

The Impact of Mobile Phone Usage on the Academic Performance of Students in Tertiary Institutions: A Case Study of Federal Polytechnic, Bida

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Abstract

This paper explores the general impact of mobile phones on the academic performance of students in tertiary institutions and investigates its effect on their academic, social, and personal lives. Mobile phones are necessary requirements in academics. The research employs a mixed-methods approach, combining surveys and interviews to gather data from a diverse sample of students in which descriptive statistics approach is employed. Designed questionnaire were administered on the students using departments as units. The findings reveal that mobile phones have become indispensable tools for students, facilitating communication and information access. However, their usage patterns are not without challenges, as students often face with issues related to distraction, addiction, and academic misconduct. Likewise, the study uncovers the influence of mobile phones on social interactions, shedding light on how these devices shape friendships, relationships, and the overall social landscape within tertiary institutions. It also delves into the impact on mental health, discussing the potential consequences of excessive screen time and digital isolation. The study which involves a sample of 200 questionnaires administered on the students recorded 98% success across all departments and schools. In conclusion, this research underscores the need for institutions and policymakers to strike a balance between embracing the benefits of mobile technology and mitigating its negative effects. It calls for targeted interventions to promote responsible phone usage among students, fostering a harmonious coexistence of mobile phones and academic pursuits in tertiary institutions.

Keywords: Mobile Phones, Combining Surveys, Questionnaires, Phone Usage, Mobile Technology.

Introduction

The Global System for Mobile Communication (GSM) stands as a ubiquitous digital mobile network, with a profound impact on mobile phone users worldwide. Its significance within the realm of higher education is undeniable. In the context of tertiary institutions, mobile phones have evolved into indispensable tools that profoundly influence students' learning experiences and communication capabilities. This is primarily attributed to the inclusion of cutting-edge technological features, such as photography, internet browsing, video games, text messaging, e-mail, multimedia messaging, video chatting, video calling, voice communication, and wireless connectivity options like Bluetooth. These advanced features

serve as invaluable resources, empowering students throughout their academic journeys (Ifeanyi & Chukwuere, 2018). In this study, we delve into the multifaceted role of GSM mobile phones among students in higher learning institutions, exploring the ways in which these devices shape and enhance the academic, social, and personal aspects of their lives. The evolution of GSM technology in Nigeria and the majority of developing countries can be traced back to the 1990s (Ogunyemi, 2010). Its widespread adoption has inadvertently led to profound implications for students, influencing their commitment to academic endeavors (Smith, 2013). However, this influence is not always positive, as it can have adverse effects on their cognitive processes, communication skills, and language proficiency, as pointed out by Nwachukwu & Onyenakeya (2017).

Statement of the Problem

In a study conducted by Harper (2017) on student perceptions of the social pressure and consequences associated with GSM device usage, it was found that students extensively used mobile phones for its utility in their studies. However, a significant portion of the respondents reported feeling anxious and distracted when using mobile phone devices, occasionally diverting their attention away from primary school programs (Nwazor, et al. 2015). This phenomenon raises important issues and highlights potential consequences that need to be addressed within the educational context.

In light of these findings, it becomes imperative to explore the various dimensions of mobile phone device usage among students in educational settings, examining both the benefits and drawbacks, in order to devise strategies that promote responsible and effective use of these devices while minimizing their potential negative impacts.

Literature Review

Utulu and Alonge (2012) provided first-hand information on the prospects, gains and challenges mobile phones provided appropriate education technology in Nigeria tertiary institution. Using smartphones distracts students from their studies in certain aspects and also showed the impact of using them on students' academic skills and progress (Ifeanyi and Chukwuere, 2018).

Rabiu et. al., (2016) conducted a study on students' dedication to their academic work and observed that a lack of commitment and a poor attitude towards their studies can result in academic failure, ultimately leading to dropout rates. Ismail (2018) further emphasized the dual nature of GSM technology as a valuable tool for information dissemination and a potential source of distraction when misused by students, which can adversely affect their academic performance.

These concerns are in line with Peters (2005) belief that GSM technology plays a significant and transformative role in the daily lives of undergraduate students. The disruptions caused by mobile phones during lecture hours can lead to divergent academic outcomes and experiences among students. This study aims to delve deeper into the impact of GSM mobile phones on the academic, social, and personal aspects of students' lives in tertiary

institutions, shedding light on both the positive and negative consequences of their pervasive use.

According to Guy (2009) and Ling (2005), the integration of GSM technology in educational settings may inadvertently lead to adverse effects on students. They suggest that students might become distracted and experience anxiety, which can weaken their focus on academic tasks.

The growth of mobile phone users has been nothing short of remarkable (Haverlag, 2013), and mobile phones have seamlessly integrated into everyday life (Holt et. al., 2015). This technological advancement has ushered in a communication revolution (Hopes, 2016) that has its roots in post-World War II efforts in Europe, the United States, and Japan (Hostut, 2010).

The inception of the first generation (1G) of mobile technology can be traced back to the experimental stages of the 1950s, with the inaugural mobile phone launch by Motorola in 1973, followed by the proliferation of similar devices by various companies (Huang, 2010; Ives, 2018). These early mobile phones were characterized by their large and heavy designs (Rogers and Michelle 2017).

The utilization of mobile phones by students has experienced an exponential surge in recent times, as observed by (Jean-Marie, 2009). This trend extends not only to tertiary institutions but also to primary and secondary schools. However, amidst the proliferation of mobile phone usage among students, Jesse (2015) highlighted that there are notable constraints that can hinder effective learning. These constraints encompass issues like inattentiveness, disruptions, and distractions, with mobile phones often playing a pivotal role in exacerbating these challenges.

One significant aspect of mobile phone usage among students is the generation of noise and disruptions during lecture hours, as pointed out by (Kim and Jin 2005). Kuznekoff and Titsworth (2013) delve deeper into the multifaceted nature of student mobile phone usage. He asserts that students employ their mobile phones for various purposes, such as tagging locations

Mobile phones offer a diverse range of educational attributes, characterized by spontaneity, informality, portability, personalization, ubiquity, pervasiveness, and a myriad of functions, including voice, text, video, radio, and internet access (Kyoshaba, 2009). However, within the educational context, certain disruptive factors can hinder students' focus and engagement in the classroom. These disruptive factors, as highlighted by Ben-Collins (2016) encompass issues like poor classroom management, music, a less conducive classroom atmosphere, alertness rivalries among peers, and other related challenges.

Moreover, Lenhart (2010) and Amali (2012) have lamented the negative impact of GSM technology on the lives of students, particularly those in tertiary institutions. They underscore the unintended consequences, including limitations on students' commitment to academic work, their critical thinking abilities, effective communication skills, and other essential competencies. Despite the immense pool of knowledge available on the internet in the e-knowledge era, these authors argue that mobile phones have inadvertently

contributed to these limitations, and the full extent of the impact on students' academic commitment has not been comprehensively understood by parents, educators, and other stakeholders (Oksman, 2010).

Given the managerial implications for lecture halls and the concerns raised by these perspectives, professors and school administrators are compelled to take measures to ensure students' mental well-being when using GSM devices during academic activities in higher education institutions. This study is conducted against the backdrop of these issues, aiming to shed light on the complex relationship between mobile phone usage and students' academic experiences.

Methodology

In this study, a descriptive statistics approach was employed as the primary research methodology. The data presentation and analysis involved the utilization of frequency counts and simple percentages, which were derived from the responses obtained through questionnaires.

The collected data were systematically tabulated and subjected to quantitative analysis, with categories established based on percentage distributions. The Statistical Package for the Social Sciences (SPSS) version 20.0 was utilized to perform data analysis, allowing for rigorous statistical examination of the questionnaire responses. Additionally, statistical tables were employed to effectively present the key findings of the study.

As highlighted by Matanhelia (2010), the use of frequencies and percentages in data analysis is well-suited to the nature of the data being presented, providing a robust framework for interpreting the information collected during the research process.

For the purpose of this study, all the students in the institution comprising of ND and HND made up of 17,756 students spread in 28 departments and 7 schools were involved. 200 students of these were chosen as sample using the proportional allocation as in equations (1) and (2).

Proportional allocation using:

$$\text{Sample size of strata} = \frac{\text{size of entire sample}}{\text{population size}} * \text{stratum size} \quad (1)$$

The allocation was done by applying the formula:

$$\text{Proportional allocation} = \frac{\text{no. of questionnaires}}{\text{total no. students}} * \text{population of school} \quad (2)$$

The primary objective of this study was to investigate the impact of GSM mobile phone usage on the academic performance of students in tertiary institutions. To achieve this, a primary research approach was employed, involving the distribution of 200 questionnaires to students across various departments and schools within the institution. The stratified sampling method of proportional allocation was used to ensure a representative sample. The breakdown of respondents from different schools within the polytechnic is as follows:

School of Agricultural Technology (SAT) = 120 respondents

School of Financial Studies (SFS) = 132 respondents

School of Business Administration and Management (SBAM) = 482 respondents

School of Applied and Natural Sciences (SANS) = 364 respondents

School of Information Communication Technology (SICT) = 398 respondents

School of Environmental Studies (SES) = 130 respondents

School of Engineering Technology (SET) = 256 respondents

The total number of students surveyed across all schools amounted to 17,756 students.

The results and findings of this study, which aim to shed light on the relationship between GSM mobile phone usage and academic performance, will be presented and discussed in subsequent sections.

In statistics, stratified sampling is a method of sampling from a population which can be partitioned into groups. Stratified sampling is a valuable technique in statistical surveys, particularly when dealing with a population that exhibits significant variability across different subgroups or strata. By dividing the population into homogeneous subgroups before sampling, researchers can achieve several important objectives.

Stratified sampling reduces sampling error by ensuring that each subgroup of the population is represented in the sample. This helps in obtaining a more accurate estimate of population parameters for each stratum. It can be more efficient than simple random sampling, especially when there is substantial variation within the population. By allocating samples proportionally to each stratum, researchers can make the best use of available resources. Overall, stratified sampling is a powerful tool that helps researchers obtain more precise and representative estimates when dealing with diverse populations or when aiming to reduce sampling error in statistical surveys and simulations.

In statistical surveys, when groups within an overall population vary, it could be advantageous to sample each group (stratum) independently. Stratification is the process of dividing members of the population into homogeneous subgroups before sampling. The strata should define a partition of the population. That is, it should be collectively exhaustive and mutually exclusive: every element in the population must be assigned to one and only one stratum. Then simple random sampling is applied within each stratum. The objective is to improve the precision of the sample by reducing sampling error. It can produce a weighted mean that has less variability than the arithmetic mean of a simple random sample of the population. In computational statistics, stratified sampling is a method of variance reduction when Monte Carlo (2007) methods are used to estimate population statistics from a known population.

Results and Findings

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sampling method of proportional allocation was used to ensure a representative sample. The breakdown of respondents from different schools within the polytechnic is as follows:

The allocation was done by applying the formula and we now have:

$$\text{SAT} = 200/17756 \times 120 = 1.35 \sim 1$$

$$\text{SFS} = 200/17756 \times 1320 = 14.87 \sim 15$$

$$\text{SBAM} = 200/17756 \times 4825 = 54.35 \sim 54$$

$$\text{SANS} = 200/17756 \times 3642 = 41.02 \sim 41$$

$$\text{SICT} = 200/17756 \times 3985 = 44.89 \sim 45$$

$$\text{SES} = 200/17756 \times 1304 = 14.69 \sim 15$$

$$\text{SET} = 200/17756 \times 2560 = 28.84 \sim 29$$

In statistics, stratified sampling is a method of sampling from a population which can be partitioned into groups.

Table 1: showing the distribution of questionnaires

Schools	No. of questionnaires	Percentage
SANS	42	21.43%
SBAM	50	25.51%
SES	15	7.65%
SET	29	14.80%
SFS	15	7.65%
SICT	45	22.96%
Total	196	100.00%

Source: Students population FPB

Table 2: showing questionnaire respondents by level

Level	No. of questionnaires	Percentage
HNDI	28	14.29%
HNDII	53	27.04%
NDI	83	42.35%
NDII	32	16.33%
Total	196	100.00%

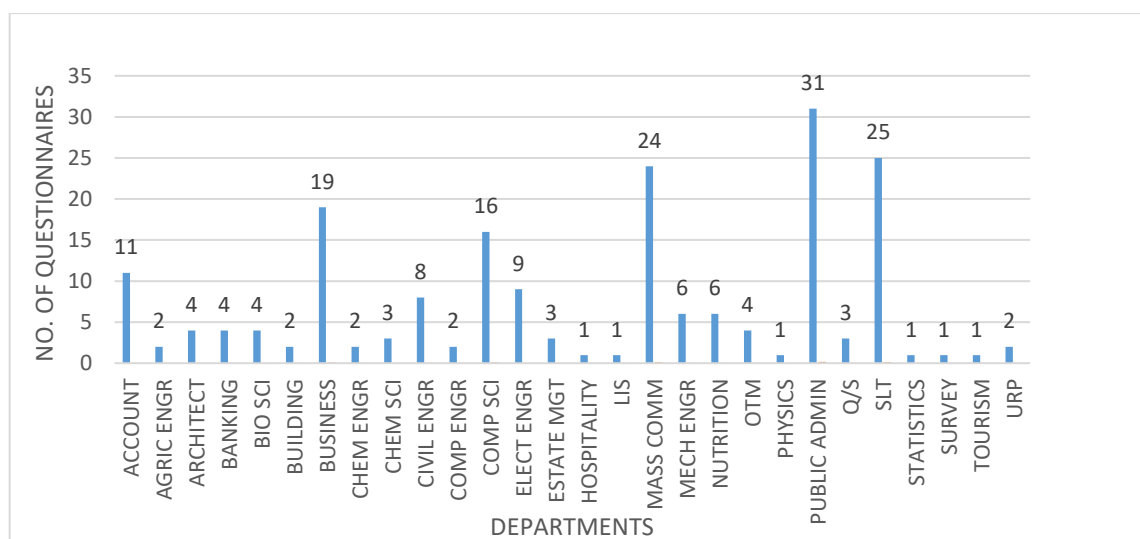
Source: Students population FPB

The table 2 above shows that the highest number of respondents were ND I students with 83 questionnaires, making up 42.35% of the total 196 questionnaires closely followed by HND II with 27.04% then ND II and HND I with 16.33% and 14.29% respectively.

Table 3: showing distribution of questionnaires by departments:

S/n.	Department	No. of questionnaires	Percentage
1.	Accountancy	11	5.61%
2.	Agric. Engineering	2	1.02%
3.	Architectural Tech.	4	2.04%
4.	Banking & Finance	4	2.04%
5.	Biological Science	4	2.04%
6.	Building Tech.	2	1.02%
7.	Business Admn. Mgt.	19	9.69%
8.	Chemical Engineering	2	1.02%
9.	Chemical Science	3	1.53%
10.	Civil Engineering	8	4.08%
11.	Computer Engineering	2	1.02%
12.	Computer Science	16	8.16%
13.	Electrical Engineering	9	4.59%
14.	Estate Mgt. & Val.	3	1.53%
15.	Hospitality Mgt.	1	0.51%
16.	Library Science	1	0.51%
17.	Mass Communication	24	12.24%
18.	Mechanical Engineering	6	3.06%
19.	Nutrition & Dietetics	6	3.06%
20.	OTM	4	2.04%
21.	Physics	1	0.51%
22.	Public Admin.	31	15.82%
23.	Quantity Surveying	3	1.53%
24.	SLT	25	12.76%
25.	Statistics	1	0.51%
26.	SGL	1	0.51%
27.	Tourism Mgt.	1	0.51%
28.	URP	2	1.02%
Total		196	100%

Source: Students population FPB



A bar-chart showing the distribution of questionnaire among the departments

Table 4: showing the type of Phone used by the students

Type of Phone	No. of Students	Percentage
BASIC	12	6.12%
FEATURE	31	15.82%
NONE	1	0.51%
SMART	152	77.55%
Total	196	100.00%

Source: Students population FPB

The above table shows the various types of device used among the polytechnic students and the percentage it represents. This also shows the prevailing type of phones that are being used by students. The smart phone is the most common device used by students with 77.55% followed by the feature phone with 15.82% and 6.12% of respondents use the basic phone and less than 1% having no phone at all.

Table 5: showing the specific use of these phones by the Students

Specific use of Phones	No. of students	Percentage
Academics	48	24.49%
Calls	62	31.63%
Internet	72	36.73%
Recreation	14	7.14%
Total	196	100.00%

Source: Students population FPB

The table shows the most important use of the phones by students of the polytechnic. It shows that the Internet access is the most important use of phones with 36.73%, followed by calls accounting for 31.63%, while 24.49% goes for Academics and Recreation has 7.14%.

Table 6: showing the frequency use of these phones by the students

Frequency of use	No. of students	Percentage
Daily	84	42.86%
Fortnightly	9	4.59%
Monthly	4	2.04%
None	16	8.16%
Occasionally	54	27.55%
Weekly	29	14.80%
Total	196	100.00%

Source: Students population FPB

Table 6 shows that 42.86% of the students used the phone daily, 27.55% use it occasionally, 14.80% use it weekly, 8.16% claimed the none use of their phones, 4.59% and 2.04% use theirs fortnightly and monthly respectively.

Table 7: showing the challenges/problems faced by the students on the use of phone

Challenges/problems with the use of phones	No. of students	Percentage
Accidents	8	4.08%
Fatigue	33	16.84%
Instability of Network	75	38.27%
Power failure	63	32.14%
Sight/hearing	8	4.08%
Time wastage	9	4.59%
Total	196	100.00%

Source: Students population FPB

The table shows the most prevailing challenge associated with the use of these phones in academic environments. 38.27% of students likened the problems to the Instability of Network, 32.14% associate it with power failure, 16.84% says it is as a result of Fatigue, some other students who blamed it on time wastage represents 4.59%, while sight/hearing and accidents account for 4.08% each.

Conclusion and Recommendation

This study was conducted to assess the usage of mobile phones among students in higher education institutions in Nigeria. A total of 200 questionnaires were distributed to students across various departments and schools using the stratified sampling method, with 196 students (98%) returning the completed questionnaires. The allocation of questionnaires was based on proportional allocation, with the School of Business Administration and Management (SBAM) receiving the highest allocation (25.51%) due to its larger student population, while the School of Environmental Studies (SES) and the School of Financial Studies (SFS) received the lowest allocations of 7.65% each, reflecting their smaller student populations.

The results, including those presented in bar charts and tables, provided valuable insights into the types of mobile phones used by students, the specific purposes for which they used their phones, the frequency of phone usage, and the challenges they faced.

Notable findings include:

- Smartphones were the most commonly used devices, with 77.55% of respondents using them.
- Internet access was the most important use of phones (36.73%), followed by calls (31.63%), academics (24.49%), and recreation (7.14%).
- A significant portion of students (42.86%) used their phones daily, with occasional use (27.55%) being the next most common frequency.
- Challenges faced by students in phone usage included network instability (38.27%), power failure (32.14%), fatigue (16.84%), time wastage (4.59%), and issues related to sight or hearing (4.08%).

In conclusion, this study underscores the significance of mobile phone usage among tertiary institution students in Nigeria, with smartphones being the preferred choice for academic and communication purposes. The challenges related to network instability and power failure have been highlighted as areas of concern.

Based on these findings, the following recommendations are made:

- i. Institutions of higher learning should provide accessible and reliable internet facilities to support students in their academic pursuits.
- ii. Authorities should ensure a stable power supply within the campus to mitigate challenges associated with power failures.
- iii. Students are advised to minimize mobile phone usage during lecture hours to enhance their concentration and academic performance.

These recommendations aim to create an environment conducive to both effective mobile phone usages for academic purposes and improved overall academic performance among students.

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