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Research Article

Smartphone addiction avoidance via inherent ethical mechanisms and influence on academic performance

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ABSTRACT

Due to smartphones' high use and penetration, it has become pertinent to interrogate addiction issues concerning inbuilt user control mechanisms and relative use for academic enhancement among university students. Based on the postulations of the uses and the gratification theory and utilitarian theory of ethics, it has been framed that smartphones are not the key issue but how smartphones are used. The study adopted a survey research design using a questionnaire instrument to collect data from 250 students at a university in Lagos, Nigeria. The findings revealed that smart attachment and addiction are extremely high among the students. However, user controls are not just a matter of default inbuilt ethical control mechanisms, but also deliberately habitual towards academically relevant outcomes. It was also revealed that how one uses smartphones and what one uses smartphones for, are more critical to academic performance than understanding and satisfaction with the inherent inbuilt control mechanism. In essence, good management of smartphone attachment or addiction issues is more of a matter of habit than it is about inherent ethical smartphone controls. The study, therefore, concluded that manufacturers must take active measures to align smartphone ethical inherent controls with emerging artificial intelligence. Such synergy would suffice to orient users toward improvement. Also, active smartphone user philosophy for self-benefitting purposes is vital. In other words, both manufacturers and users of smartphones have a role in smartphone attachment–addiction management–not just ethical inherent control mechanisms.

Keywords: academic performances, addiction-avoidance, control mechanisms, smartphones, smartphone ethics

INTRODUCTION

Smartphones perform many functions (Whyte, 2019), among which are access to the internet, social media platforms, and numerous gratifications such as entertainment, e-commerce, education, sociability, time management, mobilization, civic engagement, and activism, etc. (Abbas & Al-Bahrani, 2015; Oyebode, 2014; Sharma et al., 2021; Ukomadu, 2018). While smartphone gratifications indeed abound, there is, however, increased evidence of certain negativities pertaining to usage, particularly users' attachment and addiction to smartphones (Yuchang et al., 2017). A smartphone is a personal device that performs many of the functions of a computer as identified above (Whyte, 2019). While its adoption has become ubiquitous, a high level of addiction has also been observed among users. Sharma et. al. (2021) view smartphone addiction as an excessive devotion to smartphones leading to a loss of ability to control one's choice of use. Addiction generally is characterized by an intense craving to use something, difficulties to control use in spite of detrimental consequences, or choosing to stay glued to things above other activities and obligations (Sharma, et al., 2021). The fact every addiction is a form of mental imbalance with grievous impacts on quality of life (Szerman et al., 2019; Yuchang et al., 2017) implies the issue of smart addiction needs to be given prompt attention by all concerned.

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Balogun and Olatunde (2020) considered smartphone addiction a grave issue requiring urgent attention. The menace of smartphone addiction is rightly compared and ranked in the category of substance abuse (Sharma et al., 2021). On the contrary, Emanuel et al. (2015) believe that people are not addicted to their smartphones as most scholars perceive but are rather addicted to the information, entertainment, personal connections, and other gratifications of smartphones. Irrespective of views, the menace of smartphone-triggered addiction is unarguably a global phenomenon that is common in both developing and developed nations (NCC, 2019). The foregoing has resulted in several studies around the use, ethical controls, and relative gratifications of smartphones. For example, a correlational study on smartphone use showed that females do consider smartphones as a new way of identity and constitution, an empowerment that subtly enhances sexuality, relative negotiations, and roles (Onyima & Ebgunike, 2019). The implication may be that owning a smartphone is deemed vital, hence a default drive to become obsessed and addicted.

There are several forms of addiction such as sexual, substance abuse, shopping, gaming, and the like of them, smartphone addiction, however, seems to be the latest addition evolving particularly from what was regarded as mobile-phone addiction (Sharma et al., 2021). It, therefore, becomes important to inquire about the implication of smartphones addiction on critical aspects of human life like academic performance, particularly among university students who are not only digital natives but perhaps the most affected (Aljomaa et al., 2016). It is likewise germane to inquire about how the menace of smartphone addiction is currently being addressed by all concerned particularly the manufacturers. Jones (2016) identified ethical control mechanisms as designed and implemented by the manufacturers as one primary means to ameliorate smartphone addiction. This study, therefore, finds it reasonable to inquire about the levels of inherent ethical smartphone controls, and their influence on addiction and academic performance.

Jones (2016) believes ethical issues in smartphone adoption arise where certain core principles, values, or rights of any of the stakeholders most importantly, individual users are at stake. Inherent ethical control mechanisms can, however, come to aid in cases like this, especially where users are unconscious of the implication of use. Also, some issues such as how the correlation between smart controls and resulting benefits may persist are of great importance. One of such expected benefits is how smartphone use–irrespective of addiction–does result in improved academic performance or otherwise (Damiao & Cavaliere, 2021). Else, one can posit that an individual's laudable standing should become threatened because of attachment to the smartphone. In line with the insinuation about the negatively addictive tendencies of media technologies such as smartphones, Liu (2020) thinks that people ought to be able to appropriate and maneuver. However, due to the general notion that phone, and media technologies are vulnerable to hacks, personal data theft, and attachments. Gilad (2019) considers it prudent to investigate the meeting lines between the ability to deploy smartphones' inherent ethical user controls and the resulting academic performance of folks who are actively enticed to smartphones.

Statement of the Problem

The ubiquitous use of smart mobile communication devices is already well-documented (Sociology-Central, 2011). Although smartphone penetrations across the world, including in developing nations, are hailed because of several affordances (GSMA-GSM Association, 2008; National Bureau of Statistics, 2018; NCC, 2019), conventional media technologically tilted programs and content production practices (Sambe & Nyam, 2018) as well as mobile telecommunication convergences (Nyam & Olubodede, 2020; Nyam & Oyewole, 2020), and news aggregations (Nyam & Sambe, 2021; Nyam & Uwujiougu, 2021), there are equally some compelling issues. One of such contentions about the spread and use of smartphones is that they can harm academic performance (Balogun & Olatunde, 2020). Indeed, research investigating the role of smartphones for academic enhancement is scarce, let alone the use of smartphones' inherent mechanisms for improved user control and addiction avoidance toward enhanced academic performances.

While smartphones are generally said to be a good contemporary reality (Brock, 2013; Hodkinson, 2017), such mobile devices have also been found to be negatively used. Examples are documented by Owens-Ibie (2019a, 2019b) concerning the complexities of digital technology and the need to check for possible collateral consequences; the spread of fake news and half-truths and even social and political polarization (Ademosa & Oyeleye, 2019; Odoemelam & Odoemelam, 2019; Osuagwu, 2019). However, the immediate foregoing phenomenon relates more to smartphone users' self and social awareness and enlightenment levels towards

better media–communication cohesions and harmony. Manufacturers of smart mobile phones are usually expected to take certain ethical principles into account to conscientize and help users to deal with the high tendency to become addicted to smartphones. Nevertheless, the extent to which users of various brands of smartphones understand such a possibility is scarcely known, let alone an understanding of how such expected inherent smartphone ethical mechanisms are taken advantage of towards improved academic performances. Hence, this research reports the possible correlations between understanding and use of expectedly ethical smartphone's inbuilt mechanisms (for managing addictions) and relative academic performances.

Purpose of the Study

While the menace of smartphone addiction is an obvious reality confirmed by several studies, however, studies investigating the role of smartphones' inherent ethical control mechanisms for gratifications like improved academic performance are relatively few. In essence, the study is aimed at assessing how smartphone addiction can be avoided through the inherent ethical control mechanism and its influence on academic performance. The following objectives are directed towards actualizing the aim: assess the level of use of, and relative addiction to smartphones; assess the extent of smartphone users' awareness and use of the inbuilt control mechanism; and explore the correlation of smartphone controls with relative academic performance.

The significance of the study is to proffer an empirical insight into how the menace of smartphone attachment addiction can be ameliorated through ethical inherent control mechanisms, particularly through a conscious synergy of efforts by both smartphone manufacturers and users for various gratifications like improved academic performance.

Research Questions

This research is conducted towards answering the following:

1. What is the level of use of, and relative addiction to, smartphones?
2. To what extent are smartphone users aware and do use inbuilt control mechanisms?
3. How are smartphone controls correlated with relative academic performance?

REVIEW OF RELATED LITERATURE

Media technologies are already applauded, but there are social, behavioral and psychological issues such as addiction that are connected to its gratifications (Damiao & Cavaliere, 2021). Smartphone addiction is indeed already well documented (Balogun & Olatunde, 2020; Damiao & Cavaliere, 2021; Sharma et. al., 2021). In today's tech-driven interconnectedness, the use of smartphones seems almost inevitable. However, a situation where smartphone users appear to not have full grabs of self-control via an inbuilt mechanism can become worrisome. Inherent phone control mechanisms are aspects of device settings that enable the user to modify the phone interface and or behavior. As noted by Liu (2020), such a control mechanism is expectedly ethical consideration by phone manufacturers towards enabling self-preferred smartphone user preferences and appropriations.

However, whether the ability to use ethically construed smartphone control mechanisms can result in more benefits is hardly researched. Irrespective, the seeming inability to control oneself in the perceivable attachment to smartphones can become troubling (Onyima & Egbunike, 2019), and in some cases can become like drug or related substance abuse (Balogun & Olatunde, 2020; Sharma et. al., 2021). Due to the complexities of smart technologies, the field of ethics has also been challenged enormously (Preisig et al., 2014). Considering the rate of smartphone penetrations across different continents (Osuagwu, 2019) it implies that the perceived power of the smartphone to become addictive must be taken seriously. The ethics of device controls also must be deemed vital at all stages of media gadget production. Along with the need to use smart devices, the ethics of smartphone control also must be carefully examined during device design and final production. An inherent ethical control mechanism is expected to enable smartphone users to appreciate the manufacturer's concern about due advantage (Barbosa & Milan, 2019). One such advantage is the use of smartphones for academic purposes (Balogun & Olatunde, 2020; Damiao & Cavaliere, 2021). However, there

appears some dilemma of whether the controlled use would result in improved academic performance or smartphone attachment and addiction on the other hand do result in poor academic performance.

Empirically, research by Balogun and Olatunde (2020) comes in handy and relevant. The research titled *prevalence and predictors of problematic smartphone use among pre-varsity young people in Ibadan, Nigeria* examined the smartphone ownership dynamics and uses is increasingly becoming like substance abuse. The research used a 5-point Likert scale, and a Chi-square test to compare phone use. Out of 575 recruited respondents -aged between 10 and 24 years. There were 46% male respondents. Indeed, findings from the research showed that 96.7% had smartphones; 46.5% of the users experienced moderate to severe phone issues, while parents were known to have paid for the internet data. One of the major findings that are apt in this research is that there was a correlation between low conscientiousness and low intellect -irrespective of levels of phone use, and indeed, was found to also correlate with problematic smartphone use.

This research is based on the uses and gratification postulation of Elihu Katz and Jay Blumler in 1974. The theory is applied because of the inherent expectation that tech tools such as smartphones would ordinarily be valuable for the user. The theory–as propounded, alluded to the rationale of various individuals towards media users and benefits such as enhanced academic performances (McQuail, 2010; Severin & Tankard, 2000a, 2000b; West & Turner, 2007).

Another theory applied to this research was the utilitarianism theory of ethics–wherein smartphone manufacturers are expected to consider and include inherent smartphone control mechanisms for addiction avoidance or attachment controls. Utilitarianism theory was postulated by Jeremy Bentham between 1748 and 1832; it dwells on certain notions that correct actions are based on expected utilities–not just for the individual, but also for the larger civil society (Driver, 2009). Accordingly, smartphone controls and measured uses stand to add value to academic institutional expectations for addicted smartphone users. At least, the quality of utility rational attitude stands to merge expected use, gratifications, and civil standards of smartphone making and management towards academic standards and positive outcomes (Baujard, 2013).

METHODOLOGY

The survey research design was adopted. Using the questionnaire as the instrument of data collection, 250 respondents were recruited. Recruited survey research is quite appreciated and used in the social sciences. A ready example is the work of Balogun and Olatunde (2020). The survey research design is well-known and documented in media-communication research and other social sciences (Borden & Abbott, 2010; Wimmer & Dominic, 2011). Since the respondents were recruited, the size of the research population was not considered -besides the main bases for consideration of who was well suited to participate in the study. The study took place in a university environment, where all participants were readily accessible. Participants were briefed about the nature and purpose of the study. Due diligence was also employed towards ensuring the safety, respect, and confidentiality of responses. All responses were anonymous, and data was entirely based on questions explicitly asked.

All questions contained in the instrument of data collection were close-ended. To enhance the validity and reliability of responses, stringent care was taken to ensure that the questions, in the first instance, could obtain data for answering the research questions. Such a step is otherwise known as face validity. To achieve reliability of data (internal consistency), two respondents were selected to test the extent to which the questions were clear and concise. Validity and reliability test situations were then tagged “test-X” and “test-Y.” Certain measures were adopted to ensure that both test situations were conducted within the same but independent standard. Respondents involved in the validity and reliability were as such asked the rate of the level of respective understanding of the questions -not their responses. Scores ranging from 1 to 5 were adduced as the rating scheme (1=extremely poor understanding, 2=poor understanding, 3=fair understanding, 4=very good understanding, and 5=perfect understanding). Refer to **Table 1** to ascertain the questions contained in the instrument of data collection (the questionnaire).

Details shown in **Table 2** indicate high face validity (understanding) of the instrument–the questionnaire used in the research. The test of correlation coefficient was then based on the scores. Pearson moment correlation coefficient test result=0.645, approximated to 0.73.

Table 1. Inter-rater scores for tests of validity and reliability

Questions		1st test (1st round)		2nd test (2nd round)	
		X	Y	X	Y
		1-5	1-5	1-5	1-5
1	Once your phone's internet data is switched-on, you seem to have no control over in-coming texts & chats	5	5	5	5
2	How often do you use your smartphone for academic (school) reading?	5	5	5	5
3	To what extent do you understand & are satisfied with your smartphone user-guidelines?	5	4	5	5
4	To what extent does your phone enable user control of pop-ups such as messages, adverts, texts, promos, & news prompts?	4	4	5	5
5	When in bed, to what extent are you likely to look at your phone?	5	5	5	5
6	To what extent do you feel attached to your phone?	5	5	5	5
7	Which of this best describes your academic performances?	5	5	5	5

Note. *1-5: Scaled scores ranging between 1 and 5

Table 2. Extracted raw scores for the test of validity and reliability (1st round)

Serial number	Test X	Test Y
Question 1	5	5
Question 2	5	5
Question 3	4	5
Question 4	4	4
Question 5	5	5
Question 6	5	5
Question 7	5	5

Note. Source: Field Survey (2022)

Table 3. Extracted raw scores for the test of validity and reliability (2nd round)

Serial number	Test X	Test Y
Question 1	5	5
Question 2	5	5
Question 3	4	5
Question 4	5	5
Question 5	5	5
Question 6	5	5
Question 7	4	4

Note. Source: Field Survey (2022)

Table 4. Spearman's rho calculation based on 1st round raw inter-rater scores (number of questions=7)

Spearman's rho calculation		Results of test of validity & reliability (FGD interval based scores for 1st round [X & Y])			
Set A (X)	Rank A	Set B (Y)	Rank B	d	d^2
5	3.0	5	3.5	0.5	0.25
5	3.0	5	3.5	0.5	0.25
4	6.5	5	3.5	3.0	9.00
4	6.5	4	7.0	0.5	0.25
5	3.0	5	3.5	0.5	0.25
5	3.0	5	3.5	0.5	0.25
5	3.0	5	3.5	0.5	0.25

Note. R-value=0.8125 (it is a strong positive correlation value); Sum of d^2=10.5; & Source: Field Survey (2022)

Details shown in **Table 3** also indicate high face validity (understanding) of the instrument -the questionnaire used in the research. The test of correlation coefficient was then based on the scores. Pearson moment correlation coefficient test result=0.645, approximated to 0.73. The test was conducted via *Easycalculator.com* (a web-based statistical service).

As adduced by other scholars, such test results are deemed sufficient for the questionnaire–as the instrument of data collection towards consideration of the sufficiency of the question. All test results were interpreted as a strong positive correlation (Biddix, 2012; Bryman, 2012; Laerd Statistics, 2020).

A spearman correlation coefficient test was also conducted using the same figures. The respective results are shown in **Table 4** (for 1st round) and **Table 5** (for 2nd round).

Table 5. Spearman's rho calculation based on set B raw inter-rater scores (number of questions=7)

Spearman's rho calculation		Results of test of validity & reliability (FGD interval based scores for 2nd round [X & Y])			
Set A (X)	Rank A	Set B (Y)	Rank B	d	d^2
5	3.0	5	3.5	0.5	0.25
5	3.0	5	3.5	0.5	0.25
4	6.5	5	3.5	3.0	9.00
5	3.0	5	3.5	0.5	0.25
5	3.0	5	3.5	0.5	0.25
5	3.0	5	3.5	0.5	0.25
4	6.5	4	7.0	0.5	0.25

Note. R-value=0.8125 (it is a strong positive correlation value); Sum of d^2=10.5; & Source: Field Survey (2022)

Table 6. Extent of attachment to smartphones

Options	Frequency	Percentage (%)
Not attached	18	7.2
Somehow attached	124	49.6
Very attached	108	43.2
Total	250	100.0

Note. Source: Field Survey (2022)

Table 7. Smartphone addiction–inferred from relative use during usually sleep time

Options	Frequency	Percentage (%)
Not addicted	22	8.8
Sort of addicted	130	52.0
Addicted	98	39.2
Total	250	100.0

Note. Source: Field Survey (2022)

Table 8. Understanding and satisfaction with user-guidelines

Options	Frequency	Percentage (%)
No understanding nor satisfaction	20	8.0
Little understanding and satisfaction	126	50.4
Much understanding and satisfaction	104	41.6
Total	250	100.0

Note. Source: Field Survey (2022)

Table 9. Whether respondents lose control of smartphones once the Internet is activated

Options	Frequency	Percentage (%)
Agree	143	57.2
Disagree	92	36.8
Not sure	15	6.0
Total	250	100.0

Note. Source: Field Survey (2022)

However, given that the ordering of the questions was deliberately mixed to limit the possibility of recruited respondents aligning to confirmation biases during the actual survey exercise, the order of data presentation is not ordered according to the order of questions, but according to the order of actual research questions.

Simply put, question data in **Table 6** (extent of attachment to smartphones) is based on question 6 in the questionnaire.

Table 7 (smartphone addiction–inferred from relative use during usually sleep time) is based on question 7 in the questionnaire.

Table 8 (understanding and satisfaction with user guidelines) is based on question 3 in the questionnaire.

Table 9 (whether respondents lose control of smartphones once the Internet of activated) is based on question 1 in the questionnaire.

Table 10 (perception of levels of smartphones inherent ethical control mechanisms) in based on question 4.

Table 10. Users' perception of levels of smartphones' inherent ethical control mechanisms

Options	Frequency	Percentage (%)
Absence of control mechanisms	33	13.2
Basic control mechanisms	132	52.8
Perfect control mechanisms	85	34.0
Total	250	100.0

Note. Source: Field Survey (2022)

Table 11. Use of smartphones for academics' purposes

Options	Frequency	Percentage (%)
Poor	3	1.2
Rarely	54	21.6
Often	96	38.4
Very often	97	38.8
Total	250	100.0

Note. Source: Field Survey (2022)

Table 12. Academics performance of respondents

Options	Frequency	Percentage (%)
Poor	13	5.2
Fair	55	22.0
Good	112	44.8
Very good	62	24.8
Excellent	8	3.2
Total	250	100.0

Note. Source: Field Survey (2022)

Table 11 (use of smartphones for academics) is based on question 2.

Table 12 (academics performance of respondents) is based on question 7 in the questionnaire.

During the research, respect for participants and confidentiality was assured and achieved. This is in line with the view of Whiteman (2007) that computer-mediated research instruments do challenge hitherto disregarded aspects of Research Ethics Boards (REB). There was no institutional involvement. The research was not sponsored, approved, monitored or managed.

All personal research responsibilities were taken seriously. Also, all general standards for research ethics monitoring and practice, as well as evaluations were observed. Data was deployed only for the sake of this research report.

Data Analysis

In **Table 6**, data revealed that only a few of the recruited respondents were not in any sense attached to smartphones. This implies that addiction and the tendency to be addicted to smartphones are high.

Indeed, following the findings in **Table 6**, details in **Table 7** indicate that only a few (8.8%) of the recruited respondents can be said not to be addicted to smartphones. Furthermore, the correlation of metadata indicated that 16% of those who felt they were not attached to their smartphones indeed sometimes/often used smartphones well into bedtime. Hence, 247 (98.9%) of smartphone users recruited could be said to be mildly or strongly addicted to smartphones. Chi-square test shows that there is no significant difference between being attached to smartphones and being addicted (such as usage well into the night). What may differ would be the levels of addiction (x^2=0.4; p>0.05 at df 1–any difference in the level of attachment to smartphones and level of relative addiction by chance). In other words, the more one is attached to smartphones, the more one is likely to stay awake during bedtime.

As shown in **Table 8** concerning understanding and satisfaction with smartphone user guidelines, only 41.6% of the recruited respondents were of the view that they had much understanding of, and satisfaction with, smartphone user guidelines. However, with only 8.8% perceived level of addiction (compared to 41.6% of understanding and satisfaction with user guidelines), it is reasonable to imply that satisfaction with smartphone user guidelines does not guarantee the ability to control addiction to smartphones. Indeed, Chi-square test further revealed that there is a significant difference between understanding/satisfaction with

Table 13. Correlation between use of smartphones for academics and relative performance

Use	Poor performance	Good performance	Total
No/rare use	20	30	50
Regular use	30	170	250
Total	50	200	250

Note. Source: Field Survey (2022)

smartphone user guidelines and addiction-control (x^2=28.6; p<0.05 at df 1– which mean any difference in the level of addiction and level of understanding/satisfaction with smartphone user guidelines is not by chance–and indeed matters). One can be satisfied with user guidelines but be addicted to smartphones. Therefore, avoiding smartphone addiction is not by chance; it is not a factor of how much one understands and is satisfied with relative user guidelines, but conscious ability (effort) to be disciplined about smartphone uses and gratification.

Unlike data in the foregoing **Table 6**, **Table 7**, and **Table 8**, the findings in **Table 9** indicate that only 36.8% of the recruited respondents outrightly disagreed that they lost control of smartphones once the Internet is activated. Indeed, Chi-square test shows there is no significant difference between the ability to control internet-based smartphone use and understanding/satisfaction with user guidelines (x^2=0.4; p>0.05 at df 1–any difference in the level of understanding/satisfaction with smartphone user guidelines and actual use of user-guidelines towards control of internet-based smartphones uses is by chance). This means those who understand smartphone user guidelines are highly likely to also have the ability to control internet-based uses of smartphones.

In **Table 10**, findings indicate that only 34.2% of the recruited respondents thought there are perfect inherent ethical smartphone user control mechanisms. Compared with those who disagreed with losing control of smartphones once the Internet is activated (36.8%–as shown in **Table 4**), Chi-square test shows no significant difference (x^2=0.1; p>0.05 at df 1). This implies that knowing about user internet data-based user controls most likely results in appreciation of the quality of inherent ethical control mechanisms for the management of internet-based smartphone obstructions such as unwanted social media chat/audio-visual messages and general internet data-dependent notifications.

Findings in **Table 11** indicate how 77.2% of the respondents often used smartphones for academic purposes. Considering the findings in **Table 7** (smartphone addiction–inferred from relative use during usually sleep time), wherein only 8.8% said they consider themselves non-addictive to smartphones, it may suffice to imply that some of the recruited respondents who use smartphones even for academic purposes may also be addicted to smartphones. Chi-square test showed a significant difference (x^2=7.3; p>0.05 at df 1), which implies that any difference in the level of addiction and level of use of the phone for academic purposes may be by chance.

However, poor use of smartphones for academics may correlate with poor academic performance. This is because data in **Table 7** shows that 5.2% of the recruited respondents said their academic performances were poor. When compared with the 1.2% that said their use of smartphones for academics is poor, it could suffice to infer that the use of phones for academic purposes stands a better chance to correlate with better academic performance.

Based on the findings in **Table 13**, the test shows significant differences in the number of recruited respondents who did not use or poorly used smartphones for academic purposes and those who regularly did and their respective levels of satisfaction with relative academic performance (x^2=15.6; p<0.05 at df 1). This implies that the level of use of smartphones for academic purposes does have an effect. Indeed, any disparity in the effect of the use of smartphones for academic purposes and the actual level of satisfaction is not by chance.

Based on data obtained from recruited responses, as shown in **Table 14**, the test shows no significant differences in academic performances of those who could use inherent ethical smartphone controls and those who could not (x^2=1.8; p>0.05 at df 1). While there are differences in relative figures, the test suggests that such differences are by chance. What one uses smartphones for and the level of self-control towards attachment-avoidance is more critical than the ability to use inherent ethical controls.

Table 14. Correlation between inherent ethical controls and academics performance

Use	Poor performance	Good performance	Total
No inherent ethical control	11	22	33
Inherent ethical control	59	158	217
Total	70	180	250

Note. Source: Field Survey (2022)

Table 15. Correlation between addiction and academics performance

Use	Poor performance	Good performance	Total
Addicted	60	167	227
Not addicted	5	18	23
Total	65	185	250

Note. Source: Field Survey (2022)

Table 16. Correlation between extent of attachment and academics performance

Use	Poor performance	Good performance	Total
Attached	64	168	232
Not attached	0	18	18
Total	64	186	250

Note. Source: Field Survey (2022)

Based on data obtained from recruited responses, as shown in **Table 15**, the test shows no significant differences in academic performances of those who were considered addicted and those who were not (x^2=0.2; p>0.05 at df 1). The test results imply that addiction to smartphones does not affect academic performance. Indeed, this further means what one uses the smartphone for is more important for academic performance than the extent of use.

Data from recruited responses as shown in **Table 16**, was used for the chi-square test of the level of differences in academic performances of those who were considered attached to smartphones and those who were not. Indeed, the test showed that x2 = 0.2; p > 0.05 at df 1 -which means no significant differences. Once more, the data suggests that attachment to smartphones is not an issue. The vital dimension is what the attachment is meant for.

DISCUSSION OF FINDINGS

Few of the recruited respondents were found not to be attached to smartphones. This indicates a high tendency to become addicted to smartphones. Nevertheless, it remains to be seen how attachment results in benefits. This is because other scholars and studies have noted the level of digital penetrations along with useful realities such as activism (Oyebode, 2014) among other uses (Abbas & Al-Bahrani, 2015; Ukomadu, 2018). Having a smartphone is a matter of pride for most users (Onyima & Ebgunike, 2019).

Details of data further indicate that only 8.8% of the respondents can be said not to be addicted to smartphones. Correlation metadata indicated that 6% of those who felt they were not attached to their smartphones, even did indeed sometimes/often use smartphones well into bedtime. As such, 247 (98.9%) smartphone users recruited can be said to be mildly or strongly addicted to smartphones. Chi-square test shows that there is no significant difference between smartphone attachment and addiction (x^2=0.4; p>0.05 at df 1). In other words, the more one is attached to smartphones, the more likely to stay awake during bedtime.

Findings in previous related studies already point to situations with a high tendency of smartphone addiction (Balogun & Olatunde, 2020). Overall, with substantial understanding and satisfaction with smartphone user guidelines, which only 41.6% of the recruited respondents were deemed to attain, addiction can hardly be avoided. Data showed that even with only an 8.8% perceived level of addiction (compared to 41.6% of understanding and satisfaction with user guidelines), satisfaction with smartphone user guidelines does not guarantee the ability to control addiction to smartphones. Indeed, Chi-square test further reveals that there is a significant difference between understanding/satisfaction with smartphone user guidelines and addiction control (x^2=28.6; p<0.05 at df 1–any difference in the level of addiction and level of

understanding/satisfaction with smartphone user guidelines is not by chance–and indeed matters). One can be satisfied with user guidelines but be addicted to smartphones. Therefore, avoiding smartphone addiction is not by chance -it is not a factor of how much one understands and is satisfied with relative user guidelines, but conscious ability (effort) to be disciplined about smartphone use and gratification.

Furthermore, 36.8% of the recruited respondents outrightly disagreed they do lose control of smartphones once the Internet is activated. Interestingly, Chi-square test shows there is no significant difference between the ability to control internet-based smartphone use and understanding/satisfaction with user guidelines (x^2=0.4; p>0.05 at df 1–any difference in the level of understanding/satisfaction with smartphone user guidelines and actual use of user-guidelines towards control of internet-based smartphones uses is by chance). As such, it is reasonable to posit that an actual understanding of smartphone user guidelines results in an enhanced ability to control internet-based uses of a smartphone. As affirmed by Liu (2020), smartphone users are expected to think for themselves or at least be well-oriented to appropriate and maneuver digital technologies for personal gains.

The foregoing position is not to suggest that smartphone manufacturers bear no responsibility for poor smartphone inherent default ethical control mechanisms. In all, 34.2% of the recruited respondents thought their smartphones had perfect inherent ethical control mechanisms compared with those who disagree with losing control of smartphones once the Internet is activated (36.8%). However, Chi-square test shows no significant differences between the two groups (x^2=0.1; p>0.05 at df 1). This implies that knowing about user internet data-based controls results in such appreciation–not just the quality of inherent ethical controls mechanisms for the management of internet-based smartphone obstructions such as unwanted social media chat/audio-visual messages and general internet data-dependent notifications. Liu (2020) thinks that people ought to be ably knowledgeable about media-communication maneuverability. Besides, using smartphones can also expose one to data breaches and theft (Gilad, 2019).

With a 77.2% level of frequent smartphone use among the recruited respondents, especially for academic purposes, the popularity of smartphones is a good thing. Such a finding corroborates with Brock (2013) who alludes to the advantages of digital. The presence and penetration of smartphones and other media-communication tools are also heralded by Hodkinson (2017), National Bureau of Statistics (2018), NCC (2019), and Sociology-Central (2011). Perhaps, some smartphone users in academic environments can adopt such tools as resourceful enterprises. Relatedly, wherein only 8.8% were said to be non-addictive to smartphones, some of the recruited respondents who use smartphones even for academic purposes may also be addicted to smartphones. Chi-square test shows differences between levels of smartphone addiction and levels of use for academic purposes just by mere chance (x^2=7.3; p>0.05 at df 1). However, poor use of smartphones for academics may correlate with poor academic performance. This is because out of 5.2% of the recruited respondents who said their academic performances were poor, about one-third of them said their use of smartphones for academics is poor. This agrees with the position of Owens-Ibie (2019a, 2019b) -that the complexity of digital technology implies caution towards minimization of consequences.

The test, as shown in **Table 13**, shows significant differences in the number of recruited respondents who did not/poorly used smartphones for academic purposes and those who regularly did and their respective levels of satisfaction with relative academic performance (x^2=15.6; p<0.05 at df 1). This implies that the level of use of smartphones for academic purposes does have an effect. Indeed, any disparity in the effect of the use of smartphones for academic purposes and the actual level of satisfaction is not by chance. (Onyima & Egbunike, 2019) poor smartphone choices use can become problematic.

Other aspects of relative data showed no significant differences in academic performances of those who could use inherent ethical smartphone controls and those who could not (x^2=1.8; p>0.05 at df 1). This indicated that what one uses smartphones for and the level of self-control towards attachment-avoidance is more critical than the ability to use inherent ethical controls. Hence, smartphone manufacturers must become more ethically bound to advise and internalize phone settings factors that can enhance controls (Barbosa & Milan, 2019; Preisig et al., 2014). Considering the rate of smartphone penetrations across different continents (Osuagwu, 2019), imply that the perceived power of the smartphone to become addictive must be taken seriously.

Relatedly, another Chi-square test also shows no significant differences in academic performances of those who were considered addicted and those who were not (x^2=0.2; p>0.05 at df 1). The test results imply that addiction to smartphones does not affect academic performance. Indeed, what one uses the smartphone for is more important for academic performance, not the extent of use. A smartphone user's level of default intellect is already shown to correlate with how one takes advantage of such devices for personal gains and limitations to possible disadvantages (Balogun & Olatunde, 2020). This is especially the case as framed by Uses and Gratification postulations (McQuail, 2010; Severin & Tankard, 2000a, 2000b; West & Turner, 2007). This means inherent control mechanisms are vital, but user values and needs matter more. Indeed, even attachment to a smartphone also did not appear to affect academic performances (x^2=0.2; p>0.05 at df 1, which means no significant differences in how smartphone attachment affects those addicted and those not addicted. Once more, the data suggest an attachment to the smartphone is not an issue but what the attachment is used for. Like the uses and gratification theory, the foregoing findings align with the utilitarian theory (Baujard, 2013; Driver, 2009). Via such an approach, smartphone controls and measured uses stand to add value to academic institutional expectations and orientations.

CONCLUSION

Smartphone attachment and addiction are extremely high among university students. The level of attachment is synonymous with the extent of addiction. The more one is attached to smartphones, the more one is likely to stay awake during bedtime. However, the ability to indulge in smartphone internet-based uses was found to correlate with the understanding of ethical inbuilt user controls of smartphones. User choices are vital to smartphone user benefits. The popularity of smartphones is not the problem, but the ability to wisely use phones to enhance personal and civil benefits. However, wise use does not negate addiction since too much of everything can be potentially bad. Enterprising usage of smartphones is not only good but should be encouraged.

Indeed, there is high use of smartphones for academic purposes. Smartphone users in academic environments for instance, can tilt such tools as resourceful enterprises. It is also revealed that one-third of those who do not use their smartphones for academics are more likely to have poor grades. The level of use of smartphones for academic purposes does have a positive effect on academic performance. Indeed, any disparity in the effect of the use of smartphones for academic purposes and the actual level of satisfaction is not by chance. Poor smartphone use can become problematic. Also, how one uses smartphones and what one uses smartphones for are more critical to academic performance than understanding and satisfaction with the inherent inbuilt control mechanism.

In sum, having established the fact of smartphone attachment and addictions, the roles of ethical inbuilt control mechanisms and their influence on the academic performance of university students. It, therefore, becomes important that all hands are on deck to solve this problem most importantly through inherent inbuilt control mechanisms that are complimented by users' awareness and know-how.

Recommendations

Smartphones may be affecting sleep quality and duration. Indeed, substantial understanding and satisfaction with smartphone user guidelines are not enough to manage addiction. Hence, good management of smartphone attachment or addiction issues is more of a matter of habit, than it is about inherent ethical smartphone controls. This is not to suggest that such controls are not needed but using such control for self-control purposes matters most. One can be satisfied with user guidelines but be nonetheless addicted to smartphones. Besides, smartphone obsession management is a conscious effort to be disciplined about smartphone use and gratification. The more a user understands and decides to control internet content flow, the more likely such user would appreciate ethically in-built smartphone user controls mechanism. Actual understanding of smartphone user guidelines does mostly result in an enhanced ability to control internet-based uses of smartphones. Notably, such avoidance of internet-based uses does not in any way result in addiction avoidance since users can indulge in non-internet-based uses such as reading, listening to, and watching audio-visuals. Self-control is, therefore, just as vital as inbuilt mechanisms for smartphone user-controls. This indicates that what one uses smartphones for and the level of self-control towards attachment

avoidance are more critical than the ability to use inherent ethical controls. Hence, it is critical for smartphone manufacturers to become more ethically bound to advise and inculcate phone settings factors that can enable enhanced controls.

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