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## Research Article

# AN EXAMINATION FACTORS INFLUENCING THE INTENTION TO USE INSTRUCTIONAL TECHNOLOGIES: AN EXTENTION TECHNLOGY ACCEPTANCE MODEL (TAM)

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**ABSTRACT**

Instructional technology has attracted to improve the performance of the learning. This study attemps to focuse on two primary objectives. The first is to explore the use of Instructional technology in science teaching. The second is to examine the applicability of the extended TAM which included three exogenous enjoyment, and test the influence of these variable on primary science teachers' intention to use (IU) Instructional technologies and their actual use of the technologies. Drawn from a stratified random sample, the respondents have been 430 Science teachers (205 males and 225 females). The results from the Structural Equation Modeling (SEM) analysis confirmed the influence of the original TAM constructs (PU and PEU) on science teachers' intention and actual use of Instructional technologies, and established the effects of enjoyment on the latter variable. Enjoyment have been found to be positively correlated with perceived usefulness. The results also demonstrated the success of the extended TAM in explaining science teachers' intention and actual use of Instructional technologies, and are useful for the training of science teachers in Saudi schools and to the Ministry's decision-making in the dissemination of the said technologies in Medina primary schools.



## INTRODUCTION

The cumulated data and innovation controlled by cutting edge countries are viewed as national assets which are added to the financial and labor assets (Juwayli, 2001). The individuals who have more data and innovation will turn into the owners of the keys to power, predominance and control on the planet (Al-Sabhi, 2002). Case in point, the United States of America accentuates the significance of data innovation base in attaining to its national and worldwide destinations, showed in the backing of incredible and persistent financial development, reinforcing popular governments, encouraging in discovering better answers for worldwide natural difficulties, and enhancing social insurance (Masmoodi, 1993). Likewise, the Europeans understood the significance of what they termed as the data society; they began to plan for this through promising investigative innovative work in the fields of correspondence and innovation. The majority of this serves as clear proof on the significance of the data and correspondence and innovation divisions where the individuals who have ICT framework, information, abilities and ability are far superior off in numerous parts of advancement. Advanced advancements accomplish numerous benefits for the instructor, as said by (Al-Mushayqih, 1993)

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"Instructional Technology helps the educator in bringing the truth closer, since the delivered vistas may not completely incorporate the occasion and scene that is looked for from the clarification, and regardless of the possibility that it did a few angles would doubtlessly vanish rapidly, unexpectedly of occasions saw actually through a film creation or a substantial item" (pp. 6-8). It can be said that instructional innovation has two divisions, which are conventional innovation and advanced innovation. The classification, advanced gadgets, can then be subdivided into information gadgets and yield gadgets. A few samples of data gadgets (Scanners, Digital cams, Graphics tables, Microphones, The Digital Pen, Touch screens, Electronic white sheets, and so on). Yield gadgets, the second kind of advanced gadgets, comprise of the (Data projectors, Speakers, Electronic sources, and so on). Additionally included in the extent of electronic sources is the Internet (Lever-Duffy, 2011). Be that as it may, in government funded training schools, particularly grade schools (noticing that the analyst had already functioned as an instructor of the Science subject for elementary schools then filled in as a speaker at the division of instructional innovation at Hail University), instructors once in a while use the advanced innovations accessible. The aftereffects of (Al-Dhibyani, 2007) study uncovered that the level of the accessibility of innovation for educating in middle of the road young men's schools was greatly low, while the level of innovation usage in the halfway young men's schools

in the city of Yanbu, Saudi Arabia was additionally low. The study recorded that every single contemporary technologie were hardly used, and that educators experienced challenges in utilizing computerized advancements. As of late, it has uncovered a drop in the level of accessibility and usage of innovation in the elementary schools of Jizan city, Saudi Arabia (Ghaderi, 2014). An investigation of female instructor's usage of innovation in Hail optional schools by (Al-`Itaybi, 2011) demonstrated the use of instructional innovation in the educating of the science curricula in the auxiliary training from the viewpoint of female educators in the city of Hail. The outcomes demonstrated that female instructors infrequently used these instructional advances. Be that as it may, educators' appropriation of any kind of imaginative innovation is not a straightforward, clear sensation. What impacts them to utilize or not to utilize any specific kind of innovation is actually an intricate marvel. Numerous hypotheses endeavor to clarify this perplexing wonder of innovation selection by offering an exchange of variables as determinants of innovation appropriation. Having said that, it is not a straightforward, clear methodology to receive any specific sort of creative innovation. This is because of that truth that there is an intricate accumulation of elements that decides the usage of any given innovation. For this reason, numerous hypotheses have emerged to give an understanding to this many-sided quality of variables by offering an exchange of variables as determinants of innovation appropriation. Hypotheses that arrangement with innovation adaption are, however not constrained to, UTAUT, TRA, TPB and Rogers' dispersion hypothesis. As it has been illustrated, among these speculations, the Technology Acceptance Model (TAM), is maybe the most effortless to comprehend and is broadly utilized as a part of innovation appropriation studies.

## THEORETICAL FRAMEWORK

### TAM

The objective of TAM is to give "A clarification of the determinants of innovation acknowledgement that is by and large fit for clarifying client conduct over a wide scope of end-client registering advancements and client populaces, while in the meantime being both tightfisted and hypothetically legitimized" (Davis, 1989). The TAM is a data frameworks hypothesis that models how clients come to acknowledge and utilize a PC based innovation. It was produced by (Davis, 1986) to clarify PC utilization conduct. The model proposes that when clients are given another programming bundle, various elements impact their choice about how and when they will utilize it. Regardless of the handiness and convenience of TAM (Statistics, 1959), pundits of the hypothesis have called attention to its confinement in clarifying more perplexing innovation appropriation phenomena, particularly those managing educators' innovation use in the school and classroom settings. They contend that instructors' utilization of innovation can't be streamlined into a sensation that is just clarified by two elements: PU and PEU. In addition to other things, studies demonstrate that educators' utilization of advanced advancements in showing and learning is affected by a bunch of elements, specifically schools' administration bolster, PC uneasiness and satisfaction. This case is bolstered by the way that administration backing has been explored in a few studies connecting its impact on IT utilize (Ang, 2001).

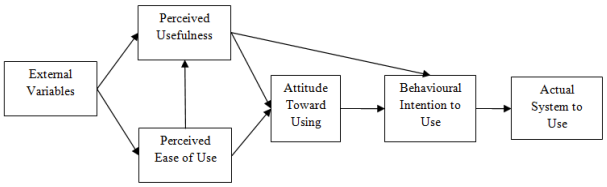


**Figure 1. The TAM.**

### Perceived Enjoyment

Enjoyment refers to the extent to which the activity of using the technology is perceived to be enjoyable in its own right. (13) (Davis, 1992). This study finding of the structural equation modelling indicate that enjoyment, PU and PEU directly affect employees' IU web-based training, while learning goal orientation has the strongest indirect impact on employees' intention (Chatzoglou, 2009). The scholars argue that the perceived enjoyment of using a system positively influences the PEU and the PU (Yi, 2003).

The hypothesized model of teachers' IU Instructional technologies in primary schools in Medina is illustrated in Figure 2.

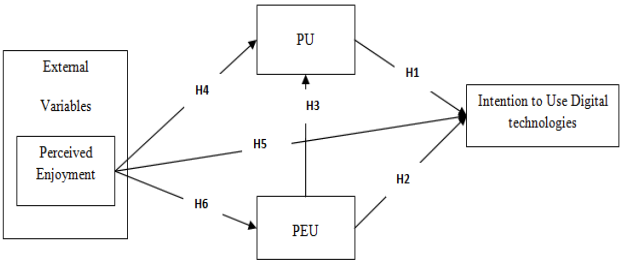


**Figure 2. Enjoyment of the digital technologies acceptance in saudi arabia**

Therefore, it is hypothesized in this study that enjoyment will influence teachers' use of Instructional technologies in teaching science. The hypotheses were as follows:

- **H1**: PU has a positive effect on IU Instructional technologies.
- **H2**: PEU has a positive effect on IU Instructional technologies.
- **H3**: PEU has a positive impact on PU of Instructional technologies.
- **H4**: Enjoyment has a positive effect on PU of Instructional technologies.
- **H5**: Enjoyment has a positive effect on PEU Instructional technologies.
- **H6**: Enjoyment has a positive effect on IU Instructional technologies.

## METHODOLOGY

### Sampling and data collection

The study test is restricted to educators in broad daylight elementary schools in Medina, under the Supervision of the Department of Education in Medina. This study is limited to utilizing a survey which might be conveyed amongst the

instructors of the science subject in the administration essential training schools. The respondent instructors will be 430 science educators, speaking to 40% of the aggregate populace of science educators in Medina. The example size of 350 was dead set utilizing (Krejcie, 1970) table of test size, where for a populace of 900, at least 269 ought to be chosen. In this manner, the specimen size of 350 for this study is more than sufficient, stratified on one structure, which is sex. The respondents will be chosen utilizing stratified irregular inspecting as a part of request to guarantee representativeness of the populace. (i) The respondent must be an educator of science in an elementary school in the city of Medina, and (ii) The respondent must not be among those instructors taking an interest in the pilot study.

## DATA ANALYSIS AND RESULTS

### Confirmatory factor analysis

**Table 2. Respondents profile**

| Measure | Characteristic | n | % |
|---|---|---|---|
| Age | Less than 30 | 62 | 18.8 |
| | Between 31-40 | 98 | 29.7 |
| | Between 41-50 | 101 | 30.6 |
| | More than 51 | 69 | 20.9 |
| Gender | Male | 205 | 47.8 |
| | Female | 225 | 52.2 |
| Teaching Experience | Less than 5 years | 128 | 38.8 |
| | 6-10 years | 48 | 14.5 |
| | More than 10 years | 154 | 46.7 |
| Qualifications | Diploma | 53 | 16.1 |
| | Bachelor | 274 | 83 |
| | Master | 3 | .9 |
| Qualifications Type | In the education field | 286 | 86.7 |
| | Not in the education field | 44 | 13.3 |
| Instructional | Yes | 139 | 42.1 |
| Technology training | No | 191 | 57.9 |

### The metric Model

In light of the CFA consequences of the estimation models, an undeniable basic model of science educators in elementary schools in Medina acknowledgement of advanced advances has been then drawn. In accordance with a portion of the best practices in the utilization of the basic comparison demonstrating, this study received the two-stage displaying. This includes indicating and fitting of the estimation model preceding doing same for the undeniable auxiliary model. The benefit of doing as such, as per (Krejcie, 1970) is that the fitting of the basic model is simpler. Demonstrated beneath in Figure 3 is the estimation model of the inactive variables. The speculated model was assessed by applying Analysis of Structures (AMOS, Version 20.0) receiving the most extreme probability estimation (MLE) on the information gathered. The aftereffects of the model have been surveyed utilizing the integrity of fit lists and sensibility of parameter assessments. Next, the squared numerous connection (SMC) of the pointers have been additionally analyzed. Taking after an effective fitting of the estimation model, fitting of the basic model ought to be simpler. The auxiliary model in this study is a higher request undeniable model. In light of the hypothetical system supplemented by exact discoveries, the basic relationship among the idle variables used to fit the estimation model is surveyed. This is to test their individual measurable centrality and general model fit.

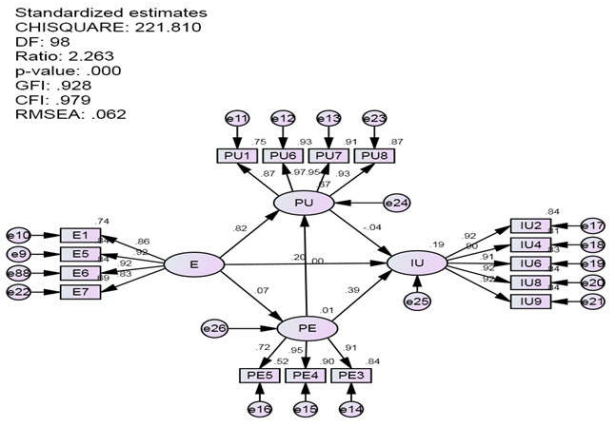


**Figure 3. The Proposed Structural Model of Science Teachers' IU Instructional Technologies in Primary Schools in Medina**

The outcomes were painstakingly evaluated. This has been finished by contrasting the qualities acquired from the examination with the arrangement of prescribed criteria. The outcomes delivered a chi-square esteem = 221.810, df=98, Ratio of 2.263, GFI estimation of .928 and CFI of .979 were over the edge of .90, yet the RMSEA estimation of .062 has been marginally over the acknowledged estimation of < .05. Moreover, the model alterations demonstrated the presence of cross-stacking and blunder covariance. The MI results uncovered 4 things with a high estimation of slip covariance.

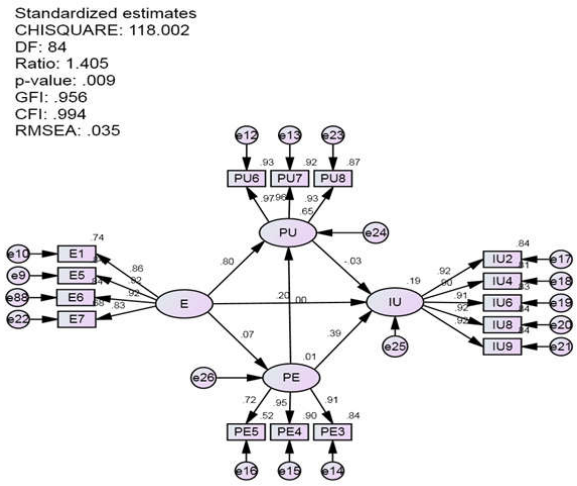


**Figure 4. Research structural model**

The theorized model in Figure 4 above has ben assessed utilizing AMOS form 20.0 in light of the accompanying lists: the chi-square test, the relative fit file (CFI), and the root mean square slip of estimate (RMSEA). Moreover, the way coefficients have been evaluated for factual hugeness at p < .05. As showed in Figure 4 over, the chi-square test was noteworthy = 118.002, df = 84 and Ratio = 1.405. The GFI estimation of .956 and CFI estimation of .994, are over the limit of .90, in any case, the outcomes yielded acceptably high decency of-fit records. This showed that the estimated model fits the watched information well and the RMSEA estimation of = .035 is underneath the 0.05 cut-off point and demonstrated a sensible lapse of estimation. The factual results upheld the consistency of the information with the estimated model, hence supporting the case that the basic model fit the information. Since the model is satisfactory, the individual parameters have been assessed and the way coefficients evaluated.

The estimation of way connections has been examined by theorized model of the study. Table 4 gives the consequences of auxiliary comparison model examination.

**Table 4. Direct Effects, Correlations and Residuals for the Structural Model of Science Teachers' Acceptance of Instructional Tecnologies in primary schools in Medina**

| Hypothesis | Parameter | Standardized Estimate | Critical Ratio | Remarks |
|---|---|---|---|---|
| H1 | PU --> IU | - .058 | - .601 | Dropped |
| H2 | PE --> IU | .392 | 7.226 | Accepted |
| H3 | PE --> PU | .015 | .379 | Dropped |
| H4 | E --> PU | .734 | 14.415 | Accepted |
| H5 | E --> PE | .026 | .375 | Dropped |
| H6 | E --> IU | .229 | 2.305 | Accepted |

Furthermore, the path coefficient values resulted from the final model did not significantly show slightly change upon estimation. Figure 4.10 shows the final model after removing path relationship between PU <--> IU, PE<-->PU and E <-->PE.

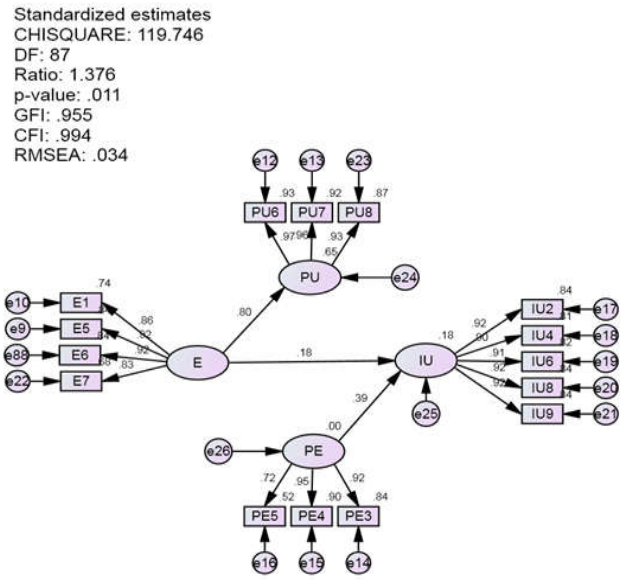


**Figure 5. The Final Structural Model**

## The structural model: Discussion

The study findings support the significance and influence of enjoyment (E) on respective Medina science teachers' perception of usefulness of Instructional technologies; recording relatively higher path coefficients of (.732) for E – PU. The coefficients indicate that enjoyment significantly explained Medina science 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, 2003). In other words, science 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 science teachers' PU as the benefits of making using of it are not realized.

The exact examination of this exploration added to learning here of exploration. The examination used a basic mathematical statement systematic procedure that allows a simultaneous appraisal of the ampleness of the estimation model and the applied model. Particularly talking, the examination utilized affirming component investigation with a specific end goal to approve the estimation model with a higher-request structure fused into the proposed exploration model. The flow examination used two sorts by method for SEM strategy; to be specific estimation and auxiliary weights invariance utilizing the covariance structure investigation, and the mean and covariance structure examination, to adequately analyze the effect of mediators on the exploration model. The current findings, however, have addressed these weaknesses. Enjoyment were found to be antecedent factors of PEU , PU, IU in the proposed model; all affecting teachers' IU Instructional technology in the future.

Extending TAM by including these variables has produced a more comprehensive and holistic explanation of the factors determining science teachers' acceptance of Instructional technologies. Based on the existing literature, lack of confidence and lack of primary school support have been reported as key barriers to science teachers' Instructional technology utilization in the primary schools. The current study applied structural equation modelling (SEM) in analyzing the proposed model. A two-step SEM has been 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 has been not only able to analyze the factorial validity of the contracts, but also examined direct effects of all 3 constructs E, PU and PE to the endogenous variable in the model of IU Instructional technologies in the primary school in Medina (IU).

## Conclusions and Recommendations

In this paper, the creator displays how the momentum research destinations have been acknowledged in light of the past expounded discourse of results and the way of the Medina grade school, as inside the study. The examination proposed an expansion to the TAM display that records for the use of the brought together model inside the E, PE, PU and IU settings. The outcomes demonstrated that the TAM structure specifically affect the E, PE, PU and IU connections.

The general observation is that most advancements that are planned and delivered in created nations are socially one-sided and outfitted for added to nations' social and social designs (Straub *et al*., 2001). This predisposition may catch the materialness of such advancements upon their exchange to other contrasting or socially assorted social orders. In this manner, where the advanced advances are minimized in view of ICT appropriation; it is worthy that the TAM model may be utilized for foreseeing innovation acknowledgement as a part of a non-western country, for example, Saudi Arabia. For ruture work, the aftereffects of this study have real ramifications. The stretched out TAM model is pertinent to a non-western country as much as it is perfect with a western country.

By the by, there is still a predominant requirement for further research, and a requirement for analyzing other conceivable variables that may give more power and profundity in clarifying the utilization of advanced advancements in non-western nations.

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