

## **Influence of Digital Divide and Experience on Nigerian University Students' Attitude Towards the Use of Information Communication Technologies for Learning**

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### **Abstract**

Recent studies have shown that factors influencing technology use include, but are not limited to, accessibility and availability. Several studies in developed countries revealed that digital division and experience significantly influence students' attitude towards ICT utilization. However, there is lack of empirical evidence to show that such variables do influence ICT utilization by Nigerian students. This study examined the influence of digital divide and experience on Nigerian university students' utilization of information communication technologies. Two research hypotheses were formulated for the study. A self-constructed and validated twenty-five- item instrument was used to gather information from one thousand and five hundred randomly selected respondents in three public universities in Ogun State, southwestern Nigeria, while t-test statistical method was used to analyze the data collected. Findings revealed that there is a significant difference in the perception of digital native and digital immigrant students in attitude towards ICT utilization ( $t = 3.25, p < 0.05$ ). The findings of this study also showed that there is no significant difference in the perception of digitally experienced and less experienced students in attitude towards ICT utilization ( $t = 1.16, p > 0.05$ ). Based on the findings, it was recommended that postgraduate students in Nigerian universities should be further encouraged not to allow age to influence their perception towards ICT utilization negatively. Also, Nigerian Government should subsidize the cost of ICT devices in order to make them affordable to all students.

**Keywords:** digitally experienced; digital divide; ICT; 21st century abilities; education

### **Introduction**

Information communication technology has now become the most preferable means of generating and disseminating information, hence the society is increasingly conscious of technology literacy. It is seen as a continuum of knowledge, skills and strategies that individuals acquire in the course of their lives through interactions with peers and communities around them (Oliver, 2008). According to Olori and Osikoya (2018), educational media have an undoubted role to play in contemporary endeavour. In support of this assertion the Federal Government of Nigeria (Federal Republic of Nigeria, 2014) stipulates in the National Policy on Education that the goal of education is to promote information and communication technology at all levels. The 21st century skills include not only creativity, innovative, critical thinking, problem solving and collaborating, but also ability to efficiently utilize new technologies to communicate with others for educational purpose.

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There are studies showing that the use of ICT will improve students' learning and it is interesting to see how students in Nigerian universities are making the best use of the opportunity. It has been asserted by Sánchez, Salinas, Contreras and Meyer (2011) that undergraduates who use ICT were found achieving better results in communication, cooperation and problem solving in learning. Trilling and Fadel (2009) as well as Margaryan, Littlejohn and Vojt (2011) claimed that the use of ICT supports the improvement of students' mental and creative abilities. Most importantly, in a study conducted by Mark and Shearer (2016) it was reported that undergraduates were highly ranked in using animations software, visual design and design software. On the other hand, Efe and Efe (2011) in their study found that 87 % of students in Nigeria showed a negative attitude towards the use of digital technologies for learning. Students in Nigerian universities use Smartphones to play games, listen to music, chat with friends and watch videos for entertainment. Ugwu (2010) asserted that majority of students in Nigerian universities (undergraduate and postgraduate) do possess a Smartphone which they use only for social media activities.

Ever since the beginning of the 21<sup>st</sup> century, several studies have tried to explore factors that influence successful utilization of information technology by students in universities. Thornham and McFarlane (2011) pointed out that any technological change in educational practice necessitates the development of users' perception toward the new technology. A number of publications are directed towards significant relationship between undergraduates' perception and successful ICT integration. Ofoegbu and Uche (2013) revealed that a positive perception towards ICT is widely recognized as a necessary condition for the effective use of information technology for learning. Malliari, Korobili and Zapounidou (2011) reported that undergraduates' negative perception served as a barrier towards information technology utilization for learning. Selwyn (2008) believed that undergraduates' use of ICT is influenced by several factors and these factors could be unpredictable. Studies revealed that students' ICT utilization is significantly influenced by attitude, acceptability, availability and accessibility. However, it could be suggested that if these factors could influence the utilization of the factor of digital divide and experience might also play a significant role.

There are two groups of students who use ICT - they are digital natives and immigrants. According to Prensky (2001), the digital natives are the generation of students who grow up in the era of ubiquitous digital technology, while the digital immigrants are students born before the widespread use of digital technology. In Nigeria the use of ICT became popular in 2000 with Y2K compliance. It was a period when Nigerian government started to be aware in the need for all citizens to be computer-literate. Therefore, in the Nigerian context the immigrants are citizens born before the use of ICT became widespread, precisely before 2000. It should be noted that as a result of the popularity of information communication technology by 2001 most developing countries like Nigeria had developed ICT policies in recognition of its enormous potential and to avoid being left behind (Adomi and Igun, 2008). The Federal Republic of Nigeria (2001) in her national policy for ICT stated that with the objectives and implementation guidelines there is an ICT roadmap for the country. Bennett and Maton (2018) explained that digital natives prefer to communicate through the internet, using instant messaging, social media chats, video conferencing, webcams, e-mail etc. They prefer social media to phone calls, believe that internet is real, pleasurable and view internet in terms of interaction rather than passive materials presented there. On the other hand, digital immigrants prefer traditional communication such as face-2-face conversation, using postal services, sending text messages through phone, talking on the phone or in person and think that young people waste their lives on the internet.

Ktoridou and Eteokleous-Grigoriou (2011) in their study focused on the attitude of digital natives and immigrants towards ICT utilization in two groups of university students: face-to-face students and online students. The findings suggest that interaction between teacher and students was anyway significant, whether they belong to the Net generation or not. Also, Hargittai (2010) in a study on the attitude of distance learning students towards ICT utilization found that there is no significant difference in the attitude of digital natives and immigrants towards ICT utilization for their study. Contrarily, in a study by Li and

Ranieri (2011) on the utilization of ICT by University students in China, it was found that the majority of the students in the digital native group were significantly more efficient in the use of ICT compared to the immigrants. Li and Ranieri (2010) also reported in their study that the natives were significantly better in their attitude towards ICT when compared to their counterparts in the immigrant group. In another study by Bennett and Maton (2018) on the rate of using ICT among school teachers, it was found that the majority of the natives were more efficient in the use of ICT than the immigrants. Ktoridou and Eteokleous-Grigoriou (2011), as well as Ferro, Helbig and Gil-Garcia (2017) revealed that the immigrants showed a more positive interest towards the use of ICT for their study than the natives.

Utilization of ICT facilities is preceded by user's ICT experience which enables them to take advantage of ICT and satisfy their information need. According to Sánchez et al. (2011); Ferro, Helbig and Gil-Garcia (2017), a digitally experienced person is someone who has been using ICT for six years and above with basic experience in the use of applications such as word processing, excel, spreadsheet, page maker, etc. Sometimes, an experienced user will display a high level of digital literacy, digital fluency, ICT proficiency, and digital self-efficacy, Internet surfing experience, confidence in technology utilization, digital skills, ability to share knowledge through the internet and competence of using social media. On the other hand, a digitally less experienced person is said to have started using ICT less than six years ago and has not fully mastered basic ICT experience. It has been established through literature that experience in ICT use has a significant influence on students' attitude towards ICT utilization and that students who have little or no ICT experience have a negative attitude to its use (Bennett & Maton, 2018).

ICT experience has the capacity to provide a higher interactive potential for users to develop their critical thinking, problem solving, creative thinking and collaborative abilities. Students who have been using digital media for six years and above have confidence in using ICT compared with their counterparts with little or no ICT experience (Thornham & McFarlane, 2011). In developed countries, ICT-experienced students make use of ICT for learning more often than ICT-less-inexperienced students (Mark & Shearer, 2016). Teachers and students will, therefore, need digital experience if they must succeed in a technologically developing world (Malliari et al., 2011). In a study by Luu and Freeman (2011), the researchers found no significant difference in ICT proficiency level between ICT-experienced and ICT-less-experienced students. In a similar study by Hargittai (2010), there was no significant difference in the attitude towards using computer technology between digitally-experienced and less-experienced students. This study sits on the Technology Acceptance Model (TAM) that is an information systems theory that studies how users come to accept and use a technology (Davis, 1989). The model explains the perceived usefulness, the ease of use and the decision to use IT in the field of education. Park, Roman, Lee, and Chung (2009) showed that both perceived usefulness and perceived ease of use and decision to utilize them are the factors in users' acceptance of digital technologies. This model explains the fact that the decision to utilize information and communication technology is influenced by users' perception and this rests on digital literacy and experience.

### **Statement of the Problem**

Information and communication technology has globally brought a lot of creativity and innovation to education. Nigerian students are expected to make use of ICT for various educational activities such as completing assignment, collaborating with other students and individualization of learning. However, it has been reported in some studies that the majority of students in Nigerian universities have not been using ICT for their studies. Many of the studies pointed out that the reason why many students usually develop apathy towards ICT could be attributed to its non-availability and inaccessibility. It is imperative to pay attention to some factors that are usually neglected but are in essence fundamental to university students' utilization of digital technologies. This study investigates the influence of digital divide and experience on university students' perception of ICT utilization.

## Research Hypotheses

- i. There is no significant difference in the attitude of digital-native and digital-immigrant university students towards ICT utilization.
- ii. There is no significant difference in the attitude of digitally-experienced and less-experienced university students towards ICT utilization.

## Methodology

This study adopted the survey research design. The population of this study consists of all undergraduate and postgraduate students of three public universities in Ogun state, Southwestern Nigeria. One thousand and five hundred students constitute the sample size. Three public Universities in Ogun state were purposively selected, while the simple random procedure was used to select the respondents from the three universities. The instrument named "Attitude towards ICT utilization Questionnaire" (AICTUQ) was self-constructed. It is divided into two sections; section A sought students' demographic information such as name of institution, student's age, programme of study and years of using ICT, while section B which included 25 questions sought information on ICT utilization attitude. It is a four-point Likert scale with 'strongly agreed', 'agreed', 'disagreed' and 'strongly disagreed' answers. It was given to two experts in Educational technology for face and content validity. After the necessary correction, it was trial-tested on 50 students with similar characteristics who were not part of the study. A test-retest method was used and it was subjected to Cronbach alpha, and a reliability co-efficient value of 0.65 was obtained. Six research assistants were used for the study. Two research assistants, one undergraduate and one postgraduate student were selected in each university. The research assistants administered the questionnaires in the three universities and the process was monitored by the researcher. *T-test* statistical method was employed for the hypotheses at 0.05 level of significance.

## Results

**H01:** There is no significant difference in the attitude of digital-native and digital-immigrant university students towards ICT utilization.

**Table 1:** Independent sample t-test showing significant difference in the attitude of digital- native and digital-immigrant students towards ICT utilization

Group	N	Mean	SD	Std Error	t-cal	Sig of t
Digital Natives	932	46.12	4.24	0.42	3.25	0.025
Digital Immigrants	568	42.21	4.09	0.25		

@ 0.05 significance level

The result in table 1 revealed a significant outcome ( $t = 3.25, p < 0.05$ ). This result shows that there is significant difference in the attitude of digital-native and digital-immigrant students towards ICT utilization. The mean students' attitude towards ICT utilization ( $\bar{x} = 46.12$ ) obtained by digital-native students is significantly higher than the mean students' attitude towards ICT utilization ( $\bar{x} = 42.21$ ) recorded by digital-immigrant students. Hence, the difference is statistically significant. Therefore, it can be deduced that there is significant difference in the attitude of digital- native and digital-immigrant students towards ICT utilization.

**H02:** There is no significant difference in the attitude of digitally-experienced and less- experienced university students towards ICT utilization.

**Table 2:** Independent sample t-test showing no significant difference in the attitude of digitally-experienced and less-experienced students towards ICT utilization

Group	N	Mean	SD	Std Error	t-cal	Sig of t
Digitally Experienced	785	41.25	4.60	0.43	1.16	0.252
Digitally Less Experienced	715	40.87	4.05	0.15		

@ 0.05 significant level

The result in table 2 revealed a non-significant outcome ( $t = 1.16, p > 0.05$ ). This result shows that there is no significant difference in the attitude of ICT-experienced and less-experienced students towards ICT utilization. The students' mean perceptions towards ICT utilization ( $\bar{x} = 41.25$ ) obtained by the digitally-experienced students was merely higher than the students' mean attitude towards ICT utilization ( $\bar{x} = 40.87$ ) recorded by the digitally-less-experienced students. Hence, the difference is statistically insignificant. Therefore, it can be concluded that there is no significant difference in the attitude of digitally-experienced and less-experienced students towards ICT utilization.

## Discussion

The findings for the first hypothesis revealed that there is a significant difference in the perception of digital-native and digital-immigrant students on the attitude towards ICT utilization. The findings of this study were in line with the work of Li and Ranieri (2010) who reported that digital natives were significantly better in their attitude towards ICT when compared with their counterparts in the digital-immigrant group. Also, it supported the findings of Bennett and Maton (2018) in a study on the rate of using ICT among secondary school teachers, which revealed that the majority of the digital natives were found to be significantly more efficient in the use of ICT than the digital immigrants. The reason for the difference could be that digital natives make use of all kinds of smart phones for social media more easily, with more pleasure than digital immigrants. The findings for the second hypothesis revealed that there is no significant difference in the perception of digitally-experienced and less-experienced students in their attitude towards ICT utilization. The findings of this study were in line with the work of Luu and Freeman (2011), which found that both digitally-experienced and less-experienced students showed a significant interest in the use of instructional media for their study. Also, in a similar study by Hargittai (2010) no significant difference was found in the attitude towards the use of computer technology between experienced and less experienced students. The reason for the insignificant difference may be the 21<sup>st</sup> century factor which requires from every citizen to be technologically literate irrespective of education level and socio-economic background.

## Conclusion

In the 21<sup>st</sup> century driven by information and communication technology, the majority of university students are digital natives, however, some, due to various factors like family background, gender, age, etc., may be digital immigrants. The utilization of ICT is considered to be influenced by the perceived group one belongs to in terms of digital divide and experience. It is important to

know whether it is really so. The study revealed that the digital natives participating in the research showed more interest in the use of ICT than the digital immigrants. On the other hand, there was no significant difference in the attitude of experienced and inexperienced ICT users because both showed interest in ICT utilization.

## Recommendations

In line with the findings of this study the following recommendations can be made:

- (1) Postgraduate students who are considered as digital immigrants should be further encouraged to make use of ICT and other digital devices for their learning;
- (2) Nigerian government should subsidize the cost of ICT devices so that they would be affordable to all students;
- (3) The young students who are considered as digital natives should be encouraged to use ICT for their studies rather than social media activities;
- (4) The digitally less experienced students should be further encouraged to improve ICT utilization skills;
- (5) Nigerian university system should work towards full adoption of ICT for teaching and research activities
- (6) Faculties should provide continuous ICT training and workshop for all categories of students at the university, as this may help them to develop in ICT utilization

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