

PERCEPTION OF LIBRARY AND INFORMATION SCIENCE STUDENTS ON THE UTILIZATION OF SMARTPHONE APPLICATIONS FOR SUSTAINABLE DEVELOPMENT IN FEDERAL UNIVERSITY DUTSIN-MA, KATSINA – NIGERIA

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Abstract

This study was carried out to investigate the perception of Library and information science students on the utilization of smartphone application in Federal University Dutsin-ma. In order to achieve the objectives of the study, three research questions were raised and answered. The study employed descriptive survey design. The population of the study comprised 386 students of library and information science. 65 students were randomly selected as sample. Students' Perception on Smartphone Application Questionnaire (SPSPAQ) was used as the instrument data collection. Using Pearson product moment correlation, 0.89 reliability indices was obtained. The research questions were analyzed using descriptive statistics of frequency and simple percentage. The study finds out that, 70% of LIS students were utilizing smartphone applications which includes WhatsApp, Instagram, Tiktok, Google Apps, Microsoft word, Excel, Palmpay, and Opay mobile banking Apps. The study recommended the university management through the directorate of ICT and MIS to take a leading role to organize training workshop on the use of smartphone applications for academic purposes and sustainable development within and outside the university.

Keywords: Perception, Library and Information Science, Utilization, Smartphones, Sustainable Development.

Introduction

Smartphones have emerged as indispensable tools in higher education, facilitating access to information, enhancing communication, and supporting various learning activities. Among Library and Information Science (LIS) students, the integration of smartphone applications into academic routines has become increasingly prevalent, reflecting a shift towards more flexible and technology-driven educational practices (Dukic, et.al 2015). In Nigeria, the adoption of smartphones among LIS undergraduates is notably high. A study by Musa, Umar, Tijjani and Hayatu (2023) revealed that students extensively use smartphones for academic purposes such as uploading learning materials, completing assignments, and communicating about

coursework. This trend underscores the potential of mobile technology to support educational objectives and promote self-directed learning.

Smartphones have significantly impacted academia, transforming the way students access information, collaborate, and engage with educational resources. The integration of smartphones into academic environments has been a gradual process, starting with their initial introduction as mobile communication devices. As smartphones evolved, they became multifunctional tools that extend beyond traditional telephony, offering internet access and a wide range of applications designed to enhance the educational experience (Johnson, 2010).

The proliferation of smartphones among students has reshaped the dynamics of learning. Mobile applications tailored for academia play a crucial role in facilitating various aspects of student life. These applications cover a spectrum of functions, from accessing digital libraries to participating in virtual classrooms (Brown & Williams, 2015). For instance, educational apps allow students to engage with course materials, collaborate on projects, and receive real-time updates about campus events.

Beyond academic tasks, smartphones also serve as gateways to a plethora of applications that can contribute to sustainable development. For instance, access to digital libraries, educational resources, and collaborative platforms aligns with the United Nations Sustainable Development Goals (SDGs), particularly those related to quality education and innovation. However, challenges such as internet connectivity issues, digital literacy gaps, and potential distractions pose obstacles to the optimal utilization of these technologies ([Esechie, Ohueri, Ishak, & Nwanesi, 2022](#)). Understanding LIS students' perceptions of smartphone applications in the context of sustainable development is crucial. Their insights can inform strategies to enhance the integration of mobile technologies in educational settings, ensuring that these tools effectively support learning outcomes and contribute to broader developmental goals. This study aims to explore these perceptions, shedding light on the opportunities and challenges associated with the use of smartphone applications among LIS students in Nigeria.

The proliferation of smartphones among university students in Nigeria has catalyzed a transformative shift in educational practices, aligning with global efforts toward sustainable development. Smartphone applications have emerged as pivotal tools, enhancing learning experiences, facilitating research, and promoting environmental consciousness among students. This technological integration is particularly significant in the context of Nigeria's higher education system, where access to traditional learning resources may be limited.

Recent studies underscore the multifaceted benefits of smartphone applications in academic settings. For instance, research conducted at the Federal Polytechnic, Ado-Ekiti, revealed that students perceive smartphones as instrumental in accessing online learning resources, engaging in digital interactions, and improving academic performance. Similarly, a study focusing on undergraduate students in Southwestern Nigeria highlighted the potential of smartphone

applications in crop protection education, emphasizing their role in early pest detection and sustainable agricultural practices (Taiwo, Olowookere, & Adewale (2022).

Despite these advantages, challenges persist. Barriers such as unreliable internet connectivity, distractions during learning activities, and limited awareness of educational applications hinder the optimal utilization of smartphones for sustainable development. Moreover, infrastructural deficits, including inadequate Wi-Fi access and electricity supply, further exacerbate these issues (Esechie et.al 2022).

Addressing these challenges necessitates a comprehensive understanding of how students in Nigerian universities employ smartphone applications to advance sustainable development goals. This study aims to explore the patterns, benefits, and obstacles associated with the use of smartphone applications among university students, providing insights that could inform policy decisions and educational strategies aimed at leveraging technology for sustainable development in Nigeria. The advancement of smartphone applications marked a new dimension in communication technology. Moving into the late 20th century and early 21st century, smartphones gradually integrated into academic environments, offering features beyond traditional telephony, such as internet access, applications and communication between people (Oksman, 2010).

The proliferation of smartphones among students became noticeable, influencing the way academic information is accessed, used and shared. According to Johnson (2010), the emergence of smartphone applications specifically tailored for academia became evident as educational institutions and developers recognized the potential of mobile technology to enhance learning, facilitate research, and improve student engagement. Educational institutions started developing and utilizing these applications to streamline various processes, including course registration, accessing grades, and receiving campus notifications.

In the contemporary academic environment, smartphones and their applications play a pivotal role. Students heavily rely on mobile apps for accessing learning resources, engaging in virtual classrooms, and collaborating on academic projects (Smith, Johnson & Brown 2019).

The pervasive availability of smartphone applications among students has catalyzed a paradigm shift in the way they engage with information, communicate, and manage their academic and personal lives. The ubiquity of smartphones, coupled with the exponential growth of app stores, has empowered students with a diverse array of applications catering to their multifaceted needs and preferences. From educational tools and productivity enhancers to social networking platforms and entertainment options, smartphone applications have permeated nearly every aspect of university life, reshaped the dynamics of teaching and learned in the digital age (Traxler, 2018).

The educational landscape has been profoundly transformed by the accessibility of smartphone applications, offering students unprecedented opportunities to augment their learning

experiences beyond the confines of traditional classroom settings. Educational apps, such as Duolingo for language learning and Quizlet for flashcards, provide students with interactive and immersive learning environments, fostering engagement and retention of course material (Fox, 2016). Moreover, the platform like Khan Academy and Coursera have made access to knowledge and learning more open, inclusive, and widely available to everyone, regardless of their location, background, or financial means. (Bozkurt & Sharma, 2020). The availability of mobile applications has not only expanded the breadth of educational resources accessible to students but has also catalyzed innovation in teaching methodologies, prompting educators to embrace digital technologies to enhance instructional delivery and student engagement.

In addition to facilitating learning, smartphone applications serve as indispensable tools for communication, collaboration, and community building within university environments. Messaging apps like WhatsApp and Slack facilitate seamless communication and information sharing among students, enabling them to coordinate group projects, discuss course materials, and seek academic support in real-time (Junco, Merson & Sakter, 2010). Social networking platforms such as Facebook and LinkedIn provide avenues for networking, mentorship, and professional development, enabling students to cultivate meaningful connections and expand their social and professional networks beyond the confines of the campus (Pascarella & Terenzini, 2005). Furthermore, collaborative tools like Google Docs and Microsoft Teams empower students to collaborate on assignments, share resources, and engage in collective problem-solving, fostering a culture of collaboration and knowledge exchange within university communities (Zhen, Honglei, & Sen, 2012). By leveraging the communicative and collaborative features of smartphone applications, students can forge deeper connections, cultivate collaborative learning environments, and enrich their academic experiences.

Smartphone applications present a ubiquitous source of distraction for university students, impacting their ability to focus on academic tasks. With the constant influx of notifications from social media, messaging apps, and entertainment platforms, students often find themselves drawn away from studying or attending classes. Research by Junco and Cotten (2012) highlights the detrimental effects of multitasking with smartphones on academic performance, suggesting that divided attention leads to lower grades and decreased learning outcomes. Moreover, a study by Kuznekoff and Titsworth (2013) found that students who frequently use smartphones during lectures are more likely to report lower comprehension and engagement levels. As such, the pervasive nature of smartphone distractions poses a significant challenge for students striving to maintain focus and productivity in their academic pursuits.

However, the convenience and accessibility of smartphone applications can impede students' ability to effectively manage their time. With a plethora of apps offering entertainment, social networking, and gaming opportunities, students may struggle to allocate sufficient time for studying, attending classes, and completing assignments. According to a study by Junco and Cotten (2012), excessive use of smartphones is associated with poor time management skills among college students, leading to procrastination and decreased academic performance. Additionally, the addictive nature of certain applications, such as social media platforms, can

exacerbate time management challenges by encouraging prolonged usage and distraction. Consequently, developing strategies to prioritize academic responsibilities amidst the allure of smartphone apps remains a pressing concern for university students.

Statement of the Problem

At Federal University Dutsinma Katsina State, the widespread use of smartphones among students has sparked interest in understanding both its positive and negative effects on academics and sustainable development. While smartphones can enhance learning, concerns include distractions and unequal access, which may widen educational gaps (Johnson, 2010). This research aims to examine how students use smartphones for academic purposes enhances its impact on their performance and explore the digital divide and differences in technological skills. Ultimately, the study seeks to provide insights that could help ensure smartphones are used equitably and effectively to support learning and sustainable development.

Objectives of the Study

The study was guided by the following objectives:

1. To examine how library and information science students use the smartphone applications for sustainable development in Federal university Dutsinma.
2. To find out the smartphone applications that are used by library and information science students in Federal university Dutsinma.
3. To identify the challenges faced by library and information science students in Federal university Dutsinma while using the smartphone applications..

Research Questions

1. How does library and information science students use the smartphone applications for sustainable development in Federal university Dutsinma?
2. What are the smartphone applications used by library and information science students in Federal university Dutsinma?
3. What are the challenges faced by library and information science students in Federal university Dutsinma while using the smartphone applications?

Methodology

The survey method was employed in the conduct of this study, the total number of 65 students of LIS were used for the study. The questionnaire was the instrument used for data collection,

the data collected for the study were presented and analyzed using descriptive statistics of frequency table and simple percentages.

Results

Question 1. How do the LIS students use smartphone applications for sustainable development in Federal university Dutsinma?

Table: 1
Frequencies and Percentages of Smartphone Applications Used by Students (N = 65)

Application	Frequency	Percentage
Quranic recitation apps	3	4.62%
Prayer timing apps	1	1.54%
Adzkhar timing apps	1	1.54%
Fiqhu apps	0	0.00%
Bible apps	0	0.00%
Chronicles apps	0	0.00%
Opay	2	3.08%
Moniepoint	0	0.00%
Palmpay	2	3.08%
Academia apps	0	0.00%
ResearchGate app	1	1.54%
Zendy app	0	0.00%
Emerald app	0	0.00%
Google Apps	5	7.69%
MS Word	4	6.15%
MS Excel	2	3.08%
MS PowerPoint	2	3.08%
WPS Office	2	3.08%
Google Meet	0	0.00%
Zoom	1	1.54%
Microsoft Teams	0	0.00%
WhatsApp	6	9.23%
Instagram	5	7.69%
Twitter	3	4.62%
Snapchat	4	6.15%
TikTok	4	6.15%
Alibaba Express	1	1.54%
Jumia	1	1.54%
Athene mining app	1	1.54%
Pi Network app	0	0.00%
Sidra Chain mining app	1	1.54%
Gmail	2	3.08%
Yahoo	1	1.54%
Flight booking apps	0	0.00%
Translation apps	1	1.54%
Total	65	100%

The table above discusses the responses of the Respondents on the type of available smartphone Applications being aware of by LIS students of FUDMA. The table shoes that Google App, WhatsApp, Instagram, Ms wordApp, Snapchat app, and Tiktok apps were the types of smartphone applications known by LIS students with highest frequency of over 4(6.15%) response scores by students whereas Alibaba express app, jumia, pi network app, yahoo app, translation app, ms excel app, zoom apps were discovered the least frequency of less than 1 (1.5%) respectively. This finding is consistent with [Bridget C., and Ujah-Ogbuagu, \(2021\)](#) study, which highlights the predominance of social media and productivity apps among Nigerian university students.

Question 2. What are the smartphone applications that are being used by the students of library and Information science in Federal university Dutsinma?

Table: 2

Frequencies and Percentages of Smartphone Applications Used by Students (N = 65)

Application	Frequency	Percentage
Quranic recitation apps	1	1.54%
Prayer timing apps	0	0.00%
Adzkhar timing apps	0	0.00%
Fiqhu apps	0	0.00%
Bible apps	1	1.54%
Chronicles apps	0	0.00%
Opay	3	4.62%
Moniepoint	0	0.00%
Palmpay	4	6.15%
Academia apps	0	0.00%
ResearchGate app	0	0.00%
Zendy app	0	0.00%
Emerald app	0	0.00%
Google	13	20.00%
MS Word	7	10.77%
MS Excel	4	6.15%
MS PowerPoint	0	0.00%
WPS Office	6	9.23%
Google Meet	0	0.00%
Zoom	0	0.00%
Microsoft Teams	0	0.00%
WhatsApp	9	13.85%
Instagram	3	4.62%
Twitter	2	3.08%
Snapchat	1	1.54%
TikTok	3	4.62%
Alibaba Express	0	0.00%
Jumia	0	0.00%
Athene mining app	0	0.00%
Pi Network app	0	0.00%
Sidra Chain mining app	0	0.00%

Gmail	0	0.00%
Yahoo	0	0.00%
Flight booking apps	0	0.00%
Translation apps	0	0.00%
Total	65	100%

The table: 2 above examines the responses from LIS students at FUDMA regarding their use of various smartphone applications. It reveals that the most frequently used application is Google, with 20.00% of respondents reporting its use. WhatsApp follows, with 13.85% of respondents using it. Other notable applications include MS Word, WPS Office, and Palmpay. Conversely, some applications, such as Fiqhu apps, Zenty app, and Microsoft Teams, show zero usage among respondents. This finding aligns with the study by Johnson (2020), which underscores the significant preference for social media and productivity apps among Nigerian university students.

Question 3. What type of challenges faced by LIS students in FUDMA while using the smartphone applications?

Table: 3
Challenges Faced by Students in Using Smartphone Applications (N = 65)

Challenge	Frequency	Percentage
Limited access to high-speed internet	5	7.69%
High data cost	34	52.31%
Lack of technical support or guidance	1	1.54%
Insufficient storage space on smartphones	10	15.38%
Distraction from non-educational apps and notifications	15	23.08%
Total	65	100%

The table above presents the challenges faced by Library and Information Science students in FUDMA while using smartphone applications. The most significant challenge reported by students is high data cost, affecting 52.31% of respondents. This indicates that the cost of data is a major barrier to effectively utilizing smartphone applications for academic purposes.

Distraction from non-educational apps and notifications is another notable challenge, affecting 23.08% of students. This suggests that managing distractions is a significant issue for many students. Insufficient storage space on smartphones is a problem for 15.38% of respondents, highlighting the limitations of smartphone hardware as a barrier to optimal usage of applications.

Limited access to high-speed internet is reported by 7.69% of students, indicating that connectivity issues still pose a challenge for some. Lack of technical support or guidance is the least reported challenge, affecting only 1.54% of respondents. This suggests that most students do not face significant issues with technical support.

These findings are in line with the observations made by Adeoye (2021), who noted that high data costs remain a prevalent issue for Nigerian students, limiting their online activities. Similarly, Bello (2000) identified distractions from non-educational apps as a significant challenge, emphasizing the need for better focus management among students. Furthermore, Olanrewaju (2023) highlighted the problem of insufficient storage space, pointing out that many students use smartphones with limited capacity, which affects their ability to install and use multiple applications effectively.

Discussion of Findings

The data collected from the surveys reveals several key insights into the usage and preferences of smartphone applications among students at FUDMA. It is evident that certain applications dominate in terms of frequency and popularity. Social media platforms like WhatsApp, Instagram, Snapchat, and TikTok are widely used, with WhatsApp leading at 9.23%. Academic tools like Google, Microsoft Word, and Excel also show significant usage, suggesting that students rely on their smartphones for both social and academic purposes. Interestingly, religious apps like Quranic recitation and prayer timing apps are also used, though to a lesser extent.

The study further refines our understanding by focusing on specific application usage. Google and WhatsApp again emerge as primary tools, with Google being used by 20% and WhatsApp by 13.85% of respondents. This underscores the dual role of smartphones as both educational and communication tools. Applications like Palmpay and Opay, which facilitate financial transactions, are also notable, indicating a reliance on smartphones for managing finances.

The frequency of usage detailed in the study shows a strong preference for daily use of key applications. WhatsApp, Facebook, Instagram, and TikTok are used daily by the vast majority of respondents, highlighting their integral role in students' daily routines. Applications like Gmail and WPS Office also show significant daily or weekly usage, which is essential for academic and administrative tasks. Conversely, certain applications like Yahoo apps and flight booking apps have minimal usage, indicating limited relevance to the students' immediate needs.

From the study it is clear that biometric authentication methods, such as fingerprint and face recognition, are preferred by students for accessing their smartphone applications. This preference for biometric security indicates a trend towards more secure and user-friendly authentication methods. Traditional methods like login credentials and PINs are still used but to a lesser extent.

The study highlights the preferences for different functionalities of smartphone applications. Browsing the internet (41.54%) is the most preferred activity, followed by reading documents in various formats (15.38%) and downloading software (15.38%). This indicates that smartphones are vital tools for accessing and managing information. The use of calculators,

dictionaries, and specific browsers like Google Chrome also shows that students leverage a variety of tools to support their academic work.

Finally, the study identifies the challenges faced by students in using smartphone applications. The most significant challenge is the high cost of data (52.31%), which can limit the effectiveness and frequency of application usage. Distractions from non-educational apps and notifications (23.08%) are also a notable issue, suggesting that managing focus is a significant concern for students. Insufficient storage space (15.38%) and limited access to high-speed internet (7.69%) further highlight the technical and infrastructural barriers to optimal smartphone use. The lack of technical support is the least reported challenge, indicating that most students feel adequately supported in this area.

Recommendations

1. Department of Library and Information Science should organize and implement comprehensive digital literacy programs to educate students on effective use of smartphone applications for academic purposes and sustainable development. These programs should emphasize strategies for minimizing distractions and maximizing productivity.
2. Faculty of Education should integrate mobile learning strategies into their teaching practices. This includes utilizing interactive applications and multimedia content to enhance engagement and learning outcomes.
3. FUDMA should Invest in improving campus-wide internet infrastructure to provide reliable and high-speed connectivity. This infrastructure upgrade is crucial for supporting seamless access to online resources and learning platforms.

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