The Impacts Of Information Culture on E-Learning Innovation Adoption In Learning Institutions In Nigeria

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ABSTRACT

This study examines the impacts of information culture (individual, institutions, technological and national) on e-learning innovations adoption in Nigeria learning institutions within the context of Technological Acceptance Models (UTAUT and Delone and McLean IS model). The model’s explanatory power differs across institutions due to the level of acceptance or usage behavior of the learning stakeholders. Data are collected from ten (10) universities in six geo-political zones in Nigeria using special criteria such as availability of ICT centres, dynamic web portals for course work management, e-payment, e-admission and e-result processing. The purpose of this study is to examine individual, institutions and national information cultural practices influences on TAMs determinants towards the adoption of e-learning innovations in teaching-learning activities. Further, this study also examines critical core cultural indices and TAMs determinants that influence most learning stakeholders’ intention. This study is analyzed with reliability analysis, correlation analysis and Standardized Regression Weight (using Structural Equation Modeling). The authors’ findings contribute to understanding the effects of cultural contexts in influencing technology acceptance behaviors, and demonstrate the need for research into additional cultural factors that account for technology acceptance.

Keywords: Cross-Cultural Technology Acceptance, Perceived Usefulness, core determinant, Social Influence, TAM2.

I. INTRODUCTION

Several researchers (Ali, 2004; Couts and Tucker, 2012; Nwabufo et al, 2012) had identified several problems, issues and challenges in the implementation of e-learning in developing nations. These include lack of awareness amongst population, low adoption rate, bandwidth and connectivity limitations, computer illiteracy, lack of quality e-learning content, difficulty in engaging learners online and language barrier. Limitation in bandwidth and connectivity will affect the response time of e-learning system among developing nation institutions. Slow response from the e-learning system will create frustration and boredom among users and leads to low satisfaction (Almutairi and Subramanian, 2005). Other researchers are of the opinion that high cost of bandwidth connectivity, poor electricity, lack of manpower to maintain the technology, poor level of literacy and awareness and the fear of the unknown were the major factors to measure the use of technology and Information system such as e-learning.

All these problems and challenges sum up to the poor cultural practices that inhibits the adoption of e-learning innovations and system at the individual, institutions, and national levels. Culture can have an impact on an individual’s decision to adopt and use a specific system (Myers and Tan, 2002). Some cultural aspects such as gender, which is a fundamental aspect of culture, were found to affect the IT adoption process (Gefen and Straub, 1997; Venkatesh and Davis, 2000). Furthermore, TAM by David (1989) was found to hold only in US and Switzerland but not in Japan, implying that TAM may not predict technology use across all cultures in the world (Gefen and Straub, 1997). In other words, this finding is an example of culture that does impact on IT adoption and use. It has now become more imperative to examine the role culture play on the acceptance of e-learning innovations by learning stakeholders.
2. LITERATURE

2.1 cultural implications

Recently, there has been an increase in the amount of cross-cultural research associated with the impact of culture on IT acceptance/ adoption especially in Asia and Europe (Kitsiou et al, 2010). In developing countries, it is important to adopt a holistic approach to cultivate a more mature Information Culture in education system so as to increase the adoption level of the technological innovation. This means that to adopt such a holistic approach, it is necessary to build conditions and capacities for interpreting, evaluating and utilizing information resources (Zheng, 2005). Curry and Moore (2003) considered Information Culture as a culture in which the value and utility of information in achieving operational and strategic success is recognized, where ICT is readily exploitable as an enabler for effective information systems.

Moreover, Martin et al (2003) defined Information Culture as a system of shared meanings and knowledge that are enacted through people, processes and technology. Braa et al (2004) argued that the organizational/institutions and environmental determinants are related to the Information Culture within the context of a given country. Therefore, the organizations which are able to both share information freely and develop cultures of information perform at much higher levels than those that are unable to share information or develop cultures of information. To further this, the development of a locally driven Information Culture is the key to sustainable development (Williamson et al, 2001).

Cultivation of an Information Culture in an institution can create an atmosphere that enables safety professionals to realize the importance of knowledge about and appropriate attitudes towards using ICT in information processing (Yang, 2012). Looking at Information Culture from the perspective of developmental outcomes, one can argue that there are better ways of using information resources than what is currently the case in many parts of the world. This implies that what has been investigated in Information Culture in a certain context of the world may not be applicable to investigating the same area in another context of the world. As previously argued by Braa et al (2004), that investigating Information Culture in a given country is determined by the environmental and the organizational factors within the context of a given country. Moreover, it was argued by Braa et al (2004) that analyzing the data at facility level in a given country is an important aspect of creating a ‘culture of information use, which means that it is important to analyze the data at the local level in a given country. This implies that the institutions readiness for ICT must be visible. Choo et al (2008) regarded Information Culture as those elements of an organization’s culture that influence its management and use of information.

Thus, Information Culture is manifested in the organization’s values, norms and practices that have an impact on how information is perceived, created and used. Values are the deeply held beliefs about the role and contribution of information to the organization as well as the principles that define how information ought to be created and used. Norms are rules or socially accepted standards that define what information behaviors are normal or to be expected in the organization.

Riyaz (2009) argued that the concept of Information Culture is relevant to the ways in which people value, use, handle information and approach. Riyaz (2009) citing Grander (1999) considered Information Culture as one of the six elements of an information infrastructure model. Riyaz stated that misuse of information, the general lack of spatial awareness shown by many decision makers, the widespread fear of information and knowledge and the general lack of good information management practices were the four forces that work against developing and sustaining an Information Culture. Leidner and Kayworth (2006) stressed the importance of understanding a culture in information technologies in that the culture at various levels including national, organizational and group can influence the successful implementation and use of information technology. Learning institutions need to focus on growing an Information Culture underpinned by a performance management framework that is meaningful to stakeholders and supports them in their daily work (Hanson, 2011). Organizational and environmental determinants are related to the Information Culture within the context of a given country. In supporting this opinion, in Africa, the new Information Culture is a hybrid of the new and the old. Therefore, the adoption of the Anglo-American model imposed on the African libraries was inefficient as reported by Plessis (2008). Plessis (2008), added that the Information Culture in Anglo-American societies differ from that in Africa.

Travica (2005) studied the influence of Information Culture on the adoption of a self-service system and he argued that a tendency toward criticizing new things refers to one of the derived information cultural aspects. He pointed out that people in their company like to criticize and complain a lot. Criticizing is the first reaction to almost anything new that occurs in the corporate life. This is especially when the new thing is an Information System as this custom drives attention to downsides of a new system, while pushing potential benefits out of the attention span. Therefore, the adoption of the Information Culture requires senior management support with an emphasis on coordinated leadership rather than merely imposition from the top to down bearing in mind the close links between the organizational culture and Information Culture (Curry and Moore, 2003). Based on these perspectives, four cultural aspects were investigated to see if they have any impacts on TAMs determinants adopting e-learning innovations. The individual aspect was gender and experience on the use of e-learning innovations (computer and Internet). The technological aspect includes ICT and supporting technologies installations.
The institution aspect includes university readiness to use e-learning innovations (e-university plan) and motivations policies on usage of e-learning innovations (such as training, workshop, rewards). The national aspect includes languages (Yoruba, Hausa and Igbo) as a national language normally used in the country.

2.2 Technology Acceptance Models
Unified Theory of Acceptance and Use of Technology (UTUAT): Melanie (2011) citing Venkatesh et al (2003) identified four core determinant of intention and usage and up to four moderators of key relationships. These determinant were performance expectance, effort expectancy, social influence and facilitating conditions. Although, attitude toward using technology, self-efficacy, and anxiety are theorized not to be direct determinants of intention, the key moderators in the model are gender, age, voluntariness, and experience.

DeLone and McLean (D&M) IS model: The distinction of use and intention of any information technology and system was showed in DeLone and McLean (2003) model and it suggest that intention to use may be a worthwhile alternative measure in some contexts, intention is an attitude whereas use is a behavior. Use must precede user satisfaction in a process sense, but positive experience with use will lead to greater user satisfaction in a causal sense. Similarly, increased user satisfaction will lead to increased intention to use. As a result of this use and user satisfaction, certain net benefits will occur.

2.3 TAMs Core Determinants
The TAMs above have key cultural determinant that collectively affects and impacts on the usage and continuous intention of using and deploying e-learning innovations for effective learning. These core determinant constructs are: Self-efficacy/Perceived Ability/Attitude (SE) is the degree to which an individual believes that he or she has the ability to perform specific task/job using computer technology. It is the individual preferences and interests regarding the use of e-learning system. (Venkatesh et al., 2003) and Melanie, 2011)

Perceived Usability (PUsa) is the extent to which a product can be used by specific users to achieve specific goals with effectiveness, efficiency and satisfaction in a specifics context of use. Three factors are identified in usability: Usefulness, ease of use and compatibility (Chiu et al (2006) and Wang (2008)). Hsu et al (2004) theorized that people build positive attitudes towards computerized systems based on cognitive evaluation of how it will improve their performance.

Social Influence (SI) is the degree to which an individual perceives that important others believe he/she should use the new system (Kholoud, 2009)

Perceived Usefulness (Puse): Perceived usefulness is defined as the degree of learning stakeholders’ believes from using e-learning innovations and systems that brings enhance learning outcomes and performances and the measurement adapted from Melanie, 2011. In addition, they stated that perceived usefulness was found to have a strong influence on people’s intentions.

Facilitating Multimedia and Interactive Activities (MI) is the believed that there exist organizational and technical infrastructure for supporting the use of the system (Kholoud, 2009).

Perceived Ease of Use(PEOU) is the degree to which a user aspects the use of e-learning innovations to be free of effort and was measured by Davis (1989). According to Chang et al., (2005), perceived ease of use also found to have a significant impact on attitude, thus affects behavior intentions.

Quality of e-learning Information (IQ) is concerned with timeliness, relevance and accuracy of information generated by an information system. DeLone and McLean (2003) show that information quality had a significant effect on user satisfaction which in turn was significantly related to user acceptance.

Quality of e-learning Service (SEVQ) is concerned with whether or not there are bugs in the system, ease of use, reliability of the user interface, response rates in interactive systems, quality documentation and quality and maintainability of the software. (Hsu et al, 2004; Lee and Lee, 2008; Liaw, 2008).

Quality of e-learning System (SQ) is derived from the comparison between what the user feels should be offered and what was actually offered. (Hsu et al, 2004). The continuous improvement in ICT devices and applications have continue to demand more expanded role of IS department and the importance of information systems in government, commerce and in the academics have continue to increase which have made researchers to comprise service quality as a measure of IS satisfaction and therefore its success.

Perceived Value (PV) in the context of learning is the users’ overall assessment of the product utility based on perceptions of what is received and what is given (Kholoud, 2009). Chiu et al, 2004 citing Rokeach (1973) classified values into terminal and instrumental. Terminal values are concerned with preferred final stage (goals) while instrumental values are related to the ways of behaving to obtain goals such as standards, policies and procedures (Kholoud, 2009).
3. RESEARCH METHODOLOGY

3.1 Study Sampling Procedure

The population of this study covered learning stakeholders (students and lecturers) from ten (10) Nigeria federal universities from six geopolitical zones. Criteria for selection was university has internet presence (website) for online transactions, e-registration, result processing and educational administration; and there is a viable ICT centre(s) installed in the university. The universities covered were University of Benin, Benin City, Edo State (SOUTH SOUTH Region), National Open University of Nigeria, (NOUN) (SOUTH WEST Region), Federal University of Technology, Yola (NORTH EAST Region), Usman Danfodyo University, Sokoto (NORTH WEST Region), Federal University of Technology, Imo State (SOUTH EAST Region), Federal university, Otuoke, Bayelsa State. (SOUTH SOUTH Region), University of Jos, Plateau State (NORTH CENTRAL Region), University of Ibadan, Oyo State (SOUTH WEST Region), University of Lagos, Lagos State (SOUTH WEST Region), Obafemi Awolowo University (OAU), Osun State (SOUTH WEST Region). Data was extracted via questionnaire which was administered for a duration of four (4) months (Jan-April, 2012).

3.2 Instrumentation

The questionnaire has two sections namely demographic section and core determinant for technology acceptance in a learning institution. The instrument of this study is based on Kripanont, (2007). It presents a new set of instrument with some modification according to eleven core determinant variables and five (5) latent variable using five-point Likert scale. The core determinant (independent variables) consist of Perceived Usability (PU), Service Quality (SQ), Information Quality (IQ), Service Quality (SEVQ), Perceived value (PV), Interactive Learning/Multimedia Activities (ILA), Perceived Ease of Use (PEOU), Perceived Usefulness (PUSE), Effort Effectiveness (EE), Social Influence (SI), Self Efficacy (SE). the latent net benefit construct (dependable variables) are Learning stakeholder usage of e-learning innovation in teaching and learning (UTL), Learning stakeholder continuous intention of using e-learning innovation in teaching and learning (CITL), E-learning innovation improves professional practices (PPRAC), E-learning innovation improves personal development (PDEV), and E-learning innovation improves quality of education (PQEDU) (Kripanont, 2007; DeLone and McLean, 2003).

Demographic section consists of gender, education level, level of computer and internet usage, e-university plans. A total of 2500 admissible questionnaires (respondents) consisting of 500 staff (lecturers and IT experts) and 2000 students was randomly selected from the surveyed schools. 2441 (97.6%) of the total questionnaire was successfully retrieved comprising of 2156 (86.24%) valid questionnaire and 285 (11.4%) invalid questionnaire. 59 (2.36%) questionnaires was never returned or lost.

Based on the available fact, we can conclude that the data collected is fit for use in this study in terms of the 86% of valid respondent.

3.3 Research Questions

RQ1: Will information culture of the individual moderate TAMs core determinants influence learning stakeholders’ usage behavior of e-learning innovations in teaching-learning activities?

RQ2: Will information culture of the institution moderate TAMs core determinants influence learning stakeholders’ usage behavior of e-learning innovations in teaching-learning activities?

RQ3: Will information culture of the technological installations in the institution moderate TAMs core determinants influence learning stakeholders’ usage behavior of e-learning innovations in teaching-learning activities?

RQ4: Will information culture of the nation moderate TAMs core determinants influence learning stakeholders’ usage behavior of e-learning innovations in teaching-learning activities?

RQ5: Will information culture of the individual moderate TAMs core determinants influence learning stakeholders’ continuous intention to use e-learning innovations in teaching-learning activities?

RQ6: Will information culture of the technological installations in the institution moderate TAMs core determinants influence learning stakeholders’ continuous intention to use e-learning innovations in teaching-learning activities?

RQ7: Will information culture of the institution moderate TAMs core determinants influence learning stakeholders’ continuous intention to use e-learning innovations in teaching-learning activities?

RQ8: Will information culture of the national level moderate TAMs core determinants influence learning stakeholders’ continuous intention to use e-learning innovations in teaching-learning activities?

RQ9: Will Usage behavior and continuous intention influence the adoption of e-learning innovations for positive professional academic practices, personal development and quality education.

4. RESULT

4.1 Data Analysis and Results

Table 1 shows the demographic data of the respondents. Based on Table 1, a total respondent of gender was fairly accounted (50.5%;49.5%). Most of the respondents are student (90.9%), Lecturer (5.7%), Non academic staffs (3.5%). Most of the respondents was first school certificate holder (71.3%), diploma holder (23.3%), degree holder (3.4%); followed by post graduate holder (2.1%). On the level of computer literacy, there was even distribution among the expert, average, beginner and none users of over 24% each.
On the level of internet literacy, most of the respondents indicated that they are expert in their level of using internet (29.1%), average and beginner (19.9% and 19.4% respectively) and 31.6% have a poor level of the internet. Most of the respondents indicated that 89.8% had used the internet once a month, week and several times daily; and 10.2% have not used it at all. 57.1% indicated that there is no functional information and communication technology (ICT) installed in the institution while 42.9% indicated a functional ICT centre installed in the institution. On the type of usage of e-learning innovations in the institutions surveyed, 53.6% indicated that it is mandatory while 46.4% indicated that it is voluntary.

### Table 1: Demographic data of respondents

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Group</th>
<th>Cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class of Respondents</strong></td>
<td>Student</td>
<td>1960</td>
<td>90.9</td>
</tr>
<tr>
<td></td>
<td>Lecturer</td>
<td>122</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>Non Academics (Administrator, Directors,</td>
<td>74</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Technical/IT Personnel)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Male</td>
<td>1089</td>
<td>50.5</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1067</td>
<td>49.5</td>
</tr>
<tr>
<td><strong>Highest Academic Qualification:</strong></td>
<td>WAEC/GCE</td>
<td>1537</td>
<td>71.3</td>
</tr>
<tr>
<td></td>
<td>Diploma (ND, OND, NCE)</td>
<td>501</td>
<td>23.2</td>
</tr>
<tr>
<td></td>
<td>First Degree (B.Sc., HND, B.ED)</td>
<td>73</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td>Post Graduate (PH.D, M.Sc. Post Graduate D</td>
<td>45</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>ip)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Level of computer literacy</strong></td>
<td>Expert</td>
<td>528</td>
<td>24.5</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>572</td>
<td>26.5</td>
</tr>
<tr>
<td></td>
<td>Beginner</td>
<td>528</td>
<td>24.5</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>528</td>
<td>24.5</td>
</tr>
<tr>
<td><strong>Level of internet literacy:</strong></td>
<td>Expert</td>
<td>628</td>
<td>29.1</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>429</td>
<td>19.9</td>
</tr>
<tr>
<td></td>
<td>Beginner</td>
<td>418</td>
<td>19.4</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>681</td>
<td>31.6</td>
</tr>
<tr>
<td><strong>How often do you use the Internet</strong></td>
<td>Don’t use at all</td>
<td>220</td>
<td>10.2</td>
</tr>
<tr>
<td></td>
<td>Once a month</td>
<td>253</td>
<td>11.7</td>
</tr>
<tr>
<td></td>
<td>Few times a month</td>
<td>275</td>
<td>12.8</td>
</tr>
<tr>
<td></td>
<td>Once a week</td>
<td>330</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td>Use few times a week</td>
<td>176</td>
<td>8.2</td>
</tr>
<tr>
<td></td>
<td>Use five to six times a week</td>
<td>286</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Use about once a day</td>
<td>275</td>
<td>12.8</td>
</tr>
<tr>
<td></td>
<td>Use several times a day</td>
<td>341</td>
<td>15.8</td>
</tr>
<tr>
<td><strong>Functional ICT centre is installed in</strong></td>
<td>Yes</td>
<td>924</td>
<td>42.9</td>
</tr>
<tr>
<td></td>
<td>the institution</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1232</td>
<td>57.1</td>
</tr>
<tr>
<td><strong>Type of usage</strong></td>
<td>Voluntary</td>
<td>1001</td>
<td>46.4</td>
</tr>
<tr>
<td></td>
<td>Mandatory</td>
<td>1155</td>
<td>53.6</td>
</tr>
</tbody>
</table>
Table 2 present the Reliability Analysis, Cronbach’s Alpha reliability coefficients of the entire study and 11 core determinants (dependent variable). A 0.94 (94.1%) of reliability coefficient for the entire study indicated high consistency in the measures used. All the determinants were all above 0.7 except SQ and ILA which were above 0.6. That could be attributed to the state of the e-learning innovations usage and adoption in the country. It seems that this study provides quite reliable instruments for the core constructs in this study. For example, the Perceived Ease of Use (PEOU) is 0.75, Perceived Usability is 0.83, Service Quality 0.81. Reliability less than 0.6 is considered poor, those in the 0.7 ranges, acceptable, and those 0.8 good (Sekaran, 2003). It is of evidence that the Cronbach’s alpha value for the eleven factors in this study ranged from 0.62 to 0.90. Therefore, the internal consistency reliability of the measures used in this study can be considered to be good.

<table>
<thead>
<tr>
<th>Core Construct</th>
<th>Cronbach's Alpha</th>
<th>No. of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Usability (PUSA)</td>
<td>.831</td>
<td>3</td>
</tr>
<tr>
<td>System Quality (SQ)</td>
<td>.623</td>
<td>3</td>
</tr>
<tr>
<td>Service Quality (SEVQ/SV)</td>
<td>.810</td>
<td>3</td>
</tr>
<tr>
<td>Perceived Value (PV)</td>
<td>.736</td>
<td>3</td>
</tr>
<tr>
<td>Interactive Multimedia &amp; Interactive Learning Activities (ILA)</td>
<td>.661</td>
<td>3</td>
</tr>
<tr>
<td>E-Learning Effort Effectiveness (EE/PQ)</td>
<td>.850</td>
<td>3</td>
</tr>
<tr>
<td>Perceived Usefulness (PUSE)</td>
<td>.789</td>
<td>3</td>
</tr>
<tr>
<td>Perceived Ease Of Use (PEOU)</td>
<td>.750</td>
<td>3</td>
</tr>
<tr>
<td>Social Influence (SI)</td>
<td>.890</td>
<td>3</td>
</tr>
<tr>
<td>Information Quality IQ</td>
<td>.904</td>
<td>3</td>
</tr>
<tr>
<td>Self-Efficacy (SE)</td>
<td>.890</td>
<td>3</td>
</tr>
<tr>
<td>Cronbach’s Alpha (Instrument)</td>
<td></td>
<td>57</td>
</tr>
</tbody>
</table>

4.2 Structural Equation Modeling

To seek answers to research questions in this study that are purely behavioural in nature, a careful choice for an accurate statistical techniques that are not subjective to certain assumption must be consider. Here, usage behaviour and continuous intention are behavioural factors that need analytical framework with unique capabilities but yet advance tool like Structural Equation Modeling (SEM). SEM, a statistical technique that is particularly useful for analyzing non-experimental data (Byrne, 2001) has gained an increasingly popular data-analytic technique in socio sciences and humanity. Azleen et al (2008) reported that recent innovations have allowed SEM to become a broad data-analytic framework with flexible and unique capabilities.

4.3 Model-estimation

Analysis of Moment Structure (AMOS) Version 16 was used to estimate the model using SEM with observed and latent variables. Recognition of the reliability of AMOS computations has been established by its increasing use in published studies in reputable journals over the last few years (e.g. Zuroff et al., 1999). Prior to model estimation, each of the multi-item constructs were transformed into totaled scores using equally weighted scales developed from the results of the Confirmatory Factor Analysis (CFA).
Figure 1: Structural Model
4.4 Model Testing Results
The structural models were assessed by using established measures and evaluative criteria for model fit. Several goodness-of-fit indices are commonly used to evaluate how well the structural model fits the data. The chi square goodness-of-fit test is one of the most commonly used indices. In SEM, a non significant chi square value is an indication that the hypothesized model has a good fit with the data. The problem with using chi square, however, is that it is hypersensitive to sample size (Ullman, 2001). Because SEM is grounded in large-sample theory, finding well-fitted hypothesized models, where the chi square value approximates the degrees of freedom, has proven unrealistic, leading SEM methodologists to develop additional practical or ad hoc indices of fit. One approach is to divide the chi square ($\chi^2$) value by the degrees of freedom. According to Carmines and McIver (1981), $\chi^2$/df ratios in the range of 2:1 or 3:1 indicated an acceptable fit between the hypothetical model and the sample data. The most popular alternative measures of fit for SEM analysis, however, are the goodness-of-fit index (GFI), the normed fit index (NFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA).

The GFI, NFI, and CFI all have values ranging from 0 to 1; a good fit is indicated by values greater than .90 for GFI and NFI and .95 and greater for CFI. For RMSEA, a value of 0 is interpreted as an exact fit; values less than .05 are a close fit, values between .05 and .08 are a fair fit, values between .08 and .10 are a mediocre fit, and values more than 1 are a poor fit. Regarding the precision of the RMSEA estimates, AMOS reports a 90% confidence interval around the RMSEA value. MacCallum et al (1996) indicated that a small RMSEA and a very narrow confidence interval suggest good precision of the RMSEA value in reflecting model fit in the population. Finally, Martens (2005) indicated that chi square/df, GFI, and NFI tend to be substantially affected by sample size and number of indicators per factor and do not generalize well across samples. Marten (2005) recommended using CFI and RMSEA as the primary goodness-of-fit indexes.

The results suggest that the data fit the current conceptual model well, with a $\chi^2$ of 16.318(df =15, $p =0.089$), $\chi^2$/df =1.087, CFI =0.743, NFI =0.716, and RMSEA =0.093.

4.5 Hypotheses Testing
The current study proposed to test nine (9) hypotheses in identifying the critical determinant in TAMs that contribute most to influence learning stakeholders’ usage and continuous intention. Details of the hypotheses are stated below:

H1: Information culture of the individual moderates TAMs core determinants towards influencing learning stakeholders’ usage behavior of e-learning innovations in teaching-learning activities.

H2: Information culture of the institution moderate TAMs core determinants towards influencing learning stakeholders’ usage behavior of e-learning innovations in teaching-learning activities.

H3: Information culture of the technological installations in the institution moderate TAMs core determinants towards influencing learning stakeholders’ usage behavior of e-learning innovations in teaching-learning activities.

H4: Information culture of the nation moderate TAMs core determinants towards influencing learning stakeholders’ usage behavior of e-learning innovations in teaching-learning activities.

H5: Information culture of the individual moderate TAMs core determinants towards influencing learning stakeholders’ continuous intention to use e-learning innovations in teaching-learning activities.

H6: Information culture of the technological installations in the institution moderate TAMs core determinants towards influencing learning stakeholders’ continuous intention to use e-learning innovations in teaching-learning activities.

H7: Information culture of the institution moderate TAMs core determinants towards influencing learning stakeholders’ continuous intention to use e-learning innovations in teaching-learning activities.

H8: Information culture at the national level moderate TAMs core determinants influence learning stakeholders’ continuous intention to use e-learning innovations in teaching-learning activities.

H9: Usage behavior and continuous intention influence the adoption of e-learning innovations for positive professional academic practices, personal development and quality education.
The results of the hypotheses testing are accessible in Table 3 and figure 1. It can be clearly shown in the table that two (2) hypotheses (H1 and H2) shows significant in Model A-all Data, Model B-Student and Model C-teaching staff for most TAMs core determinant on usage and continuous intention as indicated by $\beta$ under the HT column.

For the third hypotheses, it was very clear that for model A-All data comprising of student and teaching staff and Model B-Student, E-learning innovations usage in teaching and learning (UTL) and continuous intention of using e-learning innovation (CITL) will improve professional practices (PP/PPRAC), personal development (PD/PDEVE), and qualitative education (PQ/PQEDU) except CITL vs PD/PDEVE.

For model C-Teaching Staff, E-learning innovations usage in teaching and learning (UTL) will improve professional practices (PP/PPRAC) and personal development (PD/PDEVE), and not qualitative education (PQ/PQEDU) and continuous intention of using e-learning innovation (CITL) will not improve professional practices (PP/PPRAC) and personal development (PD/PDEVE) but will improve qualitative education (PQ/PQEDU).

**5. CONCLUSION**

This study is assured to have strong reliable determinant to assess learning stakeholders’ intention and continuous intention in using e-learning innovations in teaching learning activities. This is based on the result of Cronbach Alpha that was performed by reliability analysis for eleven core determinant (independent variables) and five latent construct (dependent variable). The empirical results of our study can provide support for Davis (1989), Venkatesh et al (2003), DeLone and McLean (2003) models.

Furthermore, this study proves strong and positive relationship between TAMs determinants with learning stakeholders’ usage and continuous intention of using e-learning innovations in teaching learning activities. The usage behavior (UTL) on e-learning innovations was influenced by all core determinant while continuous intention (CITL) for all data (student and teaching staff) was influenced by all determinant except for Effort efficiency (0.881), Perceived Usability (0.106) and Service Quality (0.995). This study suggests that learning stakeholders’ usage and continuous intention of using e-learning innovation can be improved if the e-learning innovation is flexible and easy to use towards improving their professional practices, personal development and qualitative education. Once learning stakeholders’ usage behavior improves, the eleven core determinant of TAMs will in turn influence the learning stakeholders continuous intention for using e-learning innovations for professional practices, personal development and qualitative education. This study is an exploratory study of TAMs particularly in e-learning innovation adoption in learning institution in developing country.

However, it is quite difficult to be generalized since the study did not consider all the universities including private and state universities. In future, the sample of the study should consider both federal, state and private universities student and teaching staffs in Nigeria.

**REFERENCES**


Melanie, D. L., (2011), Validating and testing a model to predict adoption of electronic personal health record systems in the self management of chronic illness in the older adult, a Ph.D dissertation, University of Arizona


