



## INFLUENCE OF THE PERCEPTIVE BELIEFS OF BUSINESS EDUCATION TEACHERS ON THEIR ATTITUDES TOWARD APPLYING NEW TECHNOLOGIES IN THE CLASSROOM

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### **Abstract**

*The purpose of this study was to examine the influence of the perceptive beliefs of business education teachers on their attitudes toward applying new technologies in the classroom. The theoretical underpinning of the study was the technology acceptance model (TAM) of Davies 1989, which posits that perceived usefulness and perceived ease of use have significant influence on an individual's attitude towards accepting technology. Survey design was used to conduct the study on a sample of 212 business education teachers from 13 tertiary colleges in Northwestern Nigeria. The instrument of data collection was a structured questionnaire adopted by the researcher from previously validated studies. Data was analyzed using SPSS 21 for descriptive statistics and AMOS 21 for structural equation modeling. The test of the hypotheses revealed that business education teachers' perception of the usefulness of technology has significant influence on their attitudes towards teaching with new technologies. However, contrary to extant literature, the study revealed that teacher's perception of the ease of use of technology does not have significant influence on their attitudes towards teaching with new technologies. The study concludes that although teachers have positive attitudes towards using new technologies and they are willing to use the technologies very well, their perceptions of their abilities for using the technologies is low and they think that new technologies are not easy for them to use. In this regard the study recommends that governing authorities of Nigerian tertiary institutions should reinforce efforts towards training and supporting teachers on the use of new technologies in the classroom.*

**Keywords:** *attitudes towards technology, business education teachers; new technologies, perceived ease of use, perceived usefulness.*

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### **Introduction**

Over the past several decades researchers in education have been keenly interested in studying ICT usage behaviour among individuals in order to find solutions to issues



related to lack of appropriate adoption and uptake of new technologies in education (Teo, 2015). Whereas there are streams of educational advantages in new technologies that can be utilized by teachers and students in Business Education, such as ICT inclined online education programmes that facilitate formal and informal self-directed, lifelong learning, studies have shown that most teachers in colleges and universities in Nigeria have not been able to implement effective ICT inclined teaching in their classrooms (Ololube, Ubogu, & Egbezor, 2007; Isiyaku, Ayub & Kadir, 2015; Isiyaku, 2019). Basically, for optimal teaching and learning experience in education, teachers must shift from the traditional forms of teaching and learning and implement new technologies in the way they design, teach and assess their courses (Rienties & Townsend, 2012). Unfortunately, whereas doing this requires a strong ICT baseline, in Nigeria the necessary ICT infrastructure to effectively implement ICT-compliant teaching are still inadequate and teachers lack the right attitude toward ICT competence and usage in the classroom (Asogwa & Eze, 2013; Isiyaku, Ayub & Kadir 2018).

Extant literature has shown that teachers' beliefs tend to be associated with their specific use of new technologies in the classroom (Becker, 2001; Ertmer, 2005; Windschitl & Sahl, 2002). Several studies explain this by hypothesizing that teachers who use computers do so because their conceptions of using new technologies fit into their existing teaching beliefs or belief systems (Higgins & Moseley, 2001; Sugar, Crawley & Fine, 2004).

New technologies refer to information communication technologies of the internet along with computer networks, World Wide Web, e-mail and search engines used in producing and sharing information, (United Nations Educational Scientific and Cultural Organization, 2010). In the context of this study new technologies refer to those technologies used in facilitating classroom instructions such as ICT peripherals for classroom interactions, ICT tools for virtual interactions, ICT tools for research, ICT tools for mind mapping and brainstorming, and ICT tools for content creation/sharing.

Based on an ICT adoption model proposed by the United Nations Educational Scientific and Cultural Organization (2010), up to the present time, business education teachers in Nigerian tertiary institutions are basically learning and attempting to use available equipment for their word processing or spread sheet tasks, haphazardly and their classroom practice is still very much teacher-centered, with minimal ICT oriented instructions. (Echeng & Usoro, 2014; Isiyaku, Ayub &



Kadir, 2018). Therefore, the central theme of this study was to survey how the perception of business education teachers in Nigerian tertiary institutions regarding the usefulness and ease of use of new technologies influence their attitudes toward applying such technologies in the classroom.

### **Conceptual Orientation**

The theoretical underpinning of this study was the Technology Acceptance Model (TAM), originally proposed by Davis (1989), to predict individual adoption and use of new information technologies and address why users accept or reject technology. The model is an adaptation of the theory of reasoned action (TRA) proposed by (Fishbein & Ajzen, 1975). However, while TRA is used as a general model for investigating diverse kinds of human behaviour, TAM is specifically used for investigating technology acceptance behaviour (Pituch & Lee, 2006).

According to the TAM, an individual's behavioral attitude toward using a system is determined by two beliefs: perceived usefulness (PU) and perceived ease of use (PEOU). PU is defined as the extent to which a person believes that using the system will enhance his or her job performance, and PEOU is defined as the extent to which a person believes that using the system will be free of effort, (Davis et al., 1989).

On the other hand, attitudes are defined as one's positive or negative judgments about a concrete subject, and they are determined by the analysis of the information regarding the result of an action and by the positive or negative evaluation of these results (Ajzen, Fishbein & Heilbroner, 1980). In Fishbein and Ajzen (1975), attitude was defined as a learned predisposition to respond in a consistently favourable or unfavourable manner towards a given object. But while one is entitled to one's opinions and attitudes, one is capable of changing them both across time and across situations and circumstances that relate to one's interactions and associations with the environment (Robinson, Stimpson, Huefner & Hunt, 1991).

In Davis (1989) it was established that user's attitude towards acceptance of technology is important for the successful adoption and integration of technology. Basically, in education integrating technology and using appropriate teaching methods in the teaching and learning process can greatly enhance cognitive and affective competence of teachers (Mohd, Mokhtar, Wong, & Tarmizi, 2010). Therefore, teachers are expected to exhibit adequate positive attitude towards new technologies in order to achieve effective integration of technology in the classroom (Garland & Noyes, 2005).

In what Bajaj and Nidumolu (1998), termed as a surprising finding, a significant negative correlation was found between perceived usefulness and attitude. Congruently, in the meta-analysis of Schepers and Wetzels (2007), the range of correlations between perceived ease of use and attitude toward use, varied from 0.05 to 0.73. Furthermore, in a longitudinal study conducted among 864 Flemish and Dutch teachers, to predict their generative and receptive use of an educational portal, by Pynoo and van Braak (2014), findings have revealed that perceived usefulness is a strong predictor of attitude towards technology use. Hence, the first research question and the first hypothesis of this study are as follows:

- RQ1 What are the mean ratings of the responses of business education teachers on their perceptions of the usefulness of new technologies in the classroom?  
HO1 Teachers' perception of the usefulness of technology has direct influence on their attitude towards using new technologies in the classroom

In Schepers and Wetzels (2007), findings have revealed that perceived ease of use has significant direct effect on attitude. Similarly, in Teo et al. (2008), pre-service teachers' perceived ease of use was found to have significant effect on computer attitude just as perceived ease of use was also found to be a strong predictor of attitude towards technology in (Pynoo& van Braak, 2014).Hence, the second research question and the second hypothesis of this study are as follows:

- RQ2 What are the mean ratings of the responses of business education teachers on their perceptions of the ease of use of new technologies in the classroom?  
HO2 Teachers' perception of the ease of use of technology has direct influence on their attitude towards using new technologies in the classroom

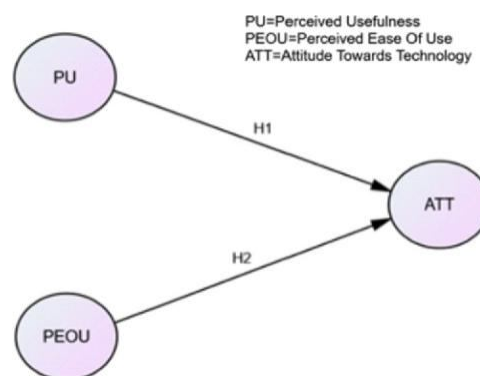


Figure 1. Hypothesized Model for Teachers' Perceived Usefulness of Technology and Perceived Ease of Use of Technology on their Attitudes Towards Technology

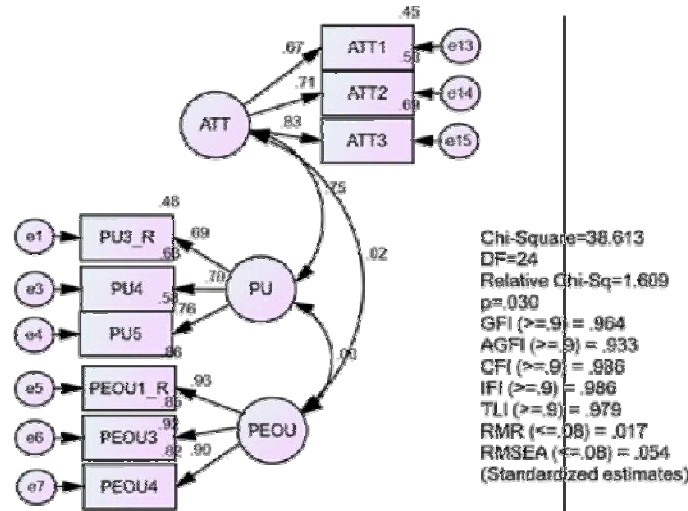


Figure 2. Measurement Model for Teachers' Perceived Usefulness of Technology and Perceived Ease of Use of Technology on their Attitudes Towards Technology

### Methodology

This is a survey study comprising a population of 383 teachers from business education faculties in 13 tertiary colleges located in Northwestern Nigeria. Being that the population was dispersed, it was quite difficult to reach out to them effectively and timely. Hence, the researcher had to select a portion of the population (sample) to represent the entire population (Ary, Jacobs, Sorensen & Razavieh, 2010).

In order to utilize an appropriate data representative of the population of the study as suggested by Bartlett, Kotrlik & Higgins (2001) the sample size was determined using a formula by Cochran (1977) with 95% level of confidence.

$$n = \frac{n_0}{\left(1 + \frac{n_0}{N}\right)}$$

Where:

n = sample size

$$n_0 = \frac{t^2 s^2}{d^2}$$

t = 1.96: Value for selected alpha of .025 in each tail, (Bartlett et al., 2001)

s = 1.25: Estimate of variance deviation for 5-point scale calculated by using 5 [inclusive range of scale] divided by 4 [number of standard



- deviations that include almost all (approximately 98%) of the possible values in the range (Bartlett et al., 2001).
- d = 0.05: Alpha level - the level of risk the researcher was willing to take that true margin of error might exceed the acceptable margin of error (Bartlett et al., 2001).
- N = 383: Total population of business education teachers as per the data collected from colleges of education in Northwestern Nigeria

After applying the Cochran (1977) sampling formula, the sample reached was 157. However, it was postulated in Bartlett et al. (2001) that in educational and social research studies where data collection methods are usually surveys and other voluntary participation methods, the response rates are typically well below 100%. Hence, Salkind (1997) recommended over sampling by 40%-50% to account for lost, non-responses and uncooperative subjects. Therefore, the researcher has increased the sample size by 40% to ensure that sufficient respondents were utilized and the sample was adequate enough for minimizing associated errors (Daniel, 2011). Note that the researcher has chosen to calculate additional sample by 40% instead of 50% so as to ensure that the sample remains moderately minimal (Cochran, 1977). Hence the sample size used was:

$$n_2 = 157 + 40\% \times 157$$

$$n_2 = 157 + 63$$

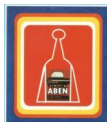
$$n_2 = 220$$

$$\text{Sample size} = 220$$

Although 220 questionnaire copies were shared randomly among the population of the study, 212 copies (96%) were retrieved and found valid for the purpose of the study, implying that 8 copies were lost (Salkind (1997). Hence, the sample retained was 212.

### Instrument of Data Collection

The instrument for data collection for this study was a structured questionnaire titled New Technologies Attitude Scale adapted from previous studies. To ensure that NTAS meets up with the objectives of this study it was subjected to the scrutiny of two experts; one from Faculty of Educational Studies, *Universiti Putra Malaysia*, and the other from Faculty of Education, University of Ilorin, Nigeria. The reliability of NTAS was determined through a pilot study on a sample of 30 respondents (who were business education teachers from 3 tertiary colleges of Northwestern Nigeria, namely: FCE (T) Bichi, FCE Kano & SRCOE, Kano). The questionnaires were administered to the respondents on line via Google Drive to their e-mails. The



internal consistency of the instrument was determined using Cronbach's-Alpha technique in which an overall Cronbach's-Alpha coefficient of 0.75 was obtained for the instrument as a proof of its reliability.

NTAS was also used to collect demographic data of the respondents apart from their responses on 20 items on the three constructs proposed in the study model, which were: perceived usefulness (PU), perceived ease of use (PEOU) and attitudes towards technology (ATT). Confirmatory Factor Analysis (CFA) was used to drop 11 items at the final stage of the structural model, due to their low factor loadings, while nine were taken. The item statements in the instrument were basically measured on a five-point Likert-type scale ranging from 1= 'strongly disagree' to '5=strongly agree'. Items of reverse nature were scored in a reverse mode as recommended in (De-Vellis, 2003).

### Method of Data Analysis

In this study data was analyzed by the use of Structural Equation Modeling (SEM) to obtain the relevant statistical information needed for drawing conclusions on the predictor factors affecting teachers' attitude towards use of new technologies in the classroom. By using SEM, the two hypotheses of the study were simultaneously tested on a model developed that depicts and predicts specific pathways for attitude toward using new technologies among business education teachers in tertiary institutions of Northwestern Nigeria. Congruently, the two research questions in the study were answered by analyzing respondents' data through the use of descriptive statistics in SPSS version 22. The overall average mean score of the responses of teachers on the variables investigated in the study was used as a rule for deciding whether the mean rating of teachers' responses on any variable is high or low.

### Results

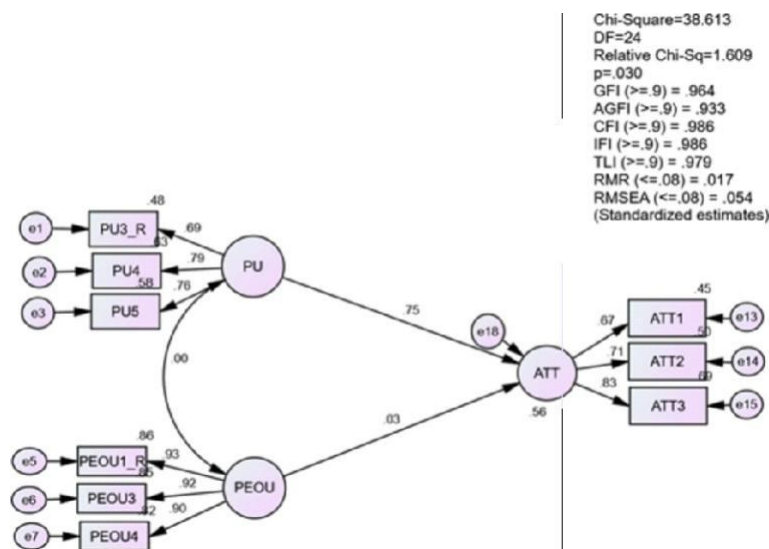
Results of the study are presented based on the data collected from the responses of 212 teachers that participated in the study.

*Table 1. Mean and Standard Deviation Scores on Teachers' Responses for the Variables Investigated.*

Variable/Construct	Number of Items	Mean	SD
Perceived Usefulness	7	4.18	0.54
Perceived Ease of Use	7	3.60	0.87
Attitude Towards Technology	6	3.98	0.65
Average Mean & SD		3.92	0.69

As can be seen on Table 1, the mean ratings of the responses of business education teachers on their perceptions of the usefulness of new technologies in the classroom stood at  $M=4.18$  ( $SD=0.54$ ); higher than the average mean score of the overall constructs investigated in the study which was  $M=3.92$  ( $SD=0.69$ ). However, the mean ratings of the responses of business education teachers on their perceptions of the ease of use of new technologies in the classroom stood at  $M=3.60$  ( $SD=0.87$ ); below the average mean score of the overall constructs investigated in the study.

### Test of the Structural Model

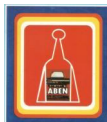


**Figure 3.** Structural Model for Teachers' Perceived Usefulness of Technology and Perceived Ease of Use of Technology on their Attitudes Towards Technology

Figure 3, presents the structural model of the study, with all the model fit measures being satisfactorily met: Chi-sq=38.613, df=24, Relative Chi-Sq=1.609, GFI=.964, AGFI = .933, CFI=.986, IFI = .986, TLI=.979, RMR = .017 and RMSEA = .054). The basic purpose of the fit measures was to determine the extent to which the model fitted with the observed data covariance matrix. The results in the study model shows that model has adequate parsimony for explaining teachers' perceived ease of use of technology in the classroom (Hair et al, 2010).

### Tests of Hypotheses

Results of the test of hypotheses in this study have shown that first hypotheses (H1) was supported. As can be seen on Table 2, the path between perceived usefulness and



attitude towards technology (H1) proposes a relationship that weighs .075 at a significance level of  $p < .001$ . This circumstance infers that hypothesis H1 is sustained. However, the path between perceived ease of use and attitude towards technology (H2) proposes a relationship that weighs .025 at a significance level of  $p < .698$ , indicating that hypothesis H2 is not supported.

Invariably, teachers' perception of the usefulness of technology has direct predictive effect on their attitude towards technology in the classroom while the perception of their ease of use of technology was not found to significantly predict their attitude towards technology in the classroom.

**Table 2: Results of the Tests of Hypotheses**

H	Paths			P	Results
H1	PU →	ATT	.748	***	Supported
H2	PEOU →	ATT	.025	.698	Not Supported

## Discussion

Based on the self-reported opinions of 212 business education teachers in tertiary colleges of Northwestern Nigeria, perceived usefulness and perceived ease of use were investigated in this study with reference to how they explain and predict teachers' attitude towards using new technologies in the classroom.

Results of the study have shown that the mean ratings of the responses of business education teachers on their perceptions of the usefulness of new technologies in the classroom was very high, indicating that they perceive that new technologies are useful for classroom instructions. However, the mean ratings of the teachers' responses on their perceptions of the ease of use of new technologies in the classroom was below average, indicating that they perceive that using new technologies for classroom instructions is not easy. This finding is consistent with Anunobi (2015) and Isiyaku (2019) where teachers had low mean scores with regard to their competency in using information communication technologies in the classroom.

Results of the study have also shown that teachers' perception of the usefulness of new technologies has a direct significant effect on their attitude towards technology. This implies that perceived usefulness predicts attitude towards technology. This finding is consistent with Teo, Lee & Chai(2008) that perceived usefulness of computers among pre-service teachers was significant in determining their overall computer attitude.



Finally, this study shows that the effect of teachers' perceived ease use of new technologies on their attitude towards technology was not significant. This finding supports what was upheld in literature. In Bajaj and Nidumolu (1998), a significant negative correlation was found between perceived ease of use and attitude towards technology.

### **Conclusion**

This study was conducted on the basis of the Technology Acceptance Model (TAM) of Davis (1989) owing to the prevailing circumstances in the tertiary institutions of Northwestern Nigeria against trends of technology usage in the classroom. In accordance with the theoretical framework and the conceptual framework/model of the study, research questions and hypothetical predictions were developed in consonance with past studies that have explored the contributions of various constructs towards explaining how and why individuals use technology. Although teachers have positive attitudes towards using new technologies and they are willing to use the technologies very well, their perceptions of their abilities for using the technologies is low and they think that new technologies are not easy for them to use. This fundamentally suggests that teachers need more training and support with regard to usage of new technologies in the classroom.

### **Recommendations**

This study is quite informative for authorities of tertiary schools in Nigeria and across the world. It has supported the contributions of extant research and has added value to TAM and the theories that supported the study. Based on the findings of the study, the following recommendations are proffered:

Governing bodies of Nigerian tertiary institutions should provide more facilities and support for business education teachers to use new technologies in the classroom since they perceive that such technologies are very useful for classroom instructions.

Governing bodies of Nigerian tertiary institutions should support business education teachers with adequate training for them to be able to use new technologies in the classroom since they perceive that using such technologies for classroom instructions is difficult.



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