model.

Behavioural intention was found to have a significant positive effect on individuals" actual use of e-government portals (H20). TAM originally hypothesises that, actual systems' use is directly determined by behavioural intention to re-use.

Inconsistent with the proposition of the original TAM, this study found that PU did not directly affect citizens' intention to use e-government services (H5), but it directly affects their attitude, which means that Attitude construct fully mediates the effect of perceived usefulness on behavioural intention. The more useful the e-government website, the more the person feels good about the idea of using the e-government services, which will increase the intention to use this service.

In the present study, trust in e-Government comprised of two dimensions, namely trust in government (H13, H14) and trust in Internet technology (H15, H16). All these hypotheses were supported. High levels of Trust in government, and Trust in Internet would directly predict a higher level of users' belief in using e-government system, which means that citizens would not anticipate gaining any usefulness from e-government services if thy do not see them as trustworthy. The government in Egypt shows inadequate collaboration between its entities to create laws and regulations related to ICT Usage,

standardizing system use, and sharing information (according to interview results explained in the consequent chapter). These issues should be considered by the government in Egypt in order to increase citizens' trust and have them more enthusiastic to use government websites.

Perceived Public Value (H19, H20) which is considered the user's overall evaluation of the usefulness of a product based on the user's opinion of what is received, and what is given, had a substantial effect on users' beliefs (Perceived usefulness, and Perceived Ease of Use). Higher level of Perceived Public Value, would predict a higher level of users' beliefs about using e-government system. Government must concentrate on how to increase the value for the public from using e-government services in order to attract more people to use their online services; also e-government strategy must pay more attention to the requirements and expectations of users in developing e-government services.

Website Design was proved to be a significant predictor to the users' beliefs (Perceived Usefulness and Perceived Ease of Use. Citizens' adoption of e-government increases if e-government websites are provided with sufficient, attractive and well-organised design and content. Government agencies in Egypt should make sure that their websites are accessible to various users. The government in Egypt therefore should guarantee that their websites are offered with reliable and attractive screen layout. Also, there should be continuous updating of the website links, so as not to direct to deleted or re-directed pages and to guarantee that people are comfortable in interacting with the government via the web-based channel.

VI. CONCLUSION

This paper demonstrates and validates a framework of e-government adoption Generally, findings indicate that Website design, Perceived Public Value, Trust in Government, Trust in the Internet, Perceived Ease of Use, Perceived Usefulness, Attitude toward using e-government, Behaviour intention, E-government Actual use are valid measures of e-government adoption success. Apart from H5 (PU on BI), H7, H8, H9, H10, H11 and H12 (demographic factors), the other hypothesised relationships between variables were moderately or significantly supported. However since overall goodness of fit of model is high including all constructs, it is proposed that different relationships for the demographic constructs within the model could be investigated in future, not specifically connected via Perceived Usefulness and Perceived ease of Use.

REFERENCES

[1] C. Srivastava and H. Teo, "Information system research relevance". In M.Khosrow pour (Ed), Encylopedia of information science and technology, 2007.

[2] N. P. Rana and Y. K. Dwivedi, "Citizen's adoption of an e-government system: validating extended social cognitive theory (SCT)". Government Information Quarterly, 32(2), 172-181, 2015.

[3] D. Gilbert and P. Balestrini, "Barriers and benefits in the adoption of e-government", The International Journal of Public Sector Management, vol. 17 no. 4, pp. 286, 2004.

[4] L. Tung and O. Rieck, "Adoption of electronic government services among business organizations in Singapore", Journal of Strategic Information Systems, vol.14, no.4, pp .417, 2005.

[5] O. Al-Hujran, M. Al-Debei, A. Chatfield, and M. Migdadi, "The imperative of influencing citizen attitude toward e-government adoption and use". Computers in Human Behavior, 53, 189-203, 2015.

[6] F. Sayed, "Innovation in public administration: the case of Egypt", United Nations Department for Economic and Social Affairs (UNDESA), 2004.

[7] V. Venkatesh, M. Morris, G. Davis, and F. Davis, "User acceptance of information technology: toward a unified view", MIS Quarterly, vol.27, no.3, pp. 425, 2003.

[8] F. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology", MIS Quarterly, vol.13, no.3, pp. 319, 1989.

[9] J. Fu, C. Farn, and W. Chao, "Acceptance of electronic tax filing: a study of taxpayer intentions", Information and Management, vol.43, no.1, pp. 109, 2006.

[10] I. Ajzen, "The theory of planned behaviour", Organizational Behaviour and Human Decision Processes, vol.50, no.2, pp. 179-211, 1991.

[11] F. Belanger, and L. Carter, "Trust and risk in e-government adoption", The Journal of Strategic Information Systems, vol. 17, no. 2, pp. 165-76, 2008.

[12] H. McKnight, V. Choudhury, and C. Kacmar, "Developing and validating trust measures for e-commerce: an integrative typology", Information Systems Research, vol. 13, no. 3, pp. 334, 2002.

[13] W. Dodds, K. Monroe, and D. Grewal, "Effects of price, brand, and store information on buyers product evaluations". Journal of Marketing Research, vol. 28, no. 3, pp. 307, 1991.

[14] T. Woodall, "Conceptualizing value for the customer": An Attribution, Structural and Dispositional Analysis", Academy of Marketing Science Review, vol. 12, pp. 1, 2003.

[15] M. Pura, "Linking perceived value and loyalty in location based mobile services", Managing service quality, vol.15, no.6, pp. 509, 2005.

[16] S. Becker, "A e-government visual accessibility for older adult users", Social Science Computer Review, vol. 22 no. 1, p. 11, 2004.

[17] C. Bertot, and P. Jaeger, "User-centred e-government: challenges and benefits for government web sites", Government Information Quarterly, vol. 23 no. 2, pp. 163, 2006.

[18] P. Zhang, and G. von Dran, "Satisfiers and dissatisfiers: a two-factor model for website design and evaluation", Journal of the American Society for Information Science, vol. 51, no. 14, pp. 1253, 2000.

[19] D. Gefen, and D. Straub, "The relative importance of PEOU in IS adoption: a study of E-commerce adoption", Journal of association for information system, vol.1, no, 8, pp.1, 2000.

[20] S. Al-Gahani, S. Hunona, and J. Wang, "Information technology in Saudi Arabia: culture and the acceptance and use of IT". Information & Management, vol.44, pp.681-691, 2007.

[21] E. Rogers,"Diffusion of Innovation",3rd Ed,Free Press,New York, 1995.

[22] National Telecommunications and Information Administration (NTIA). "A nation online: how Americans are expanding their use of the internet". Washington D.C: US Department of Commerce ,2002

[23] M. Alanezi, A. Kamil, and S. Basri, "A proposed instrument dimensions for measuring service quality", International Journal of u and e-service. Science and technology, vol.3, no.4, pp.1-18, 2010.

[24] H. Yang, and Y. Yoo, "It's all about attitude: revising the technology acceptance model", Decision Support Systems, vol.38, no.1, pp. 19, 2004

[25] M. Fassnacht, and L. Koese, "Quality of electronic services conceptualizing and testing a hierarchical model", Journal of service research, vol.9, no.1, pp.19, 2006

[26] R. Campeau and A. Higgins, "Application of social cognitive theory to training for computer skills", Information system Research, pp. 118, 1995.

[27] S. Al-Shafi, and V. Weerakkody, "Exploring e-government in the state of Qatar: benefits, challenges and complexities". Proceedings of the 2007 European and Mediterranean Conference on Information Systems (EMCIS). Valencia, Spain, 2007.

[28] C. Or, and B. Karsh, "A systematic review of patient acceptance of consumer health information technology", Journal of the American Medical Informatics Association, vol.16, no. 4 pp. 550-560, 2009.