

**USE OF SMARTPHONES FOR ACADEMIC ACTIVITIES  
AMONG LIBRARY AND INFORMATION SCIENCE  
UNDERGRADUATE STUDENTS IN FEDERAL UNIVERSITIES IN THE  
NORTHWESTERN STATES OF NIGERIA**

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**Abstract**

*This study examined the use of smartphones for academic activities among Library and Information Science (LIS) undergraduate students in federal universities in the Northwestern States of Nigeria. A quantitative technique was adopted, using a cross-sectional survey research design. A total of 2,113 LIS undergraduates in federal universities in the northwestern states of Nigeria formed the population, out of which 634 (30%) were selected using a proportionate stratified sample technique. A structured questionnaire was distributed to this sample. The findings indicated that LIS undergraduate students in federal universities in the northwestern states of Nigeria used smartphones heavily and predominantly for making calls, accessing general information, and sending text messages. Concerning the type of academic activities LIS undergraduate students in federal universities in the northwestern states of Nigeria use smartphones for, the study revealed that the students heavily used smartphones for uploading learning materials, sending text messages about class assignments, and doing assignments. This study highlights the high frequency of smartphone use among Nigerian Library and Information Science undergraduates for academic and non-academic activities. The study concluded that Library and Information Science undergraduate students in federal universities in Nigeria use smartphones for academic activities. Meanwhile, smartphones have become indispensable tools for accessing information, conducting research, and communicating. The study recommended that emphasis should be geared toward integrating smartphones into the education curriculum*

*and collaborating with policymakers, educators, and stakeholders to maximize the benefits of smartphones among LIS students.*

**Keywords:** Smartphones, Academic activities, Library and Information Science, undergraduate students, Northwestern states, Nigeria

## **Introduction**

Smartphones have transformed into a crucial device in our day-to-day lives. Smartphones are used for communication, information access, learning, and knowledge acquisition. In various demographic groups and countries, ownership and usage of smartphones are increasing (Poushter, 2016). For instance, the International Telecommunication Union's (ITU) 2022 report indicates that 75% of individuals aged ten and above worldwide own a mobile phone. Conversely, owing to the increase in smartphone ownership and penetration, Kwon et al. (2013) noted that smartphones have become part of everyday life and are used throughout the day for a variety of reasons, ranging from communication, productivity, entertainment, utilities, social networking, and gaming. Numerous applications (apps) are available for every possible use, age, and preference. The capacity of the smartphone makes it possible to play and store thousands of images, songs, applications, and games, as well as tens of videos—a capability that is also gratifying for its users. Also gratifying, according to Lepp, Barkley and Karpinski (2015), is the ability of smartphones to allow users to call, text, email, video conference, microblog, interact on social networks, surf the Internet, watch and share videos and pictures, play video games, hold meetings in real-time, and use a huge range of software-driven applications.

Nowadays, smartphones are an effective e-learning platform owing to their combination of communication platforms like videoconferencing, chats, and voice mail. Studies Wang, Shen, Novak and Pan (2009) and Hossain (2019) have found that smartphones are useful for university students in classrooms, learning vocabulary, and learning a second language. However, smartphone addiction is worsening due to affordability and the increasing use of smartphones, leading to unprecedented spending of time (Fu, Chen & Zheng, 2020). Even though smartphones have negative consequences, many students view smartphones as comfortable tools for interaction and learning, neglecting the negative consequences (Looi et al., 2016; Yi, You, & Bae, 2016).

Despite the widespread use of smartphones, there are still questions about their potential effects on education and the best ways to use them for learning. Understanding the potential of smartphones is crucial for effective student engagement and academic innovation. This study investigates the use of

smartphones for academic activities among Library and Information Science undergraduate students in federal universities in the northwestern states of Nigeria.

### **Statement of the Problem**

Smartphone usage among tertiary students has surged in the past decade. Smartphones are used for knowledge discovery, social connections, academic tasks, entertainment communication, enhancing teaching and learning, health promotion, and business transactions (Sun, Wang & Wang, 2023). Smartphone use among university students has been a topic of debate. Some scholars argue that smartphones improve academic performance by enhancing efficiency and facilitating teamwork (Chen & Yan, 2016; Samaha & Hawi, 2016). However, others see smartphones as potential distractions, with students using them primarily for entertainment rather than study tools (Lepp, Barkley, Sanders, Rebold and Gates, 2015). Besides, Walsh (2012) indicated that multitasking with a smartphone can lead to smartphone addiction. Also, students often avoid speculative, in-depth reading, or analysis-related information. Paradoxically, Ayyagari, Grover and Purvis (2011) and Tarafdar, Gupta and Turel (2013) indicated that smartphones can interfere with life necessities, including academic activities, when used wrongly. Lee, Chang, Lin and Cheng (2014) pointed out that some individuals have developed a habit of using smartphones, leading to compulsive use and addiction. This study aims to investigate the use of smartphones for academic activities among Library and Information Science undergraduate students in federal universities in Nigeria.

### **Objectives of the Study**

The objectives of this study are to;

1. identify the purpose of smartphones use by Library and Information Science undergraduate students in federal universities in the northwest states of Nigeria.
2. find out the type of academic activities Library and Information Science undergraduate students in federal universities in the northwest states of Nigeria use their smartphones for.
3. determine the frequency of use of smartphones among Library and Information Science undergraduate students in federal universities in the northwest states of Nigeria.

### **Literature Review**

The study used Bandura's social cognitive theory as a theoretical framework. According to Bandura's social cognitive theory, the environment, behaviour and

cognitive factors interact as determinants of one another (Bandura, 1986). Cognitive processes refer to all characteristics previously learned, including beliefs, expectations, and personality characteristics. Behaviour refers to anything that we do that may be rewarded or punished. Context refers to the environment or situation in which the behaviour occurs, which includes rewarding or punishing factors. Although the theory has six constructs (LaMorte, 2019; US Department of Health & Human Services, 2018), namely reciprocal determinism, behavioural capability, observational learning, reinforcement, outcome expectation, and self-efficacy, Miwa (2005) indicated that the central premises of Banduras' theory that are particularly useful for the study of information behaviour are three:

- i. Triadic reciprocal causation indicates that behavioural, cognitive, and other environmental influences all operate interactively as determinants of each other.
- ii. Multiple levels of goals cognitively generate future events that motivate present human behaviour. Bandura (1989) included multiple levels of goals to explain how higher-level distal goals of general principles control lower-level goals of context-specific plans.
- iii. Self-efficacy assumes that people generate their thoughts, behaviour, and affective states and that these affect the course of their thoughts, behaviour and affective states, which in turn affect the courses of action people choose to take, the amount of effort they put forth, and their resistance to failure.
- iv.

In this study, we can better understand the use of smartphones for academic and nonacademic activities through the social cognitive theory outcome expectations construct. Bandura (1986) argues that a person's behaviour is partially shaped and controlled by their cognition and social relations based on expected outcomes. Based on these postulations, smartphone users' perception of the benefits and expected outcomes can raise or regulate their usage behaviour (LaRose, Mastro and Eastin, 2001; Bayer, Campbell & Ling, 2015). According to Bandura (1986), outcome expectations include novel sensory, social, enjoyable, and self-reactive incentives. Besides, smartphones integrate into all facets of users' lives and function as hubs for social and academic activities, which, according to Salehan and Nagahban (2013), desisting from participating in these activities could potentially result in social exclusion. Bandura (1982) and Compeau and Higgins (1999) suggest that people are more likely to engage in behaviours if they expect positive outcomes or rewards.

In an attempt to identify the purpose of smartphone usage among undergraduate students in Malaysia, Nasser, Loh, Rashid, Sharifat, Ahmad,

Ibrahim, Mustafa, Hoo, Ching, and Suppiah (2020) conducted a cross-sectional survey among 1060 Malaysian undergraduate students. The study found that the top reason for using smartphones was social networking and communication (66.8%), followed by education-related purposes (21%). WhatsApp (72.0%) was the most widely used smartphone application, followed by Instagram (13.7%) and Facebook (7.5%). WhatsApp was preferred for communication, while Instagram was more popular than Facebook, with Facebook usage exceeding 6%. Undergraduate students use their smartphones primarily for both educational and social networking purposes.

Using a cross-sectional survey among 842 undergraduates from 101 universities in developing countries on smartphone use patterns, Atas and Celik (2019) found that most students in developing countries use smartphones for 3 years, spending 5 hours per day on them. They check their phones 28 times a day and spend 4 hours connecting to the internet. Over 80% of students use smartphones for everyday tasks, while 47.7% read lecture notes for educational purposes. The findings also indicated that smartphones offer useful services like information searching, mobile banking, and location-based services. According to Kim (2013), the perceived utilitarian value of smartphone services positively affects user behaviour and enhances social relationships.

Similarly, Falleiro (2016) conducted a study on the use of smartphones. The study found WhatsApp (94.6%) as the most popular mobile app among undergraduate students at the University of Goa, followed by games (81.6%), online shopping (79%), Facebook (76.2%), online videos (62.6%), and video calls (56.46%). However, the less popular apps include Instagram, Google, Truecaller, Hike, Opera Mini, Zomato, Clean Master, Dictionary, Camera360, BeautyPlus, Candy Camera, and Retrica. Owing to this diverse application, presumably, students are bound to spend more time using their smartphones, as indicated by Lee, Chang, Lin, and Cheng (2014), who found that students with smartphones are prone to spending too much time using them for various purposes such as communication, Internet surfing, etc., hence disrupting their personal and social activities, including education.

In their study, Singh and Samah (2018) and Agboola and Amoto (2020) found that the relationship between cell phone use and academic activities is complex. On one hand, cell phone use can have positive effects, such as improving students' reading abilities, enhancing their academic performance, and increasing their participation in classroom activities. On the other hand, it may also have negative effects, such as causing distractions during class, and reducing academic performance due to excessive use. Specifically, Agboola and Amoto

(2020) explored the use of cell phones for academic activities among undergraduate students of the Federal University of Technology Minna (FUTM). Using a questionnaire to collect data from 379 respondents, the results of the study showed that the majority of 224 respondents (59.7%) strongly agreed that they use smartphones for academic activities, with a mean score of 6.0 compared with 11 (2.9%) who disagreed with the assertion. Based on the literature, it could be seen that features of the smartphone, such as connectedness, portability, ease of operation, and the convergence of several platforms, make it a valuable learning device among university students.

The study by Ifeanyi and Chukwuere (2018) examined the use of smartphones for academic activities and its associated impact on learning activities among students of North-West University (NUW), South Africa. The study found that students use their smartphones for academic purposes. For example, the finding shows that the majority of the respondents—160 (42.7%)—use their smartphones for "doing research," followed by "doing assignments" which is 733 (19.5%). Also, the respondents indicated "downloading study material" as another reason for using a smartphone with 63 (16.8%) responses, followed by "access to lecture slides" with 38 (10.1%), "recording live lectures" with 25 (6.7%) and "watching tutorial videos" with 15 (4.0%). The finding suggests that smartphones growing capabilities in handling complex tasks, ease of operation, fast internet access, and strong screen reading and viewing qualities contribute to their use for academic-related activities.

Regarding the frequency of use of smartphones in this study, undergraduate students in federal universities established virtual environments through smartphones within a social context and interacted in this environment as they could choose activities and associate them with other social factors. Therefore, students with frequent interactions and visits to various virtual platforms, especially those who have acquaintances who use smartphones in harmful ways, are more likely to acquire smartphone addiction-like behaviour themselves (Park & Park, 2014). Habit is an "automatic behaviour which is triggered by situational cues, such as places, people, and preceding actions." (Oulasvirta, Rattenbury, Ma & Raita, 2011, p. 2). Accordingly, the frequency of using a smartphone as an environmental factor indicates how frequently they visit a virtual environment by checking their smartphone, app notifications, or even how much time they spend daily in this selected environment and the amount of time spent.

With the prevalence of smartphone use among undergraduate students, several studies were conducted to uncover the frequency, duration, and activities they engaged in while using a smartphone. Tugtekin, Kurt, and Demir (2020)

studied 255 undergraduate students at the University of Turkey, examining the relationship between fear of missing out, smartphone usage, and social networking fatigue. Results showed that 55% of participants checked their social media accounts daily, 33.5% every hour, and 11.2% every other day. Email checking frequency was also low, with 4.0% per hour. Participants frequently used social networks like WhatsApp, Facebook, Instagram, Snapchat, and Twitter. Smartphones were preferred by 96.65% of respondents, followed by computers and tablet computers.

Also, Alsayed, Bano, and Alnajjar (2020) conducted a cross-sectional study to evaluate how often students use smartphones for educational purposes at the College of Nursing of King Saud bin Abdul Aziz University. The study found that 94.8% of students consciously keep their phones with them at all times, and 92.6% check their phones as soon as they wake up in the morning. The most common use of smartphones identified more frequently in group studies than in individual studies, was for accessing website information (93.3%). Besides, a reasonable number of students mentioned participating in WhatsApp study groups (89.6%). Additionally, 85.2% of respondents reported using social media sites for academic purposes. The study concludes that undergraduate nursing students heavily rely on their smartphones for learning and communication.

## **Methodology**

The study adopted quantitative research methodology, using a cross-sectional survey research design. The population comprised undergraduate students in the Department of Library and Information Science (LIS) in three federal universities in the Northwestern States of Nigeria: Ahmadu Bello University, Zaria; Bayero University, Kano; and Federal University Dutsin-Ma, Katsina, State. A total of 2,113 Library and Information Science undergraduates in federal universities in the northwestern states of Nigeria formed the population, out of which 634 (30%) were selected using a proportionate stratified sample technique. In this regard, each university offering LIS was divided into strata based on students' levels. The study included only Library and Information Science undergraduate students in federal universities in Northwestern Nigeria who own a smartphone and are between 200 and 400. A structured questionnaire was developed and distributed to the respondents. Six hundred and thirty-four (634) questionnaires were administered to the respondents for this study, out of which 491 (77.49%) were duly completed, which form the basis for the analysis. The data collected was analysed descriptively in the form of frequency and percentage, mean and standard deviation, using the International Business Machine (IBM) Statistical Package for Social Sciences (SPSS) version 25.0.

## Result and Discussions

This sub-section presents result of the study and discussion in line with the objectives of the study.

### Uses of Smartphones by Library and Information Science Undergraduate Students in Federal Universities in Northwest States of Nigeria

The first objective of this study sought to uncover the purpose of smartphone use by Library and Information Science undergraduate students. Table 1 shows their response rates.

**Table 1: Uses of Smartphones by Library and Information Science Undergraduate**

<b>Students in Federal Universities in Northwest States of Nigeria.</b>			
<b>S/N</b>	<b>Use of Smartphone</b>	<b>Frequency</b>	<b>Percentage (%)</b>
1.	Making phone calls	478	97.4
2.	Texting message	458	93.3
3.	Video conferences	415	84.5
4.	Social networking	454	92.5
5.	Internet surfing	391	79.6
6.	Playing games	349	71.1
7.	Taking selfie	352	71.7
8.	Gambling/betting	192	39.1
9.	Watching Video/TV series	440	89.6
10.	Accessing general information	471	95.6
11.	Listening to music	454	92.5
12.	Setting alarm alert	429	87.4
13.	Checking clock	448	91.2
14.	Checking Mails	454	92.5
15.	Engaging in academic activities	452	92.1
16.	Downloading	465	94.7
17.	Accessing health information	399	81.3
18.	Mobile banking	432	88.0
19.	Sharing information with lecturers and fellow students	453	92.3
20.	Making voice calls	455	92.7
21.	Making video calls	443	90.2
22.	Watching pornography	190	38.7
23.	Listening to news	397	80.9
24.	Chatting and posting picture on Instagram	386	78.6
25.	Cyber bullying i.e., sending threatening or	162	33.0



intimidating messages

The findings in Table 1 revealed that the respondents use smartphones heavily. They use smartphones heavily because, out of the 25 items listed as reasons why they use smartphones, the majority 22 (88%) items recorded 70% or higher responses. Three main activities overwhelmingly recorded the highest responses to the use of smartphones. These are the uses of smartphones to make calls, which recorded the highest response of 478 (97.3%), while access to general information and sending text messages recorded 471 (95.6%) and 458 (93.3%) responses, respectively. Worthy to note is the fact that undergraduate students rarely engage in the act of vices. As indicated in Table 4.3, only 192 (39.1%) respondents indicated the use of a smartphone for watching photography, 190 (38.7%) for cyberbullying, i.e., sending threatening or intimidating messages, and 162 (33.0%) for gambling or betting.

The findings of this study are in line with those of Mwabungulu and Mungwabi (2017), Zickuhr (2011), and Atas and Celik (2019), who reported high use of smartphones for texting messages, calling, checking social media profiles, and searching the Internet by students. Correspondingly, they also indicated low usage of smartphones in such areas as setting an alarm, checking the time, making photo or video recordings, etc. In analyzing the theoretical argument for smartphone use, the findings influenced the Social Cognitive Theory—outcome expectation construct. These findings suggest that expected benefits such as information seeking, social contact, entertainment, relaxation, and self-reactivity are significant predictors of heavy smartphone usage. Moreover, a previous study (Youn, 2016) has indicated that cognitive expectations, such as information seeking, entertainment, and self-reactiveness, positively influence users' experiences, which are associated with relational, functional, or enjoyable benefits from using smartphones.

### **Types of Academic Activities Library and Information Science Undergraduate Students in Federal Universities in Northwestern States of Nigeria Use Smartphone for.**

The second objective was to determine the academic activities respondents engaged in with their smartphones. Table 2 displays response rates.

**Table 2: Types of Academic Activities Library and Information Science Undergraduate Students in Federal Universities in Northwestern States of Nigeria Use Smartphone for**

S/N	Use of Smartphones for Academic Activities	Frequency	Percentage (%)
1.	Texting about class assignments	476	96.9
2.	Up/Downloading learning materials	477	97.1
3.	Checking reference materials	460	93.7
4.	Accessing online quizzes	292	59.5
5.	Engaging in tutorials	259	52.7
6.	Viewing course power point slides	355	72.3
7.	E-Mailing about assignments	378	77.0
8.	Taking class notes	369	75.2
9.	Doing research	450	91.6
10.	Doing assignment	459	93.5
11.	Checking web portal	435	88.6
12.	Recording class presentations	333	67.8
13.	Making translations	321	65.4
14.	Recording class lectures	349	71.1
15.	Viewing course pictures and diagrams	390	79.4
16.	Viewing course video	328	66.8
17.	Supplementary notes taking	328	66.8
18.	Sharing information with colleagues	447	91.0
19.	Sharing information with lecturers	342	69.7
20.	Downloading course related materials	460	93.7
21.	Reading related documents in PDF, Word or others	453	92.3
22.	Accessing reference resources such as dictionaries, directories, encyclopedia etc.	453	92.3
23.	Accessing course contents	443	90.2
24.	Note taking	397	80.9

Analysis of the findings on the usage of smartphones for academic activities shows that 477 (97.1%) of the respondents used smartphones for up-and-downloading learning materials, followed by texting about class assignments with 476 (96.9%) responses. Again, 460 (93.7%) of the respondents used their smartphones for "checking reference materials" and "downloading course-related material" with the same response rate. Additionally, the findings indicated that 459 (93.5%) of the respondents used smartphones for doing assignments, whereas 447 (91.0%) of the respondents used their smartphones for sharing information with their colleagues. Overall, like the result on the general uses of smartphones,

the use of smartphones for academic purposes also indicates heavy usage, with 17 out of the 24 items listed recording 70% and above.

The results of this study also support those of Ifeanyi and Chukwuere (2018) and Agboola and Amoto (2020), who discovered that the majority of undergraduate students use their smartphones for academic purposes as well as to interact with their peers and lecturers. Despite the setback in smartphone usage for academic-related activities, it can be concluded that Library and Information Science undergraduate students are receptive to learning from new information technology, particularly smartphones and their various applications.

While viewing the usage of smartphones for academic activities through the lens of social cognitive theory (outcome expectation), Peters (2007) contends that as long as a medium is still being domesticated, outcome expectations continue to be an excellent predictor of medium usage and habit strength. In this study, students expect effectiveness and efficiency due to the advanced features of smartphones, motivating their behavioural intention to use them. Based on this, students are more likely to use smartphones for academic activities when they have a positive perception that they will improve learning efficiency and academic achievement. However, excessive smartphone use can hamper learning due to distractions from popups.

### **Frequency of smartphones use among Library and Information Science Undergraduate Students in Federal Universities in Northwest States of Nigeria**

The third objective was to determine the frequency of smartphone use among Library and Information Science undergraduate students in federal universities in the northwestern states of Nigeria. To achieve this, the respondents were provided with a list of options to rate the frequency of their smartphone use using the Likert 5-point scale: never = 1, rarely = 2, sometimes = 3, somewhat frequently = 4, very frequently = 5. Table 4.5 presents the findings.

**Table 3: Frequency of Smartphones Use among Library and Information Science Undergraduates in Federal Universities in Northwest States of Nigeria**

S/N	Smartphones Use	Frequency of Smartphones Use					Mean	Standard Dev.
		Never	Rarely	Sometimes	Somewhat Frequently	Very Frequently		
<b>Section (A) Items on frequency of General Smartphone Use</b>								
		Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)		
1.	Making phone calls	12 (2.4%)	66 (13.1%)	35 (7.0%)	33 (6.6%)	345 (68.7%)	4.29	1.20
2.	Texting message	6 (1.2%)	83 (16.5%)	123 (24.5%)	61 (12.2%)	218 (43.4%)	3.82	1.20
3.	Video conferences	41 (8.2%)	179 (35.7%)	117 (23.3%)	44 (8.8%)	110 (21.9%)	3.01	1.30
4.	Social networking	15 (3.0%)	73 (14.5%)	61 (12.2%)	67 (13.3%)	275 (54.8%)	4.05	1.25
5.	Internet surfing	39 (7.8%)	84 (16.7%)	99 (19.7%)	78 (15.5%)	191 (38.0%)	3.61	1.36
6.	Playing games	113 (22.5%)	127 (25.3%)	115 (22.9%)	52 (10.4%)	84 (16.7%)	2.73	1.38
7.	Taking selfie	68 (13.5%)	102 (20.3%)	140 (27.9%)	78 (15.5%)	103 (20.5%)	3.09	1.33
8.	Gambling/betting	307 (61.2%)	43 (8.6%)	86 (17.1%)	28 (5.6%)	27 (5.4%)	1.83	1.22
9.	Watching Video/TV series	28 (5.6%)	76 (15.1%)	145 (28.9%)	121 (24.1%)	121 (24.1%)	3.47	1.18
10.	Accessing general	11 (2.2%)	72 (14.3%)	129 (25.7%)	96 (19.1%)	183 (36.5%)	3.75	1.17

11	Listening to music	10(2.0%)	98 (19.5%)	133 (26.5%)	78 (15.5%)	172 (34.3%)	3.6	1.2
12	Setting alarm alert	20 (4.0%)	89 (17.7%)	165 (32.9%)	62 (12.4%)	155 (30.9%)	3.5	1.2
13	Checking clock	19 (3.8%)	63 (12.5%)	109 (21.7%)	81 (16.1%)	219 (43.6%)	3.8	1.2
14	Checking mails	15 (3.0%)	74 (14.7%)	137 (27.3%)	125 (24.9%)	140 (27.9%)	3.6	1.1
15	Checking website pages	12 (2.4%)	88 (17.5%)	142 (28.3%)	114 (22.7%)	135 (26.9%)	3.5	1.1
16	Downloading	21(4.2%)	61 (12.2%)	117 (23.3%)	101 (20.1%)	191 (38.0%)	3.7	1.2
17	Accessing health information	34 (6.8%)	93 (18.5%)	169 (33.7%)	116 (23.1%)	79 (15.7%)	3.2	1.1
18	Mobile banking	16 (3.2%)	77 (15.3%)	113 (22.5%)	145 (28.9%)	140 (27.9%)	3.6	1.1
19	Sharing information with lecturers and fellow students	15 (3.0%)	75 (14.9%)	112 (22.3%)	119 (23.7%)	170 (33.9%)	3.7	1.1
20	Making voice calls	18(3.6%)	72 (14.3%)	99 (19.7%)	64 (12.7%)	238 (47.4%)	3.8	1.2
21	Making video calls	38 (7.6%)	86 (17.1%)	109 (21.7%)	106 (21.1%)	152 (30.3%)	3.5	1.3
22	Watching pornography	261(52.0%)	99 (19.7%)	65 (12.9%)	32 (6.4%)	34 (6.8%)	1.9	1.2
23	Listening to	46(9.2%)	133(26.5%)	154(30.8%)	73(14.5%)	85(16.9%)	3.0	1.2

.	news	)	5%)	7)	)	)	4	2
24	Chatting	58	90	109	79	155	3.3	1.4
.	and posting	(11.6%)	(17.9%)	(21.7%)	(15.7%)	(30.9)	7	0
	picture on			)				
	Instagram							
25	Cyberbullyi	265	54	85	33	54	2.1	1.4
.	ng i.e.,	(52.8%)	(10.8%)	(16.9%	(6.6%)	(10.8%)	0	0
	sending			)				
	threatening							
	or							
	intimidating							
	messages							

**Section (B) Items on frequency of Smartphone Use for Academic Activities**

26	Texting	11	72	129	96	183	3.7	1.1
.	about class	(2.2%)	(14.3%)	(25.7%	(19.1%)	(36.5%)	5	7
	assignments			)				
27	Up/Downlo	10	98	133	78	172	3.6	1.2
.	ading	(2.0%)	(19.5%)	(26.5%	(15.5%)	(34.3%)	2	1
	Learning			)				
	Materials							
28	Checking	20	89	165	62	155	3.5	1.2
.	reference	(4.0%)	(17.7%)	(32.9%	(12.4%)	(30.9%)	0	2
	materials			)				
29	Accessing	19	63	109	81	219	3.8	1.2
.	online	(3.8%)	(12.5%	(21.7%	(16.1%)	(43.6%)	5	3
	quizzes		)	)				
30	Engaging in	15	74	137	125	140	3.6	1.1
.	Tutorials	(3.0%)	(14.7%)	(27.3%	(24.9%)	(27.9%)	1	4
				)				
31	Viewing	12	88	142	114	135	3.5	1.1
.	course	(2.4%)	(17.5%	(28.3%	(22.7%)	(26.9%)	5	4
	power point		)	)				
	slides							
32	E-Mailing	21	61	117	101	191	3.7	1.2
.	about	(4.2%)	(12.2%)	(23.3%	(20.1%)	(38.0%)	7	1
	assignments			)				
33	Taking	34	93	169	116	79	3.2	1.1
.	class notes	(6.8%)	(18.5%)	(33.7%	(23.1%)	(15.7%)	3	4
				)				
34	Doing	16	77	113	145	140	3.6	1.1
.	Research	(3.2%)	(15.3%)	(22.5%	(28.9%)	(27.9%)	4	5

35	Doing assignment	15 (3.0%)	75 (14.9%)	112 (22.3%)	119 (23.7%)	170 (33.9%)	3.7 2	1.1 8
36	Checking web portal	18 (3.6%)	18 (3.6%)	99 (19.7%)	64 (12.7%)	238 (47.4%)	3.8 8	1.2 6
37	Recording class presentations	38 (7.6%)	86 (17.1%)	109 (21.7%)	106 (21.1%)	152 (30.3%)	3.5 1	1.3 0
38	Making translations	261 (52.0%)	99 (19.7%)	65 (12.9%)	32 (6.4)	34 (6.8)	1.9 4	1.2 4
39	Recording Class Lectures	46 (9.2%)	133 (26.5%)	154 (30.7%)	73 (14.5%)	85 (16.9%)	3.0 4	1.2 2
40	Viewing course pictures and diagrams	58 (11.6%)	90 (17.9%)	109 (21.7%)	79 (15.7%)	155 (30.9%)	3.3 7	1.4 0
41	Viewing course video	259 (51.6%)	56 (11.2%)	83 (16.5%)	37 (7.4)	56 (11.2%)	2.1 3	1.4 2
42	Downloading tutorial sets	11 (2.2%)	72 (14.3%)	129 (25.7%)	96 (19.1%)	183 (36.5%)	3.7 5	1.1 7
43	Supplementary notes taking	10 (2.0%)	98 (19.5%)	133 (26.5%)	78 (15.5%)	172 (34.3%)	3.6 2	1.2 1
44	Sharing information with colleagues	256 (51.0%)	57 (11.4%)	87(17.3%)	35 (7.0)	56 (11.2%)	2.1 4	1.4 1
45	Sharing information with lecturers	14 (2.8%)	72 (14.3%)	134 (26.7%)	95 (18.9%)	176 (35.1%)	3.7 1	1.1 8
46	Reading related documents in PDF,	117 (23.3%)	75 (14.9%)	119 (23.7%)	68 (13.5%)	112 (22.3%)	2.9 7	1.4 7

	Word or others						
47	Accessing reference resources such as dictionaries, directories, etc.	59 (11.8%)	86 (17.1%)	113 (22.5%)	79 (15.7%)	154 (30.7%)	3.3 7 1.3 9
48	Accessing course contents	262 (52.2%)	53 (10.6%)	84 (16.7%)	36 (7.2%)	56 (11.2%)	3.6 2 1.2 1
49	Sharing information with lecturers and fellow students	11 (2.2%)	73 (14.5%)	131 (26.1%)	96 (19.1%)	180 (35.9%)	2.1 4 1.4 1
50	Note taking	11 (2.2%)	100 (19.9)	131 (26.1%)	78 (15.5%)	171 (34.1%)	3.6 1 1.2 2



The results in Table 3 show that the most frequent use of smartphones was for making phone calls ( $M = 4.29$ ), followed by social networking ( $M = 4.05$ ). Overall, the finding also indicated that nearly all options provided on the frequency of smartphone use revealed that smartphones were somewhat frequently used, as evident from the above table. This is because only 9 out of the 29 options recorded less than the minimum benchmark of 3.00. They rarely use smartphones for "cyberbullying," with a mean score of ( $M = 2.10$ ); "gambling/betting," with a mean score of ( $M = 1.83$ ); and "watching pornography," with a mean score of ( $M = 1.94$ ) respectively.

The findings are incongruent with the findings of Lorencowicz et al. (2016) and Tugtekin, Kurt and Demir (2020), whose studies also revealed frequent use of students' smartphones during classes for checking email accounts, making calls, sending messages, browsing, social networking sites, and sharing information with their fellow students and lecturers, among other things. Therefore, the high frequency of smartphone use among Library and Information Science undergraduates as evidenced in this study, suggests that the students have a positive attitude and have formed a strong habit of using smartphones. By implication, the more students fail to self-regulate their smartphone usage, the higher the possibility of increasing their chances of becoming addicts. While discussing habit as a precursor to the frequency of video games, Triandis (1980) indicated that individuals have come to rely on video game use to counter their psychological states and form a habit, defined as a "situation-behaviour sequence that becomes automatic and occurs without self-instruction".

While supporting this assertion, Oulasvirta, Rattenbury, Ma and Raita (2011) indicated that smartphone usage is influenced by habitual evolution, with strong habits like automatic unlocking and checking notifications. According to Verbrugge, Stevens, and De Marez (2013), these habits are influenced by smartphones' unique features and online interfaces. Besides, the ubiquitous nature of smartphones creates online flat forms, requiring constant checking of content from the users.

## **Conclusion**

In conclusion, Library and Information Science undergraduate students in federal universities in Nigeria use smartphones for academic activities. Meanwhile, smartphones have become indispensable tools for accessing information, conducting research, and communicating. Moreover, as students frequently use their smartphones, especially for non-academic tasks, this poses a risk of increasing the chances of addiction.

### **Recommendations**

The study offers the following recommendation in line with the objectives of the study.

1. Educational institutions must recognize the potential of smartphones as valuable learning tools and integrate them into the curriculum.
2. To maximize smartphone benefits in higher education, stakeholders must develop strategies that address usage challenges and promote healthy habits for academic activities.
3. University stakeholders must engage in the promotion of digital literacy skills and prepare students for the demands of the 21st-century knowledge economy. Also, it is imperative to provide comprehensive training and education to students regarding the detrimental effect of smartphones on the learning process and time management.

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