Global Models on the Acceptance of Faculty Members for Technology in Education: A Review of the Literature

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Abstract

In this article, the researcher reviews some studies that tend to apply the Unified Theory in the Use and Acceptance of Technology (UTAUT) in the acceptance of technology for faculty members of universities. Because of the paucity of these studies, the researcher has used some of the studies that applied this model in general education and the teachers of faculty members of universities. This is a comprehensive review of literature that deals with the acceptance and use of technology in schools, universities, and institutions, and how this influences them. Some recommendations will be proposed to enhance using technology in education. Therefore, in this paper, we compare and contrast studies that focused on the utility of modified versions of the unified theory of acceptance and use of technology (UTAUT) model in higher education in a developing country and evaluate the impacts of the UTAUT factors on behavioural intention and other domains to adopt technology in higher education.

Key words: review, UTAUT, faculty members, technology, education

Introduction

ICT has affected every aspect of our modern life, including education. Most educationalists have incorporated ICT into their learning with the view of achieving higher efficacy and enhancing the production, which in turn leads to higher success. Loogma et al. (2012) show that the use of ICT may ease innovative teaching and learning processes inside educational institutions. Laudon and Laudon (2010), stated that significant use of ICT does not necessarily guarantee higher returns since the investment need to be supported with some vital assets such as rewards for faculty members, teamwork and cooperative work environment.

This review provides further understanding of the matters about acceptance of ICT by students of many Institutions. These will investigate technology adoption by examining different technologies used in various cultural settings and identifying findings from other studies. Several theoretical models have been perused to seek factors that influence behavioural intentions to use technology to manage user behaviour. Combinations of many models have been applied as theoretical models in some situations while in others, these models have been extended with additional factors. These models explain between thirty to sixty percent of users' behavioural intention to use technology according to Venkatesh et al. (2003). In 2003, for example,

Venkatesh et al. unified eight of these models and arrived at the UTAUT model. The Application of the UTAUT model explains seventy percent of the variation in using technological models.

Negas and Ramos (2011) Wang and Shih (2009) maintained that mobile learning which materialized with the evolution of mobile devices, has broadened e-learning and distance education systems by allowing educators and students to teach and learn anywhere, anytime and on the move. Mobile devices include, but are not limited to, smart phones, mp3 players, tablet PCs and PDA's. The diversity of these devices along with their popularity among students makes them appropriate to use in educational contexts (El-Hussein & Cronje 2010; Jeng, et al. 2010).

Cheon, Lee, Crooks, and Song (2012) and Wang and Shih (2009) think that even though the speedy increase in the amount of mobile devices has allowed institutions to begin exploring their use, technology in education in higher education is still a rising field. The sluggish pace of adoption by educational institutions may be due to several reasons such as the cost of hardware and software systems to support e-learning can be very high. Moreover, educators need to be trained in using these new systems to teach, converse with students and assess their learning progress. Additionally, the cost of mobile Internet access may also cause low adoption rates. On the whole, technology in education presents many opportunities for innovation, but its challenges are not fully tacit (Wagner 2005)

Literature Review

Kung-Teck Wong et al., (2013) have studied the extent of understanding and acceptance of primary teachers the use of interactive white panels in teaching at the University of South Australia, Adelaide. The aim of the study was to determine the understanding of teachers in basic lower stage the use of white interactive panels through (UTAUT) model as a theoretical framework. The study followed the descriptive quantitative analytical method. The statistical analysis has been conducted through the credibility analysis, and modeling of equation of constructivism (SEM) of statistical software (AMOS). The sample was (112) subjects, the results came as follows: the probability Effort (PE) , and (ease of use): (EE) has positive and direct Impact on behavioral expectations: (BI), where (41%) of respondents was found to have positive attitudes towards the use of interactive panels.

Gogus, A, et al., (2012) have the acceptance of technology in education between cultures confirmation of the appropriateness of the Unified Theory of Acceptance and Use of Technology (UTAUT) in the context of the Turkish national culture heritage. The main objective was to identify the applicability of the Unified theory of acceptance and use of technology (UTAUT) on the users of learning technologies in the educational environment. The study was descriptive analytical and quantitative. The tool was survey questionnaires distributed partly and manually via the internet between users of educational technology targeting Turkey academics and students, and the results were obtained through (SPSS) program, statistical analysis and

modeling equation of constructivism (SEM) through statistical software of (AMOS), where the study population comprises the Turkish Academic users of learning technologies.The total sample was (1723) students and academics at the Universities of Turkey chosen randomly. The study had several results. It was found that there is a probability for the applicability of the Unified theory of acceptance and use of technology (UTAUT) on the educational environment and the field of Education. It also found the impact factor of the efficiency of the use of computer on the intention to use it. The study does not recommend the use of systematic force on the use of educational technology in Turkey regardless of the educational level of the user, also it recommended to take into account the efficiency of the use of computers. Finally, it called for more similar research on other cultures.

Oye et al., (2012) have compared the extent of acceptance and use of (ICT) for the faculty members at the University of Adamawa: (ADSU) and Lagus (LASU) in Nigeria. The study aimed to identify how Faculty members perceive technology in teaching (ICT). The study applied the model of (UTAUT) in each of the two universities for the use of staff the Information Communication Technology (ICT) in their work. The study was descriptive analytical and quantitative the (UTAUT) Model. The statistical analysis used the regression equation. The sample comprised (100) in the State of Nigeria. The variables of the study were: anxiety, and (SE), and the Attitude (ATUT). The results came as follows: The Expected Performance (the expected benefit) or (PE) has an impact on the seaff of the University of Lagus (LASU), and a prediction of effort (ease of use) (EE) has also an impact on the staff of the University of Adamawa (ADSU). It was found that the (ATUT) has great impact on behavioral expectations (BI) in both universities. Finally, it shows that (UTAUT) model was influential, and successful in the use of (ICT) in the two universities in Nigeria.

Pynoo Bram et al. (2011) have studied the prediction towards the acceptance of the use of digital learning for secondary school teachers within a cross-sectional study in the state of Belgium. The aim of the study was to explore the expected factors which predict the acceptance and use of digital information environment for secondary teachers (DLE). The study used the descriptive analytical quantitative design that applied the model of (UTAUT). The analysis used the Alpha Cronbach treatment(Alpha ά), and (LSR), Path Analysis, (RMSEA), (CFI), and (AGFI) .The sample comprised (72) teachers in the State of Belgium. The study showed the following results. The factors affecting (DLE) are the expected performance (PE), (the sought benefit) and the social impact: (SI), and a prediction of effort (ease of use): (EE). The facilitating conditions (FC) was less important, and finally the use's behavior (UB) was predicted by examining the tendencies (attitudes), and the behavioral intentions (BI).

Al-Qahtani (2010) has studied the model of acceptance of technology: a pioneer study from an Islamic perspective.The purpose was to study the acceptance model (TAM2 & UTAUT) and their theoretical basis from an Islamic perspective. The study used the general logical inductive approach of pioneering in the Islamic world. The study has several results including: the

existence of similarity and compatibility between the components, vocabulary, and relationships in the acceptance model of technology (TAM2 & UTAUT) and the theoretical basis of which they were built over from the Islamic perspective. There is a similarity between the Islamic model and the western model in terms of relationships between the components and their sequencing, and that Islam is characterized by neglecting some variables mentioned in the models which are purely material by nature.

Faculty Members and Use of Technology

This section deals with the studies that addressed the use of technology by the faculty members. In this section, the researcher's reviewed the studies that dealt with the use of faculty members in the technological universities. Since technology is advancing rapidly, it was suggested that it would be more convenient to use studies from 2007 onward.

Al-Ettiwei (1434 H) had explored the extent of use of some tools of e-learning in teaching in the faculty of Education at the University of King Saud, from the point of view of faculty members. The objective was to identify the level of availability of practical skills and knowledge by members of the Faculty of education at King Saud University towards the use of e-learning technologies. It also explored the level of availability of sources of technical and artistic constraints towards the use of e-learning technologies from the point of view of faculty members. The study used the descriptive analytical method through a questionnaire prepared for that sake. The study sample was (122) of the faculty member, selected randomly. The study has several findings. It was found that the cognitive skills to use the technology of e-learning by faculty members were highly available. The applied skills necessary to use the technology were available, but in a "medium" degree. The study recommended that there is a necessity to support and encourage faculty members to use e-learning technologies in university education. It is important to master the use of e-learning technology among the faculty members of the University.

Al Harithy (2013) has studied the technology in education and its role in the performance from the point of view of faculty members in the Military College of King Khalid. The objective was to identify the role of technology in education in the performance from the point of view of faculty members working in the Military College of King Khalid in Riyadh. The study used the descriptive analytical method through a questionnaire. The study sample comprised (155) of faculty members at the College. The study has several findings. Most of the respondents agreed to a high level to use the technology, as they have agreed to use technology in their different activities. Most respondents agreed on the lack of obstacles facing them when they use technology. Most of them didn't approve on the existence of these obstacles or they neutral towards this. The study recommended to establish a management center for technology in education linked to the Department of Education in order to support and promote the use of technology in the educational process. As well, to have an alternative to payments for obtaining

training in the use of technology in education (Contemporary teaching) adding the standard (using educational technology) in the criteria for the evaluation of performance of faculty members.

Salam (2013) studied the degree of availability of e-learning competencies for faculty members at the University of Ibb, Republic of Yemen. The objective was to identify the degree of availability of e-learning competencies for faculty members at the University of Ibb. The study used the descriptive survey method through a questionnaire designed for that. The study sample comprised (77) of faculty member. The study has several findings Faculty members have got high teaching competencies of e-learning both in the use of computers and its accessories and the use of networks and Internet. However, they have medium competencies in the culture of e-learning and the design and management of e-learning. The study has also showed significant differences in all domains due to training courses, and statistically significant in the use of computer, and its accessories and the use of networks and the internet for Science College. The study recommended to organize training courses in the field of e-learning for faculty members at the University of Ibb.

Al-Otaiby (2011) studied the on-going reality of the use of computers in teaching at King Fahad Security College from the point of view of faculty members' attitudes toward it .The aim was to explore the on-going reality of the use of computers in teaching at King Fahad Security College, and to identify the difficulties and challenges facing them towards their use of computer in teaching, and their attitudes towards using computer and Information Technologies in teaching. The study used the descriptive analytical method, through a questionnaire. The study sample consists of (79) faculty members. The study has several results. The staff uses Computer Information Technologies in general in an "average" manner. But rarely do they use the conversation in the internet, news, dialogue, virtual classes, and smart boards. The staff thinks that the best way of instruction is the traditional face-to-face method in an average way. The study recommended having programmes of continuous training for members of the faculty to keep abreast of developments in technology education, and that there is a need to create the appropriate environment towards the use of computer techniques in education.

Hasanain (2011) studied the employment of educational technology in distance learning programmes in the College of Education from the point of view of faculty members.The objective was to identify the current reality of employing educational technology in the Colleges of Education in the Sudanese Universities which adopt the distance education system. The study used the descriptive analytical approach. A questionnaire was designed for this purpose. The community of study is 32 professors. The study has several findings. The professors' perspectives are negative about the employment of educational technology in distance learning programs. The study showed that distance learning programs in the Sudanese Universities differs from the reality of employing educational technology in these programs. The study recommended the need to establish technology centres for education to employ educational

technology in distance learning programs, the need for training of employees in institutions of distance learning on curriculum design through the internet, as well as benefit from the operations of broadcasting in the development of learning services. The study requested building a model that demonstrates how to employ educational technology in the distance learning system.

Al Sayf (2009) has studied the availability of competencies and e-learning constraints, and methods of their development from the point of view of faculty members in the College of Education in King Saud University. The objective was to explore the availability of e-learning competencies for female members of the Educational Faculty. The study used the descriptive method by building a list of competencies in e-learning, through a questionnaire prepared for the purpose of the study. The study sample was (153) of faculty members. Out of the study, there were several findings. The competencies of e-learning available to the faculty members were "average", as well as there are no statistically significant differences attributable to the variables of faculty member's degree or where he/she gets his/her degree or his/her experience in university education or even the presence of training courses. The study proposed a model to implement towards the development of the teaching competencies of e-learning components which include mechanisms and policies for development, and programmes and development proposals according to three stages: (initialization, establishment, and post-training).

Al Matrefy (2008) studied the on-going reality of members of the Faculty's use of internet in teaching Natural Sciences in Saudi universities. The aim of the study was to investigate on-going reality of the use of the faculty members the internet in teaching Natural Sciences in Saudi universities and its impact according to (member's degree, experience, and faculty member's department) in the responses of faculty members. The study used a descriptive analytical method, through a questionnaire prepared for that target. The sample of the study was (255) members of the scientific departments. The study had several findings. First, there were statistically significant differences between the members due to their degree in the following domains (the extent of the use of a member of the Faculty to the internet in teaching Natural Sciences in Saudi universities, the importance of the use of the Internet by a faculty member in teaching of Natural Science, the extent of the need of faculty members additional training courses in the use of the internet in teaching Natural Sciences). There are also differences attributed to member's department for the following domains (extent of the need of faculty members additional training courses in the use of the internet in teaching Natural Sciences, , and ways to activate and develop the use of the internet in teaching Natural Sciences). The study recommended the necessity of holding training courses for members to how to use the internet, and the need to encourage members to use the internet.

Al Dakheel (2007) has studied the views of Faculty members at King Saud University towards the use of e-learning in university education .The objective was to identify the views of faculty members at the College of Education at King Saud University towards the use of e-learning in

university level. The study used the descriptive method through a questionnaire. The study sample was (90) members of the faculty. The study revealed several findings. There is no statistically significant differences at level (0.05) in the views of the members of the study about the domains of the quality of e-learning, the pros and cons of e-learning, the constraints of e-learning according to the variable (age, experience in education, a state of scientific degree, academic rank, level of computer use). The study recommended having more training of faculty members on the use of e-learning, providing them with the technical skills necessary to do so, and providing financial incentives that encourage them to use e-learning.

Faculty Members and Rehabilitation Programmes

In this section, studies related to the faculty members in terms of their rehabilitation and their performance will be tackled in. Some research studies will be reviewed through which addressing the preparation programs and evaluation of faculty; and the importance of these studies in recognition to the reality of the programmes preparing them or hindering them to use technology education.

Shayhoob, Abdulghany, and Rahemy (2014) have studied the evaluation of faculty members of Islamic Universities .The aim was to evaluate the programs of faculty members in the Islamic Universities, The study utilized a descriptive analytical method, through a questionnaire prepared for that. The community of study was all students of Education College/ fourth year majors at the state of Libya. The study has several findings. There is weakness among faculty members in using educational technology, and there are criteria for the selection of members at the Faculty, and the upgrading and updating programs. The degree for the previous domain was "medium" in the arithmetic mean. The study recommended the need to establish standards and specialized committees to choose the members of the Faculty applicants for the teaching posts to ensure their efficiency and their ability to teaching before accepting them, as well as the importance of continuous evaluation of the faculty member, and also the need to conduct training sessions periodically for faculty members in the different areas of technology education.

Salim (2004) conducted an analytical study of evaluating the programme towards the preparation of teachers of Legitimate Sciences in the College of Education in Saudi Universities. The objective was to identify the on-going reality of teacher training programs of Legitimate Sciences in some universities in Saudi Arabia evaluated from the point of view of graduates. The study followed the descriptive method through a questionnaire prepared for that target. The study sample was (400) students by (100) students of each College of Education specialized in science legitimacy in each of the (King Saud University, King Faisal University, King Khalid University, Umm Al-Qura University). The study has several findings. The alumni has evaluated the preparation programs of science teacher with less than "average" as being focused on the theoretical rather than practical domains, as well as the degree of satisfaction of the graduates on the programme was less than "average", and that the preparation programs of teachers was

unable to configure on and set them up in the light of the new roles required in the era of technological progress. The study recommended the need to develop systems and methods of teacher training programs in Legitimate Sciences at the College of Education in Saudi universities on an ongoing basis in light of the changes and contemporary developments; as well as to emphasize that the preparation of Science teachers curricula at the College of Education in Saudi universities should meet the challenges of scientific technological in the present and future as well.

Malkawi and Jallad (2003 have studied the educational innovation in the preparation of teachers of Islamic Education. The objective was to determine the views of teachers about rehabilitation programmes for their future practical professions. The study used the descriptive, survey method through a questionnaire designed for that. The population of the study was teachers of Islamic education who graduated from Legitimate Colleges in Jordan. The study sample was (288) teachers. The study has several findings. The areas of study have not been highly estimated by the teachers forming a non-positive result; as well as the importance of reviewing the program components (Teacher's Rehabilitation) and the necessity to include scientific material and teaching methods taking into account the types of thinking. The study recommended the need to explore the educational literature relating to the religious education philosophy and curricula, and to include the rehabilitation programs and material that prepare teachers of Islamic Education in educational Sciences, and the necessity of conducting comparative studies in the Muslim world about rehabilitation programs.

Results and Discussion of First Section

These studies dealt with the acceptance and use of technology in general according to the (UTAUT) model. These studies addressed the use of educational members to technology in particular. The results of those studies in terms of variables as follows:

1. According to the variable the 'benefit of the use of technology' in general and technology in education in particular, the results of those studies show positive effect and statistical significance to the variable of 'benefit of the use of technology' desired on the intention to use. The trend of attitude was positive to use technology in education. Examples on this include the study of (Kung-Teekwong et al., 2013) and study (Oye et al., 2012) and (Pynoo Bram et al., 2011).

2. According to the variable 'ease of use' on intention to use technology of education, the results revealed also the existence of direct positive effect and a statistically significant correlation for the variable 'ease of use' on intention to use educational technology. This is in harmony of other studies such as (Kung-Teck Wong et al., 2013; Oye et al., 2012).

3. According to the variable 'intention to use' in the actual use, the results revealed the presence of a direct positive effect and a statistically significant correlation for the

variable intention to use in actual use of technology for Education. The results were in accord with the study of (Kung-Teck Wong et al., 2013).

4. According to the variable 'Expected Performance (the benefit)' on the variables 'intention and ease to use' , the results of the previous studies as well as showed a positive, direct effect and a statistically significant correlation to the variable Expected Performance (the benefit)' on the variables 'intention and ease to use', where trend was positive towards technology in education. This harmonized with the study of (Kung-Teck wong et al., 2013) and (Oye et al., 2012).

In brief, the previous studies in the first section have shown the acceptance of the respondents to use technology in education, whether through UTAUT to accept and use technology in general, or those that dealt with the accept and use of faculty members in the educational technology in particular.

On the other hand, some studies recommended paying more attention to efficiency faculty members in using educational technologies, coupled with the application of the model of acceptance and use of technology (UTAUT).

Therefore, these results show the importance of using technology in education for faculty members in the educational process, particularly the members of the Faculty of Legitimate sciences; which is sought by the current study by having results that add something novel to the scientific research in this area.

Results and Discussion of the Second Section

These studies addressed the use faculty members for technology in general. The results were as follows:

The results of previous studies in the field of using technology in education for faculty members have differed. Some studies showed the availability of skills and the use of technology with the "high degree" of faculty members such as the study of Oteiwy (1434H), Salam (2013), Al-Harithy (2013). While the results Al-Otaiby (2011) Hassanein (2011) showed the lack of skills in dealing with technology in education, in a "negative degree" in relation to the employment of educational technology as demonstrated by the study of Hassanein (2011). The researcher believes that the reason for the lack of skills in dealing with educational technology in the study Al-Otaiby (2001) and Hassanein (2011) was due to the beliefs of faculty members and their attitudes towards the use of technology in education. That is what provided by the results of these two studies. It is noted that previous studies did not relate to the members of the teaching staff of Legitimate Sciences. This makes the current study important in highlighting them, and to identify the impact of some of the factors in enhancing them to use technology in education.

On the other hand, the results of other studies in the second section showed the availability of teaching competencies of e-learning for faculty members in universities and this is harmonized by the study of Seif (2009).

Differences in Studies

With regard to the existence of differences in the use of technology in education according to some variables, the results differed from previous studies dividing them into two groups :

The first group: the results showed the existence of statistically differences attributed to some variables, which are as follows:

1. Salam' results (2013) showed the existence of statistically significant differences due to the variable: training, use of the computer and its accessories, networks, and use of internet.
2. Al Matrefy's results (2008) showed the existence of statistically differences due to the variable: degree, and department.

Summary of Results

The results showed no statistically significant differences due to some variables, which are as follows:

The study of Seif (2009) showed the lack of statistically significant differences attributed to the variables: training, degree, place to get the degree, and service in the academic field . The study of Dakheil (2007) revealed that there are no statistically significant differences attributable to the variables: a place to get a degree, and service in academic work, age, degree and finally the level of computer use

In its recommendations, as it appears from the results of previous studies in the second section, they are almost proposed two things which are:

1. Emphasizing the importance of training faculty members to use technology in education, whether by using the Internet, or e-learning or training on the use of computer in education. This was confirmed by the results of Seif's study (2013) in terms of the presence of statistically significant differences in the use of technology attributed to training and degree.
2. Encouraging and promoting faculty members towards hiring technology in education, through the stipulation of suitable environment based on the use of computer techniques in education, in addition to the establishment of centres for e-learning and the production of educational programs that rely on the use of educational technology.

Accordingly, the results of previous studies in Section II, in relation to the use of the members of the Faculty to educational technology and technology in general, showed some variations in the level of teaching competencies for faculty members in their use of technology. One can believe that the reason for this probably dates back to the culture prevailing in the society, the trends towards the use of technology and employing them in the educational process, coupled with the availability of physical possibilities in each community looking for technological development.

Consequently, this variation may not reflect the real importance of the use of educational technologies and the status of faculty members in the teaching-learning process. Perhaps the consensus of the previous studies, in its recommendations, emphasized the importance of training faculty members to use educational technology, particularly e-learning. The use of computers and the internet in education is a clear indication of the existence of the need and desire of faculty members to benefit from the outputs of technology in education. This will take some time in preparing individuals to embrace technology and employ it in the process of education.

Al-Eteiwy (1434 H) and Al-Harithy (2013) agreed on the need to find criteria to assess the performance of faculty members of universities in their use of educational technology, connecting some of the advantages of physical and moral use of them. This prompted the researcher to provide a standard for evaluating the use of educational technology for faculty members at the University of Riyadh, in order to learn how to achieve the effective use of educational technology, and bring them to light.

Conclusion

These studies dealt with the evaluation programmes in the preparation of teachers and the mechanism of selecting members of the teaching staff in Legitimate Sciences in the universities, and assessing their performance. The results were as follows:

These studies have shown that teacher training programs in Legitimate Sciences in the colleges and universities in which these studies had been conducted are weak in teacher preparation in light of the roles required of the teacher in the current era, where the focus was on theoretical aspects without application. This was in harmony with Salim's (2004) and Malkawy and Jalad's (2003). These studies recommended the need to review teacher training programs in educational colleges and universities, in addition to, the need to emphasize the role of programmes and curricula preparation of teachers of Legitimate Sciences in the colleges of education at Saudi universities in the light of the technological challenges in the present and future.

From the results of previous studies in the second section, it is noted that there is an imbalance in teacher training programs, and shortcomings in terms of teacher preparation to keep abreast of technological advances in the field of Education. The presence of this defect in the programs preparing teachers will not be away from the role of faculty member since the educational

programs or curricula, and faculty members are fundamental elements in the educational process, and therefore, another study may be so convenient to tackle in the defects in the previous studies in respect of examining the second element in the educational process in the university legitimate education presented in the faculty members of legitimate sciences in the universities. Thus the image becomes clearer in relation to using technology and its employment in education at the university level.

The findings of this review indicate a need for more cross-cultural evaluations of the UTAUT model to strengthen the existing knowledge. Such studies should focus concurrently on Eastern and non-Eastern countries, but cross-national evaluation in non-Western countries alone will also be advantageous to the field. Apart from the Saudi setting, there is also a need for similar studies on the UTAUT model in the Middle East as well.

Acknowledgments

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