

CONCEPTUAL MODEL FOR EXAMINING THE CONTINUANCE USAGE INTENTION OF SMART GOVERNMENT SERVICES

Omar Hujran¹ and Mutaz M. Al-Debei²

¹*College of Business and Economics, United Arab Emirates University, Al Ain, United Arab Emirates*

²*Business School, Al-Ahliyya Amman University, Amman, Jordan*

ABSTRACT

Until recently, little attention has been paid to citizens' continuance usage (i.e. post-adoption) of emerging technologies. Recognizing this gap in the literature, this research aims at developing an integrative research model by extending the Unified Theory of Acceptance and Use of Technology (UTAUT) framework with public satisfaction and trust constructs which are considered as imperative factors in continuance usage of e-government services. As part of a larger research project, this model will be then applied to examine citizens' continuance usage intention of smart government services in the United Arab Emirates (UAE).

KEYWORDS

Smart Government, E-government, Continuance Usage, UTAUT, Trust, Satisfaction

1. INTRODUCTION

Smart government, the next-generation e-government, refers to the use of breakthrough technologies such as Artificial Intelligence (AI), Machine Learning (ML), Internet of Things (IoT), Mobile Computing, Open Government Data, Cloud Computing, Social Media, Blockchain and Big Data Analytics by the public sector (Hujran et al., 2021). Smart government has the potential to modernize the public sector by enabling governments to provide intelligent, integrated, personalized, and interactive public services to their stakeholders (Althunibat et al., 2021). Despite its numerous benefits, however, the literature on smart government is still in its infancy. In contrast to e-government and m-government, little consideration has been paid to exploring issues related to smart government (Al-Hujran et al., 2022). Hence, the first contribution of this research is to address this gap in the literature.

As smart government initiatives are increasingly being implemented by some countries around the globe including the UAE, certain technical and non-technical challenges need to be considered including citizen adoption and continuance use (Althunibat et al., 2021). Recent studies frequently reported that electronic public services and associated innovative technologies have been often underutilized (Xiong et al., 2021; Alruwaie et al., 2020) with a discontinuance rate being high (Islam et al., 2021; Xiong et al., 2021; Alruwaie et al., 2020; Li and Shang, 2020). Hitherto, prior information systems (IS) literature showed that the success of any IS and the feasibility of its long-term strategies is highly dependent on its continued use (i.e. post-adoption) rather than on initial acceptance (Alruwaie et al., 2020; Li and Shang, 2020; Bhattacharjee, 2001). Several researchers argued that the problem of underutilization of Information and Communications Technologies (ICT) applications is because organizations tend to overlook the post-adoption period (Islam et al., 2021; Alruwaie et al., 2020). After a comprehensive review of the e-government literature, the current research found only a few studies explored the continuance use of e-government services (e.g. Alruwaie et al., 2020; Li and Shang, 2020; Naranjo-Zolotov et al., 2019), m-government services (e.g. Xiong et al., 2021) and open government data (e.g. Islam et al., 2021). Therefore, studies related to the post-adoption of smart government services are still needed to make this innovation successful. Filling this gap in the literature represents the second contribution for the current study. Accordingly, this study aims at developing an integrated model of smart government continuance usage by extending the UTAUT model.

2. LITERATURE REVIEW

The e-government literature has witnessed an increasing number of studies that have been devoted to understanding citizens' perspectives toward the acceptance and adoption of e-government services (e.g. Mustaf et al., 2020; Al-Hujran et al., 2015; Al-Hujran et al., 2014; Al-Hujran and Al-dalahmeh, 2011). As a result, numerous e-government adoption models have been developed, and a wide range of factors affecting adoption have been pinpointed. For example, Mustaf et al. (2020) identified around 50 different influencing factors from 41 e-government adoption studies that have been published during the years 2007-2018. However, neither the acceptance nor the adoption is enough to ensure the success of e-government services, but the continuance use or the post-adoption does (Li and Shang, 2020). While acceptance and adoption might represent the initial stage of use of an information system, post-adoption represents the repeated or continuance use, and the latter deserves more specific attention (Yan et al., 2021).

The lack of citizens' continuance use of e-government services has been frequently recognized and highlighted in the recent literature (Gupta, 2021; Li and Shang, 2020), which also have called for further attention to be placed on understanding citizens' continuous use of e-government services. Accordingly, more recent studies started to focus on determining the underlying factors that influence citizens' continuance use of e-government services (e.g. Gupta and Maurya, 2020; Li and Shang, 2020), mobile government services (Xiong et al., 2021) and open government (Islam et al., 2021). Nevertheless, the post-adoption or continuance use of smart government services has been rarely been investigated, especially in developing nations such as the UAE. The continuance usage of technology, as a wider domain, has received little attention compared with technology acceptance and/or adoption (Yan et al., 2021). A recent examination of the use of UTAUT2 theory (from 2012 -2017) has found that, among 650 studies cities UTAUT2, only three studies focused on user post-adoption of ICT applications (Tamilmani et al., 2021). Another recent study but a broader systematic review of 147 papers in the context of continuous use of technologies at the time period from 2001 to 2019, found only 10 studies addressed continuance use of ICTs (Yan et al., 2021). Apparently, this knowledge gap also exists in the smart government literature.

3. HYPOTHESES DEVELOPMENT

This research proposes an integrative model by extending the UTAUT (Venkatesh et al., 2003) through the integration of two significant predictors of e-government continuance usage identified in the relevant literature: public satisfaction and public trust constructs (See Figure 1). The UTAUT theory is one the most broadly employed theoretical models that have effectively replicated numerous occasions and used to investigate the adoption of a wide range of technologies (Venkatesh, 2021; Hujran et al., 2020). In the UTAUT model, behavioral intention and use behavior are influenced directly by four independent constructs. These constructs are performance expectancy (PE), effort expectancy (EE), facilitating conditions (FC), and social influence (SI).

3.1 Impact of Performance Expectancy on Public Satisfaction

Performance expectancy refers to the degree to which a user believes that the usage of a particular system would lead to enhancing his/her job performance (Venkatesh et al., 2003). Smart government has the potential to enhance citizens' performance and create greater values for them such as offering greater convenience, transforming government-citizen relationships, improving citizens' experiences, and transforming public decision making (Hujran et al., 2021). Thus, it could be argued that citizens are more likely to be satisfied with their experience of utilizing smart government services when they realize a higher level of utilitarian value in using such innovative services. The significant relationship between PE and satisfaction has been validated in similar contexts (e.g. Alalwan, 2020; Singh, 2020). Hence, the following hypothesis is proposed:

H1. *Performance expectancy positively influences public satisfaction.*

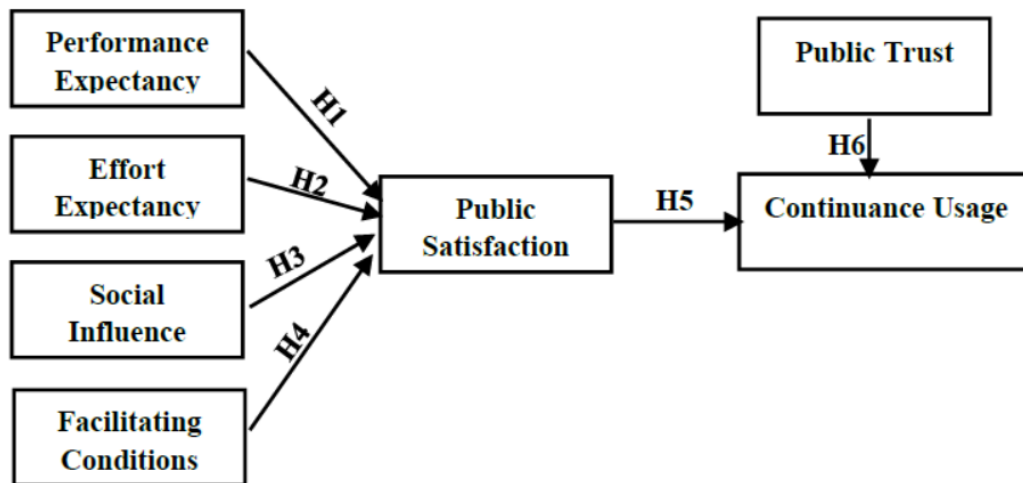


Figure 1. Research model

3.2 Impact of Effort Expectancy on Public Satisfaction

Effort expectancy is defined as the degree to which the user believes the use of a new technology to be free of effort and easy to use (Venkatesh et al., 2003). The use of various novel technologies such as Chatbots, IoT-related services, Virtual reality, and Smartphones would enable the public to complete their transactions with minimal effort and without needing help from government staff. Accordingly, it could be proposed that whereas citizens perceive that using smart government services is effortless, they will be satisfied with their experience in utilizing such services. Previous studies confirmed the significant impact of EE on end-user's satisfaction across similar contexts (e.g. Hope and Zhang, 2015). Thus, we posit:

H2. *Effort expectancy positively influences public satisfaction.*

3.3 Impact of Social Influence on Public Satisfaction

Social influence denotes the degree to which a user believes that other important individuals to him/her (i.e. family, peers, friends) think that he/she should use a technology or system (Venkatesh et al., 2003; Khasawneh et al., 2018). The current study argues that citizens are more likely to be influenced by the opinions and word-of-mouth of those around them when judging their experience (satisfied or dissatisfied) with smart government services. The positive link between SI and user's satisfaction was empirically proved by prior ICT adoption literature (e.g. Chen et al., 2020). Therefore, this study suggests the following hypothesis:

H3. *Social influence positively influences public satisfaction.*

3.4 Impact of Facilitating Conditions on Public Satisfaction

Facilitating conditions are defined as users' perceptions of the availability of proper organizational resources and infrastructure that support the use of a specific system or technology (Venkatesh et al., 2003). It is anticipated that when citizens perceive that the government provides them with enough resources and support when using smart services, they are more likely to have conformable experiences and, hence, would be more satisfied. Earlier research reported that FC is a strong predictor of user satisfaction (e.g. Alalwan, 2020; Chan et al., 2010). Thus, we hypothesize:

H4. *Facilitating conditions positively influence public satisfaction.*

3.5 Impact of Public Satisfaction on Continuance Usage

The satisfaction concept has been extensively studied in different domains including marketing, management, commerce, and information systems. According to Bhattacharjee (2001), satisfaction is regarded as “experience-specific affect” and it represents a psychological state connected to and generated from a comparison between expectations and experience (i.e., confirmation). Previous research showed that satisfaction is a strong determinant of the continuance intention to use a product, service, or technology (Alalwan, 2020; Singh, 2020). Accordingly, we posit:

H5. *Public satisfaction positively influences the continuance usage of smart government services.*

3.6 Impact of Public Trust on Continuance Usage

According to Williamson (1993), trust is viewed as a calculative process and a particular level of subjective probability with which an individual weighs available evidence associated with possible benefits and risks to decide whether to rely on another agent to perform a particular activity. Thus, if a user does not trust particular smart government services, he or she may stop using them. Past studies indicated the important role of trust in predicting a user’s intention to continually use a product, service, or technology (e.g. Benlian et al., 2012). Therefore, the following hypothesis is proposed:

H6. *Public trust positively influences the continuance usage of smart government services.*

4. CONCLUSION

While most studies on smart government have focused on Western countries, just a handful have looked at how it has been used in Arab countries like the United Arab Emirates. In addition, there is a scarce of studies that examine the continuance usage intention of smart government services. This study, therefore, proposed a conceptual model to examine the continuance intention to use smart government services. As a future work, an extensive empirical survey research will be carried out in the UAE to empirically validate the proposed research model.

ACKNOWLEDGEMENT

This study is supported by the CBE Annual Research Program (CARP) from the United Arab Emirates University.

REFERENCES

- Alalwan, A. A. (2020). Mobile food ordering apps: An empirical study of the factors affecting customer e-satisfaction and continued intention to reuse. *International Journal of Information Management*, 50, 28-44.
- Al-Hujran, O., & Al-dalahmeh, M. (2011). The role of national culture on citizen adoption of eGovernment web sites. In *Proceedings of the 11th European Conference on e-Government, ECEG 2011* (pp. 17-26).
- Hujran, O., Al-Debei, M. M., Al-Adwan, A. S., Alarabiat, A., & Altarawneh, N. (2022). Examining the antecedents and outcomes of smart government usage: An integrated model. *Government Information Quarterly*, 101783. In Press.
- Hujran, O., Abu-Shanab, E., & Aljaafreh, A. (2020). Predictors for the adoption of e-democracy: an empirical evaluation based on a citizen-centric approach. *Transforming Government: People, Process and Policy*, 14(3), 523-544.
- Al-Hujran, O., Al-Debei, M. M., Chatfield, A., & Migdadi, M. (2015). The imperative of influencing citizen attitude toward e-government adoption and use. *Computers in human Behavior*, 53, 189-203.
- Al-Hujran, O., Al-Debei, M. M., & Al-Lozi, E. (2014). Examining eDemocracy adoption intention for digital society: An integrative model. In *The eighth international conference on digital society* (pp. 39-47).
- Alruwaie, M., El-Haddadeh, R., and Weerakkody, V. (2020). Citizens’ continuous use of eGovernment services: The role of self-efficacy, outcome expectations and satisfaction. *Government Information Quarterly*, 37, 101485.

- Althunibat, A., Binsawad, M., Almaiah, M.A., Almomani, O., Alsaaidah, A., Al-Rahmi, W., and Seliaman, M.E. (2021). Sustainable Applications of Smart-Government Services: A Model to Understand Smart-Government Adoption. *Sustainability*, 13, 3028.
- Benlian, A., Titah, R., & Hess, T. (2012). Differential effects of provider recommendations and consumer reviews in e-commerce transactions: An experimental study. *Journal of Management Information Systems*, 29(1), 237-272.
- Bhattacharjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS quarterly*, 25 (3), 351-370.
- Chan, F. K., Thong, J. Y., Venkatesh, V., Brown, S. A., Hu, P. J., & Tam, K. Y. (2010). Modeling citizen satisfaction with mandatory adoption of an e-government technology. *Journal of the association for information systems*, 11(10), 519-549.
- Chen, C. C., Hsiao, K. L., & Li, W. C. (2020). Exploring the determinants of usage continuance willingness for location-based apps: A case study of bicycle-based exercise apps. *Journal of Retailing and Consumer Services*, 55, 102097.
- Gupta, K.P. (2021). Impact of e-government benefits on continuous use intention of e-government services: the moderating role of citizen trust in common service centres (CSCs). *International Journal of Electronic Governance*, 13, 176–191.
- Gupta, K. P., & Maurya, H. (2020). The role of access convenience of common service centres (CSCs) in the continued use of e-government. *Digital Policy, Regulation and Governance*, 22 (5/6), 437-453.
- Hope, P., & Zhang, X. (2015). Examining user satisfaction with single sign-on and computer application roaming within emergency departments. *Health informatics journal*, 21(2), 107-119.
- Hujran, O., Alarabiat, A., Al-Adwan, A. S., & Al-Debei, M. (2021). Digitally Transforming Electronic Governments into Smart Governments: SMARTGOV, an Extended Maturity Model. *Information Development*, 02666669211054188.
- Islam, M.T., Talukder, Md.S., Khayer, A., and Islam, A.K.M.N. (2021). Exploring continuance usage intention toward open government data technologies: an integrated approach. *VINE Journal of Information and Knowledge Management Systems*, ahead-of-print.
- Khasawneh, M. H. A., Hujran, O., & Abdrabbo, T. (2018). A quantitative examination of the factors that influence users' perceptions of trust towards using mobile banking services. *International Journal of Internet Marketing and Advertising*, 12(2), 181-207.
- Li, Y., and Shang, H. (2020). Service quality, perceived value, and citizens' continuous-use intention regarding e-government: Empirical evidence from China. *Information & Management*, 57, 103197.
- Mustaf, A., Ibrahim, O., and Mohammed, F. (2020). E-government adoption: A systematic review in the context of developing nations. *International Journal of Innovation: IJI Journal*, 8, 59–76.
- Naranjo-Zolotov, M., Oliveira, T., Casteleyn, S., & Irani, Z. (2019). Continuous usage of e-participation: The role of the sense of virtual community. *Government information quarterly*, 36(3), 536-545.
- Singh, S. (2020). An integrated model combining ECM and UTAUT to explain users' post-adoption behaviour towards mobile payment systems. *Australasian Journal of Information Systems*, 24.
- Tamilmani, K., Rana, N. P., Wamba, S. F., & Dwivedi, R. (2021). The extended Unified Theory of Acceptance and Use of Technology (UTAUT2): A systematic literature review and theory evaluation. *International Journal of Information Management*, 57, 102269.
- Venkatesh, V. (2021). Adoption and use of AI tools: a research agenda grounded in UTAUT. *Annals of Operations Research*, 308, 641–652.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 27(3), 425-478.
- Williamson, O. E. (1993). Calculativeness, trust, and economic organization. *The journal of law and economics*, 36(1, Part 2), 453-486.
- Xiong, L., Wang, H., and Wang, C. (2021). Predicting mobile government service continuance: A two-stage structural equation modeling-artificial neural network approach. *Government Information Quarterly* 101654.
- Yan, M., Filieri, R., and Gorton, M. (2021). Continuance intention of online technologies: A systematic literature review. *International Journal of Information Management*, 58, 102315.