

RESEARCH ARTICLE

COMPUTER ANXIETY OF THE INSTRUCTIONAL TECHNOLOGIES ACCEPTANCE IN PRIMARY CLASSROOM TEACHERS IN THE UNIVERSITY OF HAIL

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ABSTRACT

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The present study aims to address the applicability of technology acceptance model (TAM) in education. A study typical that mirror the features and utilize TAM services is developed and empirically tested by using anylasis model on datasets consisting with a total of 7797 primary classroom teachers have been drawn from a stratified sample randomly, consisting of 294 male primary classroom teachers and 7503 female primary classroom teachers. This study would further assert that computer anexity (CA) on science educators is negatively correlated to Perceived Ease of Use (PE) with regards to Instructional technology usage. The study found that the intention to use (IU) influenced Primary classroom teachers' actual use (AU) of Instructional technologies in primary classroom teachers. But perceived usefulness (PU) seems to not influence primary classroom teachers' intentions to apply Instructional technologies in primary schools. Primary classroom teachers are more likely to be concerned with the ease of use in Instructional technology in making decisions to use the technology for teaching, as opposed to how Instructional technology would facilitate better education and learning through their use. This study will contribute to decision-making to disseminate Instructional technologies adoption among primary classroom teachers in the primary schools and is beneficial to specialists in teacher training, and those in charge of their training in Instructional technologies.

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INTRODUCTION

In this age, the fields of science, technology and the utilisation of computer applications have become an important aspect in the development of nations. In that pursuit nations started to compete in the field of science and technology, while also helping the upcoming generation to acquire and learn how to deal with technologies and computers, and benefit from them, thus raising a generation characterised with objective thinking, creativity and productivity (Al-Humayli, 2005). In light of that, it has become an obligation upon the education institutions to utilise their available resources in order to adapt with the world of tomorrow, in which information and the strength of the accompanying technologies in transmitting that information will become the main factor in achieving economic growth and sustaining public welfare on the local, national and global arenas (Al-Musa and Al-Mubarak, 2005). Education is categorised in the forefront of the social structure in contemporary societies that gave attention to utilising technology and communication.

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This is to be able to meet the educational and developmental needs of the society, where information and technology became one of the most primary resources for the educational process (Lal, 2003). These changes in information and communication technology have obliged the education process to change quickly in order to keep pace with the changes of contemporary times (Abu Dali, 2001). Also, the novelties of this age made it necessary for the teacher to be well-acquainted with computers and technology, having become a tangible educational reality, in order to benefit from the best educational and pedagogical practices (Abbas, 2002). This is what a group of studies had suggested, such as that of (Al-Tameemi, 2008; Baljoun, 2006; Al-Zahrani, 2006) where they recommended that effective training programs are provided for teachers, emphasising the importance of making the teachers aware of the technological advances and the importance of utilising them in teaching and general life. The importance of utilising contemporary technologies in the curricula and teaching methods has recommended, while benefiting from the experience of advanced nations in that regard, and conducting more studies and research in this field (Al-Humayli, 2005). Despite the great importance of contemporary technology, the utilisation and benefiting from it is almost non-existent,

especially in the primary levels of education (Al-Mugheerah, 1989). The world, particularly the Arab societies, faces ever-increasing and accelerating challenges as a result of the swift advancement in numerous fields. This advancement in the fields of knowledge and technology, which have dominated all sectors of life and coincided with advancements in education and with the updating in the ways teaching is conducted, had caused instructional technology to be incorporated into the fields of teaching and primary education. The teacher possesses the main role in making the teaching and educational process a success, and in directing it towards achieving the goals. It is he who interprets the curriculum into a tangible reality which he can notice and measure its effect. And with the advancements in science and technology during this era of widespread knowledge, the role of the teacher has evolved, now focusing on giving the opportunity to the learner to participate in the educational process, become independent seekers of knowledge and acquire critical thinking skills in evaluating the credibility of information vastly available to them.

According to (Yusuf, 1998), the "Instructional Technology helps the teacher in facilitating the teaching process since it tackles the over all usage of oral explanation for long periods of time which leaves a negative psychological impact on both the learner and the teacher". Instructional technologies are considered to be an offspring of instructional technology. Instructional technology has been defined by (Lowther *et al.*, 2008) as the specific use and knowledge of tools and crafts in education, and it can encompass tools such as the Internet, hardware and computers. These fit nicely into the categorisation of Instructional technologies, as will be seen. Instructional technology is akin to educational technology, defined by (Lever-Duffy and McDonald, 2011) as "any technology used by educators in support of the teaching and learning process". However, looking at a broader understanding of educational technology, one is given a more diverse outlook of what it actually entails, scaling from any media being applied in the classroom to exclusively referring to the application of computers and their peripherals in the teaching experience (Lever-Duffy and McDonald, 2011). It has mentioned that studies showed the importance of using Instructional technology and their role in making the teaching process successful (Fathullah, 2004). These studies affirmed that the student acquires 40% of his/her information through the sense of hearing, 30% through the sense of sight and 30% through the other senses. Moreover, the great challenge that our schools face nowadays is how can the schools reform to deal with the requirements of the future, including the utilisation of different technologies in an effective manner, gaining a place in what is known as the information super highway (Uthman, 2009).

Generally, in order for the public education schools to be equipped to implement technological outputs effectively, they should possess a good infrastructure, a flexible education system and an effective administration. Furthermore, the education policy of the Kingdom of Saudi Arabia states in article 201 of the [Ministry of Education] that the educational authorities are obliged to provide visual, acoustic and practical Instructional technological facilities for the schools, colleges and institutes to facilitate achieving the educational objectives. The future projects of educational development are part of the plans of the Ministry of Education; and in addition to the

projects and programs which have been achieved and implemented, and the advancement that has taken place, the Ministry of Education seeks to present the best through numerous fields, the most prominent of which are the total incorporation of technology into education, electronic education programs, thinking development programs and also establishing an education television (Anzi, 2011). Instructional technologies are indispensable in the course of implementing instructional technology. Many contemporary definitions of Instructional technologies have been given in sources such as the writings of (Shelly and Vermaat, 2012). The Instructional technologies has defined as tools that utilize a discrete method such as letters or numbers to pass on information, the alternative of which is the analogue system that instead utilizes a continuous method to pass on information (Hollander, 2011). Instructional technologies encompass a wide range of applications, from fields as diverse as special needs learning, notwithstanding education particularly. The applications of Instructional technologies in the education process can effectively be applied in the teaching of Science, such as the Internet, Multimedia technology, Smart board, Video, E-Book, E-Learning, The LCD projector, Digital Camera, Digital Overhead Projector, etc, stating that Science teachers' meaningful use of varied Instructional technologies in the classroom can influence students' Science learning outcomes positively.

University of Hail is a University in Saudi Arabia with a total population of 7797 Primary classroom teachers. The primary classroom teachers offer education to children ages 6 to 9. The schools are equipped with various Instructional technologies such as the Internet, Multimedia technology, Smart board, Video, E-Book, E-Learning, Distant learning, The LCD projector, Digital Camera, Digital Overhead Projector, Audiotapes, Photographs, Screens for viewing, CD players, 3D models, Computer sets, Educational games, Laptop, Pictures, Illustrations and DVD players. The provision of these technologies to primary schools was the result of the Saudi Ministry of Education realization of the importance of utilizing Instructional technologies in the classroom and the tremendous benefits they bring to the education of primary school students, especially in terms of primary classroom teachers learning. The Ministry has started to emphasise to schools and teachers the importance of utilising these technologies for the improvement of the quality of teaching and learning by dedicating special rooms for learning facilities providing teachers with vocational training in the usage of computers and updating their knowledge with all that is new in the field of Instructional technologies. In addition, the school administration and the Education Supervision Centre in the city of Hail also encourage teachers to use Instructional technology for instructional purposes. This paper sought to identify the use of Instructional technologies in teaching subject in public primary classroom teachers in the city of Hail. The study focused on public schools and on the viewpoint of Primary classroom teachers. Indeed, the desired educational development cannot be achieved without detailed studies of the status quo to find out the challenges and difficulties, and to present a clear vision in proper planning to reach satisfactory educational output.

Theoretical framework

TAM: The goal of TAM is to provide "An explanation of the determinants of technology acceptance that is generally

capable of explaining user behaviour across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified" (Davis, 1989). The TAM can be defined as an information system theory that models how users come to accept and use a computer-based technology. It was developed by (Davis, 1986& 1989) to explain computer-usage behaviour. What is suggested in the model is that numerous factors influence users' decision on how and when to use a new software package when they are presented with such. The TAM was developed by Davis to explain computer-usage behaviour. The original TAM has two core constructs, PU, which means "The degree to which a Science teacher believes that using Instructional technologies would enhance his or her teaching quality and performance and student learning", and PE defined as "The degree to which a person believes that using a particular system would be free from effort" (Masrom and Hussein, 2008) (see Figure 1). Despite the usefulness and ease of use of TAM, critics of the theory have pointed out its limitation in explaining more complex technology adoption phenomena, especially those dealing with teachers' technology use in the school and classroom contexts. They argue that teachers' use of technology cannot be simplified into a phenomenon that is merely explained by two factors: PU and PE. Among other things, studies show that teachers' use of Instructional technologies in teaching and learning is influenced by a myriad of factors, namely schools' management support, CA and enjoyment. As observed by (Ang *et al.*, 2001) the fact that management support has been investigated in several studies linking its influence to IT use supports this claim.

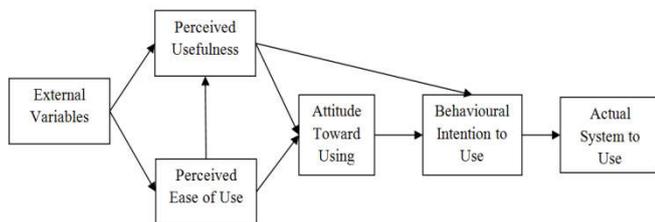


Figure 1. TheTAM

Perceived CA

As mentioned by (Compeau *et al.*, 1995). CA is the individual's tendency to be apprehensive, phobic, and uneasy towards present or futuristic use of computers generally. It has further been observed that CA has a negative influence on the PE of a system (Venkatesh, 2000). An empirical evidence supporting offered that CA is negatively related to perceived usefulness (Igarria and Iivari, 1995). Therefore, it is hypothesized in this study that CA will influence teachers' use of Instructional technologies in teaching Science. The hypothesized model of teachers' IU Instructional technology and AU of Instructional technologies in primary classroom teachers in Hail is illustrated in Figure 2. Based on the eleven hypotheses postulating the relationships among CA, PE, perceived usefulness, IU Instructional technologies and AU of Instructional technologies are tested in the study. The hypotheses were as follows:

- H1:** PE a positive effect on IU Instructional technologies.
H2: PU has a positive effect on IU Instructional technologies.

- H3:** PE has a positive impact on Perceived Usefulness of Instructional technologies.
H4: CA has a negative effect on PE Instructional technologies.
H5: CA has a negative effect on Perceived Usefulness of Instructional technologies.
H6: IU Instructional technologies has a positive influence on AU of Instructional technologies.

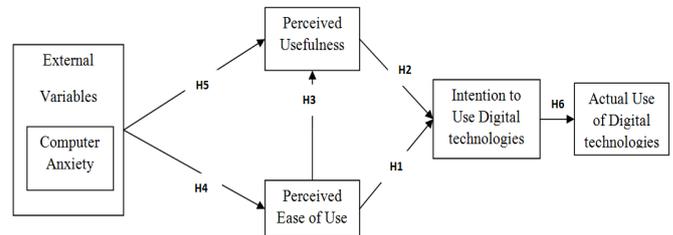


Figure 2. Computer anxiety of the digital technologies acceptance in Saudi Arabia

MATERIALS AND METHODS

Sampling and data collection

The respondent primary classroom teachers will be 400 primary classroom teachers. The sample size of 400 was determined using (Krejcie and Morgan, 1970) table of sample size, where for a population of 8000, a minimum of 367 should be selected. Therefore, the sample size of 400 for this study is more than adequate, stratified on one structure, which is gender. The respondents will be selected using Stratified random sampling in order to ensure representativeness of the population.

- The respondent must be a primary classroom teachers in the University of Hail
- The respondent must not be among those primary classroom teachers participating in the pilot study.

The questionnaire consists of the section contains 37 items that measure the 5 research constructs examined in the hypothesized SEM model.

The metric Model

This study has been applied a two-step structural equation modeling using AMOS software version (20.0) to test the research hypotheses. In the first step, the study assessed the validity of the (5) measurement models via a confirmatory factor analysis (CFA) of enjoyment, PU, PE and IU Instructional technologies. The second step examined the good-fit of the proposed structural model using a full-fledged SEM. The results have been carefully assessed. It has been done by comparing the values obtained from the analysis with the set of recommended criteria. The results produced a chi-square value = 256.590, df=98, Ratio of 1.619, GFI value of .928 and CFI of .983 were above the threshold of .90, but the RMSEA value of .043 was slightly above the accepted value of < .05. Furthermore, the model modifications indicated the existence of cross-loading and error covariance. The MI results revealed 4 items with a high value of error covariance. Figure 3 below shows the structural model for exogenous and endogenous variables.

Standardized estimates
 CHISQUARE: 265.590
 DF: 164
 Ratio: 1.619
 p-value: .000
 GFI: .928
 CFI: .983
 TLI: .980
 RMSEA: .043

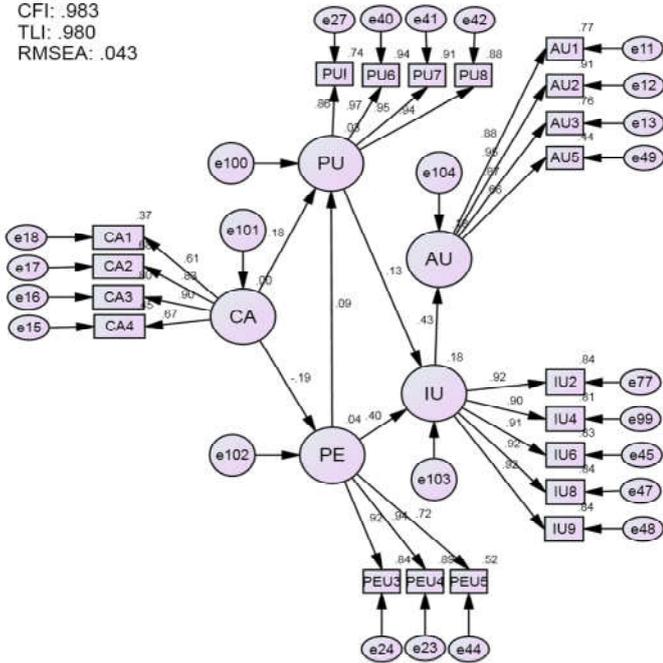


Figure 3. Research structural model

Unstandardized estimates
 CHISQUARE: 165.632
 DF: 101
 Ratio: 1.640
 p-value: .000
 GFI: .944
 CFI: .985
 TLI: .982
 RMSEA: .044

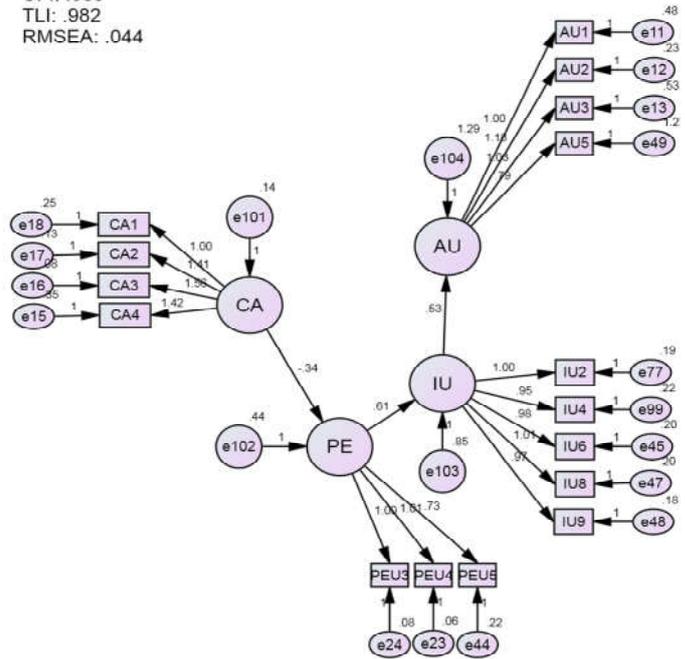


Figure 4. The Final Structural Model

The statistical results supported the consistency of the data with the hypothesized model, therefore supporting the claim that the structural model fit the data. Since the model was adequate, the individual parameters have been evaluated and the path coefficients estimated. The estimation of path relationships has been analyzed according to the hypothesized model of the study. Table 1 provides the results of structural equation model analysis.

Table 1. Direct Effects, Correlations and Residuals for the Structural Model of Primary classroom teachers' Acceptance of Instructional Tecnologies in UOH

Hypothesis	Parameter	Standardized Estimate	Critical Ratio	Remarks
H1	PE --> IU	-.394	7.236	Accepted
H2	PU --> IU	-.049	-.494	Dropped
H3	PE --> PU	.011	.294	Dropped
H4	CA --> PE	-.208	-3.343	Accepted
H5	CA --> PU	.112	2.950	Dropped
H6	IU --> AU	.428	7.754	Accepted

Furthermore, the path coefficient values resulted from the final model did not significantly show slightly change upon estimation. Figure 4 shows the final model after removing path relationship between PU <--> IU, PE <--> PU and CA <--> PU.

The structural model: Discussion

The study found that PE to influence primary classroom teachers' intentions in making use of Instructional technologies in UOH. These factors have been found to be major statistical and practical determiners of primary classroom teachers' IU, with the recording path coefficient with IU resting at (.394) for PE – IU.

But PU seems to not influence primary classroom teachers' intentions to apply Instructional technologies in primary schools. These factors have been found to be no significant predictors of primary classroom teachers' IU. This is particularly significant in light of the fact that with regards to the primary school context, primary classroom teachers are required to achieve instructional objectives and curriculum goals by all viable means and methods. The coefficients indicate that enjoyment significantly explained primary classroom teachers' perceptions of Instructional technology efficacy and utility. This discovery is consistent with results of previous research on the positive influence of enjoyment on users' perceptions of benefits of Instructional technology use (Yi and Hwang, 2003; Davis et al., 1992). In other words, primary classroom teachers would not perceive that Instructional technology would enhance their performance or aid them in performing their tasks if they did not receive a measure of enjoyment from their respective primary schools to integrate Instructional technologies into the instructional process. In the long term however, this lack of support would likely decrease primary classroom teachers' PU as the benefits of making using of it are not realized. Secondly, the contribution of this work rests in several areas of implementation and empirical analysis, where in implementation the study examined the viability of the TAM model which was established in a western culture, while explaining a similar case in a non-western culture. In addition, in terms of the measurement of the Instructional technology construct, the study made use of an operational definition of Instructional technology which embraced a broad range of technological utilities relevant to the needs of primary classroom teachers in primary school settings. Previous studies only measured primary classroom teachers' use of specific technological tools which in truth may have not represented

primary classroom teachers' actual need for Instructional technologies. In the primary school context, it requires various Instructional technology facilities for primary classroom teachers to professionally accomplish their instructional tasks. Examining specific technological tools would not comprehensively address primary classroom teachers' acceptance of technology. As such, the present study has contributed towards a greater understanding of Instructional technology acceptance among primary classroom teachers by having broadly defined the Instructional technology construct to include myriad tools, devices, software applications and the Internet.

Conclusions and Recommendations

This paper presented the approval of using TAM online technology for learning in UOH primary classroom teachers. The paper proposes an extension to the TAM model that accounts for the utilization of the unified model within the CA, PE, PU, IU and AU contexts. The results showed that the TAM structure directly impact the CA, PE, PU, IU and AU contexts. These results demonstrate the success of the proposed extension in achieving the objectives of this study. The primary focus of this work has been to address the applicability of the TAM, which has been established in the context of a western culture or developed nation, upon other non-western cultures or developing nations. This bias may apprehend the applicability of such technologies upon their transfer to other differing or culturally diverse societies. Therefore, where the Instructional technologies are minimized based on ICT distribution, it is acceptable that the TAM model may be used for predicting technology acceptance in a non-western nation such as Saudi Arabia. It will be better to recommend for future work that since it is a highly complex phenomenon involving a complex interplay of internal and external variables, primary classroom teachers' acceptance and utilization of Instructional technology can be further assessed and examined by including more variables relevant to the context in which it is assessed. Variables such as political intervention, primary schools, primary classroom teachers and cultural norms may be able to explain some of the variances unaccounted for in this study. Involving more diverse variables would yield a better understanding of the underlying factors influencing Instructional technology acceptance among primary classroom teachers.

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