

DEMOGRAPHIC VARIABLES AND SOCIAL NETWORKING-COMPETENCE AS DETERMINANTS OF UNDERGRADUATES' USE OF SMARTPHONES AS COLLABORATIVE LEARNING MEDIA IN PRIVATE UNIVERSITIES IN OYO STATE, NIGERIA

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Abstract

This study investigated demographic variables (age and gender) and social networking-competence as determinants of undergraduates' use of smartphones as collaborative learning media (CLM) in private universities in Oyo State, Nigeria. A descriptive research design of the ex-post facto type was adopted. Purposive and total enumeration sampling techniques were employed to select 530 undergraduates who were in their third year (300L) from the two private universities in the state. A structured questionnaire tagged Demographic Variables, Social Networking-Competence (SNC) and Undergraduates' Use of Smartphones as Collaborative Learning Media (DVSNCUUSCLM) with reliability coefficients of 0.85 and 0.81 for SNC and undergraduates' use of smartphones as collaborative learning media respectively were used to collect data. Five research questions were answered in the study. The findings showed that the majority 500(97%) of the undergraduates involved in the study used smartphones as CLM. The following were the mostly used smartphones among the undergraduates: Blackberry 490(97%), Techno 390(76%) and Nokia Class 300(58%). The mostly used social network sites were Facebook 510(99%), YouTube 450(87%) and Twitter 400(78%) in that order. Demographic variables (age) and SNC had joint significant contribution to undergraduates' use of smartphones as CLM [$F_{(3,512)}=35.635, p<0.05$], while SNC [$\beta=.59, t=8.59$] and age [$\beta=.46, t=7.36, p<0.05$] had relative significant contributions to undergraduates' use of smartphones as CLM. However, gender did not. Based on the findings of this study, therefore, age, gender and SNC should be important factors to be considered in the use of smartphones among the undergraduates as CLM in the Nigerian universities for effectiveness and efficiency.

Keywords: Demographic variables, Social networking-competence, Undergraduates' use of smartphones; Collaborative learning media, Private universities.

Introduction

The ideas of "social networking" have existed for several decades as a means of people interactions and building relationships among the people of a society. Therefore, with the increase in the use of technology in communicating with others

and the popularity of the internet, "social networking" has become an activity that is done primarily on the internet, with sites such as Facebook, Twitter, MySpace, Bebo, Linked In among others (Coyle and Vanghn, 2008). Social networking sites (SNS) can be

defined as Web-based services that allow individuals to (a) construct a public and semi-public profile within a bound system, (b) articulate a lot of other users with whom they share a connection and (c) view and traverse their list of connections and those made by others within the system (Boyd and Ellison, 2007). They opined further that SNS have been popular since the year 2002 and have attracted and fascinated millions of internet users across the globe. Though, only a few have gained worldwide publicity and attention. For instance, the Federal Bureau of Investigation (FBI) in the US (2015) estimated that there are over 200 different sites that are used for social networking. The Bureau explained further that most people who are members of these sites are mostly teenagers and adolescents between 15 and 30 years of age. They use them on a daily basis. For example, Facebook has over 400 million users, while, MySpace has over 100 million users.

Furthermore, SNS are also described as a body of applications that augment group interaction and share spaces for collaboration, social connections and aggregate information exchanges in a web-based environment. Research has shown that many people connect to social networks sites at least once a day either to check their profiles or to participate in different online activities (Johnson and Lenhart, 2009). Facebook, Flickr, LinkedIn, Twitter, MySpace and YouTube are the most commonly known social network sites containing similar as well as different features. However, Facebook is found to be the most popular and most heavily visited social network site used by the undergraduates in Nigeria for classroom-related collaborative activities, such as arranging study groups and learning about course processes (Egunjobi, 2012a).

Moreover, students, particularly the undergraduates in Nigerian universities make use of smartphone such as Blackberry, Techno, Nokia, Samsung galaxy, HTC and iPhone among others to access all these SNS for their collaborative learning tasks (Egunjobi, 2012b).

Smartphone is a gadget that allows people to make phone calls as well as use other features that are not common on conventional phone. It is christened smartphone because of its smartness in operating system which manages the gadget's hardware and software. It also has internet connectivity, either through Wi-Fi or 3G/AG. In fact, with smartphones, students have instant access to numerous websites for questions and answers for their collaborative learning activities (Egunjobi, 2012b). He opined further that for video assignments, students can record their films using smartphones and send them to a computer for editing through mobile learning. Smartphones are used mostly by the students for mobile learning (m-learning) as a gateway to tools and resources.

M-learning makes learning more personalised and creates bridges over the gaps between teacher and student. It opens up the opportunity to learn all the time. In fact, with the use of smartphones, students can solve assignment, problems, read books, download books and articles send and receive messages as well as make and receive calls and a lot of other activities. However, some addicted students may use smartphones for the wrong things such as watching pornographic films on the internet in lieu of using them for their collaborative learning tasks (Egunjobi, 2012b).

Moreover, impact of mobile smartphones in learning enhances students' academic performance in various ways. They easily promote collaborative and

different types of learning through their wireless connection to the internet. In the classroom situation, mobile smartphones motivate students to be more engaged to the instruction by promoting learner-centred participation in the instructional processes. Lampe (2013) identified the main impacts of mobile smartphones on the students' learning as motivation, portability and collaboration. For motivation, where smartphones are used as m-learning devices, most especially in a large classroom, students appear to be more engaged in learning processes. The phones increase students' will to learn. They take the initiative of using the device as a learning tool. In fact, teachers reported that the use of smartphones in instructional process enhances group participation in activities done during the learning process (Egunjobi, 2012b). The portability of the smartphones enables students' learning to take place anywhere, anytime, anyhow in obtaining/retrieving and storing course information via their smartphones as they are carrying them from one lecture/class to another or wherever.

Meanwhile, their portability can improve a wide variety of learning settings, namely a field trip, in the classroom, or outside the campus or classroom. For the collaboration, students access the SNS such as Facebook, Twitter, Google among others through their smartphones which allow them to form groups so as to distribute and add together their knowledge and share information with ease. The outcome of this could result into a more successful collaborative learning. More so, the use of smartphones also results to increasing parents' involvement in their wards' education, thus enhancing their children's learning capabilities.

According to Carlson (2014), the

following elements are crucial in using and developing smartphone applications in m-learning contexts:

- (a) **Connectivity:** The capacity to establish a physical connection (in this case, wireless) with other portable or fixed devices in an autonomous fashion using technologies such as WiFi, Wimax, 3G, 4G or Bluetooth.
- (b) **Condition of personal proximity:** This connotes that, portability and proximity give the smartphone the possibility of generating and transferring information of personal and private nature in an immediate fashion.
- (c) **Spontaneity:** It is an intention of use which arises from the need to accessing information on communicating with a course-mate or teacher in an immediate and spontaneous fashion. This feature allows users the possibility of interacting and participating in social networks, providing a powerful tool to support collaborative and ubiquitous engagement in educational contexts.
- (d) **Mobility:** The types are identified thus: (i) spatial, that is, where displacement in a particular geographical area is considered such as lecture rooms, homes, offices among others. (ii) Temporal, that is, the intensity and frequency of use during the day or night, week or month and so on. (iii) Contextual, this is in the areas of education, entertainment, organisation or working activities.

However, the following technical and usability limitations of the smartphones as m-learning devices had been identified by Egunjobi (2012b) as small screen size, relatively low battery life, memory and data rate capacities which should be considered for effective and efficient collaborative learning tasks. In the effective and efficient utilisation of smartphones as devices for

SNS, the competence of the users or students is paramount. This competence involves skills for developing and analysing relevant information for interacting and collaborating with peers as well as for managing the instructional processes which are fundamental requirements for effective learning. Meanwhile, this competence is based on today's online and networked media environment which requires a more complex digital or website literacy that is often not explicitly taught in schools. Therefore, this environment requires that young people should develop new skills to participate and stay safe in the new digital media environment. Consequently, there are a number of components to online media literacy skills that constitute the SNS competence. These include:

- Mobile media literacy skills: These involve the familiarity with the skills and forms of communication specific to mobile phones, mobile web literacy and an understanding of mobile phone etiquette.
- Technical literacy skills: These consist of the knowledge and skills required to use smartphones, web browser or particular software programme or application in accessing SNS for collaborative learning activities.
- Creative content and visual literacy skills: These are in addition to the skills to create and upload image and video content. It also includes understanding how online visual content is edited and constructed, what kind of content is appropriate and how copyright applies to their activities while utilising SNS for collaborative learning tasks.
- Communicative and social networking literacy skills. These involve an understanding of the many different spaces of communication on the web, the

formal and informal rules that govern or guide what is appropriate behaviour, level of privacy (and therefore level of safe self-disclosure for each); and how to deal with unwanted or inappropriate communication through them.

- Critical content literacy skills: These involve the ability to effectively use search engines and understand how they order information, who or what organisations created or sponsored the information, where the information comes from and its credibility and/or nature.

All these aforementioned and discussed skills should be properly acquired and utilised by the undergraduates for effective, efficient and meaningful accessibility of SNS for collaborative learning tasks.

The collaborative learning is a form of student to student interaction. It was first adopted in the industry in USA to promote productivity in the 1930s. It has been considered as an effective instructional strategy for both conventional and open distance learning. Based on the internet and powerful computing techniques, smartphone-supported collaborative learning can shorten the learning time and the venue. It can enable learning and communication to take place synchronously or asynchronously. People from different fields can raise different view points through the collaborative learning process as well. Students can also contribute and share their knowledge. However, several differences can be identified as existing between e-learning and the smartphone-supported collaborative learning. On the other hand, the latter should focus more on interactive process, active learning and knowledge sharing. Generally, in this digital age, most undergraduates are christened "Digital

Natives”, therefore, students are beginning to demand for more flexibility and alternative modes of delivery of instruction and more multimedia-enriched and interactive course materials. The mobile smartphone could be of useful media for collaborative learning for these digital natives and also alternative mode to the instructional delivery strategy.

Meanwhile, in this digital age, the “digital natives”, that is, the undergraduates have peculiar demographic characteristics in terms of age and gender. These two variables have significant factors to be considered in terms of SNS utilisation. For instance, research revealed that, young female adults of ages 18-29 are more powerful users of SNS than their male counterparts within the age group (Doring, 2013). She explained further that nearly 7(out) of 10 online users are females, while, 3 are males. Though, both males and females are enthusiastic users of mobile phones, the latter tend to be the driving force for social networking to gain relatively larger and intense social groups than the former. For instance, occasions such as birthdays and anniversaries are remembered and nurtured mainly by females in order to maintain the fiber of family bonds and social relationships. More so, mobile phones in the hands of females sustain this nurturing quality of womanhood.

According to Cavus and Ibrahim (2013), teenage girls (13-19 years) communicate more intensely over cell phones than their male counterparts. But teenage boys concern themselves more with mobile communication technology than girls do, that is, the latter fancy things such as colour and look of the phone, whereas the former are more enthusiastic about the technical features of the phone. Teenage girls communicate in a more emotional manner, over mobile phones than boys do,

that is, girls add more expression and feeling via their phone communication than boys (Doring, 2013).

In Nigeria, almost young adults are online with 90% of 16-29 years old using the internet daily. They spend more time online with an average of 22 hours per week than any other age group. These are mostly students in the tertiary institutions in the country. Therefore, the importance of SNS in young adults’ lives is indisputable since 98% of this age group is online daily utilising the SNS (Egunjobi, 2012b).

There are paucity of researches on private tertiary institutions particularly, privately owned universities due to their relative **recency** in their establishments compared with the government established and controlled universities (Federal and State) in Nigeria. This study, therefore, investigated the demographic variables (age and gender) and social networking-competence as determinants of undergraduates’ use of smartphones as collaborative learning media (CLM) in private universities in Oyo State, Nigeria.

In Oyo State, at present, there are two private universities, namely: Lead City and Ajayi Crowther Universities established in Ibadan and Oyo town in 2003 and 2005 respectively. The Lead City University (LCU) was established by the Eduserve Consult as the proprietor, while, the Ajayi Crowther University (ACU) was established by the Supra Diocesan Board (West) of the Church of Nigeria, Anglican Communion. The LCU has the following faculties: Arts, Social Sciences and Entrepreneurial Studies, Information Technology and Applied Sciences, Education and Law, while, the ACU has the following faculties: Humanities, Natural Sciences, Social and Management Sciences and Law.

II. Research Questions (RQ)

The following questions were answered in the study.

1. Do the undergraduates in the private universities in Oyo State use smartphones as collaborative learning media?
2. What types of smartphones do the undergraduates in the private universities in Oyo State use as collaborative learning media?
3. What are the mostly used SNSs by the undergraduates in private universities in Oyo State as collaborative learning media?
4. What is the joint contribution of demographic variables (age and gender) and social networking, competence to undergraduates' use of smartphones as collaborative learning media in private universities in Oyo State?
5. What are the relative contributions of demographic variables (age and gender) and social networking competence to undergraduates' use of smartphones as collaborative learning media in private universities in Oyo State?

III. Research Design

The descriptive research design of the *ex-post facto* type was adopted in the study because the existing variables were

investigated. There was no manipulation of any variable in the study.

IV. Population and Sampling Technique

The target population for this study consisted of all 300 level undergraduates in the selected faculties in the two universities viz: Social Sciences and Entrepreneurial Studies (SSES), Arts, Education and Information Technology and Applied Sciences (ITAS) from LCU and Humanities (HUM), Natural Sciences (NS), Social and Management Sciences (SMS) from ACU. The Faculty of Law in LCU is still under accreditation by the National University Commission (NUC) while, that of ACU first started admitting students. Thus, the faculty could not be used for the study. The 300 level undergraduates in the two private universities were purposively selected for the study because they have spent a reasonable number of years in the universities hence; they have fully acclimatised with the university system and possessed SNS competence for their learning tasks. Total enumeration was used to select 530 students from the two private universities chosen for the study. Table 1 shows the distribution of the selected undergraduates from the two universities used for the study

Table 1: Selected Undergraduates from Universities Used for the Study

LCU Faculties	Age		Gender		Total
	15-18	18-25	Male	Female	
Arts	20	10	16	14	30
Education	25	15	19	21	40
ITAS	45	10	35	20	55
SSES	50	20	37	33	70
Total	140	55	107	88	195
ACU					
Humanity	30	15	20	25	45
NS	70	20	40	50	90
SMS	150	50	95	105	200
Total	250	85	155	180	335
Grand Total	390	140	262	268	530

V. Instrumentation

The main instrument used for the data collection was a structured questionnaire christened "Demographic Variables, Social Networking-Competence and Undergraduates' Use of Smartphones as Collaborative Learning Media (DVSNCUUSCLM). The questionnaire has three sections A – C. Section A consists of the demographic information of the respondents such as name of the university, gender, age, level of study and faculty. Section B contains items on types of smartphones for SNS mostly used, social networking competence of the respondents. It is made up of 25 SNS and 30 items one of which is on Yes/No and other on four likert format of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with ($r = 0.85$). Section C is on undergraduates' use of smartphones as collaborative learning media. It has 25 items on four likert format of SA, A, D and D with reliability coefficient of 0.81. Meanwhile, the reliability coefficients were found reliable and adequate for the study.

VI. Data Collection Procedure

Table 2: Frequency and Percentages Distribution of Respondents' Use of Smartphones as Collaborative Learning Media

Options	Frequency	Percentage (%)
Yes	500	97.1
No	15	2.9
Total	515	100.0

In Table 2, finding reveals that 500(97.1%) respondents indicated that they were using their smartphones as collaborative learning media, while 15(2.9%) indicated they did not. This implies that, the majority of the undergraduates are using their smartphones as collaborative learning media (CLM). This finding is corroborated with that of Egunjobi

The data were collected from the respondents in two privately owned universities used for the study by the help of two research assistants, one for each of the two universities. They were properly trained on how the questionnaire will be administered to the respondents. In LCU, 195 questionnaires were administered, out of which 190 were returned and properly filled, while in ACU, 335 were administered, out of which 325 were filled properly. However, the total returned rate is 515 (97%) which was found adequate and appropriate for the study.

VII. Results and Discussion of the Findings

The data collected were analysed based on the research questions answered in the study.

RQ 1: Do the undergraduates in the private universities in Oyo State use smartphones and collaborative learning media? Table 2 shows the finding.

(2012b), that the majority of the undergraduates in Nigeria universities utilized smartphones as CLM.

RQ 2: What types of smartphones do the undergraduates in the private universities in Oyo State use as collaborative learning media? Table 3 presents the findings.

Table 3: Percentage of Distribution of the Types of Smartphones used by the Undergraduates in Private Universities in Oyo State as CLM

Types of smartphones	Frequency	Percentage %	Remark
Blackberry	490	95.1	* 1
HTC	40	7.7	5
IPhone	200	38.9	6
Nokia class	300	58.3	* 3
Samsung Galaxy	250	48.5	4
Techno	390	75.7	* 2

* mostly used

From Table 3, finding reveals that the mostly used smartphones as CLM are Blackberry 490 (95.1%), Techno 390 (75.7%) and Nokia class 300(58.3%) in that order of magnitude. This connotes that Blackberry is the mostly used smartphone as CLM among the undergraduates in Oyo State followed by Techno and Nokia class. This finding

supports that of Afenkhen (2014) that Blackberry was found to be most commonly used among the students in the university used for the study. Also, the finding corroborated that of Motiwalla (2014) that Techno and Nokia class were the mostly used smartphones in mobile learning by students in Japan.

RQ 3: What are the mostly used SNSs by the undergraduates in the private universities in Oyo State as CLM? Table 4 shows the finding.

Table 4: Percentage Distribution of the Mostly Used SNSs by the Undergraduates in the Private Universities in Oyo State as CLM

SNSs	Mostly used		Rarely used		Never used		Remark
	Frequency	%	Frequency	%	Frequency	%	
Facebook	510	99.0	5	.01	-	-	**1
Google talk	250	48.5	200	38.8	200	38.8	
MySpace	200	38.8	100	19.4	500	97.1	*
Skype	150	29.1	90	17.5	490	95.1	*
Twitter	400	77.7	100	19.4	15	2.9	** 3
YouTube	450	87.4	50	9.7	15	2.9	**2

** mostly used SNSs

* never used SNSs

Table 4 indicates that the mostly used SNSs are Facebook 510(99%), YouTube 450(87.4%) and Twitter 400(77.7%), while, MySpace 500 (97.1) and Skpe 490(95.1%) were never used SNSs by the respondents. This connotes that Facebook is the most

popularly used SNS among the undergraduates in the private universities used for the study. This finding is in line with that of Egunjobi (2012b), Salomon (2013), Afenkhen (2014) and Busari (2015) that students in higher institutions in

Nigeria mostly utilised Facebook, Twitter and 2Go for social interaction as collaborative learning media in their various studies.

RQ 4: What is the joint contribution of the demographic variables (DV) (age and

gender) and social networking competence (SNS) to undergraduates' use of smartphones as collaborative learning media in private universities in Oyo State? Table 5 shows the finding.

Table 5: Summary of Regression Model of DV, SNC and Undergraduates' Use of Smartphones as CLM

R = .826 R Square = .615 Adjusted R Square = .610					
Model	Sum of Square	Mean Square	Df	F	Significance
Regression	13022.748	4340.916	3	35.635	.000*
Residual	48085.952	95.871	512		
Total	62108.7		515		

* Significant at $p < 0.05$

From Table 5, finding reveals that variables (age, gender and social networking competence contributed $R^2 = .610$, that is, 61.0% to variation in the use of smartphones as collaborative learning media. Moreover, all the variables had joint significant contribution to the use of smartphones as CLM [$F_{(3,512)} = 35.635$, $p < 0.05$]. This finding supports that of Lampe (2013), Doring (2013) and Carlson (2014) that variables such as gender, age, field of study had

significant joint contribution to students' use of smartphones as collaborative learning media.

RQ 5: What is the relative contribution of demographic variables (age and gender) and social networking competence (SNC) to undergraduates' use of smartphones as CLM in private universities in Oyo State? Table 6 presents the finding.

Table 6: Summary of Regression Model for Relative Contribution of Demographic Variables (Age and Gender) and Social Networking-Competence (SNC) to Undergraduates' Use of Smartphones as Collaborative Learning Media (CLM)

Variables	Unstandardised Coefficients		Standard Coefficients	T	Significant
Age	.897	.098	.461	7.361	.000*
Gender	.168	.131	.098	1.415	.181NS
SNC	.952	.066	.587	8.591	.000*

* Significant at $p < 0.05$

NS = Not Significant

Table 6 indicates that SNC ($\beta = .587$, $t = 8.591$) and age ($\beta = .461$, $t = 7.361$, $p < 0.05$) had

significant contributions to undergraduates' use of smartphones as CLM, while, gender

did not. This implies that SNC contributed most significantly and this is followed by age. This finding corroborates that of Rosenberg (2012), Doring (2013), Carlson (2014) and Busari (2015) that students' social networking competence had significant contribution to their use of smartphones as CLM, while, age most especially the younger students (15-25 years) are more technology-friendly than the older students (25 years and above). Hence, the former are christened "Digital Natives" while the latter are tagged "Digital Migrants". However, gender had no significant contribution because both male and female undergraduates of the same age group particularly the "digital natives" are at par in the use of smartphones as CLM. That is, there is gender equality in their technos-applicability to learning tasks.

VIII. Conclusion

Based on the findings of this study, the following could be conclusively deduced: demographic variables such as age contributed significantly to the undergraduates' use of smartphones as CLM, while, gender did not. SNC also had significant contribution to undergraduates' use of smartphones as CLM.

IX. Recommendations

From the findings of this study, the following are proffered:

1. Age is a significant factor to be considered for effective and efficient use of smartphones as collaborative learning media among the undergraduates in Nigerian universities.
2. Gender equality should be encouraged among the undergraduates in Nigerian universities in the use of smartphones as CLM, while, gender stereotype should be put into oblivion.

3. Social networking competence should be significantly considered and motivationally encouraged among the undergraduates in the Nigerian universities in the use of smartphones as collaborative learning media.
4. Nigerian universities should endeavour to make provisions for functional ICT facilities coupled with constant power supply for teachers and students' use in their teaching and learning activities.

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