

THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

A Bird's Eye View on the Determinants of Acceptance and Use of Institutional Digital Repositories (IDRS)

Aliyu Isyaku Ahmad

Librarian, Adebimpe Ike Library, Abubakar Tafawa Balewa University, Bauchi, Nigeria

Dr. Babangida Umar Dangani

Librarian, Federal University Dutsinma, Katsina, Nigeria

Abstract:

This paper discussed Digital Institutional Repositories as set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It also introduced the Unified Theory of Acceptance and Use of Technology (UTAUT) Model, UTAUT Model provides a useful tool for the management needing to assess the likelihood of success for technology introduction as well as helping to understand the drivers of technology acceptance. The UTAUT Model is the consolidation of eight (8) technology acceptance models (TRA, TAM, MM, TPB, C-TAM-TPB, MPCU, IDT, and SCT) by Venkatesh et al, 2003. The constructs of these eight models were integrated into five (5) which are: performance expectancy, effort expectancy, social influence, behavioural intention and facilitating conditions. The four moderators of these constructs are: age, gender, experience and voluntariness of use. The paper further provides a review of previous studies that adopted UTAUT model such as a study conducted by Oshlyansky et al in 2007 titled "validating the unified theory of acceptance and use of technology (UTAUT) tool cross-culturally", Nassoura (2012) titled "Students Acceptance of Mobile Learning for Higher Education in Saudi Arabia" among others. The paper discussed how the UTAUT model can be applied in the study of Acceptance and use of IDRs for research by postgraduate students. And finally, it concluded that, the UTAUT Model can be a suitable theoretical framework for research in emerging technologies/innovations in our Nigerian universities.

Keywords: institutional digital repositories, unified theory of acceptance and use of technology, determinants, technology acceptance theory.

1. Introduction

The development of an Institutional Digital Repository (IDR) redefines the production and dissemination of scholarly material within an academic community for research activities. The objective of such repositories is to support the organization's goals which promoting of academic researches that will bring about societal developments is one of them. Some institutions use an IDR as a positive marketing tool to enhance their reputation. An IDR can provide a platform to manage institutional information, including web contents. IDRs have a number of benefits, including access to resources, visibility of research, and presentations of the contents (Bhardwaj, 2014). More so, libraries are aimed at giving a satisfactory service to its users. Satisfactory service is always measured by giving the library user accurate/relevant information/information resource(s) within a limited time possible, in other words, saving the time of the user. Saving the time of the user in a library is the fourth law in Ranganathan's five law of library (Ranganathan, 1988). Therefore, in order to reduce the time waste by Postgraduate Students from the time they request theses/dissertations to the time they are given, there is need for these students to accept and use Institutional Digital Repositories.

Noruzi in Bhatt (2011) very rightly opines that considering the time of the user as a vital notion, and that all five laws of library science are transferable and applicable to the Web. Increasingly, saving the time of the user becomes navigating with them through the Web and creating high-quality and accurate guides to information in this challenging domain. The main objective of the library should be that, the user who enters in a library for a specific purpose should not leave empty handed. At the same time, it must also be ensured that, the users' valuable time is not wasted in searching for material. The IDR reduces to a lower level the time spend during the request of an information resource in our Libraries and Information Centres to the time the requested material is given to the clientele.

2. Institutional Repositories

Institutional repositories are one of the recommended ways to achieve the open access vision described in the Budapest Open Access Initiative definition of open access. This is sometimes referred to as the self-archiving or 'green' route to open access. Nevertheless, it should be noted that online storage costs dropped and standards of digital preservation came together so that libraries looked at open

access digital repositories as a way to preserve and distribute the scholarly communication produced by faculty, students, and programs to achieve research activities and development (Lynch, 2003). He further states that changes in technology made repositories more affordable.

Lynch (2003) defines a university-based digital repository as a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials including long-term preservation where appropriate, as well as organization and access or distribution. When mature, university repositories would contain the “intellectual works of faculty and students.” While universities want to preserve and distribute their scholarly communication they do not want to clutter the Internet with marginal or poor scholarship.

3. Acceptance and Use of Technology

According to Louho, et al, (2006), technology acceptance is about how people accept and adopt technology to use. The main objective of many technology acceptance studies is to investigate how to promote usage and also explain what hinders user acceptance and usage of technologies (Kripanont, 2007). User acceptance has been defined as the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support (. Kripanont, 2007). Thus, technology acceptance theorists are less concerned with unintended uses or non-discretionary use of technologies and more interested in understanding the factors influencing the adoption of technologies as planned by users who have some degree of choice. By developing and testing models of the forces shaping user acceptance, human factors researchers seek to influence the process of design and implementation in a manner that will minimize the risk of resistance or rejection by users.

The scientific concern with user acceptance is comparatively recent, since traditionally, developers and procurers of new technology could rely on authority to ensure that technologies were used, at least in many industrial perspectives. However, current working practices, as well as the large market for leisure and educational applications of information technology have enabled greater discretion among users thus increasing the need to determine the dynamics of acceptance. The fact that technology acceptance model received overwhelming application in many technology-related researches resulted in development of new and modified editions of technology acceptance models like TAM 2, MM, TPB, C-TAM-TPB, MPCU and many other competing theories and model which finally Venkatesh and others came out with an integrated unified technology acceptance theory called Unified Theory of Acceptance and Use of Technology (UTAUT).

3.1. The Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT model was developed by Venkatesh and his team basing upon the conceptual and empirical similarities among eight competing technology acceptance models: TRA, TAM, MM, TPB, C-TAM-TPB, MPCU, IDT, and SCT (Venkatesh et al, 2003; Rosen, 2005; Schaper and Pervan, 2007; Birth and Irvine, 2009; Van Biljon and Renaud, 2009). The UTAUT model successfully integrated key elements from among the initial set of 32 main effects and four moderators from eight different models (Venkatesh et al, 2003; Peter, 2004; Kripanont, 2007). According to Venkatesh et al (2003), the UTAUT model was formulated by identification and discussion of eight specific models of the determinants of intention and usage of information technology (Dulle, 2010). From the theoretical perspective, the UTAUT model provides a refined view of how the determinants of intention and behaviour evolve over time. This model provides a useful tool for the management needing to assess the likelihood of success for technology introduction as well as helping to understand the drivers of technology acceptance so as to proactively design interventions including training targeted at populations of users that may be less inclined to adopt and use new technology (Venkatesh et al, 2003; Kripanont, 2007). The UTAUT model postulates three indirect determinants of new technology usage (performance expectancy, effort expectancy, and social influence), and two direct determinants of usage behaviour (intention and facilitating conditions). Four moderators, gender, age, voluntariness, and experience were identified to play specific moderating roles to the indirect and direct determinants of technology use behaviour.

The sections below explained on the key determinants (constructs) and moderators of the UTAUT model.

3.2. Indirect Determinants of Technology Usage

Indirect determinants of technology usage are those factors that influence individuals to build interest toward technology usage. Such factors are briefly explained under the following sub-sections.

3.2.1. Performance Expectancy

This is the degree to which an individual believes that the new innovation will help him or her to attain gains in job performance (Venkatesh et al, 2003). According to UTAUT model, it is expected that individuals will build interest of using a certain technology if they believe that it will enable them to improve their performance in what they are doing. This simply means that unless the new technology improves efficiency or quality of an individuals' job/task, it is less likely to attract their interest on it.

3.2.2. Effort Expectancy

This is the degree of ease associated with the use of the system. The model postulates that individuals are likely to show interest in technology usage if that technology is easy to use. This means less complicated technologies can easily attract usage intention of many users than complicated technologies. Effort expectancy is said to influence behavioural intention. **Social influence:** This has been defined as the degree to which an individual perceives it important that other people believe he or she should use the new system

(Venkatesh et al, 2003). Developers of this theory believe that individuals will be in a position to show interest in technology usage if their peers or superiors value and encourage them to use such technologies. In other words, individuals' intention to use new technology is expected to be high if such individuals expect their peers will look positively at them if they use that technology.

3.3. Direct Determinants of Technology Usage

There are two direct determinants of technology usage which makes the constructs of UTAUT model to be five (5). These are: Behavioural intention and facilitating conditions.

3.3.1. Behavioural Intention

According to the UTAUT model, technology usage is subject to individuals building interest (behavioural intention) toward it. In other words, behavioural intention of an individual towards a technology will ultimately lead him/her to use the technology in question. In addition to behavioural intention, the UTAUT model also considers facilitating conditions as the other direct determinant of technology usage.

3.3.2. Facilitating Conditions

These has been defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh et al, 2003). In this model, it is postulated that the usage of technology is dependent on the availability of an enabling environment for its application. For example, computer applications may not be expected in an organization without such facilities.

4. Previous Studies that Adopted UTAUT Model

This section discussed some of the studies conducted using UTAUT model to determine the acceptance and use of different technologies by individuals. Some of the technology acceptance studies that adopted the UTAUT model as the main basis for their theoretical frameworks include the following:

In 2007, Oshlyansky et al conducted a study titled "validating the unified theory of acceptance and use of technology (UTAUT) tool cross-culturally. The introduction of this research was that, technology acceptance that is people's attitude to the uptake and use of different technologies, has emerged as a strong candidate for cross-cultural validation of Human-Computer Interaction tools. The study tested seventeen (17) hypotheses which includes, Computer attitude will positively affect the intensity of occupational therapists' behavioural intention. Mixed-mode methodology was adopted by collecting substantial quantitative, qualitative and longitudinal data. Questionnaire and focus groups were used as research instruments for collecting data. Findings of this study reveals that, while the factors influencing individual technology acceptance and use decisions by healthcare professionals vary from those factors that apply to business professionals and students; there may be some particularly unique factors that contribute to allied health therapists and those working in community based settings. It was recommended that, further research should be broaden in health IT research, and particularly technology acceptance studies.

Nassoura (2012) conducted a study titled "Students Acceptance of Mobile Learning for Higher Education in Saudi Arabia". The introduction was that, widespread access to mobile devices and the opportunity to learn regardless of time and place make the mobile learning an important tool for lifelong learning in Saudi Arabia. The study tested nine (9) hypotheses among which are Social factors will have a positive influence on attitude towards behavior. Quantitative approach survey method was used. Questionnaire was used as an instrument for data collection. Findings reveals that five out of nine hypotheses were confirmed showing that a positive attitude leads to the behavioural intention to use m-Learning. The researcher recommended that, the university administration should focus on the design m-Learning system that appropriate with student's perception.

In a similar study conducted by Abu-Al-Aish and Love,(2013) titled "Factors Influencing Students' Acceptance of M-Learning: An Investigation in Higher Education". The introduction of this study was that, the fast spread of mobile devices (PDA, tablet PC, smart phone) and wireless networks within university campuses makes higher education a suitable place to integrate student-centered m-learning. The study tested five alternate hypotheses which include that, Performance expectancy will have a positive effect on behavioural intention to use m-learning. The study adopted qualitative research method with questionnaire as an instrument for data collection. The findings reveal that, two out of the four constructs of UTAUT Model (performance expectancy and effort expectancy) among others were significant factors that affect behavioural intention to use m-learning. The study finally recommended that, higher education institutions need to develop strategic plans and provide guidelines considering students' acceptance in order to include all critical success factors for the sustainable deployment of m-learning.

Another study conducted by Wu et al (2007) titled "Using UTAUT to explore the behavior of 3G mobile communication users". In the introduction, it stated that, Taiwan's mobile phones subscribers adopts the use of 3G internet service since 2003, yet service providing companies failed in designing marketing tactics that will go closer to the consumers' need under the influences of the decreasing individual's contribution and the low utility rate. The research questions raised among others include what are the factors that influence the adoption of 3G service among mobile network subscribers? Mixed research method was adopted and questionnaire and interview was used as data collection instruments. The findings of the study show that "performance expectancy," "social influence," and "facilitating conditions," are the factors that significantly influenced the behavioural intention. It was recommended that, overall 3G service should be expanded to reach significant proportion of targeted subscribers.

Salim (2012) conducted a study titled "An Application of UTAUT Model for Acceptance of Social Media in Egypt: A Statistical Study". Its introduction was that, Digital Social Media such as Facebook, twitter, YouTube and others influence the spread of

information more quickly and easily in Egyptian society and are now a part of daily human activities. The research question asked was does the subscribers of Facebook's 'Khalid Saied page' of the Arab spring accepted Facebook as an influential factor. The study adopted quantitative research method, and survey study was used with questionnaire as an instrument of data collection. The findings of the study showed that Facebook has been accepted as an influential factor by Khalid Saied's page members. The study recommended that further research is needed to focus on governmental employees and find the similarities and differences between governmental people and Non-government employees in regard to influencing factors which UTAUT model suggested.

5. Application of UTAUT Model to Acceptance and Use of Digital Institutional Repositories (DIR)

In spite of the fact that Researchers in the field of technology acceptance and use have adopted UTAUT model in their investigations and testified the validity and reliability of the model in explaining how individuals accept and use new technology in their daily businesses mostly in developed countries, there is very little studies conducted on this subject in developing countries especially in Africa and particularly Nigeria. Therefore, this section discussed how UTAUT model can be applied in acceptance and use of digital institutional repositories research.

Performance Expectancy is the degree to which an individual believes that accepting and using the system will help him or her to attain gains in job performance. According to UTAUT model, it is assumed that postgraduate students will build interest of using a certain technology (like IDR) if they believe that it will enable them to improve their performance in what they are doing (researches). Research question and hypotheses could be asked/test using this construct as; to what extent do you believe that using IDRs will improve your research activity as a postgraduate student? Or using IDRs will help me in the conduct of my research

Effort Expectancy is the degree of ease associated with the use of the system. This assumes that individuals are likely to show interest in using digital institutional repositories if found that it is easy to use. Similarly, it means that less complicated technologies can easily attract usage intention of many users than complicated technologies. Research questions such as these can be raised under this construct: to what extent the use of IDR is simplified to the targeted users? How simple do you find IDR while using?

Social Influence is the degree to which an individual perceives how important others believe she/he should use and accept the new system. This construct is about whether the participants expect others such as relative, Friends, partners, co-workers, partners, spouses or neighbors, who are close to him/her to appreciate of using DIR. In other words, individuals' intention to use new technology is expected to be high if such individuals expect their peers will look positively at them if they use that technology. The following research questions could be raised using this construct: To what extent are you motivated to use DIR in the conduct of your research as influenced by other people around them? Or what is the extent to which university community members influence you to use DIR in the conduct of your research?

Facilitating Condition is the degree to which an individual believes that an organizational and technical infrastructure is available to support the use of the system. In UTAUT model, it is assumed that the usage of technology depends on the availability of an enabling environment for its application. For instance, electricity, PCs, and Internet within the university community. This construct can be used to ask the following research questions: What infrastructure exist to support the use of DIR in your institution? Or to what extent can you justify the availability of infrastructure to support the access and use DIR in your institution?

6. Conclusion

This paper presents an overview of the development and testing of UTAUT model. One can now see the justification of using this model in the study of technology acceptance/adoption and usage. Many scholars have tested it and the outcomes of their studies proved that the model is reliable in determining the factors which motivates individual's behavioural intention to accept and use or reject a new technology/innovation. This also means that, the model could be suitable theoretical framework in conducting a study like this one (Acceptance and Use of DIRs for Research by Postgraduate Students in Nigerian Universities).

7. References

- i. Abu-Al-Aish, A. and Love, S. (2013). Factors Influencing Students 'Acceptance of M-Learning: An Investigation in Higher Education. *The International Review of Research in Open Distributed Learning*, Athabasca University: Vol 14, No 5 (2013) available at www.irrodl.org/index.php/irrodl/issue/view/59. (accessed on 14 September 2014)
- ii. Bhardwaj, R. K. (2014). *Institutional Repository Literature: A Bibliometric Analysis*. *Science & Technology Libraries* ahead-of-print (2014): 1-18.
- iii. Bhatt, R. K. (2011). *Relevance of Ranganathan's Laws of Library Science in Library Marketing*. *Library philosophy and practice* 2011. Available at <http://www.webpages.uidaho.edu/~mbolin/bhatt.htm> (accessed on 4/3/2015)
- iv. Birth, A and Irvine, V. (2009). *Preservice Teachers' Acceptance of ICT Integration in the Classroom: Applying the UTAUT model*. *Educational media international*, 46 (4): 295-315.
- v. Dulle, F. W. (2010). *An Analysis of Open Access Scholarly Communication in Tanzanian Public Universities*. Unpublished PhD thesis, University of South Africa.
- vi. Lynch, C. (2003). *Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age*, *ARL: A Bimonthly Report* 266 (Feb. 2003): 2.
- vii. Kripanont, N. (2006). *Using technology acceptance model to investigate academic acceptance of the Internet*. *Journal of business systems, governance, and ethics*, 1(2): 13-28.
- viii. Louho, R, Kallioja, M. and Oittinen, P. (2006). *Factors Affecting the Use of Hybrid Media Applications*. *Graphic arts in Finland*, 35 (3): 11-21.

- ix. Nassuora A. B. (2012). Students Acceptance Of Mobile Learning For Higher Education In Saudi Arabia. American Academic & Scholarly Research Journal Vol. 4, No. 2, March 2012 available at www.aasrc.org/aasrj
- x. Oshlyansky, L, Cairns, P and Thimbleby, H. 2007. Validating the Unified Theory of Acceptance and Use of Technology (UTAUT) Tool Cross-Culturally, in volume 2 Proceedings of the 21st BCS HCI Group Conference, edited by D Ramduny-Ellis & D Rachovides, Lancaster University, U.K. Available: http://www.bcs.org/upload/pdf/ewic_hc07_sppaper21.pdf (Accessed 8 October 2014).
- xi. Ranganathan, S. R. (1988), Five laws of library science, 2nd ed., Sarada Ranganathan Endowment for Library Science, Bangalore.
- xii. Rosen, P. 2005. The Effect of Personal Innovativeness on Technology Acceptance. Unpublished PhD Dissertation Abstract, Oklahoma State University. Available: <http://earchive.library.okstate.edu/dissertations/AA13179557/>(Accessed 31 January 2015)
- xiii. Salim B. (2012).An Application of UTAUT Model for Acceptance of Social Media in Egypt: A Statistical Study. International Journal of Information Science 2012, 2(6): 92-105
- xiv. Schaper, L.K. and Pervan, G.P. (2007). An Investigation of Factors Affecting Technology Acceptance and Use Decisions by Australian Allied Health Therapists, in Proceedings of the 40th Hawaii International Conference on System Sciences - 2007. Available: <http://csdl2.computer.org/comp/proceedings/hiccs/2007/2755/00/27550141c.pdf> (Accessed 8 October 2014).
- xv. Van Biljon, J. and Renaud, K. (2009). Distance Education as Enabler in Crossing the Digital Divide: Will Phoenix Fly? In Proceedings of the 3rd International IDIA Development Informatics Conference, 28-30 October 2009, Berg-en-Dal, South Africa. Available:
<http://uir.unisa.ac.za/dspace/bitstream/10500/3136/1/vanbiljon-j.pdf> (Accessed 21 Jan. 2015).
- xvi. Venkatesh, V. et al. (2003). User Acceptance of Technology: Toward a Unified View. MIS quarterly, 27(3): 425-478.
- xviii. Wu, Y., Tao, Y. and Yang, P. (2007). Using UTAUT to Explore the Behaviour of 3G Mobile communication Users. Available: <http://tao.nuk.edu.tw/papers/IEEM2007.pdf> (Accessed 17 January 2015).