International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Self-Efficacy and Perceived Ease of Use as Factors to Determine Medical Personnel Readiness to Use an Information System Technology

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Abstract
This article uses an empirical investigation to evaluate self-efficacy and perceived ease of use as factors that will determine the successful adoption of the health information system in health institutions, using Nigeria as a case study. The health information system is the application of information technology to enable and promote health care services provision, support and delivery. Utilizing the DeLone and McLean model and a construct from the TAM (Technology Acceptance Model), the focus is on self-efficacy and perceived ease of use which are tested with the (intention to) Use to find a correlation, to consider them as determinant factors of the readiness to adopt an information system in the healthcare environment. Results and findings reveal that self-efficacy and perceived ease of use have an effect on the intention to use and actual use of the HIS. Health practitioners should be trained on how to utilize the information system in order to improve their attitudes and perceptions towards it. Doing this will increase their zeal and make it habitual for them to utilize the system, hence better goals will be attained.

Keywords: Information System Quality Dimensions, patients' health record. Perceived ease of use, Health information system, Self-efficacy, IS Success Model, E-health, Digital Health, Health information system, IS success model, Information system technology, electronic health, Service Quality, System Quality, and Information Quality,

1. Introduction

Lots of countries and organizations are leaning greatly towards digital health and this led to a sharp increment in the release of health policies and reports, like the *World Health Organization's Draft Global Strategy for Digital Health (2020-2025), the United Kingdom's Digital Strategy published in 2012, China's Outline of Healthy China 2030 Plan, the European Union's Europe's Digital Decade and Digital Europe Programme*, and etc. Digital health is the integration of digital technology and health information with the goal of increasing the efficiency of the delivery of health care and improved health of patients. Furthermore, digital technology is the adoption of digital technology in health, such as eHealth, electronic health records (EHR), robotics, telemedicine or telehealth services, mobile health supported by the use of

mobile applications, monitoring devices, smartphones and wearables (Yao, 2022) and (Hanifah A.M.,Deji A., Sherifah O.M., (December 2023)

Studies show that the perceived ease of use has a direct positive impact on the behavioral intention to use. Ease of use that is tied with the usage of a specific technology is a critical factor users will take into consideration before its adoption. Perceived ease of use is defined as the degree to which a user of a technology is convinced that the usage of that technology will be free from effort or challenges. For example, in the context of m-health (mobile health), individuals unhindered access to healthcare via systems that are easy to use and provide a suitable environment to adopt mobile healthcare will drive them to utilize it. Ease of use features like design, technical functionality, easy browsing, faster download time, navigation of the sites, and easy uploading and downloading of files would improve the perceived ease of utilizing the m-health services. The adoption of technology-related applications can be ascribed to the degree of self-efficacy that the users have. Self-efficacy is regarded as people's belief in their ability to take on and complete a specific course of action. Like in the usage of m-health, it is the confidence one has in their ability to make use of a mobile device to take on and complete an action. For instance, a person being able to utilize their mobile devices to access public health services on their own. Studies show that mobile self-efficacy has a direct impact on the adoption of technology systems, as it is significantly related to behavioral intention to use (Mensah, 2022), Deji A., Sheroz K., Musse M.A., (December 2023), D. Abdulwahab et al., (2010).

There is a potential for the health information system to enhance interprofessional communication within the hospital environs. The communication technological tools that are utilized vary within and between health institutions and hence ranges from mobile devices to specialized software applications with differing levels of integration with electronic health records (Nie, 2023). A wide variety of definitions of the term are available in different literatures with most of them highlighting the importance of internet-related technologies to support, enable, promote and enhance health and also augment the efficiency of the process of healthcare (Barello et al., 2016). E-health is the cost effective and secure use of information and communication technologies in support of the health and health related fields including healthcare, health surveillance and health education, knowledge, and research (world health organization definition). It can also be referred to as forms of prevention and education, diagnostics, therapy and care delivered through digital technology regardless of time and place (Ossebaard &Van Gemert-Pijnen 2016). (Hage et al., 2013) defines E-health services as any interactive communication and information technology directed at improved community quality of life and health outcomes. The idea the aforementioned definitions have in common is the "use of information and communication technology" to provide and improve healthcare which is the core essence of the term 'E-health'. The need to integrate various electronic health information from various domains such as medical research laboratories, hospitals and health insurance firms has led to the evolvement of a concept called e-health, otherwise known as electronic health (Azeez & der Vyver, 2019). It should be noteworthy that e-health requires a large investment on ICT and a failure in its successful implementation could result in huge losses with respects to money, time, and effort. These failures, however, do not normally mean technological issues but instead human and organizational factors in relation to the adoption and implementation. Therefore, as an end result, the successful merging of IT solutions into the healthcare roadmap is significantly dependent on the engagement of health practitioners starting from the jump of the development and proceeding evaluation of these applications (Beebeejaun & Chittoo, 2017). Hanifah A.M., Deji A., Sherifah O.M., (December 2023, Deji A., Sheroz K., Musse M.A., (Jan-Feb 2024).

2. Literature Review

Medical practitioners and patients have an expectation of easy utilization and navigation of the health care technologies for them to achieve the needed functionality since e-health solutions are still in early stages in most of the developing countries. Complicated factors can happen when healthcare practitioners cannot grasp the system adequately. Also, trainings and work experience in e-health is needed for fusing e-health initiatives into pre-existing healthcare services in the developing nations. These trainings have to be drawn out to furnish healthcare practitioners in e-health utilization and management (Omotosho, 2019). There is the case of discomfort with the use of technology for instance, which could be connected with having a perception of risk, as well as concerns of safety, reliability and validity of the technology, particularly security, confidentiality and privacy concerns (Fulgencio, 2019). In Uganda, the human resource for e-health which is made up of Ict practitioners, health professionals and e-content developers has a low quantity of computer skills and literacy to utilize ICT tools and systems, particularly those in rural areas. The integration of ICT in the present hospital settings is considered burdensome to the doctors and nurses. Even in some of the health facilities where there are computer literate health personnel, the computers are not utilized for official work that is habitual. Furthermore, there is a shortage of ICT staff that is qualified to manage and keep up the technology tools and to also aid health personnel to utilize these tools and systems, particularly in lower health facilities (Kiberu, 2017). There is the case of discomfort with the use of technology for instance, which could be connected with having a perception of risk, as well as concerns of safety, reliability and validity of the technology, particularly security, confidentiality and privacy concerns (Fulgencio, 2019).

Previous research reveals that internet self-efficacy relates positively to internet usage and that people's confidence in their abilities to master effectively a new technology is vital for its adoption. There is proof that the health information system self-efficacy predicts the behavioral intention to utilize digital services (Tetri & Juujärvi, 2022). Self-efficacy reiterates an individual's trust in his or her ability to produce a given achievement. Difficulties will be viewed as a problem to be defeated by people with a high feeling of self-efficacy (Gurban & Almogren, 2022). The extent to which a person trusts using a specific system with minimal effort is referred to as the perceived ease of use (Alamri, 2022). Perceived ease of use influences the intention to use technologies and is defined by (Park & Kim, 2023) as the degree to which individuals think they needn't struggle to use a technology. Individuals have described that their intentions to utilize mental health applications rely on the perceived ease of use, that is, the feeling at ease during the navigation and utilization of the apps in their daily lives. D. Abdulwahab, S. Khan, J. Chebil and A. H. M. Z. Alam, Khan S., A. Deji, A.H.M Zahirul, J. Chebil, M.M Shobani, A.M Noreha. (Setember 2012), Deji A., Sheroz K, Musse M.A, Jalel C. (August 2014).

Usability is deemed a vital system quality attribute that affects the adoption of an information system as it involves the ability to learn, understand, and use a software efficiently and effectively. The usability of the system influences the user's acceptance to adopt an information system as well as its sustainability (Silva Coutinho & Costa, 2023).

A concluded survey shows that Nigeria has the readiness to go forward with the application of Ict in the healthcare sector putting alongside the principal issues raised into considerations. It should be noted that the research was conducted in just one state of the country hence the belief that the statistics can be enlarged to other parts of the federation (Adebayo & Ofoegbu, 2014). (Emuoyibofarhe & Oladosu, 2019) defined readiness as that extent to which a society is ready to participate and succeed in the adoption of e-health, and hence considered e-health readiness as a factor that could influence the growth of e-health in

any community. Therefore, the first step towards the successful adoption of e-health is understanding readiness. Asides the readiness assessment, another tool that can aid the improvement of the adoption of technological solutions is the occasional assessment of its acceptance and usage. Deji, A., Khan, S., Habaebi, H.M., Musa. O.S. (2024), Deji A., Sherifah OM., 2023, Elfaki Ahamed, O.M.H., Musa O.S, Deji A., (2023).

Figure 1 Acceptance/Rejection distribution Chart of E-health system (Adebayo & Ofoegbu, 2014)

3. Proposed Research model

The research model adopted for this research is an integration of the DeLone and McLean IS success original model with a construct from the TAM model. (Ojo, 2017) States that several researchers have used the D&M model in their IS studies, and therefore the model has been tested and applied and hence it has been validated that it serves as a good framework for the evaluation of health information systems. (Purwanto & Budiman, 2020) Describe the TAM as a model that is used to explore how someone gets technological progress and what factors influence the acknowledgement, selection and the intention to utilize an innovation. The constructs added to this proposed model are self-efficacy and perceived ease of use. (Dhiman, 2019) deems self-efficacy to be a vital determinant of behavioral intention. The logic behind including this construct is that users will not come to terms with a technology unless they are confident about it hence self-efficacy could be a motivator to adopt a technology as well as a continued usage. (Aldholay, 2018) agrees and also added self-efficacy as a construct in his D&M model and defined it as the degree to which students believe in the ability to learn from an online course successfully, and further states that self-efficacy plays a major role in the utilization of technology and information systems.

Self-efficacy can be defined as a person's judgement about his or her ability to successfully utilize a computer system. There are criteria used to measure self-efficacy in using computers and they are: The convenience of utilizing the system if trained by someone else, the capability to encounter difficulties, the convenience to use the system if online guide is available and the convenience over a person's capabilities. Perceived ease of use can be defined as the way people believe that making use of a technology will be effort free. The criteria used to measure perceived ease of use are: flexibility, easy to learn, and easy to arrange (Ismi Fathia Rachmi., 2023). According to (Chirchir, 2019), a user's performance is at its finest when the users perceive the system as easy to use. Results reveal that most frameworks pay more attention

to the technical aspect instead of the human aspect that is the actual usage of the information by users, during the capture of the information quality needs (Hanifah, 2023). The perceived ease of use is a factor used in the TAM and it measures the degree to which an individual assumes that it is easy to use a system (Samar Zaineldeen, 2020).

Technology readiness and self-efficacy estimates a user's perceived ease of use. Self-efficacy is referred to as a user's confidence in the ability to make use of a technology and is considered as a determinant of perceived ease of use. Present day studies show that self-efficacy affects the behavioral intention to adopt e-government systems, apps, and etc., whether directly or indirectly and thus it has been analyzed in connection to the adoption of technology (Graça Miranda Silva, 2022), Deji A., Sheroz K, Musse M.A, Jalel C. (2011), Abdulwahab D. (2011), Abdulwahab D. (2016), Deji A., Sheroz K., Musse M.A., (December 2023),

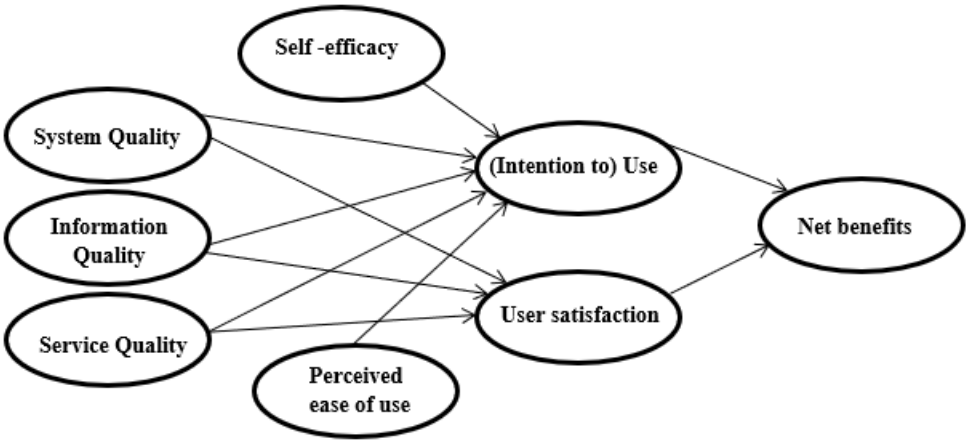

Figure 2 Proposed Research Model

The hypotheses derived from the above model:

H1: Self-efficacy has an effect on the intention to use and actual use of the HIS

H2: Perceived ease of use has an effect on the intention to use and actual use of the HIS

4. Research method and Data Collections

This research utilized a quantitative method and questionnaires which contained four demographics, to gather data from 19 health institutions in two cities and two states (Benin city, Zaria, Gombe, and Osun state) respectively in Nigeria. The units of analysis utilized for this study are the hospitals that use an IS (information system) and the sample size was 377 medical employees. However, 288 was utilized for the analysis after the exclusion of incomplete responses.

Table 1: Statistical value of demographic analysis

	Sex	Pro	Age	Knowledge
N Valid	228	228	228	228
Missing	0	0	0	0
Skewness	-.142	.067	.281	-.119
Std. Error of Skewness	.161	.161	.161	.161
Kurtosis	-1.998	-1.613	-.630	-.508

Std. Error of Kurtosis	.321	.321	.321	.321
Sum	350	448	390	490

Table 2: Reliability Statistics

Cronbach's Alpha	N of Items
.901	31

6. Data Analysis and Results

The Pearson's correlation model is used in this study to test the statistics that measure statistical relationship between two set of continuous variables. Displayed below are the results showing the correlations:

Self-efficacy has an effect on the intention to use and actual use of the HIS while the Perceived ease of use also has an effect on the intention to use and actual use of the HIS. The Self-efficacy has an overall significant correlation with the (intention) use at the 0.01 and 0.05 levels (2-tailed) and Perceived ease of use has an overall significant correlation with (intention) use at the 0.01 level (2-tailed). The impact of the added variables to the model self-efficacy and perceived ease of use on (intention) Use overall was significant, but with each measurement item showing either positive/negative/significant/insignificant relationships, moderate or weak strength. Overall correlation results which show that relationships exist between the variables indicate that a user's ability and confidence to use the HIS and how easy they perceive the system's use affects the user's intention to use, and actual use of the system in hospitals. However, based on the correlations that were weak, self-efficacy and perceived ease of use should be further analysed and enhanced to get more significant results with stronger strength in the context of the subject's objective.

7. Conclusion

Perceived ease of use and self-efficacy are good factors to be considered when looking into the readiness to adopt an information system technology in the health environs, as both constructs have an impact on the use of the system. Health personnel should be trained and taught to use the system so as to improve their attitudes and perceptions towards it. If this is met following the results from this study, the motivation to utilize the system will be increased, the health personnel will feel more encouraged to get accustomed to use the system and better values and results will be achieved as well.

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