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COMPUTER ANXIETY OF THE DIGITAL TECHNOLOGIES ACCEPTANCE IN SAUDI ARABIA

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Abstract: *This research focus of was to address the applicability of TAM. A total of 11640 teachers were drawn from a stratified sample randomly, consisting of 6080 male teacher's and 5560 females' teachers. The instruments were developed to collect data; the instrument was a questionnaire adopted from four previous studies. Teacher's use of digital technologies in teaching and learning is influenced by several factors, namely schools' computer anxiety (CA). This research would further assert that CA on Educators is negatively correlated to PE with regards to digital technology usage. The study found that the intention to use (IU) influenced teacher's actual use (AU) of digital technologies in primary schools. But perceived usefulness (PU) seems to not influence teacher's intentions to apply digital technologies in primary schools. Teachers are more likely to be concerned with the ease of use in digital technology in making decisions to use the technology for teaching, as opposed to how digital technology would facilitate better education and learning through their use. The research proposed 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 impacts the CA, PE, PU, IU and AU contexts. These results demonstrate the success of the proposed extension in achieving the objectives of this study. This study will contribute to decision-making to disseminate digital technologies adoption among teacher's in the primary schools and is beneficial to specialists in teacher training, and those in charge of their training in digital technologies.*

Keywords: *Computer Anxiety, Teacher's, Digital Technology, Technology Acceptance Model (TAM), Structural Equation Modelling (SEM)*

Introduction

Education is categorised in the forefront of the social structure in contemporary societies that gave attention to utilising technology and communication. 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). 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.

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 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.

Digital technologies are considered to be an offspring of instructional technology. Instructional technology has been defined by Lowther, Russell and Smaldino, (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 digital technologies, as will be seen. Digital technology is akin to educational technology, defined by Lever-Duffy et al., as "any technology used by educators in support of the teaching and learning process" (2011, p. 394). 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 et al., 2011, p. 5).

Digital technologies are indispensable in the course of implementing instructional technology. Many contemporary definitions of digital technologies have been given in sources such as the writings of Shelly and Vermaat (2012). Hollander (2010) defined digital technologies 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. Digital technologies encompass a wide range of applications, from fields as diverse as special needs learning, notwithstanding education particularly. The applications of digital technologies in the education process can effectively be applied in the teaching of, such as the Internet, Multimedia technology, Smart board, Video, E-Book, E-Learning, The LCD projector, Digital Camera, Digital Overhead Projector, etc, stating that teacher’s meaningful use of varied digital technologies in the classroom can influence students’ learning outcomes positively.

Hail is a city in Saudi Arabia with a total population of 11640 primary teachers. The primary schools in Hail offer education to children ages 6 to 12. The schools are equipped with various digital 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 Hail primary schools was the result of the Saudi Ministry of Education realization of the importance of utilizing digital technologies in the classroom

and the tremendous benefits they bring to the education of primary school students, especially in terms of learning.

This research sought to identify the use of digital technologies in teaching subject in public primary schools in the city of Hail. The study focused on public schools and on the viewpoint of 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 and Hypotheses

Technology Acceptance Model

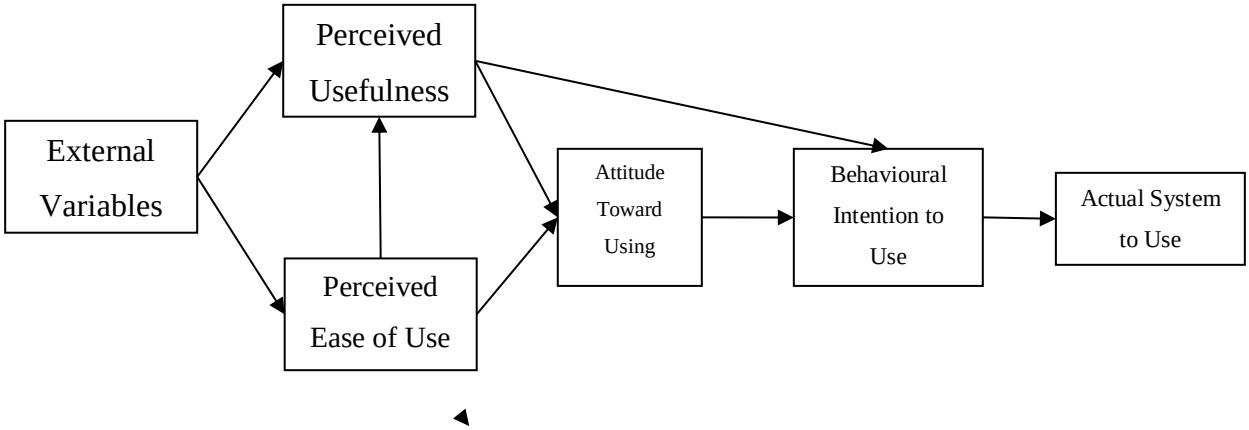
The goal of TAM is to provide "An explanation of the determinants of technology acceptance that is generally capable of explaining user behaviour across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified" (Davis, 1989, p. 985). The Technology Acceptance Model (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) 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 Technology Acceptance Model (TAM) was developed by Davis to explain computer-usage behaviour. The original (TAM) has two core constructs, perceived usefulness (PU), which means " The degree to which a teacher believes that using digital technologies would enhance his or her teaching quality and performance and student learning" (Masrom & Hussein, 2008, p. 52), and perceived ease of use (PEU) (Masrom et al., 2008) defined as "The degree to which a person believes that using a particular system would be free from effort" (p. 52). These two constructs influence teacher's intention to use instructional digital technologies (IU) (Masrom et al., 2008) which is defined as "The measure of the strength of the teacher's intention to use digital technologies" (p. 52), and their actual use of instructional digital technologies (AU), which means that which is measured in terms of the frequency in use of digital technologies (how often) and volume of use of digital technologies use (how much) by the teacher's, as adopted from Davis (1989).

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 teacher's technology use in the school and classroom contexts. They argue that teacher's use of technology cannot be simplified into a phenomenon that is merely explained by two factors: perceived usefulness and perceived ease of use. Among other things, studies show that teacher's use of digital technologies in teaching and learning is influenced by a myriad of factors, namely schools' management support, computer anxiety and enjoyment. As observed by Ang, Davies & Finlay (2001), the fact that management support has been investigated in several studies linking its influence to IT use supports this claim.

Concerning computer anxiety, it has been supported by Venkatesh (2000) that computer anxiety has a negative influence on the perceived ease of use of a system, whereas the perceived enjoyment of using a system is argued to positively influence the perceived ease of use and the perceived usefulness (Yi & Hwang, 2003).

Figure 1: The Technology Acceptance Model.



Source: (Davis, Bagozzi & Warshaw, 1989)

Research Questions

1. Is Hail primary teacher's actual use of digital technologies in Hail influenced by intention to use digital technologies?

2. Is Hail primary teacher's intention to use digital technologies influenced by perceived ease of use, perceived usefulness?

3. Is Hail primary teacher's perceived usefulness of using digital technologies influenced by perceived ease of use and computer anxiety?

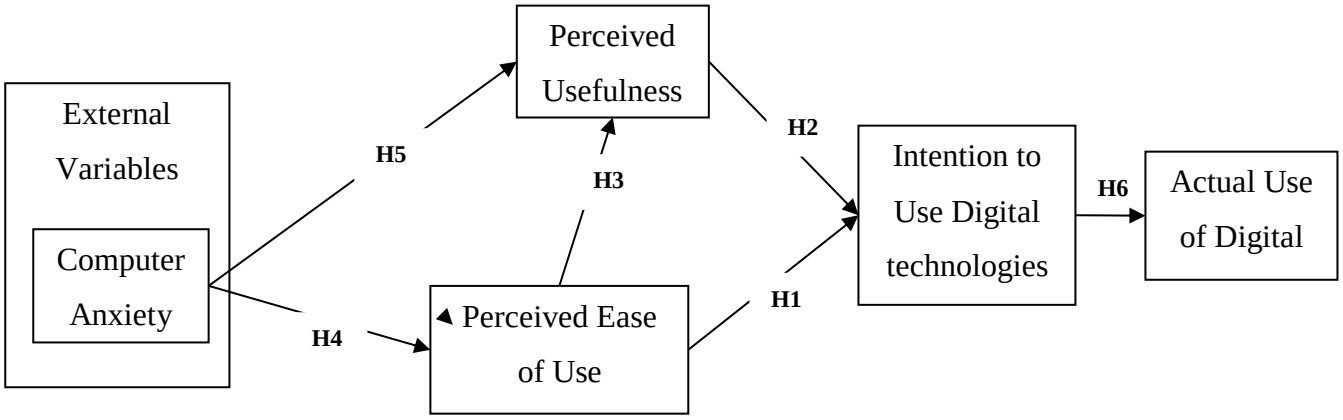
4. Is Hail primary teacher's perceived ease of use of using digital technologies influenced by computer anxiety?

Perceived Computer Anxiety

As mentioned by Compeau, Higgins and Huff (1995), computer anxiety 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 computer anxiety has a negative influence on the perceived ease of use of a system (Venkatesh, 2000). Igbaria and Iivari (1995) offered empirical evidence supporting the belief that computer anxiety is negatively related to perceived usefulness. Therefore, it is hypothesized in this study that computer anxiety will influence teacher's use of digital technologies in teaching.

The hypothesized model of teacher's intention to use digital technology and actual use of digital technologies in primary schools in Hail is illustrated in Figure 2.

Figure 2: Computer Anxiety of The Digital Technologies Acceptance in Saudi Arabia



Based on the six hypotheses postulating the relationships among computer anxiety, perceived ease of use, perceived usefulness, intention to use digital technologies and actual use of digital technologies are tested in the study. The hypotheses were as follows:

H1 Perceived Ease of Use has a positive effect on Intention to Use digital technologies.
H2 Perceived Usefulness has a positive effect on Intention to Use digital technologies.
H3 Perceived Ease of Use has a positive impact on Perceived Usefulness of digital technologies.
H4 Computer Anxiety has a negative effect on Perceived Ease of Use digital technologies.
H5 Computer Anxiety has a negative effect on Perceived Usefulness of digital technologies.
H6 Intention to use digital technologies has a positive influence on Actual use of digital technologies.

Research Methodology

Sampling and Data Collection

The study sample is limited to teachers in public primary schools in Hail, under the Supervision of the Department of Education in Hail. This study is confined to using a questionnaire which shall be distributed amongst the teacher's in the government primary education schools.

This research is purely quantitative in nature employing a cross-sectional survey to collect data. The data collected from a stratified sample randomly drawn from a population of 11640 teacher's, consisting of 6080 male teacher's and 5560 females' teachers. The reason for employing a cross-sectional survey is to gain current data from the respondent teacher's in the primary schools for boys and girls in the city of Hail at a specific point in time.

The respondent teacher's will be 350 teachers', representing 40% of the total population of teacher's in Hail. The sample size of 350 was determined using Morgan and Krejcie's (1970) table of sample size, where for a population of 900, a minimum of 269 should be selected. Therefore, the sample size of 350 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. (i) The respondent must be a teacher

of in a primary school in the city of Hail, and (ii) The respondent must not be among those teacher's participating in the pilot study.

The instrument is a questionnaire adopted from three studies (Chatzoglou, Sarigiannidis, Vraimaki & Diamantidis, 2009); Masrom et al., (2008); and Davis (1989) and Alshammari (2015) to collect data from teacher's in primary schools in the city of Hail. The questionnaire consists of five variables to be measured in the study: (i) computer anxiety, (ii) perceived usefulness, (iii) perceived ease of use, (iv) teacher's intention to use digital technologies and (v) actual use of digital technologies.

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

Data Analysis and Results

Confirmatory Factor Analysis

Table 1

The Questionnaire Constructs and Operational Definition.

Constructs	Operational definition	Items	References
Computer Anxiety	The tendency of the teacher in primary schools in Hail to feel uneasy, apprehensive and phobic towards current or future use of computers and other digital technologies in general	6	Compeau et al., (1995) and Chatzoglou et al., (2009).
Perceived Usefulness	The degree to which a teacher believes that using digital technologies would enhance his or her teaching quality and performance and student learning	9	Davis (1989) and Masrom et al., (2008).
Perceived Ease of Use	The degree to which a teacher believes that using digital technologies would be free from effort	5	Davis (1989) and Masrom et al., (2008).
Intention to Use Digital Technologies	The measure of the strength of the teacher's intention to use digital technologies	9	Davis (1989) and Masrom et al., (2008).
Actual use of digital technologies	The terms of teacher's frequency of using digital technologies (how often) and volume of use of digital technologies (how much) by the teacher's	8	Davis (1989).

Prior to running Structural Equation Modelling, the data were first screened for the analysis. The mean scores from the 5 Likert scales ranged from 1.26 to 4.02. The standard deviations ranged from .625 to 1.698, indicating a narrow spread of items around the means. The Cronbach's alpha (internal consistency) for the 31 items based on the 4 variables was .94. The descriptive statistics of the items are presented in table 2

Table 2
Items Distribution of Enjoyment, Perceived Usefulness, Perceived Ease of Use and Intention to Use Digital Technologies.

Construct	Items	Mean	Std. deviation	Skewness	Kurtosis	Loadings	CMIN/DF	GFI	CFI	CR	AVE
Computer	CA1	1.29	.625	2.548	7.544	.606	.442	1.000	1.000	.92	.76
Anxiety	CA2	1.28	.643	2.852	9.016	.825					
	CA3	1.27	.656	2.967	9.541	.900					
	CA4	1.34	.798	2.602	6.012	.669					
	CA5	1.26	.631	3.234	12.279	-					
	CA6	1.37	.844	2.542	5.794	-					
Perceived	PU1	3.73	1.278	-1.349	.631	.858	1.143	.997	1.000	.94	.80
Usefulness	PU2	3.70	1.266	-1.329	.594	-					
	PU3	3.63	1.287	-1.281	.349	-					
	PU4	3.66	1.302	-1.253	.301	-					
	PU5	3.67	1.263	-1.341	.579	-					
	PU6	3.65	1.275	-1.307	.459	.969					
	PU7	3.71	1.263	-1.364	.674	.954					
	PU8	3.66	1.314	-1.223	.225	.936					
	PU9	3.56	1.400	-1.040	-.364	-					
Perceived	PE1	3.50	.880	-.953	-.062	-	-	1.000	1.000	.95	.86
Ease of Use	PE2	3.20	1.089	-.696	-.749	-					
	PE3	3.67	.733	-1.300	1.375	.907					
	PE4	3.72	.717	-1.258	1.448	.955					
	PE5	3.72	.685	-1.806	3.082	.718					
Intention to	IU1	3.60	1.115	-1.287	.922	-	.633	.996	1.000	.95	.81
Use Digital	IU2	3.80	1.101	-1.439	1.585	.917					
Technology	IU3	3.85	1.133	-1.427	1.472	-					
	IU4	4.02	1.069	-1.674	2.616	.900					
	IU5	3.80	1.061	-1.537	2.057	-					
	IU6	3.92	1.089	-1.563	2.132	.909					
	IU7	3.94	1.097	-1.609	2.234	-					
	IU8	3.89	1.118	-1.548	1.898	.917					
	IU9	3.90	1.069	-1.664	2.486	.919					
Actual use of digital	AU1	2.80	1.439	-.293	-1.638	.954	1.341	.996	.999	.82	.53
	AU2	2.97	1.558	-.303	-1.603	.871					
Technology	AU3	2.98	1.493	-.399	-1.502	.656					

AU4	3.75	1.251	-1.253	.584	-
AU5	3.24	1.504	-.607	-1.219	.874
AU6	3.16	1.516	-.532	-1.345	-
AU7	2.56	1.561	.104	-1.802	-
AU8	2.68	1.698	.134	-1.798	-

The Metric Model

This study 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, perceived usefulness, perceived ease of use and intention to use digital technologies. The second step examined the good-fit of the proposed structural model using a full-fledged SEM.

The study adopted the maximum likelihood estimation (MLE) in generating estimates of the full-fledged model. After the model was estimated, a set of accepted criteria was applied to evaluate its goodness of fit. The measures, based on the conventionally accepted criteria for deciding what constitutes a good fit model, included (i) the consistency of the hypothesized model with the collected data, (ii) reasonableness of the estimates, and (iii) proportion of variance of the endogenous variables accounted for by the exogenous variables (Nur, 2012).

The analyses are presented according to single-group analysis of confirmatory factor analysis (CFA) and structural equation modeling (SEM) from the data collected from 330 teacher's in primary schools in Hail. CFA was used in this study to examine the relationships between the observed variables and the underlying latent variables, and more specifically, to validate the measurement models.

Based on the CFA results of the measurement models, a full-fledged structural model of teacher's in primary schools in Hail acceptance of digital technologies was then drawn. In line with some of the best practices in the use of the structural equation modeling, this study adopted the two-phase modeling. This involves specifying and fitting of the measurement model prior to doing same for the full-fledged structural model. The advantage of doing so, according to Hair et al. (2006) is that the fitting of the structural model is easier. Shown below in Figure 3 is the measurement model of the latent variables.

STEP 1: THE SEM IS THE TESTING OF CONFIRMATORY FACTOR ANALYSIS OF TEACHER'S ACCEPTANCE OF DIGITAL TECHNOLOGIES IN THE PRIMARY SCHOOLS OF HAIL

The results were carefully assessed. This was done by comparing the values obtained from the analysis with the set of recommended criteria. The results produced a chi-square value = 2207.571, df=619, CMIN/df of 2.017, TLI value of .875 and CFI of .884 were above the threshold of .90, the RMSEA value of .088 was the accepted value of < .08.

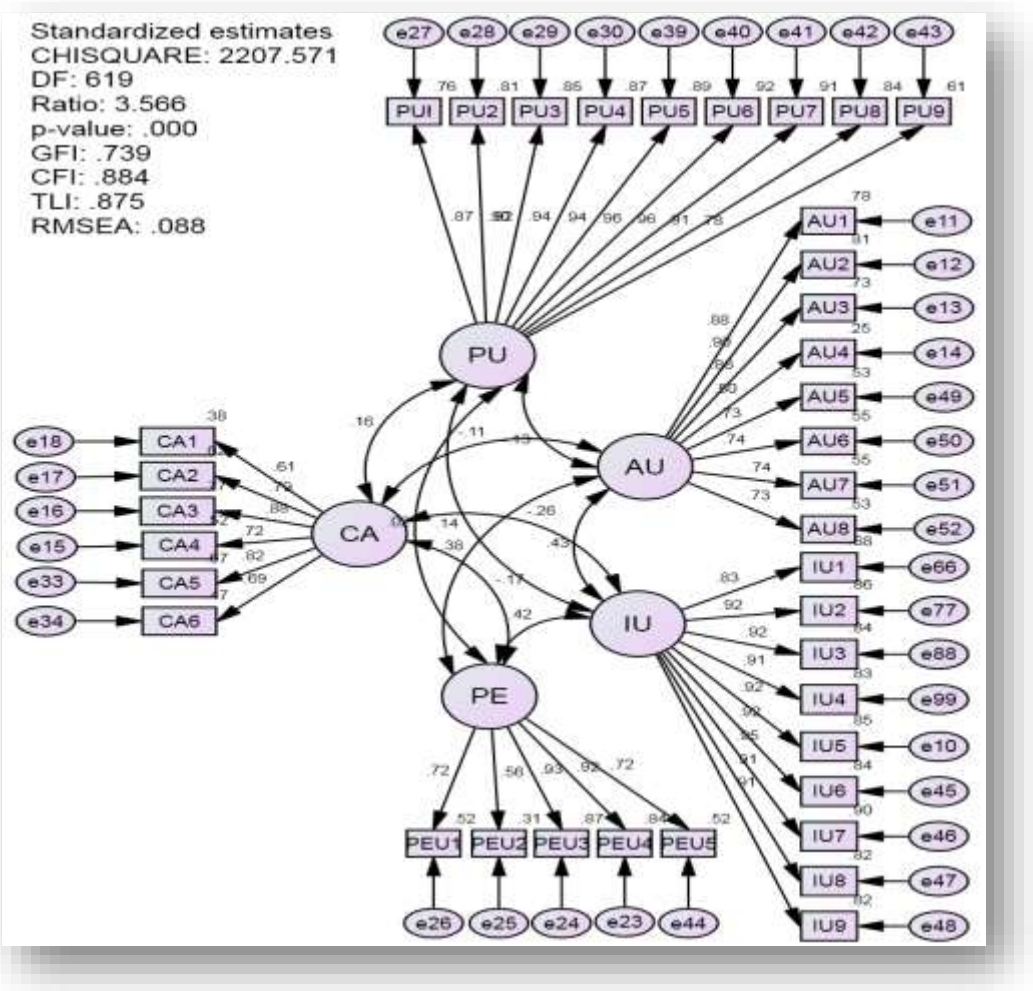


Figure 3: The SEM Is the Testing of CFA Of Teacher's Acceptance of Digital Technologies in The Primary Schools

STEP 2: THE PROPOSED STRUCTURAL MODEL OF TEACHER'S ACCEPTANCE OF DIGITAL TECHNOLOGIES IN THE PRIMARY SCHOOLS OF HAIL

The hypothesized model was estimated by applying Analysis of Structures (AMOS, Version 20.0) adopting the maximum likelihood estimation (MLE) on the data collected. The results of the model were assessed using the goodness of fit indices and reasonableness of parameter estimates. Next, the squared multiple correlation (SMC) of the indicators were also examined.

The results were carefully assessed. This was done by comparing the values obtained from the analysis with the set of recommended criteria. The results produced a chi-square value = 2255.214, df=363, CMIN/df of 2.017, TLI value of .873 and CFI of .881 were above the threshold of .90, the RMSEA value of .089 was the accepted value of < .08.

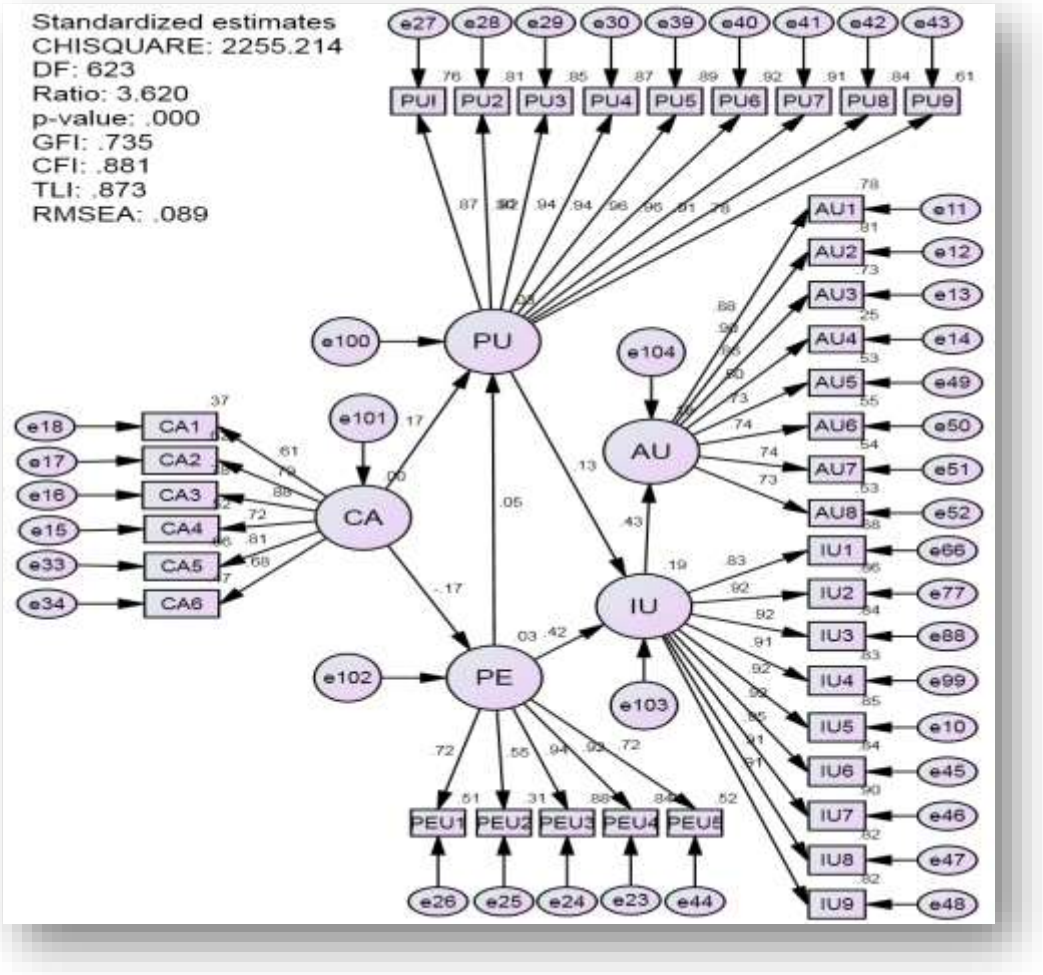


Figure 4: The Proposed Structural Model of Teacher's Actual Use of Digital Technologies in Primary Schools in Hail

STEP 3: THE FINAL STRUCTURAL MODEL OF TEACHER'S ACCEPTANCE OF DIGITAL TECHNOLOGIES IN THE PRIMARY SCHOOLS OF HAIL

The results of the final model indicated that the overall fit of the structural model was adequate and satisfied the recommended criteria with a chi-square value= 747.896, df = 369 and CMIN/df = 1.730. The TLI value of .953 and CFI value of .957, were above the threshold of .90.

Furthermore, RMSEA = .056 showed a reasonable error of estimation. 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 were evaluated and the path co-efficients estimated. The estimation of path relationships was analysed according to the hypothesized model of the study. Table 4.19 provides the results of structural equation model analysis.

The hypothesized model was estimated by applying Analysis of Structures (AMOS, Version 20.0) adopting the maximum likelihood estimation (MLE) on the data collected. The results of the model were assessed using the goodness of fit indices and reasonableness of parameter estimates. Next, the squared multiple correlation (SMC) of the indicators were also examined.

Following a successful fitting of the measurement model, fitting of the structural model should be easier. The structural model in this study was a higher order full-fledged model. Based on the theoretical framework complemented by empirical findings, the structural relationship among the latent variables used to fit the measurement model is assessed. This is to test their individual statistical significance and overall model fit.

The results were carefully assessed. This was 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.

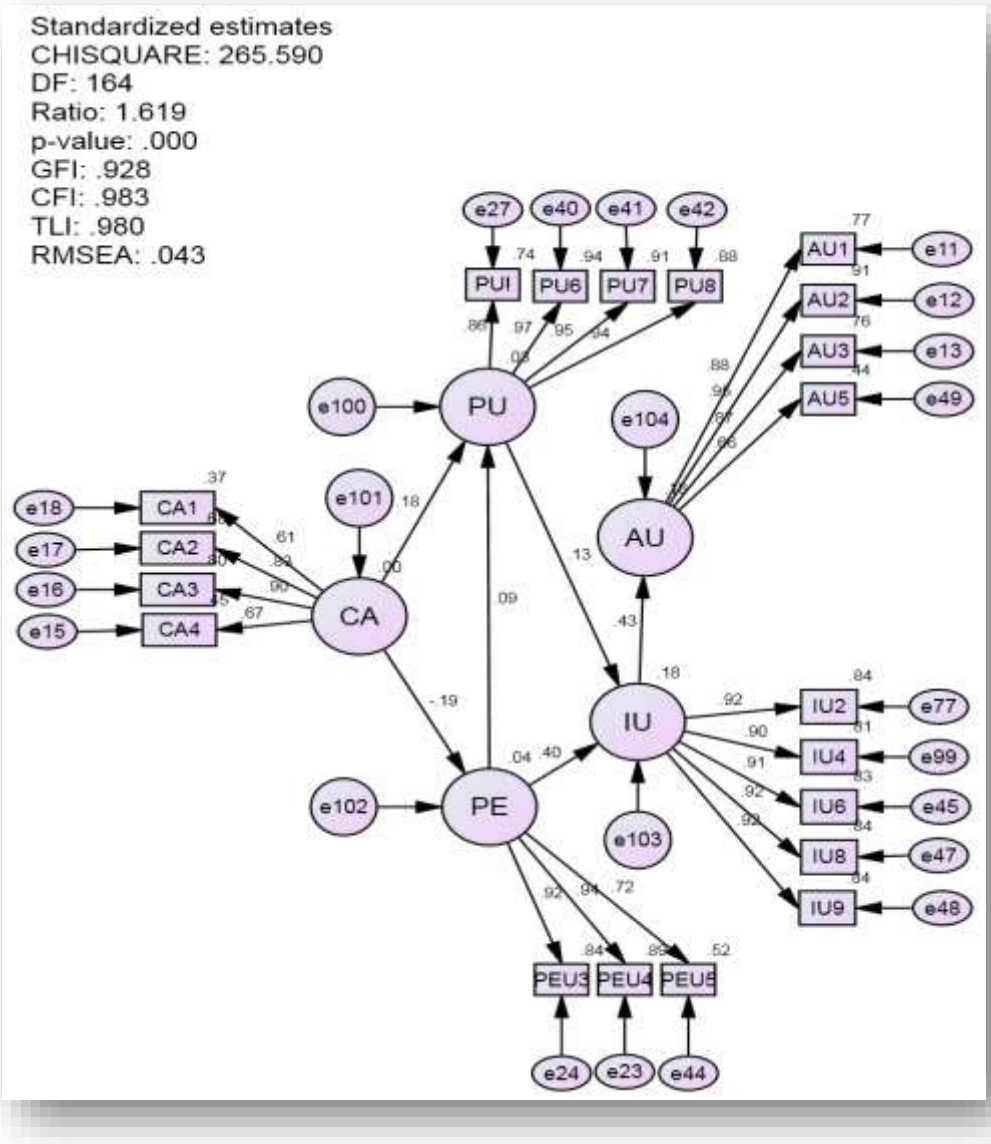


Figure 5: Research Structural Model

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 were evaluated and the path coefficients estimated. The

estimation of path relationships was analyzed according to the hypothesized model of the study. Table 4 provides the results of structural equation model analysis.

Table 4
Direct Effects, Correlations and Residuals for The Structural Model of Teacher's Acceptance of Digital Technologies in primary schools in Hail.

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

Note. CA (Computer Anxiety), PU (Perceived Usefulness), PE (Perceived Ease of Use), IU (Intention to Use), AU (actual use).

Furthermore, the path coefficient values resulted from the final model did not significantly show slightly change upon estimation. Figure 5 shows the final model after removing path relationship between PU <--> IU, PE <--> PU and CA <-> PU.

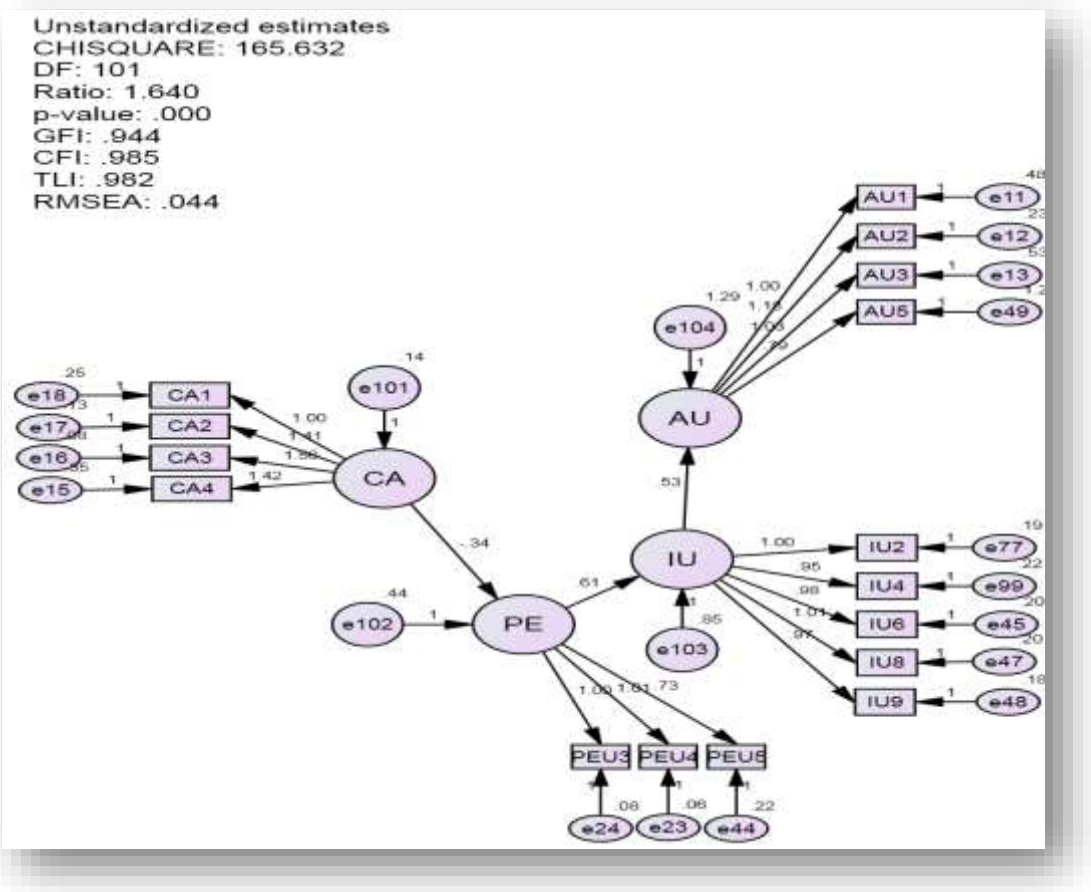


Figure 5: The Final Structural Model

The Structural Model: Discussion

The study found that perceived ease of use (PEU) to influence teacher's intentions in making use of digital technologies in primary schools. These factors were found to be major statistical and practical determiners of teacher's intentions to exploit digital technologies (IU), with the recording path coefficient with intention to use resting at (.394) for PE – IU. But perceived usefulness (PU) seems to not influence teacher's intentions to apply digital technologies in primary schools. These factors were found to be no significant predictors of teacher's intention to use digital technologies (IU). The presented coefficients imply that teacher's perception of benefits of digital technology explained a significant amount of their respective decision to use digital technology for teaching and learning than their perception of digital technologies' ease of use and enjoyment. In the context of the present study, this may be interpreted as follows; teachers are more likely to be concerned with the ease of use in digital technology. This is particularly significant in light of the fact that with regards to the primary school context, teachers are required to achieve instructional objectives and curriculum goals by all viable means and methods.

Info far as the computer anxiety construct is concerned, a mere one of the two causal relationships is found to be valid. Firstly, a negative correlation (- 0.20) exists between computer anxiety and perceived ease of use, as affirmed by Igbaria and Iivari (1995). This relationship is possibly derived by existing the phenomenon teacher's experiencing anxiety and fear regarding the use of digital technologies, as it is difficult for them to realize or understand the teachers of learning method by digital technology.

Table 5

The Result of Analysis for the Revised Model and Final Model

Endogenous Variables	Determinants	Revised Model		Final Model	
		SMC	Direct	SMC	Direct
AU	-	.183		.181	
	IU		.428		.426
IU	-	.196		.187	
	PE		.394		.397
	PU		- .049		-
PE		.054		.035	
	CA		- .208		- .187
PU	-	.701		.687	
	CA		.112		-
	PE		.011		-

Note. SMC (Squared Multiple Correlation).

As far as perceived ease of use is concerned, its positive link to intention has been confirmed in a number of other studies also discovered (Moon & Kim, 2001; Liu & Wei, 2003). These findings assert that in the case the trainee has realized the easiness of a training program; the individual would then comprehend its on-the-job usefulness and acquire intent to use it (Chatzoglou, et al., 2009). In general, however, these direct relationships between the enjoyment and ease of use with intention have been found to be statistically significant. Interestingly enough, the relationship of highest magnitude is that which exists between enjoyment and ease of use (0.732). The second more important relationship seems to be

situated between intention to use and actual use (0.428), while the third in ranking may be found between ease of use and intention (0.394).

When digital technology promises to provide assistance towards this end and produce benefits, teachers are willing to make use of it even though it may require some measure of extra effort. In this study, the results have once more established the efficacy of the core TAM which constructs perceived ease of use as determiners of users' intentions to effectively utilize digital technology in achieving their purpose. This discovery is consistent with results of prior conducted research on enjoyment directly affecting employees' intentions to utilize web-based training, while learning that goal orientation holds the strongest indirect impact on employees' intention. (Chatzoglou et al., 2009). All these direct relationships standing between ease of use, and usefulness with intention reflect statistical import (Chatzoglou et al., 2009).

The coefficients indicate that enjoyment significantly explained Hail teacher's perceptions of digital 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 digital technology use (Yi et al., 2003; Davis, et al, 1992). In other words, teacher's would not perceive that digital 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 digital technologies into the instructional process. In the long term however, this lack of support would likely decrease teacher's perceived usefulness as the benefits of making using of it are not realized.

The current findings have several implications theoretically, methodologically and practically to the body of knowledge. First in terms of theory, the current study has extended TAM following confirmed results regarding the effects of three additional variables on teacher's acceptance and utilization of digital technology. Management support, computer anxiety and enjoyment, in addition to the core constructs of perceived ease of use, perceived usefulness, intention to use and actual use are shown to be significant determinants of digital technology acceptance among teacher's teaching at Hail primary schools.

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. The extension was comprised of decomposing the technical source dimension of the facilitating condition construct of the TAM structure variable. The current work validated the TAM measures as developed by its authors, in addition to supporting the interrelationships among key constructs in a technology acceptance model.

The empirical analysis of this research contributed to knowledge in this area of research. The research utilized a structural equation analytical technique that permits a concurrent assessment of the adequacy of the measurement model and the conceptual model. Specifically speaking, the research employed confirmatory factor analysis in order to validate the measurement model with a higher-order structure incorporated into the proposed research model. The current research utilized two types by means of SEM technique; namely measurement and structural weights invariance using the covariance structure analysis, and the mean and covariance structure analysis, to effectively examine the impact of moderators on the research model.

The current findings, however, have addressed these weaknesses. Management support, computer anxiety and enjoyment were found to be antecedent factors of perceived ease of use

(PEU), perceived usefulness (PU), intention to use (IU) and actual use in the proposed model; all affecting teacher's actual use of digital technology in the future. Extending TAM by including these variables has produced a more comprehensive and holistic explanation of the factors determining teacher's acceptance of digital technologies. Based on the existing literature, lack of confidence and lack of primary school support were reported as key barriers to teacher's digital technology utilization in the primary schools. The study then brought these three factors under investigation while asserting that the removal of such barriers would promote digital technology acceptance and utilization. The results appear to support this assumption, as primary school support and teacher's management support, computer anxiety and enjoyment were found to influence digital technology acceptance. In overall, the findings have extended current the understanding on digital technology acceptance beyond the constructs of the original TAM.

The current study applied structural equation modelling (SEM) in analyzing the proposed model. A two-step SEM was used in the study, first to test the factorial validity of each construct prior to testing the structural model, and secondly to test the adequacy of the structural model. Applying measurement model analysis enabled the study to identify the main indicators of the latent variable, while further examining the compatibility of the model with the data collected from the sample. Being a robust technique, SEM was not only able to analyze the factorial validity of the contracts, but also examined direct effects of all 2 constructs PU and PE to the endogenous variable in the model of Intention to use digital technologies in the primary school in Hail (IU).

In addition, in terms of the measurement of the digital technology construct, the study made use of an operational definition of digital technology which embraced a broad range of technological utilities relevant to the needs of teacher's in primary school settings. Previous studies only measured teacher's use of specific technological tools which in truth may have not represented teacher's actual need for digital technologies. In the primary school context, it requires various digital technology facilities for teacher's to professionally accomplish their instructional tasks. Examining specific technological tools would not comprehensively address teacher's acceptance of technology. As such, the present study has contributed towards a greater understanding of digital technology acceptance among teacher's by having broadly defined the digital technology construct to include myriad tools, devices, software applications and the Internet.

Conclusions and Recommendations

Conclusions

In conclusion, the author presents how the current research objectives have been realized in light of the previous elaborated discussion of results and the nature of the Hail primary school, as within the study.

The research proposed 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 research was to address the applicability of the TAM, which was established in the context of a western culture or developed nation, upon other non-western

cultures or developing nations. The general perception is that most technologies that are designed and produced in developed countries are culturally-biased and geared in favour of developed countries' social and cultural configurations (Straub, Loch, & Hill 2001). This bias may apprehend the applicability of such technologies upon their transfer to other differing or culturally diverse societies. Therefore, where the digital 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.

Recommendations

Based on the current findings, the study makes the following recommendations for directions in future research**.** Since it is a highly complex phenomenon involving a complex interplay of internal and external variables, teacher's acceptance and utilization of digital 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, teacher's 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 digital technology acceptance among teachers.

The results of this study have major implications. The extended TAM model is applicable to a non-western nation as much as it is compatible with a western nation. Nevertheless, there is still a prevailing need for further research, and a need for examining other possible variables that might provide more power and depth in explaining the use of digital technologies in non-western countries.

Our study depends on a cross-sectional survey of respondents through structured questionnaires. Legris, Ingham & Collerette (2001) suggested that the influence of some factors on the intention of using information technology varies at different stages in the implementation process. A longitudinal study would be more informative in investigating the problem of individual acceptance of digital technologies. The relevance of certain constructs in our model may therefore be scrutinized carefully in the future.

Future research should also look into the manner in which digital technologies are being used in the classroom, and whether teachers possess the requisite knowledge and skills to integrate digital technologies into the various subjects they teach. Having digital technologies facilities in schools and equipping teacher's with digital technology skills alone are insufficient to guarantee the teacher's uptake, not to mention the success and proliferation of digital technologies use. Finally, further research on teacher's characteristics in this context should receive more attention.

Enjoyment refers to the extent to which the activity of using a computer system is perceived to be personally enjoyable in its own respect aside from the relative intrinsic value of the technology (Davis et al., 1992). Prior research suggested enjoyment as a factor towards behavioural intention (Davis et al., 1992) and as a factor for ease of use (Venkatesh, 2000). According to Davis et al. (1992), extrinsic motivation refers to the performance of an activity for the reason that it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself. In contrast however, intrinsic motivation refers to carrying out an activity with no obvious reinforcement besides the performance of the activity alone. Davis et al. classified enjoyment as form of intrinsic motivation and perceived usefulness as a form

of extrinsic motivation. Later, Venkatesh (2000) conceptualized enjoyment as the antecedent to ease of use, whose effects grow over time as users accrue more experience with the system. The specific effect of enjoyment on ease of use however, has been unfortunately overlooked in a web-based context. Moon, et al., (2001) examined a conceptually similar yet distinctive intrinsic motivation construct.

The results of the study clearly point to the important roles of variables such as enjoyment in influencing the decision to use digital technology and subsequent actual use. The model effectively illustrates the underlying relationships between these motivational variables and existing TAM variables, while providing insights into how the acceptance and use of digital technology may be further facilitated. As application-specific enjoyment has been found to be a strong determinant of perceived usefulness and intention to use. The findings identify important sources for enhancing individual confidence in using digital technology by means of enjoyment. For the successful acceptance of technology, researchers and practitioners should actively pursue various means to facilitate and encourage individuals to enjoy their use of digital technologies.

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Appendix A: Questionnaire items

Computer Anxiety:	1= **Strongly Agree** to 5= **Strongly Disagree**
CA1	I feel apprehensive about using computers.
CA2	I feel apprehensive about using the Smart Board.
CA3	I feel apprehensive about using the LCD projector.
CA4	I hesitate to use computers because I fear making technical mistakes I cannot correct.
CA5	I find computers intimidating.
CA6	I fear using digital technologies to teach because they may break down.
Perceived Usefulness:	1= **Strongly Agree** to 5= **Strongly Disagree**
PU1	Using computers in teaching enables me to accomplish tasks more quickly.
PU2	Using digital technologies improves my classroom explanation of concepts.
PU3	Using digital technologies enhances my general teaching effectiveness.
PU4	Using digital technologies makes it easier to teach concepts.
PU5	I find digital technologies useful in teaching.
PU6	Using digital technologies helps me to achieve the objectives of the subject.
PU7	Using digital technologies enhances students' learning.
PU8	Using digital technologies makes my teaching process more interesting.
PU9	Using digital technologies motivates students' engagement in the classroom.
Perceived Ease of Use:	1= **Very Easy** to 5= **Very Difficult**
PE1	Operating digital technologies is easy for me.
PE2	I find it easy to get digital technologies to do what I want them to do.
PE3	I find digital technologies to be flexible to interact with.
PE4	I find digital technologies easy to use.
PE5	Handling digital technologies in the classroom is easy.
Intention to Use Digital Technologies:	1= **Daily** to 5= **Never**
IU1	I will use digital technologies to create instructional materials.
IU2	I will use digital technologies to improve my teaching performance.
IU3	I will use digital technologies to enhance my teaching effectiveness.
IU4	I will use digital technologies to make it easier for students to understand.
IU5	I will use digital technologies to improve the quality of teaching.
IU6	I will use digital technologies to help me to achieve the objectives of the subject.
IU7	I will use digital technologies to enhance students' learning.
IU8	I will use digital technologies to make my teaching process more

	interesting.
IU9	I will use digital technologies to increase students' engagement in the classroom.
Actual Use of Digital Technologies:	1= **Daily** to 5= **Never**
AU1	I use digital technologies to create instructional materials to teach .
AU2	I use digital technologies to teach.
AU3	I use Web 2.0 tools to teach.
AU4	I use the Internet to search for information to teach.
AU5	I use the LCD projector for presenting on teaching.
AU6	I use PPT Slides for presentation.
AU7	I use Digital Overhead Projector for presentation.
AU8	I use the Smart Board for presentation in the classroom.