

Electronic Health Record Portal Adoption by Health Care Consumers

Proposal of a New Adoption Model

Jorge Tavares and Tiago Oliveira

ISEGI, Universidade Nova de Lisboa, Rua Campolide, Lisboa, Portugal

Keywords: e-Health, Technology Adoption, UTAUT2, Health Care Consumers, e-Government.

Abstract: The aim of this study is to identify a set of determinants of adoption of electronic health records (EHR) portals by health care consumers. Based on extensive literature review we suggest a new research model based on the unified theory of acceptance and use of technology in a consumer context (UTAUT2) by integrating a second order construct, Concern for Information Privacy (CFIP) framework and a moderator, chronic disability. A set of propositions is also included to test the new conceptual model. We also present a plan to validate the proposed model through empirical testing. The EHR portals are a part of the e-government strategy currently unfolding in Portugal. Understanding the acceptance and use of EHR portals by health care consumers should benefit the future sustainability of the Health Care System, which will gain a more efficient use of resources.

1 INTRODUCTION

E-health technology for health care consumers is the use of electronic resources, mainly web-based, on medical topics by healthy individuals or patients (Alpay et al., 2010; Lee et al., 2010; Millard and Fintak 2002; Nazi, 2003). Our study focuses on a specific type of e-health technology, the electronic health records (EHR) portals, which give patients access to medical records, exam results, and services, such as appointment scheduling, notification systems, and e-mail access to the doctor (Angst and Agarwal, 2009, Andreassen et al., 2007).

In Portugal, where data collection for this study will be implemented, approximately 30% of the population already uses the internet for health purposes (Andreassen et al., 2007), considerably less than Northern European countries like Denmark and Norway, where more than 50% of the population uses Internet for health purposes (Andreassen et al., 2007). Understanding the acceptance and use of EHR portals technology by health care consumers is a very important topic with clear benefits for society and the future sustainability of the Health Care System (Or and Karsh, 2009; Wilson and Lankton, 2004). In a country like Portugal, which faces a severe austerity program, the cost and efficiency

advantages of e-health technology use by patients brings benefits to health care consumers and relief to the Ministry of Health budget (McKee et al., 2012; Metaxiotis et al., 2004). The EHR portals are a specific type of technology that can greatly help to achieve these benefits for both patients and health care providers (Angst and Agarwal, 2009). EHR portals are an initiative promoted by the Portuguese government that is a part of a broader e-government strategy seeking to facilitate services and communications between public services and the citizens. The most important initiative is the "Portal do Utente" (User's Portal) a national EHR portal, created by the Ministry of Health that allows all Portuguese citizens to schedule appointments with their general practitioner, obtain electronic medical prescriptions, access medical records and exam results, and share information with health care providers (Rodrigues et al., 2013; Pereira, 2012). With more than half a million users already registered, the objective of the Ministry of Health is to make this portal a primary point of contact between the patient and the national health care system that in Portugal provides coverage to the entire population (Rodrigues et al., 2013; Pereira, 2012).

Understanding whether or not the current adoption models are suitable to a particular field of

interest, by verifying and proposing the necessary changes and extensions (Alvesson and Kaerremann, 2007; Martins et al., 2014; Miltgen et al., 2013) is a vital topic in the area of information system (IS) acceptance and use (Venkatesh et al., 2012). In our study we will examine these assumptions in the field of e-health technology use and acceptance by the health care consumers and propose a new research model based on the unified theory of acceptance and use of technology in a consumer context (UTAUT2) by integrating a second-order construct based on the Concern for Information Privacy (CFIP) framework and a new moderator, chronic disability (Angst and Agarwal 2009; Millard and Fintak, 2002).

The paper proceeds as follows: First we review the literature concerning information technology (IT) adoption models regarding consumer health care. We then present a research model to analyze ERHs portals for the health care consumer. Finally we discuss the issue and present conclusions.

2 THEORETICAL BACKGROUND

There have been several theoretical models developed from theories in psychology, sociology, and consumer behavior employed to explain technology acceptance and use (Venkatesh et al., 2012). The goal of this study is to focus specifically on the e-health adoption in the perspective of the health care consumer, so it is of the utmost importance to review the literature in this particular field. Adoption of e-health technologies by the patients is clearly a very important topic in IS. The adoption of e-health technologies by health care professionals still requires more attention and research due to the limited number of studies reported in the literature to date (Angst and Agarwal, 2009; Or and Karsh, 2009).

When studying e-health and health care adoption by health care professionals the most common adoption models used are the technology acceptance model (TAM) (Dunnebeil et al., 2012; Ketikidis et al., 2012) and UTAUT (Chang et al., 2007; Yi et al., 2006). Evaluating the studies published in the field of consumer health information technology adoption and more specifically in the use and adoption of e-health tools by the health care consumer, most studies use TAM or extensions of TAM (Or and Karsh, 2009; Wilson and Lankton, 2004). TAM was designed and tailored in IS contexts to predict information technology acceptance and usage on the job (Venkatesh et al., 2003). Independent attempts

by several researchers to expand TAM in order to adapt it to the constantly changing IT environments, like e-health, has led to a state of theoretical chaos and confusion in which it is not clear which version of the many iterations of TAM is the commonly accepted one (Wilson and Lankton, 2004; Benbasat and Barki, 2007). UTAUT formulate a unified model that integrates elements of eight models in the field of IT acceptance. The eight models are the theory of reasoned action (Fishbein and Ajzen, 1975); the technology acceptance model (Davis, 1989); the motivational model (Davis et al., 1992); the theory of planned behavior (Ajzen, 1991); a model combining the technology acceptance model and the theory of planned behavior (Taylor and Todd, 1995); the model of PC utilization (Thompson et al., 1991); the innovation diffusion theory (Rogers, 1995), and the social cognitive theory (Compeau et al., 1999; Compeau and Higgins, 1995). The R^2 obtained with UTAUT was superior to any of the individual models including TAM (Venkatesh et al., 2003).

Although UTAUT provides better results than TAM and other IS adoption models, the focus of UTAUT is also the employee technology acceptance at individual level (Venkatesh et al., 2003; Venkatesh et al., 2012). Ideally, we then need a model tailored to the consumer use context, and in this specific field UTAUT2 was developed with this goal, obtaining excellent results (Venkatesh et al., 2012). When compared with UTAUT in the consumer use context, the new UTAUT2 model obtained higher R^2 , and is better able to explain the reasons behind the adoption (Venkatesh et al., 2012). If UTAUT2 outperformed UTAUT in the consumer use context, we believe that UTAUT2 could be used as the standard starting model for studying e-health adoption.

E-health technology adoption differentiates from IT adoption in general due to the sensitive topics and issues related to health status of an individual, making the drivers of adoption in e-health different from other IT technologies (Angst and Agarwal, 2009). In health care, confidentiality is the ethical principle that a health professional will keep confidential all information relating to a patient, unless the patient consents to disclosure (Bauer, 2002). Several studies point out that awareness of lack of confidentiality and privacy concerns may reduce the adoption of e-health tools by the patients and health care consumers (Angst and Agarwal, 2009; Fisher and Clayton, 2012; Fogel and Nehmad, 2009; O'Donnell et al., 2011). Studies focusing specifically on EHR portals show that patients are

highly concerned about privacy of their personal medical records (Angst and Agarwal, 2009). Literature review identified that patients with chronic illness, severe illness, or disability are more likely to use e-health technologies if they have the resources and support available. It is paramount to understand that it is only if patients who are chronically or severely disabled have the conditions and resources available, will they access the health record portals. (Millard and Fintak, 2002; Renahy et al., 2008).

3 RESEARCH MODEL

UTAUT2 was developed as an adoption model providing the general factors of IT adoption in the consumer use. However, according to Venkatesh et al. (2012) in certain situations where the technology may be influenced by specific factors it may be necessary to make extend the model with new constructs, moderators, and relationships. We therefore identified key additional constructs and relationships based on the literature review that are specific to IT health care adoption to be integrated into UTAUT2, thus tailoring it to e-health consumer context, more specifically to study the adoption of EHR portals. We did this by (1) identifying key constructs from earlier research in IT health care consumer adoption (confidentiality) and by (2) adding a new moderator specific to IT health care use (chronic disability). Figure 1 illustrates the new research model.

3.1 UTAUT2 Model

Performance expectancy is defined as the degree to which using a technology will provide benefits to consumers in carrying out certain activities (Venkatesh et al., 2003). Literature review indicates that health care consumers tend more to adopt e-health technologies that provide clear benefits, such as obtaining an electronic medical prescription via EHR portals (Alpay et al., 2010; Arsand and Demiris, 2008; Keselman et al., 2008).

P1. Performance Expectancy will Positively Influence Behavioral Intention.

Effort expectancy is the degree of ease related to consumers' use of technology (Venkatesh et al., 2003). The easier that consumers can understand and use an e-health technology, the greater is the probability that they will adopt it (Alpay et al., 2010; Keselman et al., 2008).

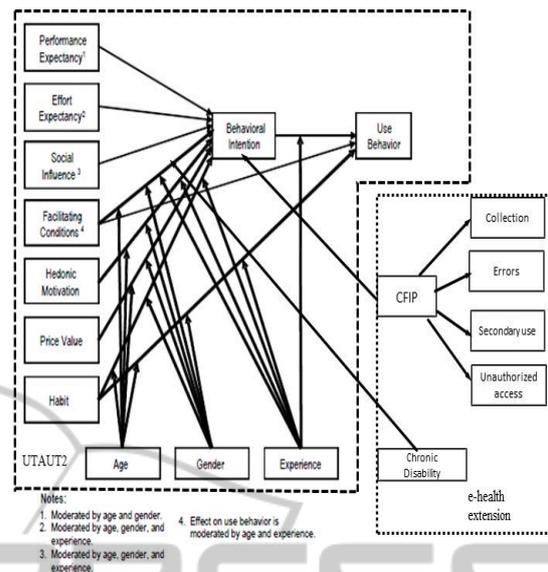


Figure 1: The Research Model.

P2. Effort Expectancy will Positively Influence Behavioral Intention.

Social influence is the extent to which consumers perceive that others who are important to them (e.g., friends and family), believe they should use a particular technology (Venkatesh et al., 2012). In the case of e-health this can be also an important construct, since people that share the same diseases (e.g., Multiple Sclerosis) or the same health condition (e.g., obesity) tend to be influenced by what others in the same condition use and do (Fisher and Clayton, 2012; Thackeray et al., 2013).

P3. Social Influence will Positively Influence Behavioral Intention.

Facilitating conditions refer to consumers' perceptions of the resources and support available to execute a behavior (Venkatesh et al., 2003). In the specific case of e-health this construct can be very important due to the fact that patients and disabled people may have special needs that healthy people do not (Arsand and Demiris, 2008; Millard and Fintak, 2002).

P4. E-health Platforms with Greater Resources and Support Available (Facilitating Conditions) are more likely to Positively Influence Behavioral Intention and Use Behavior.

Hedonic motivation is defined as intrinsic motivation (e.g., enjoyment) and has been included as a key predictor in much of the reported consumer behavior research (Venkatesh et al., 2012). Dealing and obtaining information about our health status by using e-health technologies may be a rewarding

process, or in some cases may not be when a patient is dealing, for example, with cancer (Lee et al., 2010).

P5. Hedonic Motivation will Positively or Neutrally Influence Behavioral Intention.

Price value: in a consumer use environment, price is also a relevant factor, as unlike workplace technologies, consumers must bear the costs related with the purchase of devices and services (Venkatesh et al., 2012). If a patient can obtain his medical prescription via an EHR portal, he can save transportation money by avoiding a trip to a health center or hospital. The better the perception a health care consumer has about the “price value” of an e-health technology (i.e., that it can help him save money), the more likely it is that he will adopt it (Alpay et al., 2010; Metaxiotis et al., 2004).

P6. Price Value will Positively Influence Behavioral Intention.

Habit can be defined as the extent to which people tend to execute behaviors automatically because of learning (Venkatesh et al., 2012). We can expect that habit will positively influence e-health adoption, as it does in other IT adoption fields, since habit is a concept that should not be specific to an IT technology (Venkatesh et al., 2012).

P7. Habit will Influence Positively Behavioral Intention and use Behavior.

Age, gender and experience are theorized to moderate various UTAUT2 relationships (Venkatesh et al., 2012). Literature review indicates that in IT technologies in general and specifically in e-health, younger people and women tend to have the habit to use more e-health technologies (Millard and Fintak, 2002; Thackeray et al., 2013; Venkatesh et al., 2012). According to the literature review, people with less experience in using a technology tend to be more influenced by experience (Venkatesh et al., 2012).

P8. Age and Gender will Moderate the Effect of Habit on Behavioral Intention, such that the Effect will be Stronger for Younger Women.

P9. Age and Gender will Moderate the Effect of Habit on Use Behavior, such that the Effect will be Stronger for Younger Women.

P10. Experience will Moderate the Effect of Behavioral Intention on Use, such that the Effect will be Stronger for Consumers with Less Experience.

3.2 e-Health Extension

Smith, Milberg, and Burke (1996) developed and tested the CFIP construct to measure attitudes and beliefs about individual information privacy related to the use of personal information in a business setting. They conceptualized CFIP as being composed of four distinct, yet correlated, latent factors: collection, errors, unauthorized or improper access, and secondary use. Collection is the concern that an extensive amount of personal information is being collected and stored in databases (Smith et al., 1996). Errors are directly linked with the concern that protection against deliberate and accidental error in personal data is inadequate (Smith et al., 1996). Unauthorized access is the concern that data about individuals is available to people not authorized to view or work with these data (Smith et al., 1996). Secondary use is the apprehension that information is collected from individuals for one purpose but is used for another secondary purpose without authorization from the individuals (Smith et al., 1996). Stewart and Segars (2002) expanded upon the Smith et al. (1996) study and not only validated the multidimensional nature of the CFIP construct, but also found support for the hypothesis that a second-order factor structure is empirically valid, thus settling the complexity of an individual’s concern for information privacy with direct influence in the behavioral intention to use a technology (Stewart and Segars, 2002). Angst et al. (2009) studied the adoption of EHRs in the presence of privacy and used in their study the CFIP framework as a second order factor structure. To measure CFIP Angst et al. (2009) adapted the scale developed by Smith et al. (1996). Minor changes were made to their instrument to reflect privacy concerns relative to health data instead of corporate data. Based on the earlier use of the CFIP framework in e-health, we add CFIP as a predictor of health consumer behavioral intention to use a technology.

P11. CFIP will Positively Influence Behavioral Intention.

Chronic disability is an incapacitating situation (e.g., chronic illness) that affects a patient permanently or for long-term periods. Review of literature points out that patients with chronic illness or disability are more likely to use e-health technologies if they have the resources and support available (facilitating conditions) (Millard and Fintak, 2002; Thackeray et al., 2013).

P12. We can Theorize that Chronic Disability is a

Positive Moderator of Facilitating Conditions to Explain Behavioral Intention.

4 METHODOLOGICAL IMPLICATIONS AND VALIDATION APPROACHES

To test the propositions suggested here, we will develop a pilot study with a sample of 30 users of EHR portals. The final questionnaire will be administered in Portuguese. To ensure translation equivalence we will translate the English questionnaire to Portuguese and then back to English; these tasks will be executed by professional translators (Brislin, 1970). We will test the hypothesized relationships among the constructs using structural equation modeling (SEM). There are two families of SEM techniques (Henseler et al., 2009): covariance-based techniques and variance-based techniques. Partial least squares (PLS) is a variance-based technique and will be used in this research since, (i) the research model has not been tested in the past; (ii) the research model is considered complex. The theoretical approach developed in this study should be implemented first in Portugal focusing in the EHR portals. The data will be collected in EHR portals managed by the Portuguese Ministry of Health, allowing a vast coverage of the Portuguese population since Portugal has a National Health System that covers all of the population. The eligibilities criteria's to answer the questionnaire are: Portuguese nationality and age equal to or greater than 18 years old. Our objective is to collect a final sample with more than 300 questionnaires.

5 LIMITATIONS AND FUTURE RESEARCH

This study is in its first theoretical concept, in which an initial model is suggested based on the literature review and conceptual reasoning. The next step is the application and validation of the model to a set of health care consumers, in order to test the developed framework and directly assess its explanatory and predictive power. Future studies may evaluate other relationships that were not foreseen in this model and that will improve the ability to explain the dependent variables. Thus, this study opens up other options for future research.

Refinement of the constructs and measures is one of the possibilities. Another option is the investigation of more complex relationships between the independent and dependent variables of the model. Testing this model with other e-health technologies and in other countries that may be more or less developed than Portugal in e-health use are options that can also bring added value.

6 CONCLUSIONS

Understanding the acceptance and use of EHR portals by health care consumers should bring strong benefits for the future sustainability of the Health Care System, which will enjoy more efficient use of resources. Thus, the aim of this study is to identify a set of determinants of adoption of EHR portals by health care consumers. To realize this goal we suggest a research model based on UTAUT2, adding new constructs (CFIP) and a new moderator of chronic disability. We designate this new set of constructs and the new moderator "e-health extension to UTAUT2". We also expect this study to provide a theoretical framework that is a foundation and a starting point for future research on the adoption of e-health by health care consumers.

REFERENCES

- Ajzen, I. (1991) 'The Theory of Planned Behaviour', *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Alpay, L. L., Henkemans, O. B., Otten, W., Rovekamp, T. A. J. M. and Dumay, A. C. M. (2010) 'E-health Applications and Services for Patient Empowerment: Directions for Best Practices in The Netherlands', *Telemedicine Journal and E-Health*, 16(7), 787-791.
- Alvesson, M. and Kaerremann, D. (2007) 'Constructing mystery: Empirical matters in theory development', *Academy of Management Review*, 32(4), 1265-1281.
- Andreassen, H., Bujnowska-Fedak, M., Chronaki, C., Dumitru, R., Pudule, I., Santana, S., Voss, H. and Wynn, R. (2007) 'European citizens' use of E-health services: A study of seven countries', *BMC Public Health*, 7(1), 53.
- Angst, C. M. and Agarwal, R. (2009) 'Adoption of electronic health records in the presence of privacy concerns: The elaboration likelihood model and Individual Persuasion', *MIS Quarterly*, 33(2), 339-370.
- Arsand, E. and Demiris, G. (2008) 'User-centered methods for designing patient-centric self-help tools', *Informatics for Health & Social Care*, 33(3), 158-169.
- Bauer, K. A. (2002) 'Using the Internet to empower patients and to develop partnerships with clinicians',

- World hospitals and health services : the official journal of the International Hospital Federation*, 38(2), 2-10.
- Benbasat, I. and Barki, H. (2007) 'Quo vadis, TAM?', *Journal of the Association for Information Systems*, 8(4), 212-218.
- Brislin, R. W. (1970) 'Back-Translation for Cross-Cultural Research', *Journal of Cross-Cultural Psychology*, 1(3), 185-216.
- Chang, I. C., Hwang, H.-G., Hung, W.-F. and Li, Y.-C. (2007) 'Physicians' acceptance of pharmacokinetics-based clinical decision support systems', *Expert Systems with Applications*, 33(2), 296-303.
- Compeau, D., Higgins, C. A. and Huff, S. (1999) 'Social cognitive theory and individual reactions to computing technology: A longitudinal study', *MIS Quarterly*, 23(2), 145-158.
- Compeau, D. R. and Higgins, C. A. (1995) 'Application of Social Cognitive Theory to Training for Computer Skills', *Information Systems Research*, 6(2), 118-143.
- Davis, F. D. (1989) 'Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology', *MIS Quarterly*, 13(3), 319-340.
- Davis, F. D., Bagozzi, R. P. and Warshaw, P. R. (1992) 'Extrinsic and Intrinsic Motivation to Use Computers in the Workplace', *Journal of Applied Social Psychology*, 22(14), 1111-1132.
- Dunnebeil, S., Sunyaev, A., Blohm, I., Leimeister, J. M. and Krcmar, H. (2012) 'Determinants of physicians' technology acceptance for e-health in ambulatory care', *International Journal of Medical Informatics*, 81(11), 746-760.
- Fishbein, M. and Ajzen, I. (1975) *Belief, attitude, intention, and behavior : an introduction to theory and research*, Reading, Mass.: Addison-Wesley.
- Fisher, J. and Clayton, M. (2012) 'Who Gives a Tweet: Assessing Patients' Interest in the Use of Social Media for Health Care', *Worldviews on Evidence-Based Nursing*, 9(2), 100-108.
- Fogel, J. and Nehmad, E. (2009) 'Internet social network communities: Risk taking, trust, and privacy concerns', *Computers in Human Behavior*, 25(1).
- Henseler, J., Ringle, C. M. and Sinkovics, R. R. (2009) 'The use of partial least squares path modeling in international marketing.' in (Eds.), I. R. R. S. a. P. N. G., ed. *New Challenges to International Marketing*, Stamford: Jai Press Inc., 277-319.
- Keselman, A., Logan, R., Smith, C. A., Leroy, G. and Zeng-Treitler, Q. (2008) 'Developing Informatics Tools and Strategies for Consumer-centered Health Communication', *Journal of the American Medical Informatics Association*, 15(4), 473-483.
- Ketikidis, P., Dimitrovski, T., Lazuras, L. and Bath, P. A. (2012) 'Acceptance of health information technology in health professionals: An application of the revised technology acceptance model', *Health Informatics Journal*, 18(2), 124-134.
- Lee, C.-j., Gray, S. W. and Lewis, N. (2010) 'Internet use leads cancer patients to be active health care consumers', *Patient Education and Counseling*, 81S, S63-S69.
- Martins, C., Oliveira, T. and Popovič, A. (2014) 'Understanding the Internet banking adoption: An unified theory of acceptance and use of technology and perceived risk application.', *International Journal of Information Management*, 34(1), 1-13.
- McKee, M., Karanikolos, M., Belcher, P. and Stuckler, D. (2012) 'Austerity: a failed experiment on the people of Europe', *Clinical Medicine*, 12(4), 346-350.
- Metaxiotis, K., Ptochos, D. and Psarras, J. (2004) 'E-health in the new millennium: a research and practice agenda', *International journal of electronic healthcare*, 1(2), 165-75.
- Millard, R. W. and Fintak, P. A. (2002) 'Use of the Internet by patients with chronic illness', *Disease Management & Health Outcomes*, 10(3).
- Miltgen, C. L., Popovič, A. and Oliveira, T. (2013) 'Determinants of end-user acceptance of Biometrics: Integrating the "Big 3" of technology acceptance with privacy context.', *Decision Support Systems*, 53, 103-114.
- Nazi, K. M. (2003) 'The journey to e-Health: VA Healthcare Network Upstate New York (VISN 2)', *Journal of medical systems*, 27(1), 35-45.
- O'Donnell, H. C., Patel, V., Kern, L. M., Barron, Y., Teixeira, P., Dhopeswarkar, R. and Kaushal, R. (2011) 'Healthcare Consumers' Attitudes Towards Physician and Personal Use of Health Information Exchange', *Journal of General Internal Medicine*, 26(9).
- Or, C. K. L. and Karsh, B.-T. (2009) 'A Systematic Review of Patient Acceptance of Consumer Health Information Technology', *Journal of the American Medical Informatics Association*, 16(4), 550-560.
- Pereira, G. (2012) 'Meio milhão de utentes já marca consultas pela Internet - JN', *Jornal de Notícias*, available: http://www.jn.pt/PaginaInicial/Sociedade/Saude/Interi or.aspx?content_id=2723506 [accessed 18 Oct 2012].
- Renahy, E., Parizot, I. and Chauvin, P. (2008) 'Health information seeking on the Internet: a double divide? Results from a representative survey in the Paris metropolitan area, France, 2005-2006', *BMC Public Health*, 8(1), 69.
- Rodrigues, D. F., Lopes, J. C. and Tavares, J. F. (2013) *Manifold Marketing: A New Marketing Archetype for the Information Age, Applied to the Adoption of Oral Contraceptives and Other Drugs by End-Users.*, *Proceedings of the Third Annual Conference of International Network of Business & Management Journals (INBAM 2013)*, Lisbon.
- Rogers, E. (1995) *Diffusion of Innovations*, Free Press, New York.
- Smith, H. J., Milburg, S. J. and Burke, S. J. (1996) 'Information privacy: Measuring individuals' concerns about organizational practices', *MIS Quarterly*, 20(2), 167-196.
- Stewart, K. A. and Segars, A. H. (2002) 'An empirical examination of the concern for information privacy

- instrument', *Information Systems Research*, 13(1), 36-49.
- Taylor, S. and Todd, P. (1995) 'Assessing IT usage: The role of prior experience', *MIS Quarterly*, 19(4), 561-570.
- Thackeray, R., Crookston, B. T. and West, J. H. (2013) 'Correlates of health-related social media use among adults', *Journal of medical Internet research*, 15(1), e21.
- Thompson, R. L., Higgins, C. A. and Howell, J. M. (1991) 'Personal Computing: Toward a Conceptual Model of Utilization', *MIS Quarterly*, 15(1), 125-143.
- Venkatesh, V., Morris, M. G., Davis, G. B. and Davis, F. D. (2003) 'User acceptance of information technology: Toward a unified view', *MIS Quarterly*, 27(3), 157-178.
- Venkatesh, V., Thong, J. Y. L. and Xu, X. (2012) 'Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology', *MIS Quarterly*, 36(1), 425-478.
- Wilson, E. V. and Lankton, N. K. (2004) 'Modeling patients' acceptance of provider-delivered e-health', *Journal of the American Medical Informatics Association*, 11(4), 241-248.
- Yi, M. Y., Jackson, J. D., Park, J. S. and Probst, J. C. (2006) 'Understanding information technology acceptance by individual professionals: Toward an integrative view', *Information & Management*, 43(3), 350-363.