INFLUENECE OF SMARTPHONES ON THE ACADEMIC PERFORMANCE OF STUDENT IN BAUCHI STATE HIGHER INSTITUTIONS OF LEARNING

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Abstract: **Smartphones are transforming human lives at fast pace were by learning culture is not the same as a decade back, now student are reading electronic documents and the latest form of electronic books at the tips of their fingers anytime, anywhere. Smartphones has been one of the most widely used gadget for reading and learning culture amidst students of higher institution in Nigeria today. Hence, this research work is to find out the impacts of smartphones on the academic performance of students in Bauchi State higher institutions of learning. The study made use of questionnaires using the convenient sampling technique which was used to select a sample of 300 students across all levels and programs of study within the two selected higher institutions in Bauchi state. The data were analysed using percentage and frequency to answer the research questions. The findings show that the student have access to smartphones and that their exposure to these smartphones is to a very great extent and this contribute positively to their academic performance. Therefore, the finding recommends that Students should be admonished by teachers, colloquies and guardians on how they should regulate the use of these Smartphones within the school walls. This is to create a balance between Smartphones and academic activities of students to avoid setbacks in their academic performance.**

Keywords: **apps, e-learning, education, institutions, smartphone, social-media, student.**

1. INTRODUCTION

Today Smartphones are not just the formal device we use to get hook up with the virtual world or get connected with our friends and family over a distance but a compelling learning tool used to enhance teaching and learning among student of higher institutions [15]. Nowadays, these smartphones have evolved and become a part of human daily activities.

A smartphone is a mobile phone running a complete operating system in a manner similar to a traditional computer, which offers advanced computing abilities and connectivity options in addition to traditional mobile functions. Smartphones help users to complete various activities such as sharing information, sending and receiving emails, chatting, opening and editing documents, paying for products, learning, browsing and shopping. Globally, "People around the world have adopted this new and exciting technology as one of the most important required facility in their everyday life" [2]. These evolution of smartphones has greatly transformed teaching and learning in all level of education across the globe.

It is very obvious that integration of smartphones into human daily lives has also contributed fully in changing how learners depends fully on paper based materials. According to [15] he stated that smartphones came to the scene to replace the works of the camera, video recorders, digital watches, etc. For instance, it is becoming so rare for an individual to purchase a digital camera for personal use except for commercial purposes, and the extent at which people yearn for

digital watches has reduced as a result of the introduction of smartphones. In effect, it becomes redundant for one to purchase such gadgets which can be found in smartphones. [2] Postulated that having a smartphone is like having a tiny computer in a pocket. It is blatant that, the potency of smartphone is not only meant for placing of calls and receiving of calls. Usually, there are amazing features such as for browsing, checking health status, sending and receiving emails, watching videos, listening to music, chatting, sharing photos, videos and other documents, to mention but a few. No wonder there is an exponential use of social media as a result of the emergence of the smartphone.

Currently, the use of smartphones performs phenomenal roles as far as teaching and learning are concerned. For instance, students can access their lecture materials on their smartphones, quickly access information online to meet their information needs via learning management systems, access academic databases, and a website to mention but a few. This was evident in the works of [12] they revealed that "The smartphone has also made students' lives easier, as they can access their school information on the gadget through electronic learning (e-learning), and mobile learning (m-learning)." The development of smartphone keeps on evolving as human lives keep evolving. The use of smartphones in learning has become the latest trend in higher education where an individual may not necessarily need a computer set to access electronic learning materials. The phenomenal roles of the smartphone in learning have been revealed by numerous authors such as in the works of [21] that, smartphones have made learning more flexible, easy and have helped to reduce the ultimate inherent conventional classroom learning. For instance, a smartphone makes it possible for students to access educational materials at anytime, anywhere and it is highly cost-effective since this opportunity is just a function of smartphones.

According to the researchers own preliminary investigation, it was noted that despite the remarkable benefits of the smartphone in learning, students mostly use a smartphone on social media platforms such as Facebook, WhatsApp, Instagram, Twitter, Snapchat, Tango, rather using it for educational purposes. Those who in turn use smartphones are distracted by other functions with notification. This research work is aimed to find out more about the impact of this smartphones on the academic performance of student in Bauchi State.

Statement of the Problem

There were so much findings made during this paper work and it was concluded that there was no any study that examined the impact of smartphones on the academic performance of student in Bauchi State higher institutions of learning, which outlined these smartphones as either learning tool or a distracting tool to their studies. This research work tend to fill the gap and therefore interrogate the impact of smartphones on the academic performance of these student within Bauchi State Context.

Objectives of the Study

The overall objective of the research is to investigate the Influence of Smartphones on the academic performance of students in Bauchi state higher institutions of learning. A case study of Bauchi State University Misau Campus and A.D Rufa'i College of Education, Legal and General Studies Misau Bauchi State. Precisely, the purpose of this research seeks to:

- Examine the usefulness of smartphone on academic performance of student in Bauchi State higher institutions of learning.

- Determine the percentage of student who uses smartphones?

- Understand the effects of smartphones to the academic performance of the students in Bauchi State higher institutions of learning.

- Examine the academic uses of smartphones which can benefit the students in Bauchi State higher institutions of learning.

Research Questions

The following research questions were drawn to guide this study based on the research problem.

1. What percentage of the student uses smartphones in the course of studies?

2. To what extent do student use smartphones as a tool that contribute positively to their studies?

3. What are the impacts of smartphones to the behavior and academic performance of the students in Bauchi State higher institutions of learning?

4. What percentage of these student think that use of smartphones among student is a learning tool and not a distraction tool?

2. LITERATURE REVIEW

A. Smartphones

In the past, mobile phones were mostly about making phone calls. They had a number pad, a digital phone book and a pick-up/hang-up button and not much more. Now smartphones offer so much more – they're really fully-fledged computers that you can fit in your pocket. They can run programs and games, access the internet, send email and much more [15]

According to [8] they see smartphone as the new class of mobile devices with advanced features and functionality beyond traditional functionalities and of computing and wireless communication capability representing classic illustration of convergence and digitalisation. Smartphones are the electronic companions of people in the modern society in that perform multiple functions that mainly revolve around social communication, leisure, information processing and storage. One could as well say smartphones are the mobile communication computers. Nearly all smartphones now use touchscreen controls. Instead of having hardware buttons like before, one side of the phone is taken up mostly by a touchscreen that you control using taps and gestures. There aren't even any number buttons; when you want to make a call, a number pad will pop up on the touchscreen [4].

According to a report by [6] the number of smartphone users in Nigeria, Africa's biggest economy and most populous country, is forecast to grow to more than 140 million by 2025. Currently, estimates from different sources put the number of smartphone users in Nigeria at roughly 25 and 40 million. The exact number of users is hard to pin down - however, the data found shows a strong growth outlook for the Nigerian smartphone market with user numbers to at least triple within the next five to six years.

B. Smartphones and its emergence in Nigeria

Smartphone emergence in Nigeria is predicated upon the advent of mobile telecommunication in Nigeria in 2011 as this development allowed for the exposure to mobile phones and internet penetration in Nigeria. For [16] believes the motivation for the growth of smartphones in Nigeria is also due to the exclusive preserve of the well-to-do and the well-connected in the Nigerian society. [17] on his part attests that the emergence of smartphones provided much relief for Nigerians, noting that its convergent nature in which all media form has been built-in, from voice telephone, telegraph, print, radio, movies, television, internet and computerisation has richer services to the users. The emergence of smartphones in Nigeria is projected at 34million come 2018 [1], while that of the Africa continent, presently at 106 Million is expected to hit 174 Million come 2019 [11].

C. Usefulness of Smartphones among Student

The world has been invaded by smartphone owners, that the profound impact of smartphones on education caused adjustments in both teaching and learning activities. In fact, along with the development of the living standard, the number of people who access mobile phones increase steadily. In solely America 2020, roundly 80% of households owned smartphones and had internet access. A high number of smartphone owners has been reported in many other countries. Accordingly, using smartphones for teaching and learning is the current and future of the education industry. Nigeria is no exception as the most populous African country with approximately 180 million people: it has the largest economy and mobile market on the continent [13]. Additionally smartphones bring effective learning solutions to teachers and students in many ways. Indeed, the impact of smartphone on education can be experienced in many aspects. In terms of students, the benefits of smartphones for students are undeniable in changing their behavior in life and learning. In the past, lecture materials were also indicated in physical forms or merely stored on desktops. Accordingly, it took time to access and reference those documents. The birth of smartphones makes students' life more accessible that they can have books, learning material right on their phones.

The smartphone is an indispensable device in the area of mobile learning. The most crucial features of a smartphone are its availability with users, strong battery, touch screen, millions of downloadable applications [4]. Smartphones support learning either offline or online. Offline access enables users of smartphones to store any form of learning materials such as pdf, powerpoint, word, excel, pictures, animations, symbols; irrespective of the geographical location. Internet access is needed for learners like students and teachers to visit websites to meet their information needs [15].

D. Negative Impact of Smartphones on Student

Salehan et al [10], stated that the penetration of mobile phones in societies increases, there is a large growth in the use of mobile phones especially among the youth. This trend is followed by the fast growth in use of online social networking services (SNS). Extensive use of technology can lead to addiction. This study finds that the use of SNS mobile applications is a significant predictor of mobile addiction.

As per the research work of [3], smartphone poisoning means connection to poisoning phenomena habitually using a smartphone without special purpose for and showing anxiety and restlessness without a smart phone.

According to [19-20], an increasing reliance on cell-phones among young adults and college students may signal the evolution of cell-phone use from a habit to an addiction. Although the concept of addiction has multiple definitions, traditionally it has been described as the repeated use of a substance despite the negative consequences suffered by the addicted individual.

Smartphone's addiction is a major impact on academic and social life. As per [11], surveys show that Smartphone addiction is interfering with our night's sleep. According to the survey, 33% of mobile workers admitted that they check their phones for email and message throughout the night. Nearly 50% of those surveyed said, they wouldn't even think of going to bed without have their Smartphone's tucked under their pillows [14, 17].

According to [9], the use of the Internet has become a part of life of every student and a mean to search for the information as and when it is needed. These days, use of mobile phones for internet purposes has become a routine and number of mobile consumer accessing the Internet is surpassing fixed line internet users. The Smartphone with the capability of always connected makes it much easier for the students to avail this type of education facility and makes the Smartphone a perfect fit device for distance learning.

3. RESEARCH METHODOLOGY

The convenient sampling method was employed for this study because the population of the respondent were few therefore, did not permit the use of probability sampling method. The researchers made use of descriptive statistics in order to determine the frequency counts, percentage and mean. The descriptive statistics were used to determine percentage of the gender involvement in the usage of smartphones and to answer other objective questions.

Population of the Study

The study studied the Influence of Smartphones among student of higher institutions of learning in Bauchi State, two different institution were selected for the study, namely Bauchi State University Misau Campus and A.D RUFA'I College of Education, Legal and General Studies Misau, both in Misau Local Governmnet of Bauchi State. Bauchi State is in the Northern-Eastern part of Nigeria. The two institutions were purposively selected for logistical reasons because they were the two higher institutions closest to the researchers. The population of the students is as follows:

1.	Bauchi State University Misau Campus. Bauchi State.	= 250
2.	A.D Rufa'i College of Education, Legal and General Studies, Misau. Bauchi State.	= 2,750
Total		*= 3,000*

Sample Size and Sampling Technique

In this study, the researcher selected a sample size with reference to the sampling ratios proposed by Alreck and Settle (as cited in Ankrah, 2014, p.124). "They proposed that for different population sizes; a sampling ratio of 30% is adequate for a population of less than 1,000; a sampling ratio of 20% is adequate for a population between 1,000 and 10,000 and a sampling ratio of 10% is adequate for a population greater than 10,000. To achieve this sample size, 20% of the total number of students within the two sister institutions were used and in other to have a balanced analysis for both

institutions, the researchers used an equal number of one hundred and fifty (150) questionnaires for both institutions. Thus, a total number of 300 questionnaires were prepared and distributed electronically using Google form link, so as to acquire fast record and ease the research analysis.

1.	Bauchi State University Misau Campus. Bauchi State	= 150
2.	A.D RUFA'I College of Education, Legal and General Studies, Misau. Bauchi State	= 150
Total Sample Size of Student	*= 150 + 150 = 300*	

Questionnaires were distributed to guide the study so as retrieve different responses from the students. The required respondents for this study were selected randomly from different level of study and program of study for the case of A.D RUFA'I COELEGS-Misau which operates a number of programs as follows:

1. Undergraduates Degree, 2.Ordinary Diploma, 3. National Diploma and 4. NCE programme.
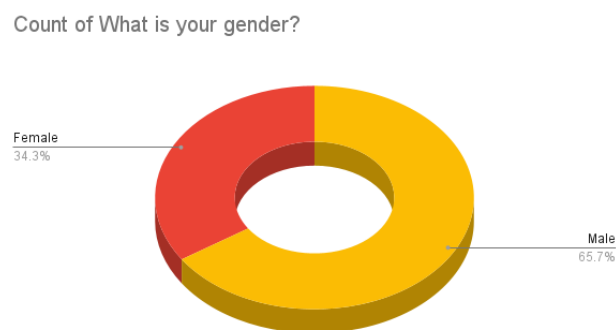
4. RESULT

Data Analysis

In this section the data obtained from the survey conducted is analysed. The analysis is based on the research question raised to guide the study. The data were collected using Google form and analysed using a Google sheet.
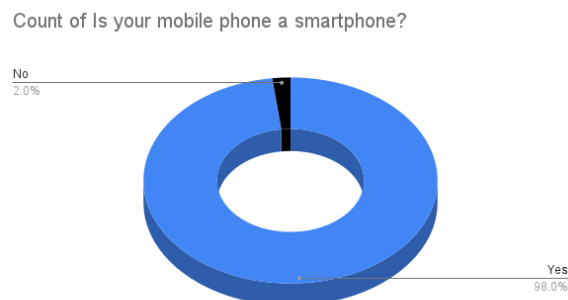
Research question one

This research question was formulated to address the research question thus: What percentage of student in Bauchi State higher institutions of learning uses smartphones in the course of studies?

Fig. 1 *Percentage of student Gender*

The research results in *Figure 1* showed above shows that 197 (65.7%) of the respondents were Male and 103 (34.3%) are found to be Female.

Fig. 2 *Percentage of student using smartphone*

Similarly in *Figure 2,* all the 300 respondents admitted to owning a mobile phone. A large percentage of the students, 294 (98%) uses smartphone while only 6 (2%) do not own phones that are smartphones.

**Fig. 3** Percentage of student usage of smartphone for academic purpose
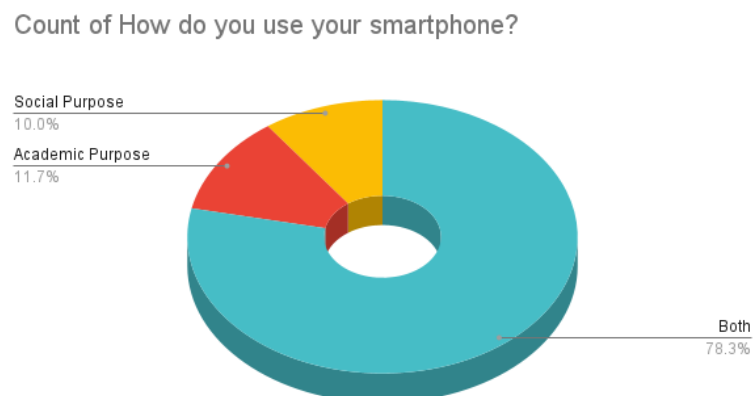
In *Figure 3*, 235 (78.3%) of all students who own a smartphones admitted that they deploy their smartphones for both academic and social purposes, while 35 (11.7%) admitted that they deploy their smartphone on Academic purpose only and lastly 30 (10%) admitted the use of smartphone solely on Social purpose.

Research question two

This research question was formulated to address the research question thus: To what extent do student use smartphones as a tool that contribute positively to their studies?

Fig. 4 *Percentage on which platform do student use for studies*
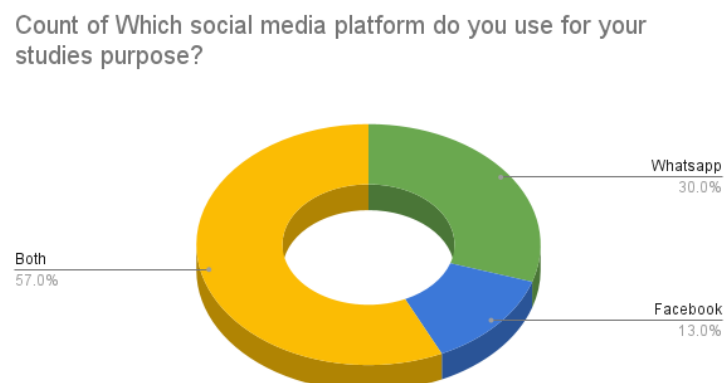
Results in *Figure 4* show that an overwhelming percentage of students 171 (57.0%) uses both Facebook and Whatsapp social media platforms for academic purpose while 39 (13%) of these student uses only Facebook and 90 (30%) goes for Whatsapp only.

Table 1: Respondent perceived positive impact of smartphone to their studies?

| No	Items	Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree
1.	Using Smartphone for learning has enabled me to gain extra skills and experience outside classroom	46.7%	28%	11%	6.3%	8.3%
2	Smartphone enable me to store all my lecture materials.	73%	17.3%	4.3%	3.7%	2%
3.	Smartphone is used for recording when lectures is going on	67.7%	13%	6%	10.7%	2.7%

4.	Smartphone enable me to schedule my lecture activities with reminder.	68.3%	17.3%	4.7%	7.3%	2.7%
6.	Smartphone help me in sharing lecture materials among colleagues.	69.7%	20.3%	3%	6%	1%
7.	I use smartphone in online group discussion.	63.3%	16%	4.7%	13%	3%

It is refreshing to note from table 1 that 140(46.7%) of the respondents agreed that "*using the smartphone for learning has enabled them to gain extra skills and experiences outside the classroom*", 33(11%) did not take any stand, 84(28%) strongly agreed whiles 19(6.3%) opposed to the statement by indicating disagree and 25(8.3%) strongly disagreed. Also on the statement *"Smartphone enable me to store all my lecture materials."* 219(73%) and 13 (4.3%) of the respondents agreed and were ambivalent respectively, 52(17.3) strongly agreed whiles 11 (3.7%) disagreed and lastly 6(2%) strongly disagreed. Also, it is revealed that 203(67.7%) representing the majority of the respondents agreed to the assertion that *"Smartphone is used for recording when lectures is going on"*, 39(10.7%) strongly agreed then 32(10.7%) disagreed and 8(2.7%) strongly disagreed whiles 18(6%) indicated neutral. Also, on the *statement "Smartphone enable me to schedule my lecture activities with reminder"*, majority of the respondents 205(68.3%) agreed to this perceived useful factors 52(17.3) strongly agree, 14(4.7%) were neutral while 22(7.3%) disagreed and 8(2.7%) strongly disagree. Furthermore, 135(45.9%) of the responded by indicating strongly agreed to the fact that *"Smartphone helps in sharing lecture materials among colleagues"*, 209(69.7%) agreed, 61(20.3%) strongly agree, 9(3%) were ambivalent, 18(6%) disagreed and lastly 3(1%) strongly disagree to this. It is also evident in the Table that, a greater portion of the respondents created by indicating strongly agree to the point *"I use smartphone in online group discussion"*, 190(63.3%) agreed, 48(16%) strongly agree, 14(4.7%) were undecided while 39(13%) disagreed and lastly 9(3%) strongly disagree to that.

Research question three

This research question was formulated to address the research question thus: What are the impacts of smartphones to the behaviour and academic performance of the students in Bauchi State higher institutions of learning?

Fig. 5 *Percentage of Hours student spent on Social Purpose.*

Count of Hours spent on social purpose daily
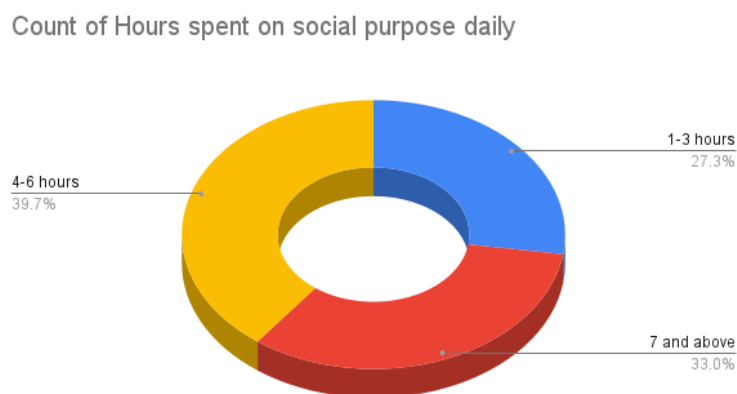
The research results in *Figure 5* showed that 82 (27.3%) of the respondents spent 1-3 hours daily on social purpose by the student, 119(39.7%) agreed to 4-6 hours a day and 99(33%) goes for 7 hours and above daily.

Table 2: Respondent perceived effect of smartphone on academic performance.

No	Items	Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree
1.	I always use my smartphones more for playing games and accessing social media platforms instead of using it for learning.	56.7%	11.3%	6.7%	18.3%	7%
2	Smartphones takes more of my attention from Studies.	49.7%	13.3%	9%	20.3%	7.7%

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3.	Sometimes I am not able to pay attention in class because of my smartphone	43.7%	13.3%	9%	25%	9%
4.	Using smartphone for learning consumes a lot of data bundle which increase my school expenditure.	62.3%	22.3%	3.3%	9%	3%

Result from *Table 2* proved that 170(56.7%) of the respondents agreed to *"I always use my smartphones more for playing games and accessing social media platforms instead of using it for learning"*, 20(6.7%) did not take any stand, 34(11.3%) strongly agreed while 55(18.3%) opposed to the statement by indicating disagree and 21(7%) strongly disagreed. Also on the statement *"Smartphones takes more of my attention from Studies."* 149(49.7%), 27(9%) of the respondents agreed and were ambivalent respectively, 40(13.3%) strongly agreed whiles 61(20.3%) disagreed and lastly 23(7.7%) strongly disagreed. Also, it is revealed that 133(43.7%) representing the majority of the respondents agreed to the assertion that *"Sometimes I am not able to pay attention in class because of my smartphone"*, 40(13.3%) strongly agreed then 75(25%) disagreed and 27(9%) strongly disagreed whiles 27(9%) indicated neutral. It is also evident in the *Table* that, a greater portion of the respondents created by indicating strongly agree to the point *"Using smartphone for learning consumes a lot of data bundle which increase my school expenditure."*, 187(62.3%) agreed, 67(22.3%) strongly agreed, 10(3.3%) were undecided while 27(9%) disagreed and lastly 9(3%) strongly disagreed to that.

Research question four

This research question was formulated to address the research question thus: What percentage of these student think that use of smartphones among student is a distraction tool not a learning tool?

Table 3: Frequency of student perceived smartphone as a learning tool not a distraction tool

No	Items	Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree
1.	I see smartphone as a learning tool not a distraction tool	53%	15.7%	20.3%	6%	5%

Table 3 shows that a good percentage of student 159(53%) see the use of smartphones as a learning tool in their studies 47(15.7%) strongly agreed while slightly above one third of students, 18(6%) disagreed to that, 15(5%) strongly disagreed and on that same regard 61 (20.3%) were neutral.

Fig. 6 *Percentage of most used app on student smartphone*

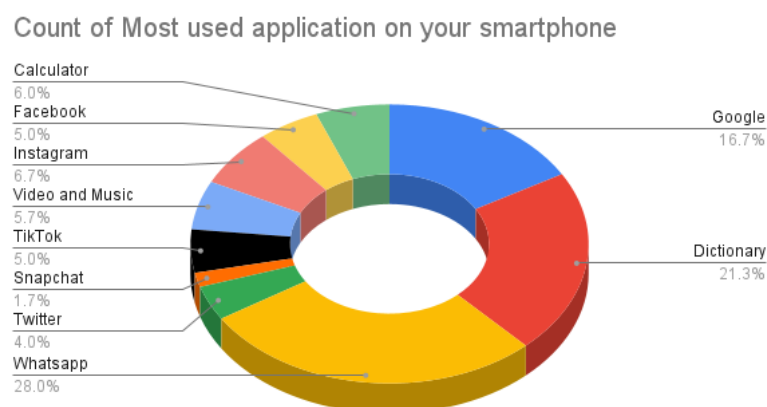Count of Most used application on your smartphone

Figure 6 shows that most students (112) that is 37.3% of all respondents identified "Whatsapp" as the most used app on their smartphones. This was closely followed by "Google" with 72 students (24%). "Dictionary" App came next with 68 (22.7%) students using it on their smartphones, then "Facebook" with 38 (12.7%), "Instagram" with 30 (10%) "Twitter" 23 (7.7%). On the other hand, Video and Music app gathered 25(8.3%) student, then followed by "TikTok" with 18 (6%)

student. On last regard the least most use app by students on their smartphones is "Snapchat" with only 11 students (3.7%).

Fig. 7 *Percentage of how smartphone distract student during lectures*
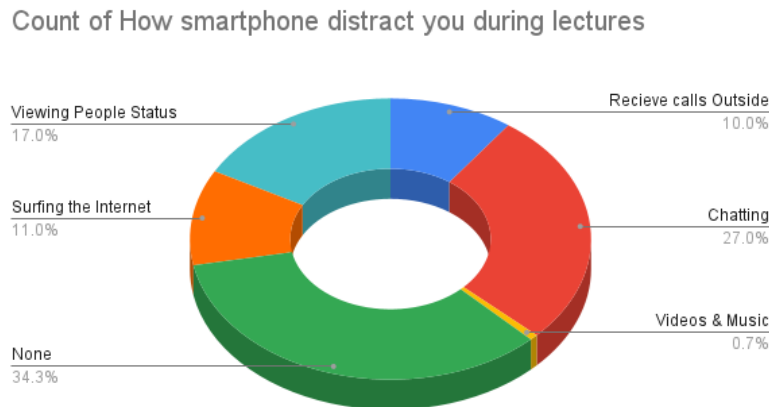
The results in *Figure 7* shows in what ways smartphones distract students in their studies. Most students admit that the smartphone distract them in their studies with (27%) using their smartphones to Chat, (17%) viewing people status on social media, (11%) surfing on the Internet, (10.0%) go out during lectures to receive calls. while the least form of distraction is when students (0.7% valid percentage) Listening to Music and Watching Videos while lectures is going on. On a final note 34.4% respondent that they don't use their smartphones when class is going on.

Table 4: Respondent perceived School authorities to regulate the use of smartphone on campuses

No	Items	Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree
1.	Should schools authority regulate the use of smartphone on campuses?	56%	17%	14.7%	5.3%	7%

From *Table 4*, A total percentage of (56%) students agreed and (17%) strongly agreed that school authorities should regulate the use of smartphones. While (14.7%) were neutral on this stand, lastly (5.3%) disagreed and (7%) strongly disagreed to these regulations.

Fig. 8 *Percentage of how school authorities should make regulations on smartphones*
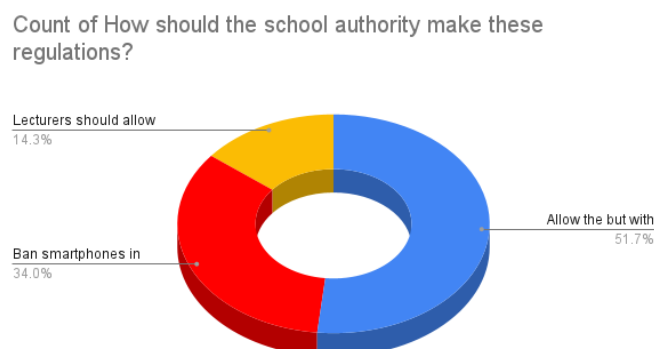

Figure 8 shows that a majority of students (51.7%) suggested that the use of smartphones should be regulated in schools preferred that the authorities should allow the use of smartphones during lectures but with discretion. (34.0%) suggested the ban of smartphones in Classrooms and lastly (14.3%) preferred that Lecturers should allow the use of smartphones during lectures.

5. CONCLUSION

Based on the findings of this research, it can be concluded that students of Bauchi state higher institutions of learning own phones and almost all students own smartphones. It can be asserted that students see and use their smartphones regularly as a companion in their studies. There were some negative influence proved in the study that found smartphone as a distraction tool in classrooms, student were more likely to chat during lectures, some were distracted by Viewing people status on social media. Surfing the internet is among these influence. Conversely, only little amount of these students are likely to go out to receive a call during lectures. Large percentage of the student were not distracted by these smartphones when lectures are going on i.e they don't use smartphones in class rooms. Also, Whatsapp is the most used app then Dictionary and Google while Snapchat is the least used. With the result of the study it proves that social media distract these student and this can make negative impact in their academic performance as well. Also, the study found a positive usefulness of the use of smartphone in the students learning activities such as easy sharing and accessing of lecture materials online, easy communication with colleagues and course masters.

In addition, quite number of percentage want authorities of higher institutions to regulate students' use of smartphones during their studies while almost about half of all students want authorities of higher institutions to allow the use of smartphones during lectures but with discretion, rather with little respondent suggesting banning smartphone in Class rooms when lectures are going on. The research also established that students who spent less hours on their smartphone are more likely to do well in their studies.

6. RECOMMENDATION

For the academic performance of student in higher level of learning in Bauchi state to improve more, even though they are with their smartphones is that the following restrictions must be made on the usage of smartphone on campuses

1. Making regulations that no student should be allowed to use his/her smartphone when lectures is going on in order to maintain a conducive learning atmosphere and concentrate on listening and taking notes from the lecturer.

2. Student should maintain a positive use of Social media, by including themselves in more academic social forums.

3. Student should also minimize hours they spent on usage of their smartphones for social purpose.

4. Student should be encourage to develop interest in the use of academic website and the use of mobile applications that will improve their academic performance as well.

5. Lastly, the two institutions studied has no any wire-less network install within the campuses so as to minimize the student expenditure on data subscription. The authorities of these sister institutions need to configure a complete free wi-fi network, that will be accessible any-where within the school premises, this will improve the academic performance of the student positively.

6. Future research work should investigate the influence of social media on these student academic performance.

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