

# Examining Performance Expectancy and Effort Expectancy as determinants of Secondary School Teachers' Behavioural Intention to use Mobile Technologies for Instruction in Kaduna State, Nigeria

BURAIMOH Oluwaseun Funmilola, YUSUF Mudasiru Olalere, OLUSANJO Micheal Oluwole, AJIJOLA Esther Modupe, Aladesusi Gboyega Ayodeji

**Abstract**— Mobile technologies have significant impact in our daily activities and it has improved how people gathered and make use of information. In spite of its significant for improving instructional process, the factors that influence teachers' behavioural intention have not yet been given due attention. The study therefore aimed at examining the determinants of secondary school teachers' behavioural intention to use mobile technologies for instruction in Kaduna State. The study benefited from the Unified Theory of Acceptance and Use of Technology (UTAUT) model choosing two construct from this model (performance expectancy and effort expectancy) to investigate teachers' behavioural intention to use mobile technologies for instruction. Data was collected from 958 teachers from four education zone in Kaduna State which include Giwa, Kaduna, Sabon-Tasha and Zaria. A descriptive study of cross-sectional survey was employed in the study. Researcher designed questionnaire was used to gather information. Descriptive statistics of mean was used to analyze the research questions while multiple regression was used to analyze the formulated hypothesis. The findings indicated that PE and EE of the respondents have positive influence on the behavioural intention to use mobile technologies with grand mean of 3.14 and 3.18. Also, there was significant relationship between the independent variables (PE & EE) and the dependent variable (BI). Based on the findings of this study, it was concluded that PE and EE are strong determinants of teachers' behavioural intention to use mobile technologies for instruction. It was therefore recommended that secondary school teachers should be given adequate training on the use of mobile technologies for effective instructional delivery.

**Index Terms**— Mobile Technologies, Performance Expectancy (PE), Effort Expectancy (EE), UTAUT, Behavioural Intention.

## I. INTRODUCTION

In recent years, countless improvements have been recorded in the area of mobile and wireless technologies. The introduction of mobile technology has brought about greater changes in the lifestyles of mobile users around the world, including the field of education. Mobile technologies have a significant part of daily activities and it has improved how people gather information and make appropriate use of information. Mobile technologies enhance extension of education beyond school timing and confines of the physical

classroom. These technologies enable learners to engage in learning activities sending information to the instructor and work with other people through the internet. Mobile technologies are no longer just a functional accessory but it is a device used at anytime and anywhere. It is design- learning contexts that allow learning to be situated in a real-world context.

Mobile technologies are devices that are capable of performing a variety of tasks as they are small, self-directed and modest enough to assist instructional activities. The ability of mobile technology to improve the instructional process is so significant that it is at the forefront of technological advancement in education. Mobile technologies can be the best in mobile learning.

The most important aspect of mobile learning is its ability to make learning mobile, away from the classroom or workplace. These Wireless and mobile technologies provide learning opportunities to learners who do not have direct access to learning in these places. Most learners in the remote place of the developing countries have trouble accessing the internet, or experience difficulty in affording technology that enables learning in an e-learning environments, this is as a results of epileptic supply of electricity and power voltage. Mobile devices are a cheaper alternative compared to traditional e-learning equipment such as PC's and Laptops (Master, 2017).

Trifonova and Ronchetti (2006), described mobile devices as any electronics device that is portable, self-directed and able to frequently assist both students, teachers in an instructional activities. Mobile devices are small enough to be kept in the user pocket and should be carried by the user in a habitual way. Mobile devices are equipped with suitable instructional platforms as they have resourceful applications that teachers and learners can use in learning. Mobile devices are digital, easily portable, usually connected to a network and can facilitate any number of tasks including communication, data storage, video and audio, and many more (UNESCO, 2013) Mobile devices offer learning capabilities to users in such a way that it provides connectivity, individualized learning, social interactivity, portability and affordability (Murphy, 2011) Mobile technologies can be useful in different ways because it allows interaction with people via voice, written messages, still and moving images. Mobile technologies are tools for evaluating content, which can be stored locally on

BURAIMOH Oluwaseun Funmilola, YUSUF Mudasiru Olalere, OLUSANJO Micheal Oluwole, AJIJOLA Esther Modupe, Aladesusi Gboyega Ayodeji, University of Ilorin, Kwara State, Nigeria

the device or can be reached through an interconnection (Trifonova & Ronchetti, 2006). Educational institutions and businesses are increasingly using mobile technology from wireless networks to personal communication devices, in a different setting for different reasons (Alex, 2011). As a result of the influence of technology throughout the world, teachers around the world have taken notice of the need to equip young people with 21<sup>st</sup> century technological skills. Mobile technology help teachers to receive feedback from students, encourage participation, makes asking and answering questions less intimidating and motivate students learning (Scornavacca & Marshall, 2007; Market, Sanchez, Weber, & Tangney, 2006). Mobile technology has the ability to build interesting learning environments that engage learners in learning activities (Shorff & Narasipuram, 2009).

In Nigeria, secondary school education is the second level of educational training after primary school. Secondary education prepares the student for higher education and useful living within the society (Federal Republic of Nigeria, 2013). The objective of secondary school education cannot be achieved if the student is not properly trained while they are in school. Studies have shown that the introduction of media technology into secondary schools cannot by itself improve the quality of education or raise learners attainment. Borris, Michael, Leigh and Peter (2011) believed that one important measure of the success of any educational reform is the extent to which it is adopted by teachers.

The emergence of technologies leaves a significant impact on educational development and the acceptance by teachers has a greater influence on the successful introduction of mobile learning. Unified theory of acceptance and use of technology (UTAUT) is a model that has been found very significant in determining perception on the use of a technology. UTAUT is a model that accounted for more variance on behavioural intention (Venkatesh, Morris, Davis and Davis, 2003). Venkatesh, et al (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model to consolidate previous TAM related studies. The model was developed in order to explain user intentions to use a new technology. The UTAUT model comprises of four core constructs which are performance expectancy, effort expectancy, social influence, facilitating conditions and four moderators which are gender, age, experience and voluntariness of use that influence behavioural intention and use behaviour. This model has been widely used to investigate mobile learning acceptance in both developed and developing countries. Majority of studies that adopted the UTAUT model have extended the model by including new variables or reducing the existing variables to suit the purpose of their study. This is done because mobile devices usage and adoption is not the same in all countries (Nassuora, 2012).

Based on UTAUT model, the researcher adopted only two construct which includes: performance expectancy and effort expectancy (Venkatesh, et al 2003). The two selected construct are therefore the predictors of user behavioural intention. Behavioural intention has been described as predictors on individual possibility of executing an action. Dillon and Morris (1996) opined that behavioural intention is the willingness of a user towards the use of technologies. It

was explained further that willingness can also be evaluated through intention or actual use of information technology (Martocchio, 2005). Also, Chan and Hu (2002) described behavioural intention as an individual likelihood of deciding to accept a technology. It is the degree to which a person has formulated conscious plans to perform or not to perform some specified future behaviour (Warshaw & Davis, 1985). Performance expectancy as one of the major determinants of behavioural intention to use a technology is the belief held by a teacher that using the system will help him or her to attain gains in job performance (Venkatesh et al., 2003). In this study, performance expectancy is the extent to which teachers' believe that mobile technology will be useful for improving their classroom teaching. Also, it will be helpful for the teacher to teach effectively and be highly productive. Effort expectancy can be described as the degree of ease that teachers think they will have when using an information system (Venkatesh et al., 2003). Effort expectancy in this study represents teachers' perception on the ease that is associated with the use of mobile technology and their self-efficacy to use it for teaching. The ease that teachers' believe to get from mobile technology will encourage their acceptance of the mobile technology.

The integration of mobile technology into teaching and learning is expected to have great influence on the performance of teachers in their teaching activities. However, it is the acceptance of teachers that have the potential to have the greatest influence on the successful introduction of mobile learning (MacCallum, 2010). Liu, Han and Li (2010) stated that the presence and accessibility of mobile technologies do not guarantee that their potential will be realized in educational contexts. But it should be noted that the success of mobile learning depends on human factors in the use of mobile devices (Kukulka-hulme, 2007). The need to understand factors that contribute towards teachers' behavioural intention to integrate mobile technologies into teaching is critical for successful implementation in a given context. Hence, this study aims to examine performance expectancy and effort expectancy as determinants of secondary school teachers' behavioural intention to use mobile technologies for instruction in Kaduna State.

### **1. Purpose of the Study**

The main purpose of this study was to examine performance expectancy and effort expectancy as determinants of secondary school teachers' behavioural intention to use mobile technologies for instruction in Kaduna State, Nigeria. Specifically, the study:

2. explored performance expectancy as a determinant of secondary school teachers' behavioural intention to use mobile technologies for instruction;
3. examined effort expectancy as a determinant of secondary school teachers' behavioural intention to use mobile technologies for instruction and;
4. examined behavioural intention of secondary school teachers' on the integration of mobile technologies for instruction.

### **5. Research Questions**

The following research questions were answered in the study

1. What influence does performance expectancy have on teachers' behavioural intention to use mobile technologies for teaching?
2. What influence does effort expectancy have on teachers' behavioural intention to use mobile technologies for teaching?
3. What effect does behavioural intention of teachers have on the integration of mobile technologies for instruction?

### 6. Hypothesis

H<sub>01</sub>: There is no significant relationship among secondary school teachers' performance expectancy, effort expectancy and their behavioural intention to use mobile technologies for instruction.

#### Methodology

This study was a descriptive research using cross-sectional survey method. Data was collected from 958 teachers from

four education zone in Kaduna State which include Giwa, Kaduna, Sabon-Tasha and Zaria. Researcher designed questionnaire was used to gather information. Descriptive research type was adopted, using four point Likert scale response modes: Strongly Agree (SA=4), Agree (A=3), Disagree (D=2), and Strongly Disagree (SD=1). Three research questions were answered using mean and standard deviation and considering 2.5 as the benchmark. Thus, hypothesis was tested using multiple regression analysis.

## II. RESULTS

### Research Question 1:

What influence does performance expectancy have on teachers' behavioural intention to use mobile technologies for teaching?

**Table 1: Teachers Performance Expectancy and Behavioural Intention to Use Mobile Technologies**

S/N	Performance Expectancy	Mean	Std. Deviation
1	Mobile technologies will be useful for my teaching	2.81	.954
2	Mobile technologies will help to improve the quality of my teaching	2.83	.987
3	Using mobile technologies will reduce my teaching workload	3.00	.867
4	Mobile technologies will enable me to teach quickly and effectively	3.17	.764
5	Using mobile technologies will increase my teaching productivity	3.24	.674
6	Using mobile technologies will fit in with my method of teaching	3.23	.674
	Mobile technologies will give me easy access to students even after school.	3.22	.695
8	Using mobile technology will enable me to cover the school syllabus in good time	3.46	.582
9	Using mobile technologies will encourage interaction between me and my students	3.16	.657
10	Using mobile technologies for teaching will make my teaching more interesting	3.32	0.91
	<b>Grand Mean</b>	<b>3.14</b>	

It could be noted from Table 1 that the respondents were of the opinion that using mobile technology will enable them to cover the school syllabus in good time and that using mobile technologies for teaching will make my teaching more interesting as the mean score were 3.46 and 3.32, respectively. Furthermore, it was revealed that using mobile technologies will increase my teaching productivity with a mean score of 3.24. On the other hand, the respondents expect that using mobile technologies will increase their teaching productivity with a mean score of 3.23. Also, it was expected that mobile technologies will give me easy access to students even after school and that mobile technology will enable me to teach

quickly and effectively with a mean score of 3.22 and 3.23, respectively.

On the final analysis, the grand mean score for the influence of teachers' performance expectancy on their behavioural intention to use mobile technologies for teaching is 3.14. With 2.50 as the benchmark which is less than the grand mean score, it means that the performance expectancy of the respondents has a positive influence on the behavioural intention to use mobile technologies for teaching.

### Research Question 2:

What influence does effort expectancy have on teachers' behavioural intention to use mobile technologies for teaching?

**Table 2: Teachers Effort Expectancy and Behavioural Intention to Use Mobile Technologies for Teaching**

S/N	Effort Expectancy	Mean	Std. Deviation
1	I will find mobile technologies easy to use	3.28	.596
2	Using mobile technologies will not require much effort	3.31	.588
3	Using mobile technologies will make my teaching clearer and understandable	3.28	.627
4	It will be easy for me to become skilful at using mobile technologies for teaching	3.18	.677
5	Mobile technologies will make my teaching easier	3.15	.666
6	I will find it convenient to use mobile technologies	3.00	.000
7	I will be able to operate mobile technologies easily	3.11	.34
	<b>Grand Mean</b>	<b>3.18</b>	

Table 2 presents the influence of effort expectancy on the behavioural intention to use mobile technologies for teaching. The table reveals clearly that item two has the highest mean value of 3.31, meaning that using mobile technologies will not require much effort. This was noted to be followed by a mean score of 3.28 against the statement that they found mobile technologies easy to use and that using mobile technologies will make their teaching clearer and understandable. The respondents also believed that it was easy for them to become skilful at using mobile technologies for teaching, this having a mean score of 3.18. Furthermore, it was revealed that mobile technologies will make my teaching easier with a mean score of 3.15. This was closely followed by a mean score of 3.11 against the statement that they will be able to operate mobile technologies easily. However, item

seven which revealed that some of the respondents still find it convenient to use mobile technologies had a mean score of 3.00.

On the general note, the grand mean score for the influence of teachers' effort expectancy on their behavioural intention to use mobile technologies for teaching was 3.18. Using 2.50 as the benchmark, it could be deduced that the influence of teachers' effort expectancy on their behavioural intention to use mobile technologies for teaching was positive. This implies that teachers' effort expectancy depends on their behavioural intention to use mobile technologies for teaching.

**Research Question 3:**

What influence does behavioural intention have on the integration of mobile technologies for teaching?

**Table 3: Influence of Behavioural Intention on the Integration of Mobile Technologies for Teaching**

S/N	Behavioural Intention	Sum	Mean	Std.Deviation
1	I prefer to use mobile technologies for teaching in my school	1876	2.00	.000
2	I plan to use mobile technologies frequently	2987	3.19	.635
3	I intend to increase my use of mobile technologies	3002	3.20	.588
4	I will recommend mobile technologies to my fellow teachers	3004	3.40	.64
	<b>Grand Mean</b>		<b>2.94</b>	

Table 3 presents the results on the effect of behavioural intention of teachers on the integration of mobile technologies for teaching. The findings showed that secondary school teachers recommend mobile technologies to their fellow teachers and they intend to increase the use of mobile technologies with the mean score of 3.40 and 3.20 respectively. It was also revealed that secondary school teachers plan to use mobile technologies frequently with the mean score of 3.19. The lowest mean score was 2.0 against the statements that the teachers prefer to use mobile technologies for teaching in their school. However using a benchmark of 2.5, the grand mean score on the effect of the behavioural intention of teachers on the integration of mobile technologies for teaching was 2.94 which is greater than the

benchmark it can then be established that behavioural intention of the teachers can affect the integration of mobile technologies for teaching.

**Hypothesis One**

There is no significant relationship among secondary school teachers' performance expectancy, effort expectancy and their behavioural intention to use mobile technologies for teaching.

To test for a relationship between predictors variables of performance expectancy and effort expectancy on the criterion variable behavioural intention, the multiple regression analysis was carried out using the enter method. The results derived from the analysis are shown in Tables 4, 5 and 6

**Table 4: Adjusted R square value for the Model Summary on Behavioural Intention**

Model	R	R square	Adjusted R square	Std. An error of the Estimate
1	.147 <sup>a</sup>	.022	.017	.3649148

a. Predictors: (Constant), performance expectancy and effort expectancy

From the result in Table 4, the Adjusted R Square (.017) has a poor fit. This revealed that the constructed multiple regression models of the independent variables (performance expectancy and effort expectancy) account for .017% variance in the dependent variable (behavioural intention).

The results of the analysis of variance (ANOVA) for the model are as shown in Table 5

**Table 5: ANOVA for Independent Variables on Behavioural Intention**

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.744	2	.686	5.152	.000 <sup>b</sup>
Residual	124.241	956	.133		
<b>Total</b>	<b>126.985</b>	<b>958</b>			

a. Dependent Variable: Behavioural Intention

b. Predictors: (Constant), performance expectancy and effort expectancy

The results of the analysis of variance (ANOVA) which revealed that  $F(2, 956) = 5.152, p < 0.05$ , indicated a statistically significant relationship (less than 0.05) between the independent variables (performance expectancy and effort expectancy) and dependent variable (behavioural intention).

Based on this significant relationship, the coefficient for the Beta weight for the amount of standard deviation unit of change in the dependent variable for each standard deviation unit of change in the dependent variable was calculated. The results are as shown in Table 6.

**Table 6: Coefficient of Independent Variables on Behavioural Intention**

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
(Constant)	2.422	.136		17.815	.000
PE	.028	.029	.036	.988	.032
EE	.003	.036	.003	.083	.034

a. Dependent Variable: Behavioural Intention

The standardized coefficients in Table 6 revealed that;

- (a) The independent variable (performance expectancy) has strong positive effect on behavioural intention because the Beta ( $\beta = .036, .032$ ) shows statistically significant relationship because the significant value was less than 0.05 alpha value.
- (b) The independent variable (effort expectancy) has strong positive effect on behavioural intention because the Beta ( $\beta = .003, .034$ ) shows statistically significant relationship because the significant value was less than 0.05 alpha value.

### III. DISCUSSION OF THE FINDINGS

Influence of teachers' performance expectancy on behavioural intention to use mobile technologies for teaching was examined using research question one. The results of the mean score established that performance expectancy of the respondents has a positive influence on the behavioural intention to use mobile technologies for teaching. These findings agree with the previous findings of Venkatesh et al, (2003) whose findings established that performance

expectancy is a major determinant of behavioural intention to use a technology. The authors further affirmed that Performance expectancy is the individual believes that using the system will help him or to attain gains in job performance. However, the findings reveal that mobile technology support teachers in teaching and encourage its adoption for teaching. Influence of effort expectancy on teachers' behavioural intention to use mobile technologies for teaching was determined using research question two. Such effort expectancy includes it will be easy for me to become skilful at using mobile technologies for teaching, mobile technology will make my teaching easy, among others. The result of the mean score established that Influence of teachers' effort expectancy on their behavioural intention to use mobile technologies for teaching was positive. These results were however in support with the findings of Gao and Deng (2012), who investigated the determinants of Chinese users acceptance of mobile e-book and found out that there is a significant relationship between effort expectancy and behavioural intention to use the mobile e-book. The ease that teachers' believe to get from mobile technology will encourage their acceptance of the mobile technology. Effect of behavioural intention on the integration of mobile

technologies for teaching was examined using research question three. Such effect includes I plan to use mobile technologies for technologies, I plan to use mobile technologies frequently in my school, I intend to increase my use of mobile technologies among others. The result of the mean score on behavioural intention established that behavioural intention has an effect on teachers integration of mobile technologies in teaching. These findings agreed with the findings of Maldonado et al. (2009) who found behavioural intention to significantly predict use of mobile technology.

Relationships among secondary school teachers' performance expectancy, effort expectancy and their behavioural intention to use mobile technologies were examined using hypothesis 1. The results of the findings revealed that there is a strong relationship among secondary school teachers' behavioural intention, effort expectancy and performance expectancy to use mobile technologies for teaching. These findings agreed with the findings of Maldonado, (2009) who found behavioural intention to significantly predict user behaviour.

#### IV. CONCLUSION AND RECOMMENDATION

The study concluded that there is strong relationship between secondary school teachers' behavioural intention, effort expectancy and performance expectancy to use mobile technologies. Based on the findings and conclusion of this study, the study recommends that secondary school teachers in the selected education zones should be given adequate training on the use of mobile technologies for effective instructional delivery.

#### REFERENCES

- [1] G Alex, H. (2011). *How mobile technology can enhance students learning and workforce training*: McGraw-Hill Research Foundation.
- [2] Boris, H., Michael, C., Leigh, W. & Peter, P. (2011). Factors leading to the adoption of a learning technology: The case of graphics calculators. *Australasian Journal of Educational Technology*, 27(2), 343-360.
- [3] Dillon, A. (2011). User acceptance of information technology. In W. Karwowski (Ed) *Encyclopedia of human factors and ergonomics*. London: Taylor and Francis.
- [4] Federal Republic of Nigeria, (2013). National Policy on Education (6<sup>th</sup> Ed). Lagos: NERDC Press.
- [5] Gao, T., & Deng, Y. (2012). A study on users' acceptance behaviour to mobile e-books application based on UTAUT model. *Paper presented at the Software Engineering and Service Science (ICSESS), 2012 IEEE 3rd International Conference on*.
- [6] Kukulske-hulme, A. (2007). Mobile Usability in Educational Contexts: What have we learnt? *International Review of Research in Open and Distance Learning*, 8 (2), 1 - 16.
- [7] Liu, Y., Han, S. & Li, H. (2010). Understanding the factors driving m-learning adoption; a literature review. *Campus-wide information system*, 27(4), 210-226. Retrieved from <http://www.emeraldinsight.com/journals.htm?articleid=1881561&show=html>.
- [8] MacCallum, K. (2010). *Attitudes of educators to the introduction of mobile technology*. Paper presented at the 1<sup>st</sup> annual conference of computing and information technology research & education. New Zealand, Dunedin.
- [9] Maldonado, U. P. T., Khan, G. F., Moon, J. & Rho, J. J. (2009). E-learning motivation, Students' Acceptance /Use of Educational Portal in Developing Countries. *Proceed of the 4<sup>th</sup> International Conference on Computer Sciences and Convergence Information Technology*.
- [10] Markett, C., Sanchez, I. A., Weber, S. & Tangney, B. (2006). Using short message service to encourage interactivity in the classroom. *Computer and Education*. 46(3), 280-293.
- [11] Masters, K.; Ng'ambi D. (2017). "After the broadcast: disrupting health sciences' students' lives with SMS". Proceedings of IADIS

- International Conference Mobile Learning. Lisbon, Portugal. pp.171-175. ISBN978-972-8924-36-2
- [12] Murphy, G. D. (2011) Post-PC devices: A summary of early iPad technology adoption in tertiary environments. *EJournal of Business Education & Scholarship of Teaching*, 5(1) 18-32.
- [13] Nassuora, A. B. (2012). Students acceptance of mobile learning for higher education in Saudi Arabia. *American Academic & Scholarly Research Journal* 4 (2), 24-30.
- [14] Scornavacca, E. & Marshall, S. (2007). Improving students learning experience in the classroom through interactive SMS. Paper presented at the annual Hawaii International conference on system science (HICSS'07), Hawaii.
- [15] Shroff, R.H., & Narasipuram, M.M. (2009). An exploration of individual student perceptions of mastery of knowledge in an online collaborative context. *Communication of the IBIMA*.11, 92-98. Retrieved from <http://repository.ied.ed.hk/dspace/handle/2260/496b>
- [16] Trifonova, A. & Ronchetti, M. (2018). *Hoarding Content in M-Learning Context*. PhD Thesis University of Trento, Italy.
- [17] UNESCO, (2013). UNESCO Policy Guideline for Mobile Learning. United Nations Educational, Scientific and Cultural Organization. Retrieved from <http://unesdoc.unesco.org/images/0021/002196/219641e.pdf>.
- [18] Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F. D. (2003). user acceptance of information technology: *Toward a unified view MIS Quarterly* 27 (3), 425 - 478.