

Behavioural intention on e-government adoption: The moderating effect of technology readiness

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Key Words

Behavioural Intention, E-Government, Technology Readiness, UTAUT, UTAUT2.

Abstract

This conceptual research paper is about the moderating effect of technology readiness on the relationship between performance expectancy, effort expectancy, social influence, facilitating conditions, trust, habit and behavioural intention to adopt the e-government services in Malaysia. Previous studies have been emphasising too much on factors that influence the behavioural intention to use e-government services; however, there is no study yet done on the role of technology readiness, especially on its moderating effects. This proposal will use the UTAUT2 theory as the basis for the formation of the conceptual theoretical framework. The respondents will be the Malaysian citizens. This research will be carried out with a surveyed-based quantitative approach. The SPSS version 23 will be used at the preliminary stage for screening and cleaning of data collection. It will then be transformed into csv form for the measurement model and structural model analysis using the Partial Least Square-Structural Equation Model (PLS-SEM).

1. Introduction

Behavioural intention and actual use of behaviour on technological advancement have been the focal point of research discussion of late. However, further research is still needed since the findings of the previous research are inconclusive. Behavioural intention has long been empirically proven to be a significant predictor to user intention to adopt and use a new technology (Ajzen, 1991; Sheppard et al., 1988; Taylor and Todd, 1995b; Venkatesh et al., 2003; Almalki, 2014; Lean et al., 2009). According to Fishbein and Ajzen (1975) the main determinant of a person's behaviour is behaviour intent. A person will take into consideration of what would be the implication of his/her action before she/he decides to actually engage or not in certain behaviour. Ajzen and Fishbein (1980) posits "that a person's attitude is determined by his/her perception about the expected outcome of performing the behaviour and the assessment of the consequences. Hence, if a person's behaviour intent is strong, then it is highly expected that the behaviour will be actually performed".

Behavioural intention is about the measurement of the strength of one's intention to perform specific behaviour which determines the usage behaviour and user adoption. Sabah (2016) in his study, defined Behavioural Intention as a measurement of an individual's commitment towards utilizing a new technology system of ICT. Venkatesh et al. (2003) defined behaviour intention as "a measure of the strength of individual's intention to perform a specified behaviour" and is regarded as a key criterion for user's acceptance in use behaviour. Hence, it is important to identify the underlying factors that affect the formation and change of behavioural intent.

This research will be based on the UTAUT2 theory, the extension of UTAUT theory with slight modification by excluding some of the existing independents and moderating variables while injecting new ones at the same time. The UTAUT is the theory that combined eight theories of ICT adoption, making it a suitable, valid, recent, and reliable model of technology adoption to accommodate a high percentage of variances (Alawadhi and Morris, 2008). The original UTAUT Model could explain 56 percent of the variance on Behavioural Intention to Use and about 40 percent variance on the actual usage (Venkatesh et al., 2003). UTAUT2 has improved the variance up to 74 percent and use of technology to 52 percent respectively (Slade et al., 2013; Venkatesh et al., 2012). The objectives of this study are to examine the technology readiness moderating effect on the relationship between the performance expectancy,

effort expectancy, social influence, facilitating condition, trust, habit and behavioural intention to adopt e-Government services in Malaysia.

2.0 Literature Review

Previous studies proved that there are many factors significantly affecting the behavioural intention to adopt e-government services. Among them are lack of awareness (Mitrovic and Bytheway, 2009; Mofleh and Wanous, 2008; NATION, 2014; Rehman et al., 2012), digital divide (Mohamad Farouk and Shafee, 2005), trust (Alaiad and Zhou, 2013) self-efficacy and experience (L.a Carter and Christian Schaupp, 2008) hedonic motivation, performance expectancy, enriching system use, perceived economic benefit, perceived social benefit, enriching use behaviour (Liew, Vaithilingam, & Nair, 2014), trust and flow experience (Oh and Yoon, 2014) job fit, attitude, self-efficacy and anxiety (Xiong, Qureshi, & Najjar, 2013), trust of Internet and trust of intermediaries (Weerakkody, El-Haddadeh, Al-Sobhi, Shareef, & Dwivedi, 2013), involvement (Shibl, Lawley, & Debuse, 2013), perceived financial control and ease of navigation (Saeed, 2013), self-efficacy (Mckenna, Tuunanen, & Gardner, 2013) and many more. Similar study on Malaysian perspective by Taiwo, Downe, and Loke (2014,) found that facilitating condition, effort expectation, performance, risk taking propensity, disposition of trust, institutional based trust, trust belief and attitudes to computer are significantly affecting the behavioural intention to adopt the e-governmental services.

Extensive researches have been done to understand the behavioural intention in adopting an e-government service around the world as well as on Malaysian context. Nevertheless, there is no specific model of e-government that could be universally and generally accepted to explain how an e-government is well adopted and used. This is due to the fact that factors such as socio-economic norm, economic, and political factors have affected the design of the system, and the citizens' decision to adopt e-government models (AL Mansoori, 2017). The success of an e-government initiative is determined by its use, and it is measured by its adoption (Xie, Song, Peng, & Shabbir, 2017). On account of that, new models of adoption keep coming up to explain the scenario.

Although studies on e-government adoption have been extensive, most of them are focusing on the technical and management factors point of view, known as the supply side of an e-government. However, there are fewer studies on individuals technology readiness to embrace technological innovations (Celik and Kocaman, 2015). Researchers around the world have overlooked that e-government is actually involving change that was induced by information and communication technologies (ICT) (Nogrask, 2011) and therefore the effect of it—the change -- should be dealt with from the readiness perspective point of view (Smith, 2005). Thus, there is a profound need for a research to be carried out from the human factors perspective, especially from the psychological elements of a user, the readiness of embracing an ICT-technology innovation (Alsaif, 2014). Readiness, on the other hand, has been proven by Smith (2005) to be the biggest obstacles to achieving change. Smith (2005) further argues that failure of an individual readiness may result in managers spending significant time and energy to dealing with resistance to change.

What stands out is that the extensions of research on e-government adoption researchers have given less emphasis on the effect of technology readiness in adapting e-government initiative in the process of understanding the adoption issue. With the growing implementation of e-government innovative, technology readiness has become one of the key performance measurement tools in making sure that an e-government is managed and implemented successfully (Dilip Potnis and Pardo, 2011). On account on this, it is believed that the technology readiness could have helped enlighten the adoption of e-government services issue.

As far as the literature review is concerned, it was found that previous studies are lack of a comprehensive view on the role of technology readiness as the moderating variable on e-government adoption studies. For example, a review and a synthesis paper by Venkatesh et al. (2016) on the original UTAUT revealed that from 2003 to 2014, the UTAUT model had been cited generally for 1,205 times, applied 12 times, integrated 13 times with another model, and had been extended for 37 times. Out of the 37 times of extension, 17 studies involving the new moderation mechanism, 23 new endogenous, and 11 exogenous mechanisms respectively. Of the 17 studies with the 17 new moderations mechanism, none of the studies take the academic contributions of technology readiness as the moderator except two studies

(not part of the 17 list) by Borrero, Yousafzai, Javed, and Page (2014) on students' use of social networking site (SNS) for expressive participation in the Internet Social Movement (ISMA) and by Tsourela and Roumeliotis (2015) on consumer acceptance and actual use on Technology-based services which includes e-government, in Greece.

On the literature review of UTAUT2, there is no study yet done on the technology readiness as the moderating variable from the perspective of citizens on e-government especially in Malaysia's perspective. This strengthens the researcher's argument that there is a gap of knowledge on the possible moderating effect of technology readiness on the relationship between performance expectancy, effort expectancy, social influence, facilitating conditions, trust, habit and behavioural intention on the Malaysian e-government context and therefore warrants such research to be carried out. In a study by Kalamatianou and Malamateniou (2017) on UTAUT2's suitability on e-government in Greece, they have found that the proposed model of UTAUT2 with four additional criteria to be well-fitted to explain the success of an e-government project. This further strengthens the choice of the underpinning theory of UTAUT2 in this proposed research. The following is the conceptual framework of this study.

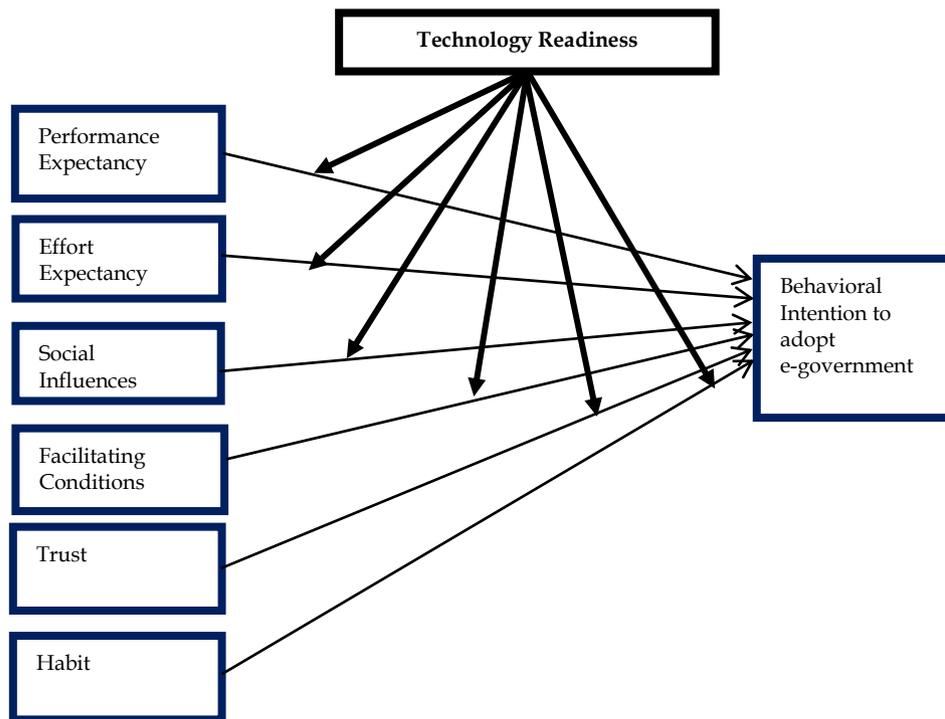


Figure 1 The conceptual Framework of The Research

3.0 Methodology

This research will adopt the quantitative method. The questionnaire will be compiled from the past literature with slight modification to suit the objectives of this research and to maintain its reliability and validity construct. Each construct will be measured using the 5-likert-scale (ranging from 1-strongly disagree, to 5-strongly agree). Likert's 5 points scale is a proper choice for this study since the numbers of items were not too many and it did not burden the respondents to participate and give reliable answers.

This research will use the purposive sampling technique. Purposive sampling, also known as judgmental, selective, or subjective sampling, is a form of non-probability sampling in which researchers rely on their own judgment when choosing the respondents. However, this sampling method requires researchers to have prior knowledge about the purpose of their studies so that they can properly choose and approach eligible participants. This makes the result more representative to the whole population and yielding good result for generalization (Mahmud, 2011). Purposive sampling is a sampling technique where the target population is screened. Respondent will be selected based on the main criteria defined beforehand (Sekaran and Bougie, 2013). The questionnaire will be distributed manually and will be ministered face-to-face to minimize misunderstanding and ambiguity (Al Athmay, 2015). The

respondents for this proposed research would be the baby boomers of Malaysian citizen. Baby boomers are those born between 1946-1964 (Berraies, Ben Yahia, & Hannachi, 2017; Wilson, Hallo, Mcguire, Sharp, & Mainella, 2018). However, this definition of cohort is from the perspective of the American citizens. In Malaysia baby boomers are those citizens who were born in the year 1946-1965 (Ting, Lim, Cyril, Run, & Koh, 2018). The Malaysian total population as of now is 32 million.

Size of sample is crucial when comes to carrying out an analysis of statistic to make inferences about the population. Insufficient sample size may not reveal a significant effect for the population inferences while at the same time committing Type II error. Hence, for this purpose the researcher will use the G*Power technique. The G*Power sampling technique which emphasising that the sample size should be equal to the larger of (1) 10 times the largest number of formative indicators used to measure a single construct, or (2) 10 times the largest number of structural path directed at a particular construct in the structural model as shown in the Figure 1 (Hair Jr, Sarstedt, Hopkins, and G. Kuppelwieser, 2014). Based on the G*Power's rule of thumb and based on the proposed theoretical framework (which consists of 12 constructs) the minimum size sample would be 184 respondents. According to Comrey and Lee (1992), the sample size of 100 is considered poor, 200 is fair, 500 is very good. Kline (2011) who once suggested that for the analysis using the Structural Equation Model (SEM), a minimum of 200 respondents is a good sample size (Shareef, Kumar, Kumar, & Dwivedi, 2011)..

For this proposed research, PLS-SEM statistical analysis will be used. The application of PLS-SEM has been growing exponentially in the past few years, cited for more than 800 times (according to google scholars), and has been published and become the number one of the highest impact articles published in the top 20 marketing journal. PLS-SEM provides numerous advantages to researchers working with structural equation models. Besides, other main reason why PLS-SEM has been widely used of late was due to its attribution to: (1) non-normality data; (2) the requirement of small size sampling; and (3) formatively measurement construct (Hair Jr et al., 2014). Other than that, compared to CB-SEM, PLS-SEM is the right choice since it suits with the main objective of this research which involves prediction and explanation of the target construct (Hair et al., 2017a). For the purpose of analysing the proposed theoretical model, the path model estimation would undergo the measurement model and the structural model.

The measurement model deals on how the latent variables are being measured. However, to operationalize the construct involved in this study and in order to preserve the internal consistency and the content validity and reliability, the measurement of variables is adopted (and modified) from the previous research especially from the relevant studies of UTAUT and UTAUT2 (Farooq et al., 2017; Lallmahomed, Lallmahomed, & Lallmahomed, 2017). For instance, performance expectancy, effort expectancy, social influence and facilitation conditions were adapted from Venkatesh et al., (2003), technology readiness from Lescevic et al., (2013); Lin et al., (2015); Parasuraman, 2000; Rojas-Méndez et al., (2017), trust from (Bélanger & Carter, 2008; Lemuria Carter & Bélanger, 2005) habit from (Limayem and Hirt, 2003; Venkatesh et al., 2012; Vinnik, 2017) and behavioural intention from Lemuria Carter and Bélanger, (2005) and Venkatesh, Thong, and Xu, (2012).

Reliability test is an important test in making sure that the measurement of research is free from error, consistent, and reproducibility. If a test finding is inconsistent, it may be unethical to take substantive actions based on the test. Validity test on the other hand is another crucial test when comes to research. Validity test is important because it makes sure what is supposed to be measured is measured. The rule of thumb is that the higher the test, the higher the possibility the result is closely linked to the intended focus of test. There are many ways of testing the reliability and validity of which depending on the type of measure. Basically measurement model involves two ways: the formative measurement model and reflective measurement model (Hair, Hult, Ringle, and Sarstedt, 2017b; Mohd Hanafi and Puteh, 2017). For the reflective measurement model, it is assessed on their internal consistency reliability and validity. The specific measures include the composite reliability, convergent validity, and discriminant validity. On the other hand, the reflective measurement model cannot be applied to the measurement model of formative. For the formative measure, the most important thing to be made sure is the content validity before data is collected and the PLS path model is estimated. Once it is estimated, the convergent

validity test, the significance and relevance of indicator weights test and the presence of collinearity among the latent indicators analysis will be done (F.Hair et al., 2017b).

The structural model measure will only be done once the reliability and validity of the model construct have been established. The PLS-SEM assessment of the structural model involves the model's capability to predict the variance in the dependent variable of the proposed model. The primary analysis if

the structural measure is the coefficient of determination, the R^2 value as well as the size and significance of the path coefficients. The other evaluations of PLS path evaluation would include the f^2 effect sizes, the predictive relevance (Q^2), and the q^2 effect size (F.Hair et al., 2017b). For the moderation test, it will be done as part of the PLS-SEM analysis through the structural model analysis. There are three approaches that researchers can employ to examine interaction terms (Moderator Analysis). There are Product-Indicator Approach (Chin, Marcolin, & Newsted, 2003), Two-Stage Approach (Chin et al., 2003) and Orthogonalizing Approach (Henseler & Chin, 2010).

4.0 Conclusion

This conceptual paper is a research that examining the moderating effect of technology readiness on the behavioural intention to adopt the e-government services. The findings would lead the researcher to draw conclusions about what are the factors that researchers have been failed to address when comes to understanding the adoption of e-government services, especially on the role and effect of technology readiness. Academically, the findings will be another contribution to the body of the literature on the adoption of e-government services. Practically, it would benefit the stakeholders and the policy makers to systematically plan on how best to increase the adoption rate of e-government services in Malaysia for full optimisation of the initiative.

5.0 Recommendations for Future Research

Based on the literature the following are the recommendations for future research. Recommendation 1: Further research should be conducted to test whether experience acts as an influential factor on Behavioural Intention. Recommendation 2: Further research should take awareness, attitude, anxiety and security that could have improved the variance in explaining the behavioural intention. Recommendation 3: Further research should take gender and age. The inclusion may have better insight on the effect of age and gender on the independent variables to the dependent variable especially the effect of age and gender on technology readiness. The young generation maybe have strong citizens technology readiness in comparison to the older generation. The same applies to gender where difference sex may have difference level of technology readiness.

References

- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, N.J.: Prentice Hall.
- Al Athmay, A. A. A. R. A. (2015). Demographic factors as determinants of e-governance adoption. *Transforming Government: People, Process and Policy*, 9(2), 159-180. <https://doi.org/10.1108/TG-07-2014-0028>
- AL Mansoori, K. A. AL. (2017). *Use of a modified UTAUT model to investigate Emirati Citizens' adoption of e-Government in Abu Dhabi Use of a Modified UTAUT Model to Investigate Emirati Faculty of Business*.
- Alaiad, A., & Zhou, L. (2013). Patients' Behavioral Intention toward Using Healthcare Robots. *Americas Conference on Information Systems*, 1-11.
- Alawadhi, S., & Morris, A. (2008). The use of the UTAUT model in the adoption of e-government services in Kuwait. *In Proceedings of the Annual Hawaii International Conference on System Sciences*. <https://doi.org/10.1109/HICSS.2008.452>
- Almalki, O. (2014). *A framework for e-government success from the user's perspective*. Retrieved from file:///C:/Users/SaDaM CeNtEr/Downloads/amalki.pdf
- Alsaif, M. (2014). Factors Affecting Citizens' Adoption of e-Government Moderated by Socio and Cultural Values in Saudi Arabia. *Proceedings of the 13th European Conference on E-government*, (July), 578-586. <https://doi.org/10.1179/204264411X12961227987886>
- Bélanger, F., & Carter, L. (2008). Trust and risk in e-government adoption. *Journal of Strategic Information Systems*, 17(2), 165-176. <https://doi.org/10.1016/j.jsis.2007.12.002>

- Berraies, S., Ben Yahia, K., & Hannachi, M. (2017). Identifying the effects of perceived values of mobile banking applications on customers. *International Journal of Bank Marketing*, 35(6), 1018–1038. <https://doi.org/10.1108/ijbm-09-2016-0137>
- Borrero, J. D., Yousafzai, S. Y., Javed, U., & Page, K. L. (2014). Expressive participation in Internet social movements: Testing the moderating effect of technology readiness and sex on student SNS use. *Computers in Human Behavior*, 30, 39–49. <https://doi.org/10.1016/j.chb.2013.07.032>
- Carter, L., & Christian Schaupp, L. (2008). Efficacy and acceptance in E-file adoption. *14th Americas Conference on Information Systems, AMCIS 2008*, 1, 226–236.
- Carter, L., & Bélanger, F. (2005). The utilization of e-government services: Citizen trust, innovation and acceptance factors. *Information Systems Journal*, 15(1), 5–25. <https://doi.org/10.1111/j.1365-2575.2005.00183.x>
- Celik, H., & Kocaman, R. (2015). Roles of self-monitoring, fashion involvement and technology readiness in an individual's propensity to use mobile shopping. <https://doi.org/https://doi.org/10.1108/JSIT-01-2017-0008>
- Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A Partial Least Squares Latent Variable Modeling Approach for Measuring Interaction Effects: Results from A Partial Least Squares Latent Variable Modeling Approach for Measuring Interaction Effects: Results from a Monte Carlo Simulation Study and an Ele, (May 2014). Retrieved from <https://doi.org/10.1287/isre.14.2.189.16018>
- Comrey, A., & Lee, H. (1992). *A first course in factor analysis* (second). Hillsdale, HJ: Lawrence Erlbaum.
- Dilip Potnis, D., & Pardo, T. A. (2011). Mapping the evolution of e-Readiness assessments. *Transforming Government: People, Process and Policy*, 5(4), 345–363. <https://doi.org/10.1108/17506161111173595>
- F. Hair Jr, J., Sarstedt, M., Hopkins, L., & G. Kuppelwieser, V. (2014). *Partial least squares structural equation modeling (PLS-SEM). An emerging tool in business research. European Business Review* (Vol. 26). <https://doi.org/10.1108/EBR-10-2013-0128>
- F. Hair, J. J., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017a). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Second Edn). Sage Publications.
- F. Hair, J. J., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017b). *A Primer on Partial Least Square Structural Equation Modeling (PLS-SEM)* (2nd Edition). SAGE.
- Farooq, M. S., Salam, M., Jaafar, N., Fayolle, A., Ayupp, K., Radovic-Markovic, M., & Sajid, A. (2017). Acceptance and use of lecture capture system (LCS) in executive business studies: Extending UTAUT2. *Interactive Technology and Smart Education*, 14(4), 329–348. <https://doi.org/10.1108/ITSE-06-2016-0015>
- Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Reading, MA: Addison-Wiseley.
- Henseler, J., & Chin, W. W. (2010). A comparison of approaches for the analysis of interaction effects between latent variables using partial least squares path modeling. *Structural Equation Modeling*, 17(1), 82–109. <https://doi.org/10.1080/10705510903439003>
- Kalamatianou, M. A., & Malamateniou, F. (2017). An Extended UTAUT2 Model for e-Government Project Evaluation. *Icds 2017: The Eleventh International Conference on Digital Society*, (c), 48–54.
- Lallmahomed, M. Z. I., Lallmahomed, N., & Lallmahomed, G. M. (2017). Factors influencing the adoption of e-Government services in Mauritius. *Telematics and Informatics*, 34(4), 57–72. <https://doi.org/10.1016/j.tele.2017.01.003>
- Lean, O. K., Zailani, S., Ramayah, T., & Fernando, Y. (2009). Factors influencing intention to use e-government services among citizens in Malaysia. *International Journal of Information Management*, 29(6), 458–475. <https://doi.org/10.1016/j.ijinfomgt.2009.03.012>
- Lescevic, M., Ginters, E., & Mazza, R. (2013). Unified theory of acceptance and use of technology (UTAUT) for market analysis of FP7 CHOReOS products. *Procedia Computer Science*, 26(December), 51–68. <https://doi.org/10.1016/j.procs.2013.12.007>
- Liew, E. J. Y., Vaithilingam, S., & Nair, M. (2014). Facebook and Socioeconomic Value Creation in the Developing World. *Behaviour & Information Technology*, 33(4), 345–360. <https://doi.org/10.1080/0144929X.2013.810775>
- Limayem, M., & Hirt, S. G. (2003). Force of Habit and Information Systems Usage: Theory and Initial Validation. *Journal of the Association for Information Systems*, 4(4), 65–97. <https://doi.org/10.1016/j.actbio.2005.04.004>
- Lin, S. F., Lin, C. L., & Lee, D. C. (2015). The relationship between elementary school teachers' technology readiness and intention to use social media platforms for classroom management. *International Journal of Organizational Innovation (Online)*, 8(1), 48–63.
- Mahmud, Z. (2011). *Handbook of Research Methodology. A simple Version*. University Publication Centre, UiTM, Shah Alam.
- Mckenna, B., Tuunanen, T., & Gardner, L. (2013). Information & Management Consumers' adoption of information services. *Information & Management*, 50(5), 248–257. <https://doi.org/10.1016/j.im.2013.04.004>
- Mitrovic, Z., & Bytheway, A. J. (2009). Awareness of e-government related small business development services in Cape Town. *The Electronic Journal of Information Systems in Developing Countries*, 39(4), 1–14. <https://doi.org/>

- Mofleh, S. I., & Wanous, M. (2008). Understanding factors influencing citizens' adoption of e-government services in the developing world: Jordan as a case study. *INFOCOMP Journal of Computer Science*, 7(2), 1-11.
- Mohamad Farouk, F., & Shafee, K. K. (2005). The Awareness of Electronic Government from The Malaysian Perspective. *Prosiding Seminar Kebangsaan E-Komuniti 2005*, 1-7. Retrieved from [http://www.maele.net/articles/ekom2005/Paper/Jamiatun Kusrin.pdf](http://www.maele.net/articles/ekom2005/Paper/Jamiatun%20Kusrin.pdf)
- Mohd Hanafi, A. O., & Puteh, F. (2017). Quantitative data analysis: Choosing between SPSS, PLS and AMOS in social science research. *International Interdisciplinary Journal of Scientific Research*, 3(1), 14-25. Retrieved from www.ijrsr.org/data/frontImages/gallery/Vol._3_No._1/3._14-25.pdf
- NATION, U. (2014). *E-Government Survey: e-Government for the Future We Want*. United Nations. [https://doi.org/10.1016/S1369-7021\(02\)00629-6](https://doi.org/10.1016/S1369-7021(02)00629-6)
- Nogrased, J. (2011). Change Management as a Critical Success Factor in e-Government Implementation. *Business Systems Research*, 2(2), 13-24. <https://doi.org/10.2478/v10305-012-0016-y>
- Oh, J.-C., & Yoon, S.-J. (2014). Predicting the use of online information services based on a modified UTAUT model. *Behaviour & Information Technology*, 33(7), 716-729.
- Parasuraman, A. (2000). Technology Readiness Index (TRI): A Multiple-Item Scale to Measure Readiness to Embrace New Technologies. *Journal of Service Research*, 2(4), 307-320. <https://doi.org/10.1177/109467050024001>
- Rehman, M., Esichaikul, V., & Kamal, M. (2012). Factors influencing e-government adoption in Pakistan. *Transforming Government: People, Process and Policy*, 6(3), 258-282. <https://doi.org/10.1108/17506161211251263>
- Rojas-Méndez, J. I., Parasuraman, A., & Papadopoulos, N. (2017). Demographics, attitudes, and technology readiness. *Marketing Intelligence & Planning*, 35(1), 18-39. <https://doi.org/10.1108/MIP-08-2015-0163>
- Sabah, N. M. (2016). Exploring students' awareness and perceptions: Influencing factors and individual differences driving m-learning adoption. *Computers in Human Behavior*, 65, 522-533. <https://doi.org/10.1016/j.chb.2016.09.009>
- Saeed, K. a. (2013). Perceived Financial Control and Acceptance of Mobile Banking Services: An Empirical Assessment. *Americas Conference on Information Systems*, 1-9.
- Sekaran, U., & Bougie, R. (2013). *Research Methods for Business. A skill Building Approach* (6th ed.). Wiley.
- Shareef, M. A., Kumar, V., Kumar, U., & Dwivedi, Y. K. (2011). E-Government Adoption Model (GAM): Differing service maturity levels. *Government Information Quarterly*, 28(1), 17-35. <https://doi.org/10.1016/j.giq.2010.05.006>
- Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The Theory of Reasoned Action: A Meta-Analysis of Past Research with Recommendations for Modifications and Future Research. *Journal of Consumer Research*, 15(3), 325. <https://doi.org/10.1086/209170>
- Shibl, R., Lawley, M., & Debusse, J. (2013). Factors influencing decision support system acceptance. *Decision Support Systems*, 54(2), 953-961. <https://doi.org/10.1016/j.dss.2012.09.018>
- Slade, E., Williams, M., & Dwivedi, Y. (2013). Extending UTAUT2 To Explore Consumer Adoption of Mobile Payments. *UK Academy for Information Systems Conference Proceedings*, 23. Retrieved from <http://aisel.aisnet.org/ukais2013/36/>
- Smith, I. (2005). Achieving readiness for organisational change. *Library Management*, 26(6/7), 408-412. <https://doi.org/10.1108/01435120510623764>
- Taiwo, A. A., Downe, A. G., & Loke, S.-P. (2014). Behavioural intention towards E-Government in Malaysia. A Structural Equation Modeling Approach. *Malaysia: International Journal of Economic Government Research*.
- Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*. <https://doi.org/10.1287/isre.6.2.144>
- Ting, H., Lim, T., Cyril, E., Run, D., & Koh, H. (2018). Kasetsart Journal of Social Sciences Are We Baby Boomers, Gen X and Gen Y? A qualitative inquiry into generation cohorts in Malaysia. *Kasetsart Journal of Social Sciences*, 39(1), 109-115. <https://doi.org/10.1016/j.kjss.2017.06.004>
- Tsourela, M., & Roumeliotis, M. (2015). The moderating role of technology readiness, gender, and sex in consumer acceptance and actual use of Technology-based services. *The Journal of High Technology Management Research*, 26. <https://doi.org/http://dx.doi.org/10.1016/j.hitech.2015.09.003>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *Source: MIS Quarterly*, 27(3), 425-478. <https://doi.org/10.2307/30036540>
- Venkatesh, V., Thong, J., & Xu, X. (2012). Consumer acceptance and user of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157-178. <https://doi.org/10.1111/j.1365-2729.2006.00163.x>
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association for Informaiton Systems*, 17(5), 328-376. <https://doi.org/10.1080/1097198X.2010.10856507>
- Vinnik, V. (2017). User adoption of mobile applications: Retrieved from

- <https://brage.bibsys.no/xmlui/bitstream/handle/11250/2487036/masterthesis.PDF?sequence=1>
- Weerakkody, V., El-Haddadeh, R., Al-Sobhi, F., Shareef, M. A., & Dwivedi, Y. K. (2013). Examining the influence of intermediaries in facilitating e-government adoption: An empirical investigation. *International Journal of Information Management*, 33(5), 716-725. <https://doi.org/10.1016/j.ijinfomgt.2013.05.001>
- Wilson, D. L., Hallo, C., Mcguire, F. A., Sharp, J. L., & Mainella, F. P. (2018). Transportation mode choice among baby boomer visitors in national parks: Exploring the concept of freedom, 13(February), 61-70. <https://doi.org/10.1016/j.tbs.2018.06.001>
- 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. <https://doi.org/10.1108/EL-08-2015-0141>
- Xiong, J., Qureshi, S., & Najjar, L. (2013). Factors that affect information and communication technology adoption by small businesses in China. *19th Americas Conference on Information Systems, AMCIS 2013 - Hyperconnected World: Anything, Anywhere, Anytime*, 3, 1694-1705. Retrieved from <http://www.scopus.com/inward/record.url?eid=2-s2.0-84893251130&partnerID=40&md5=904b1a24f75971e2aba429d68c387e19>