Examining the Effect of Technology Acceptance Model on ICT Usage in Nigerian Tertiary Institutions

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ABSTRACT

This paper examines the effect of technology acceptance model on ICT usage in Nigerian tertiary institutions. The study was conducted at the university of Jos Plateau state, Nigeria as a pilot study. One hundred questionnaires were administered and collected containing 23 UTAUT survey questions and 9 demographic statements totaling 32 questions. The focus of this paper is on the UTAUT four constructs (PE, EE, SI & FC). The UTAUT model theories that four constructs have a significant determination on user acceptance of IT innovations. This was verified using multiple regressions of the four constructs on behavioral intention (BI) as reported in table 8. Three null hypotheses were stated thus: (1) The independent variables (PE, EE, SI & FC) do not have influence on the dependent variable BI.(2) UTAUT do not predict successful acceptance of ICT by the academic staff of Nigerian public universities. (3) Nigerian university academic staff rejects ICT acceptance and usage in their workplace. The findings show that for hypothesis (1), PE is significant with p-value 0.026; EE is significant with p-value 0.000; SI is not significant with p-value 0.340. FC is significant with p-value 0.037. Therefore for the independent variables (PE, EE & FC), we reject the null hypothesis (H01) and accept the alternative (H1). For SI, the null hypothesis (H01) is accepted. For hypothesis (2), we reject the null hypothesis (H02) and accept the alternative (H1). For hypothesis (3), we reject the null hypothesis (H03) and accept the alternative (H1). The study shows that performance expectancy, effort expectancy and facilitating condition have a significant positive influence and impact on the behavioral intention to accept and use ICT, by the university academic staff. However the findings show that effort expectancy is the most influential UTAUT construct.

Keywords: Component; UTAUT-Constructs; Tertiary institutions; ICT; Acceptance; Usage; Behavioral intention.

1. INTRODUCTION

Technology is a broad concept that refers to use and knowledge of tools and crafts, and how these tools and crafts affect our ability to control and adapt to the environment. In human society today, technology is a result of science and engineering. A specific definition for the word "technology" is difficult to determine, because "technology" can refer to material objects of use to humanity, such as machines, hardware or utensils, but can also encompass broader themes, including systems, methods of organization, and techniques. Technology is the process by which humans modify nature to meet their needs and wants. Most people, however, think of technology in terms of its artifacts: computers and software, aircraft, pesticides, water-treatment plants, birth-control pills, and microwave ovens, to name a few. But technology is more than these tangible products. Technology includes the entire infrastructure necessary for the design, manufacture, operation, and repair of technological artifacts, from corporate headquarters and engineering schools to manufacturing plants and maintenance facilities. The knowledge and processes used to create and to operate technological artifacts -- engineering know-how, manufacturing expertise, and various technical skills -- are equally important part of technology.

2. Technology Acceptance Model

The technology acceptance model is one of the most influential extensions of Ajzen and Fishbein theory of reasoned action (TRA) in the literature. It was developed by Fred Davis and Richard Bagozzi[1] [2]. TAM replaces many of TRA attitude measures with the two technology acceptance measures ease of use, and usefulness. TRA and TAM, both of which have strong behavioral elements, assume that when someone forms an intention to act, that they will be free to act
without limitation. In the real world there will be many constraints, such as limited ability, time constraints, environmental or organizational limits, or unconscious habits which will limit the freedom to act [3]. Earlier research on the diffusion of innovations also suggested a prominent role for perceived ease of use. [4] analyzed the relationship between the characteristics of an innovation and its adoption, finding that compatibility, relative advantage, and complexity had the most significant relationships with adoption across a broad range of innovation types. Eason studied perceived usefulness in terms of a fit between systems, tasks and job profiles, using the terms “task fit” to describe the metric quoted in [5]. Many models of technology acceptance have been developed over the years, including: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined Theory of Planned Behavior/Technology Acceptance Model (C-TPB-TAM), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), and the Social Cognitive Theory (SCT). The key dependent variable in all of these models is intention and/or usage. The Theory of Reasoned Action (TRA) is “one of the most fundamental and influential theories of human behavior” [6]. The TRA states that an individual’s attitude toward a behavior and the surrounding subjective norms (whether the individual believes that people important to them think they should perform the behavior) influence their behavioral intention [7].

Figure 1: The Theory of Reasoned Action Source: [8].

The Technology Acceptance Model (TAM), developed by Davis and Davis, “is tailored to IS contexts, and was designed to predict information technology acceptance and usage on the job”[6] p428. TAM was adapted from the TRA, but does not included attitude as a construct [7]. TAM instead uses perceived usefulness and perceived ease of use (and TAM2 extends these by adding subjective norm). Figure 3 shows a drawing of the TAM model. TRA is a technology acceptance model that can be used to predict behavior in a wide variety of situations, not just the adoption of information systems technology. Ajzen states that an individual’s beliefs influence his/her attitude towards various situations. The users’ attitude joins with subjective norms to shape the behavior intentions of each individual. This theory was further refined and called the theory of planned behavior (TPB) which is also titled the extended theory of reasoned action. The TPB is a general behavior model which can be used to study broader acceptance situations than the TAM but it has been applied to information systems studies [9, 10].

The TAM model, and its derivations, gradually became the accepted model for research in information systems adoption cases. Debate and refinement of technology adoption models has continued in IS research literature. The advantage of a TAM is that it is specifically designed to address the acceptance of IS technology. The TAM model replaced the first three attitudinal constructs from the TPB with two technology acceptance measures perceived [11] usefulness and perceived ease of use. This was done in an attempt to simplify the model making prediction of acceptance easier to predict. In a meta-analysis study on TAM with 88 published studies, [11] concluded that the TAM is a valid and robust model.

Figure 2. The Technology Acceptance Model.

The first is perceived usefulness (PU) and perceived ease of use (PEOU). Davis defines usefulness as “the degree to which a person believes that using a particular system would enhance his or her job performance.” Davis goes on to define perceived ease of use as “the degree to which a person believes that using a particular system would be free of effort” (Davis et al., 1989, p. 985). A recognized limitation of TAM is that it does not take into consideration any barriers that would prevent an individual from adopting a particular information systems technology [10].

3. UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY

UTAUT has condensed the 32 variables found in the existing eight models (TRA,C-TPB-TAM, TPB, MPCU, TAM, IDT, MM and SCT) into four main effect and four moderating factors. The combinations of the constructs and moderating factors have increased the predictive efficiency to 70%, a major improvement over previous TAM model rates [6].
In the UTAUT model, PE and EE were used to incorporate the constructs of perceived usefulness and ease of use in the original TAM. PEOU can be expected to be more noticeable only in the early stages of using a new technology. UTAUT also addresses how individual differences determine the acceptance and use of technology. Precisely speaking, the connection between PU, PEOU, and intention to use can be moderated by age, gender, and experience. With the ongoing development of ICT and the diversification of the fields it affects, various theoretical studies have been carried out in order to ensure better understanding concerning its diffusion, adoption, acceptance, and usage [2, 6, 10, 12-15].

4. ICT NEEDS FOR NIGERIAN TERTIARY INSTITUTIONS

Nigerian universities require adequate ICT facilities to augment face-to-face teaching. Students are expected to have academic networking with their student counterpart across the globe. Excellent and current learning materials are required from academic staff to promote the quality of education and their product. Nigerian university academic staff should be able to compete globally with their colleagues. However the concern is whether university academic staff are prepared to integrate the technology that is feasible to them into effective lessons for their students. [16-18] argue that, “the integration of ICT into our classrooms is determined by key factors, such as the contexts in which teachers interact, their beliefs, and their attitudes towards teaching and learning” (p80). The stage of enlightenment on which ICT could be used in education is still low. Many lecturers hardly comprehend the benefit of ICT in education. Most of the lecturers acknowledged the fact that internet could be browsed as a point of supply of teaching materials. [19], [20, 21] investigated the level and depth of use of computers by university staff. From the survey, in Nigeria, 58.5% use computers for word processing, 32.2% use it for spreadsheet and data processing and 20.5% use it for programming. 66.9% use it for e-mail/Internet while 9.4% use the computer for other purposes apart from the programming. 66.9% use it for e-mail/Internet while 9.4% use the computer for other purposes apart from the programming. Excellent and current learning materials are required from academic staff to promote the quality of education and their product. Nigerian universities require adequate ICT facilities to augment face-to-face teaching. Students are expected to have academic networking with their counterpart across the globe. Excellent and current learning materials are required from academic staff to promote the quality of education and their product. Nigerian universities require adequate ICT facilities to augment face-to-face teaching. Students are expected to have academic networking with their counterpart across the globe. Excellent and current learning materials are required from academic staff to promote the quality of education and their product.
the Nigerian university academicians rages from, lack of funds; lack of time for practice; lack of sponsorship by the university management; no opportunities for training; unable to procure personal ICT facilities; lack of interest in learning; lack of patience to learn; no ICT facilities at the workplace; poor electricity supply; insufficient time due to workload; lack of ICT knowledge and proximity to ICT facilities. [25-27] opined that inadequate ICT facilities, excess workload and funding were identified as major challenges to ICT usage among academic staff in Nigerian universities. The challenges facing Nigerian Public Universities pertaining ICT acceptance and usage for teaching and learning is primarily lack of commitment by the government in terms of funding, staff training and stable power supply[23]. The growth of ICT has drastically reshape the teaching and learning processes in our universities [28, 29]. ICT for education is more critical today than before[30]. The higher education institutions around the globe have increasingly adopted ICT as tools for teaching, curriculum development, staff development, and student learning [31, 32].

5. RESEARCH HYPOTHESES

According to the UTAUT, four factors influence use of ICT: performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating condition (FC). Therefore we state our hypotheses as follow:

H01 : The independent variables PE, EE, SI and FC do not have influence on the dependent variable BI.

H1: All the independent variables (PE, EE, SI & FC) have influence on the dependent variable.

H02 : UTAUT do not predict the successful acceptance of ICT by the academic staff in Nigerian public universities.

H1, UTAUT do predict ICT acceptance by the academic staff of Nigeria public universities.

H03 : Nigerian University academic staff rejects ICT acceptance and usage in their workplace.

H1: Nigerian University academic staff does not reject ICT acceptance and usage in their workplace.

5.1 Methodology

This study was conducted at the university of Jos Plateau state, Nigeria as a pilot study. One hundred questionnaires were administered and collected, containing 23 UTAUT survey questions and 9 demographic statements totaling 32 questions. We want to use regression analysis to check the influence of the independent variables (PE, EE, SI and FC) on the dependent variable Behavioral Intention (BI) to accept and use ICT by the university Academicians, by using SPSS version 17. We shall use the results obtained to test our null hypotheses.

Reliability

<table>
<thead>
<tr>
<th>Table 2a Case Processing Summary</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases Valid</td>
<td>100</td>
<td>100.0</td>
</tr>
<tr>
<td>Excluded*</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100.0</td>
</tr>
</tbody>
</table>

a. List wise deletion based on all variables in the procedure.

<table>
<thead>
<tr>
<th>Table 2b: Reliability Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's Alpha</td>
</tr>
<tr>
<td>.786</td>
</tr>
</tbody>
</table>

Generally reliability numbers greater than 0.6 are considered acceptable in technology acceptance literature[33]. As summarized in the table 2b, a reliability analysis was conducted, for the 23 items using Cronbach’s Alpha. The UTAUT constructs appears to have a good degree of reliability of above .7

6. REGRESSION ANALYSIS

By using regression analysis we want to find the influence of the independent variables (PE, EE, SI and FC) on the dependent variable Behavioral Intention (BI).
\( \beta \) – implies that as PE figures increase, the BI figures increased by 0.178 and vice versa, this shows a positive relationship between the BI and the PE based on the data collected.

\( \alpha \) – implies that the BI figure will remain at 2.609 as the PE figure tends to zero.

\( \beta \) – implies that as PE figures increases, the BI figures increased by 0.178 and vice versa, this shows a positive relationship between the BI and the PE based on the data collected.

\( R^2 \) – implies that 5% (0.050 * 100 = 5%) variation on the BI is explained by PE based on the data collected for the study.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
Model & R & R Square & Adjusted R Square \\
\hline
1 & 0.223 & 0.050 & 0.040 \\
\hline
\end{tabular}
\end{table}

\textbf{Table 4: Model Summary}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
Model & Sum of Squares & Df & Mean Square & F & Sig. \\
\hline
Regression & 1.115 & 1 & 1.115 & 5.134 & \text{.026}\textsuperscript{a} \\
Residual & 21.289 & 98 & .217 & & \\
Total & 22.404 & 99 & & & \\
\hline
\end{tabular}
\end{table}

\textbf{ANOVA}\textsuperscript{b}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
Model & Unstandardized Coefficients & Standardized Coefficients & T & Sig. \\
\hline
\text{(Constant)} & 2.609 & .332 & 7.870 & \text{.000} \\
PerformanceExpectancy & .178 & .079 & .223 & 2.266 & \text{.026} \\
\hline
\end{tabular}
\end{table}

\textbf{Coefficients}\textsuperscript{a}

\text{a. Predictors: (Constant), PerformanceExpectancy}

\text{b. Dependent Variable: BehavioralIntention}
From figure 4 & Table 4, \( R^2 \) is the amount of variation in BI contributed by the independent variable PE. This shows that PE contributed 5% of variation as observed in BI which is the dependent variable. The regression equation \( Y = 2.609 + 0.178PE \) is significant with p-value .026. From the equation one can deduce that if there is a unit increase in PE (which is the extent an individual believes that the ICT system will help them do their job better), then this will increase the behavioral intention to accept and use the ICT system.

\[ \alpha \text{ - implies that the BI figure will be } -0.768 \text{ as the EE figure tends to zero. This has no any meaning because it’s a negative constant.} \]

\[ \beta \text{ - implies that as EE figures increases, the BI figures is increased by 6.33 and vice versa, indicating a positive relationship between the BI and the EE based on the data collected for the study.} \]

\[ R^2 \text{ - implies that 14.6 } \% (0.146 \times 100 = 14.6\%) \text{ variation on the BI is explained by EE based on the data collected for the study.} \]

**Table 5: Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.382</td>
<td>.146</td>
<td>.137</td>
<td>.44183</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), EffortExpectancy

**ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3.273</td>
<td>1</td>
<td>3.273</td>
<td>16.769</td>
<td>.000a</td>
</tr>
<tr>
<td>Residual</td>
<td>19.131</td>
<td>98</td>
<td>.195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22.404</td>
<td>99</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), EffortExpectancy
b. Dependent Variable: BehavioralIntention

**Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
</table>

538
From figure 5 & Table 5, EE contributed only 14.6% of the total variation observed in behavioral intention. The regression equation $Y = 6.333 - 0.768 \text{EE}$ is significant with p-value 0.000. This implies that EE has a positive relationship with BI. Hence an increase in EE (which is related to how ease an individual believes the system is to ease) will lead to a corresponding increase in behavioral intention to accept and use ICT by the university academicians and vice versa.

Social Influence

![Social Influence Diagram](image)

- $\alpha$ - implies that the BI figure is constant at 2.962 as the SI figure tends to zero.

- $\beta$ - implies that as SI figures increases, the BI figures increased by 0.107 and vice versa, indicating a positive relationship between the BI and the SI based on the data collected for the study.

- $R^2$ - implies that 0.9% $(0.009 \times 100 = 0.9\%)$ variation on the BI is explained by SI based on the data collected for the study.

Table: 6 Model Summary
<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R$ Square</th>
<th>Adjusted $R$ Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.096\textsuperscript{a}</td>
<td>.009</td>
<td>.000</td>
<td>.47591</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Predictors: (Constant), Social Influence

### ANOVA\textsuperscript{2}

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>.208</td>
<td>1</td>
<td>.208</td>
<td>.918</td>
<td>.340\textsuperscript{a}</td>
</tr>
<tr>
<td>Residual</td>
<td>22.196</td>
<td>98</td>
<td>.226</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22.404</td>
<td>99</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{a} Predictors: (Constant), Social Influence

### Coefficients\textsuperscript{a}

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>$T$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>2.962</td>
<td>.412</td>
<td>7.194</td>
<td>.000</td>
</tr>
<tr>
<td>Social Influence</td>
<td>.107</td>
<td>.096</td>
<td>.958</td>
<td>.340</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Dependent Variable: Behavioral Intention

From figure 6 & table 6: SI contributed 0.9% of the total variation observed in behavioral intention. Since $R^2$ is low (.009), the independent variable SI has contributed less to the variation in the dependent variable BI. Therefore the regression equation $Y = 2.962 + 0.107SI$ is not significant since the p-value (0.340) > (0.05). Here we can deduce that changes in SI (which is related to whether or not important others influence an individuals’ intention to use the (ICT) system), is not significant on the behavioral intention to accept and use the (ICT) system by the university academicians.

**$\alpha$** - implies that the BI figure will be constant at 2.114 as FC figure tends to zero.

**$\beta$** - implies that as FC figures increases, the BI figures increased by 0.350 and vice versa, indicating a positive relationship between the BI and the FC based on the data collected for the study.

**$R^2$** - implies that 4.4% $(0.044 \times 100 = 4.4\%)$ variation on the BI is explained by FC based on the data collected for the study.
Table 7: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.209a</td>
<td>.044</td>
<td>.034</td>
<td>.46757</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), FacilitatingCondition

ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>.979</td>
<td>1</td>
<td>.979</td>
<td>4.480</td>
<td>.037a</td>
</tr>
<tr>
<td>Residual</td>
<td>21.425</td>
<td>98</td>
<td>.219</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22.404</td>
<td>99</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), FacilitatingCondition
b. Dependent Variable: BehavioralIntention

Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>2.114</td>
<td>.587</td>
<td>3.601</td>
<td>.001</td>
</tr>
<tr>
<td>FacilitatingCondition</td>
<td>.350</td>
<td>.165</td>
<td>.209</td>
<td>.037</td>
</tr>
</tbody>
</table>

a. Dependent Variable: BehavioralIntention

From figure7 & table7: FC contributed only 4.4% of the total variation observed in the behavioral intention to accept and use ICT by the academic staff. The regression equation Y = 2.114 + 0.350FC, with the p-value 0.037 is significant. Therefore an increase in FC (that is, whether individual have personal knowledge and institutional resources available to use the ICT system) have positive influence on the behavioral intention to accept and use the (ICT) system by the university academicians.

7. MULTIPLE REGRESSIONS

Figure 7
\( \alpha \) - implies that the BI figure is constant at 5.746 as the respective figures of the variables PE, EE, SI and FC tends to zero.

\( \beta \) - implies that the increase in the figures of each of the variables PE, SI and FC, has led to an increased BI figures by 0.420, 0.483 and 0.513 respectively and vice versa, indicating a positive relationship between the BI and the variables PE, SI and FC based on the data collected for the study. While the variable EE indicate an inverse relationship with the BI, as increase in EE has led to a decrease in BI by 1.990 (negative slope -1.990) and vice versa.

\( R^2 \) - implies that 60.2 % (0.602 * 100 = 60.2%) variation on the BI is explained by the variables PE, EE, SI and FC based on the data collected for the study.

### Table 8: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.776(^a)</td>
<td>.602</td>
<td>.585</td>
<td>.30641</td>
</tr>
</tbody>
</table>

\(^a\) Predictors: (Constant), FacilitatingCondition, EffortExpectancy, PerformanceExpectancy, SocialInfluence

### ANOVA\(^a\)

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>13.485</td>
<td>4</td>
<td>3.371</td>
<td>35.907</td>
<td>(.000^a)</td>
</tr>
<tr>
<td>Residual</td>
<td>8.919</td>
<td>95</td>
<td>.094</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22.404</td>
<td>99</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Predictors: (Constant), FacilitatingCondition, EffortExpectancy, PerformanceExpectancy, SocialInfluence

### Coefficients\(^a\)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>5.746</td>
<td>.625</td>
<td></td>
<td>9.187</td>
</tr>
<tr>
<td>PerformanceExpectancy</td>
<td>.420</td>
<td>.071</td>
<td>.525</td>
<td>5.917</td>
</tr>
<tr>
<td>EffortExpectancy</td>
<td>-1.990</td>
<td>.182</td>
<td>-.991</td>
<td>-10.909</td>
</tr>
<tr>
<td>SocialInfluence</td>
<td>.483</td>
<td>.109</td>
<td>.434</td>
<td>4.416</td>
</tr>
<tr>
<td>FacilitatingCondition</td>
<td>.513</td>
<td>.109</td>
<td>.307</td>
<td>4.693</td>
</tr>
</tbody>
</table>

\(^a\) Dependent Variable: BehavioralIntention

\(^b\) Dependent Variable: BehavioralIntention
From figure 8 and table 8, the independent variables (PE, EE, SI & FC) contributed 60.2% of the total variation observed in behavioral intention to accept and use ICT by the university academicians. The correlation and the R² are high, which are 0.776 and 0.602 respectively and the P-value 0.000 is significant. The regression equation Y = 5.746 + 0.420PE – 1.990EE + 0.483SI + 0.513FC, the estimate of the constant, and the coefficients are all significant with P-values 0.000 respectively. We can deduce that an increase in the unit of PE, EE, SI, and FC will cause a positive change in behavioral intention to accept and use ICT by the university academicians. The multiple regressions of the four constructs on BI produce a better result. This has validated the UTAUT model theory, which states that: four constructs have a significant determination on user acceptance of IT innovations [6], as seen in table 3.

Table 9: The Summary of the Trend of Behavioral Intention (BI) as a result of changes in the independent variables - PE, EE, SI and FC.

<table>
<thead>
<tr>
<th>Variables (models)</th>
<th>Coefficients of determination (R²)</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Constants (α)</td>
<td>Slope (β)</td>
</tr>
<tr>
<td>PE</td>
<td>0.050 * 100 = 5%</td>
<td>2.609</td>
</tr>
<tr>
<td>EE</td>
<td>0.146 * 100 = 14.6%</td>
<td>-0.768</td>
</tr>
<tr>
<td>SI</td>
<td>0.009 * 100 = 0.9%</td>
<td>2.962</td>
</tr>
<tr>
<td>FC</td>
<td>0.044 * 100 = 4.4%</td>
<td>2.114</td>
</tr>
<tr>
<td>PE, EE, SI and FC</td>
<td>0.602 * 100 = 60.2%</td>
<td>5.746</td>
</tr>
</tbody>
</table>

Constants (α): These are constant figures of the BI whenever the corresponding figure of the Variables (PE, EE, SI and FC) stands at zero.

Slope (β): Slope of the Variables (PE, EE, SI and FC) Changes on the figures of BI as a result of the corresponding changes on the Variables figures (PE, EE, SI and FC).

R² - implies that 60.2% (0.602 * 100 = 60.2%) variation on the BI is explained by the variables PE, EE, SI and FC based on the data collected for the study.

Table 10: Regression Analysis Summary Outcome

<table>
<thead>
<tr>
<th>Figures</th>
<th>Independent Variables</th>
<th>Dependent Variable</th>
<th>R</th>
<th>R²</th>
<th>Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>PE</td>
<td>BI</td>
<td>.223</td>
<td>.050</td>
<td>.026</td>
</tr>
<tr>
<td>2.</td>
<td>EE</td>
<td>BI</td>
<td>.382</td>
<td>.146</td>
<td>.000</td>
</tr>
<tr>
<td>3.</td>
<td>SI</td>
<td>BI</td>
<td>.096</td>
<td>.009</td>
<td>.340</td>
</tr>
<tr>
<td>4.</td>
<td>FC</td>
<td>BI</td>
<td>.209</td>
<td>.044</td>
<td>.037</td>
</tr>
<tr>
<td>5.</td>
<td>PE, EE, SI &amp; FC</td>
<td>BI</td>
<td>.776</td>
<td>.602</td>
<td>.000</td>
</tr>
</tbody>
</table>

8. DISCUSSION ON THE HYPOTHESES

H01: The independent variables (PE, EE, SI and FC) do not have influence on the dependent variable BI.

From table 4, the independent variable PE is significant with p-value 0.026. Hence PE has positive influence on BI. From table 5, the independent variable EE is significant with p-value 0.000. This also implies that EE have a positive relationship with BI. From table 6, the independent
variable SI is not significant with p-value 0.340. This shows that SI does not have influence on BI. From table 7, the independent variable FC is significant with p-value 0.037. Therefore FC has positive influence on the dependent variable BI. We conclude that for the independent variables (PE, EE & FC), we reject the null hypothesis (H01) and accept the alternative H1, which states that, the independent variables do have influence on the dependent variable BI. However for the independent variable SI, the null hypothesis (H01) is accepted because SI do not have influence on the dependent variable BI.

H02: UTAUT do not predict the successful acceptance of ICT by the academic staff of Nigerian public universities.

From table 8, the four constructs of UTAUT (PE, EE, SI & FC) contributed 60.2% of the total variation observed in behavioral intention to accept and use ICT by the university academicians. The correlation and the R2 are high, which are 0.776 and 0.602 respectively. Since all the coefficients of the four constructs are significant with p-values 0.000 each, we hereby reject the null hypothesis H02 and accept the alternative H1, which states that, UTAUT do predict successful acceptance of ICT by the academic staff of Nigerian public universities.

H03: Nigerian university academic staff rejects ICT acceptance and usage in their workplace.

PE is the extent an individual believes the ICT system will help them do their jobs better (PU). EE is related to how easy an individual believes the system is to use (PEOU). From table 4, PE is significant with p-value 0.026 and EE is significant with p-value 0.000. This implies that the Nigerian university academic staff believes that ICT is useful and easy to use. This influence their acceptance and use of ICT in their workplace. Therefore we reject the null hypothesis (H03) and accept the alternative (H1) which states that; Nigerian university academic staff does not reject ICT acceptance and usage in their workplace.

In summary, our findings shows that performance expectancy, effort expectancy and facilitating condition have a significant positive influence and impact on the behavioral intention to accept and use ICT, by the university academic staff. This shows that university academic staff will intend to use ICT that they believe will improve their job performance, are easy to use and facilitating conditions such as appropriate hardware, software, training and support should be in place by the management.

9. CONCLUSION

This paper confirms the ability of the unified theory of acceptance and use of technology (UTAUT) model to determine users’ acceptance of a technology tools. Other researchers have used descriptive statistics to validate UTAUT model but this paper is using regression analysis to validate UTAUT model. The hypotheses were supported by positive correlations between most of the model constructs towards behavioral intent and use behavior. The study examines the effect of technology acceptance model on ICT usage in Nigerian tertiary institutions. A plot study was conducted at the university of Jos Nigeria, to verify the stated null hypotheses. The UTAUT model theories that four constructs have a significant determination on user acceptance of IT innovations [6]. This was verify using multiple regression of the four constructs on BI as reported on table 8. The regression analysis summary outcome, shows that the best result is obtained by the influence of the four independent variables (PE, EE, SI & FC) on the dependent variable BI. From table10, which is the regression summary outcome, the most influential UTAUT construct on the dependent variable BI is the effort expectancy (EE).

REFERENCES


